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Office of Water Resources

Estimated Use of Water in Alabama in 2005

Scientific Investigations Report 2009–5163

U.S. Department of the Interior
U.S. Geological Survey

Public suppliers and private wells provide plentiful water to the residents and visitors of Alabama. (Photo courtesy of Glenn Phillips.)

The coal-fired James H. Miller Steam Plant employs a recirculating-induced draft tower to cool water before release as return flow to the Mulberry Fork of the Black Warrior River. (Photo courtesy of Sheila A. Garrett, Alabama Power Company.)

Boise Paper Mill in Jackson, Alabama. (Photo courtesy of Boise Papers.)

A surface-water intake on the Tallapoosa River is one of several sources of water for the City of Montgomery, Alabama. (Photo courtesy of Montgomery Water Works and Sanitary Sewer Board.)

Golf course ponds collect rainfall and runoff. Shown is Craft Farms Golf Resort, Cypress Bend Golf Course, Foley, Alabama. (Photo courtesy of Alabama Bureau of Tourism & Travel.)

Limestone quarry, Jefferson County, Alabama. (Photo courtesy of Athena P. Clark, U.S. Geological Survey.)

Catfish harvesting in Perry County, Alabama. (Photo courtesy of Debra Davis, Alabama Farmers Federation.)

Breeder chickens in Cleburne County, Alabama. (Photo by Michael J. Harper, Alabama Office of Water Resources.)

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Estimated Use of Water in Alabama in 2005

By Susan S. Hutson, Thomas M. Littlepage, Michael J. Harper, and James O. Tinney

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U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
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Foreword

Water is one of the most important natural resources in Alabama. It is a vital component of human existence and essential to the overall quality of life. In order to protect and preserve this resource for future generations, baseline information is needed to help policymakers know where water is used, how it is used, and how much is used.

This report is a result of a cooperative effort among numerous State and Federal agencies, and is the most comprehensive discussion of water use in Alabama to be published in the history of the State. The amount of water used in each county and watershed for drinking water and household purposes, and to support agriculture, industry, and thermoelectric-power production is presented in this report. The estimates of water use in Alabama are the result of countless hours of data collection and data analysis by the staff of the Alabama Office of Water Resources (OWR) and the U.S. Geological Survey. The success of this report primarily depended on the support of the public suppliers, industrial and agricultural enterprises, and individuals who annually participate in the OWR's Alabama Water Use Reporting Program. Thanks to their submission of valuable data, we have a much more comprehensive understanding of the link between water use, water supply, and overall water availability.

We hope you find this report to be informative and useful. Although we are extremely proud of this product, we always strive towards better data. The Alabama OWR welcomes your comments and suggestions as we consider our plans to update this information in the future.

Respectfully,
Doni M. Ingram, Director
Alabama Department of Economic and Community Affairs

Lower High Falls, High Falls Creek, Talladega National Forest, Clay County, Alabama. (Photo courtesy of Alan M. Cressler, U.S. Geological Survey.)

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Conversion Factors and Datums

Multiply	By	To obtain
	Length	
inch	2.54	centimeter (cm)
inch	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	4,047	square meter (m^2)
square mile (mi^2)	259.0	hectare (ha)
square mile (mi^2)	2.590	square kilometer (km^2)
	Volume	
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m^3)
gallon (gal)	3.785	cubic decimeter (dm^3)
million gallons (Mgal)	3,785	cubic meter (m^3)
acre-foot (acre-ft)	1,233	cubic meter (m^3)
	Flow rate	
acre-foot per day (acre-ft/d)	0.01427	cubic meter per second (m^3/s)
acre-foot per year (acre-ft/yr)	1,233	cubic meter per year (m^3/yr)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
million gallons per day (Mgal/d)	0.04381	cubic meter per second (m^3/s)
inch per year (in/yr)	25.4	millimeter per year (mm/yr)
	Energy	
kilowatt-hour (kWh)	3,600,000	joule (J)
	Application rate	
gallon per day per acre	0.003785	cubic meter per day per acre

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32$$

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$°C = (°F - 32) / 1.8$$

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).
Horizontal coordinate information is referenced to North American Datum of 1983 (NAD 83).

Abbreviations Used in this Report

ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
AEC	Alabama Electric Cooperative
AL	Alabama
APCO	Alabama Power Company
ARWA	Alabama Rural Water Association
AWURP	Alabama Water Use Reporting Program
COU	Certificate of Use
CP	county population
CWS	community water system
DOE–EIA	Department of Energy, Energy Information Administration
DWB–ADEM	Drinking Water Branch, Alabama Department of Environmental Management
GA	Georgia
GIS	geographic information system
gpcd	gallons per capita per day
GPCO	Georgia Power Company
GW	ground water
HH	housing unit
HH-PS	number of housing units on public supply
HUC	hydrologic unit code
mg/L	milligrams per liter
MOR	monthly operating report
NASS	National Agricultural Statistics Service
NWUIP	National Water Use Information Program
OWR	Office of Water Resources
PCTHH-PS	percent of housing units on public supply
P-HH	persons per housing unit
PP-PS	population served by public supply
PWSID	Public Water System Identification
SDWIS	Safe Drinking Water Information System
SIC	Standard Industrial Classification
SW	surface water
TVA	Tennessee Valley Authority
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USEPA	U.S. Environmental Protection Agency

Estimated Use of Water in Alabama in 2005

By Susan S. Hutson, Thomas M. Littlepage,[1] Michael J. Harper,[1] and James O. Tinney[1]

Abstract

Water use in Alabama was about 9,958 million gallons per day (Mgal/d) during 2005. Estimates of withdrawals by source indicate that total surface-water withdrawals were about 9,467 Mgal/d (95 percent of the total withdrawals) and the remaining 491 Mgal/d (5 percent) were from ground water. More surface water than ground water was withdrawn for all categories except aquaculture, mining, and self-supplied residential. During 2005, estimated withdrawals by category and in descending order were: thermoelectric power, 8,274 Mgal/d; public supply, 802 Mgal/d; self-supplied industrial, 550 Mgal/d; irrigation, 161 Mgal/d; aquaculture, 75 Mgal/d; self-supplied residential, 39 Mgal/d; livestock, 28 Mgal/d; and mining, 28 Mgal/d.[2]

During 2005, about 83 percent of the water used in Alabama was for thermoelectric power to generate about 114,144 net gigawatt-hours of energy. Almost all of the thermoelectric-power water use (about 8,274 Mgal/d) was from surface water; nearly all of the water (98 percent) was used for once-through cooling, and most of that water was returned to a surface-water source.

Public-supply and self-supplied residential withdrawals were about 8 percent of total water withdrawals and about 50 percent of total water withdrawals for all categories excluding thermoelectric power. The combined public-supply and self-supplied residential ground-water withdrawals were about 64 percent of total ground-water withdrawals for Alabama. Public-supply deliveries to residential customers were 41 percent of total public-supply withdrawals, or about 326 Mgal/d; combined industrial and commercial deliveries were 44 percent, or about 355 Mgal/d; and public use and losses accounted for the remaining 15 percent, or about 120 Mgal/d.

Self-supplied industrial (550 Mgal/d) and mining (28 Mgal/d) withdrawals were about 6 percent of total water withdrawals and about 33 percent of total water withdrawals for all categories excluding thermoelectric power. Paper and allied products accounted for the largest self-supplied industrial surface-water withdrawals (301 Mgal/d), and chemical and allied products (12 Mgal/d) accounted for the largest ground-water withdrawals.

Water withdrawals for the agricultural sector—irrigation (161 Mgal/d), aquaculture (75 Mgal/d), and livestock (28 Mgal/d)—were about 3 percent of total withdrawals and about 16 percent of total withdrawals for all categories excluding thermoelectric power. About 135,800 acres of crops, nursery stock, sod, and golf courses were irrigated in 2005. About 97 percent of these acres were irrigated with sprinkler irrigation systems. The statewide average application rate was 1.33 acre-feet per acre per year. The highest application rate, 3.74 acre-feet per acre per year, was for nursery stock.

The largest total water withdrawals by county occurred in Limestone, Jackson, Colbert, and Mobile Counties, and were 60 percent of the total; these withdrawals primarily were used to meet the cooling needs at thermoelectric-power plants. Excluding thermoelectric power, the largest withdrawals by county were in Morgan, Mobile, Jefferson, Talladega, and Madison Counties.

Water use was estimated at the hydrologic subbasin level for all categories except aquaculture, mining, and self-supplied residential. The Middle Tennessee–Elk subregion accounted for about 53 percent (5,185 Mgal/d) of the estimated total withdrawals by subbasin of 9,816 Mgal/d. About 92 percent of the water use in the Middle Tennessee–Elk subregion was for thermoelectric power, and more than 99 percent of the water was from surface water.

Gross per capita use for all offstream uses was 2,185 gallons per day (gal/d) for the estimated 4.56 million Alabama residents in 2005. Public-supply per capita use was 199 gal/d for the estimated 4.04 million residents served by a public supplier; public-supplied residential per capita use was 81 gal/d. Self-supplied residential per capita use was 75 gal/d for the estimated 0.52 million self-supplied residential population. Average residential per capita use was 80 gal/d.

Total water withdrawals decreased less than 1 percent from 9,990 Mgal/d in 2000 to 9,958 Mgal/d in 2005. Surface-water withdrawals decreased less than 5 percent from 9,950 Mgal/d in 2000 to 9,467 Mgal/d in 2005. In contrast, ground-water withdrawals increased about 12 percent from 440 Mgal/d in 2000 to 491 Mgal/d in 2005. By category, increases in irrigation (118 Mgal/d, about 274 percent), thermoelectric power (84 Mgal/d, about 1 percent), and aquaculture (65 Mgal/d, 620 percent) were offset by declines in self-supplied industrial (283 Mgal/d, about 34 percent), self-supplied residential (40 Mgal/d, about 50 percent); and public supply (32 Mgal/d, about 4 percent) from 2000 to 2005. Water use for livestock and mining was not estimated in 2000.

[1]Alabama Department of Economic and Community Affairs, Office of Water Resources, Water Management Branch.

[2]Values may not sum to total estimated use(s) or acreage because of rounding.

Introduction

A continuing assessment of water availability and **water use** is needed for resource management for the State of Alabama. Population growth in many parts of the State has resulted in increased competition for available water resources. This competition includes **offstream use** for residential, agricultural, and industrial use as well as **instream use** for maintenance of habitat and species diversity, navigation, power generation, recreation, and water quality. Accurate water-use information is required for sound management decisions within this competitive framework.

Since 1950 when the U.S. Geological Survey (USGS) first conducted water-use compilations, important changes in water use have occurred in Alabama. The early part of the history (1950 to 1980) showed a steady increase in water use (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Peirce, 1972; Baker and others, 1982; Solley and others, 1983). During this time, the expectation was that, as the population increased, so would water use. Contrary to this expectation, reported **water withdrawals** declined in 1985, remained relatively stable through 1995, and are increasing again, nearing the 1980 levels (Baker and Mooty, 1987; Solley and others, 1988, 1993, 1998; Baker and Mooty, 1993; Hutson and others, 2004a). Changes in technology, in State and Federal laws, and in economic factors, along with increased awareness of the need for conservation, have resulted in more efficient use of water from the rivers, lakes, reservoirs, and ground water in Alabama. Some differences in the water withdrawal estimates over time also can be attributed to changes in data collection and methodologies used to evaluate, calculate, and estimate water use.

Water withdrawals have more than doubled in Alabama from 1960 to 2005 from about 4,220 million gallons per day (Mgal/d) to 9,958 Mgal/d (fig. 1). The entire increase in withdrawals actually occurred from 1960 to 1980 (4,220 Mgal/d to more than 10,350 Mgal/d), while withdrawals in subsequent years have declined somewhat, then increased slightly, but remained nearly constant from 2000 to 2005 (8,593 Mgal/d in 1985; 8,074 Mgal/d in 1990; 8,286 Mgal/d in 1995; 9,990 Mgal/d in 2000; and 9,958 Mgal/d in 2005). Population increased about 19 percent from 1960 to 1980 and increased another 17 percent from 1980 to 2005. As a result of the leveling off of withdrawals as population has increased, **gross per capita use** has declined. The data indicate that gross per capita water use increased from about 1,292 gallons per day (gal/d) for 1960 to a high of about 2,661 gal/d for 1980, and then decreased to about 2,185 gal/d for 2005. The change in gross per capita water use is mainly attributable to the fluctuation in thermoelectric-power withdrawals for the period.

More water continues to be withdrawn for thermoelectric-power generation than for any other use. Thermoelectric-power withdrawals are large, nearly exclusively from surface water,

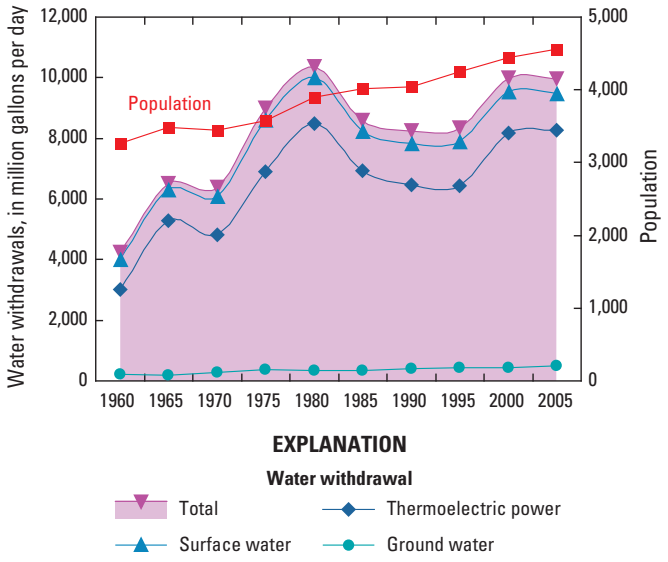


Figure 1. Freshwater withdrawals in Alabama, 1960 to 2005.

and, therefore, dominate the surface-water trends in Alabama. The dates of the operating schedules of the generating units at the power plants can be compared to the corresponding 5-year water-use data-collection cycle to explain changes in the thermoelectric-power trend. For example, Browns Ferry Nuclear Plant in Athens, Alabama, began operation in 1974, closed for review of procedures in March 1985 (the average daily withdrawal was 1,165 Mgal/d in 1985), and began generating power for one unit in July 1991 and a second unit in December 1995 (the average daily withdrawal was 776 Mgal/d in 1995). The water withdrawal for Browns Ferry in 2000 was 2,107 Mgal/d, and in 2005 was 1,990 Mgal/d. Commercial operation of a third unit, "Unit 1," began in May 2007.

Ground-water withdrawals slowly increased from 1960 to 2005, primarily because of increased ground-water withdrawals for public supply. Since 1985, public-supply withdrawals have accounted for more than 50 percent of ground-water withdrawals in the State.

With passage of the Alabama Water Resources Act in 1993, the State of Alabama established the Office of Water Resources (OWR) within the Alabama Department of Economic and Community Affairs (ADECA). Beginning in 1993, the State formalized a water-use registration, reporting, and data-collection program that has improved the accuracy and accounting of water use throughout the State. Administered by the OWR, the **Alabama Water Use Reporting Program** (AWURP) has become the repository of water-use data for the State.

The AWURP provides the framework and reporting structure for the collection of baseline water withdrawal information. Specifically, the AWURP requires that all public systems (**community water systems**, CWS) as well as **non-public** (commercial, industrial, mining, and thermoelectric-power facilities) and irrigation water users with a

capacity to withdraw 100,000 gallons of water per day or greater obtain a Certificate of Use (COU). Each COU holder is required to annually report water withdrawals for average daily and peak day amounts for each month of the year. Each water-use report is signed and certified as to the accuracy of the data. The annually reported data are electronically stored in the **eWater** database.

An outreach effort has been made by the Alabama OWR to increase awareness of the reporting requirements. Although established in 1993, the program provided only minimal data for the 1995 USGS water-use compilation. A more complete reporting of public, non-public, and irrigation water-use entities improved the 2000 estimate of water use for Alabama. For this 2005 report, AWURP data were further supplemented by data from other governmental and nongovernmental agencies, greatly improving the comprehensiveness and accuracy of the water-use estimates.

This study of 2005 water use was conducted by the USGS in cooperation with the Alabama OWR, Water Management Branch to provide water-use data for local and State water managers. By examining historical and current water-use practices, more realistic projections of water needs can be made.

Purpose and Scope

This report presents water-use estimates by source of supply, by water-use category, by county, and by hydrologic subregion and subbasin for the State of Alabama for 2005 (figs. 2 and 3). Water-use estimates for Alabama have been part of the USGS effort to document similar water-use estimates every 5 years since 1950 (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Solley and others, 1983, 1988, 1993, 1998; and Hutson and others, 2004). The eight water-use categories are public supply, residential, irrigation, livestock, aquaculture, industrial, mining, and thermoelectric power. The report contains a section on total water use with more detailed information for each water-use category. A comparison of water-use estimates for total, public supply, residential, irrigation, aquaculture, self-supplied industrial, and thermoelectric power from 2000 to 2005 also is presented in this report. Appendixes A and B summarize water use by county and subbasin, respectively, according to source of water, water-use category, public supplier, and **Standard Industrial Classification (SIC) code**. Appendix C lists the hydrologic region, subregion, and subbasin names and corresponding eight-digit subbasin numbers. Appendix D presents the water-system survey form. Appendix E lists the hydroelectric dams and maps their location. Instream water use in Alabama is not assessed in this report.

Hydrologic Setting

The rainfall that replenishes the rivers (fig. 4) and aquifers (fig. 5) in Alabama varies annually, seasonally, and geographically. Local geology, geomorphology, and topography determine the short-term and long-term ground-water and surface-water availability within a watershed. The mean annual rainfall for Alabama is 54 inches (1895 to 2007) ranging from a low of slightly less than 34 inches in 1954 to a little more than 76 inches in 1975 (National Oceanic and Atmospheric Administration, 2008). In 2007, the third driest year on record, the average rainfall was a little more than 39 inches.

The Tennessee and Mobile Rivers along with numerous minor streams provide water to Alabama residents for a variety of offstream and instream uses (Lineback, 1973). The Tennessee River flows in a westerly direction through the Cumberland Plateau, the Highland Rim, and a small part of the East Gulf Coastal Plain (figs. 4 and 6). Total drainage area of the Tennessee River in Alabama is about 7,500 square miles (Alabama Department of Economic and Community Affairs, Office of Water Resources, 2002). The river is the only source of water used to supply communities such as Decatur and Sheffield and supports a robust thermoelectric power and industrial base. Wells and springs within the Cumberland Plateau and Highland Rim physiographic provinces (figs. 5 and 6) provide some limited ground water for aquaculture, industrial, irrigation, mining, livestock, and self-supplied residential uses (Baker, 1989; Baker and Moser, 1989; Hunter, 1991; Mooty and Richardson, 1998). Most of the ground water within the Cumberland Plateau and Highland Rim physiographic provinces is withdrawn for public supply.

The Lower Tombigbee River and its tributaries, the Upper Tombigbee and Black Warrior River, flow southward and join with the Alabama River and its tributaries, the Cahaba, Coosa, and Tallapoosa Rivers, to form the Mobile River (fig. 4). The rivers traverse the East Gulf Coastal Plain, Cumberland Plateau, Alabama Valley and Ridge, and Piedmont Upland and drain 32,207 square miles in Alabama. Supplemented by ground water, the rivers provide water to communities such as Birmingham, Mobile, Montgomery, and Tuscaloosa. Ground-water use is greatest in the East Gulf Coastal Plain with some locally productive aquifers in the Piedmont Upland, Alabama Valley and Ridge, and Cumberland Plateau areas that are used for various purposes (Journey and Atkins, 1997; Kidd and others, 1997; Mooty and Kidd, 1997; Robinson and others, 1997).

The Conecuh, Yellow, Pea, and Choctawhatchee Rivers, which originate in Alabama, and the Chattahoochee River that originates in Georgia, traverse southeastern Alabama. Ground water from the relatively unconsolidated Mesozoic and Cenozoic sediments underlying the Coastal Plain (DeJarnette, 1989; Chapman and Peck, 1997; Mayer, 1997) is the source of public supply for most southeastern Alabama communities, including Andalusia and Dothan; however, some surface water is used for aquaculture, industry (Conecuh River), irrigation, livestock, and mining. The cities of Opelika, Phenix City, Smiths, and the East Alabama Water, Sewer and Fire Protection District, which serves Chambers County, withdraw water from the Chattahoochee River.

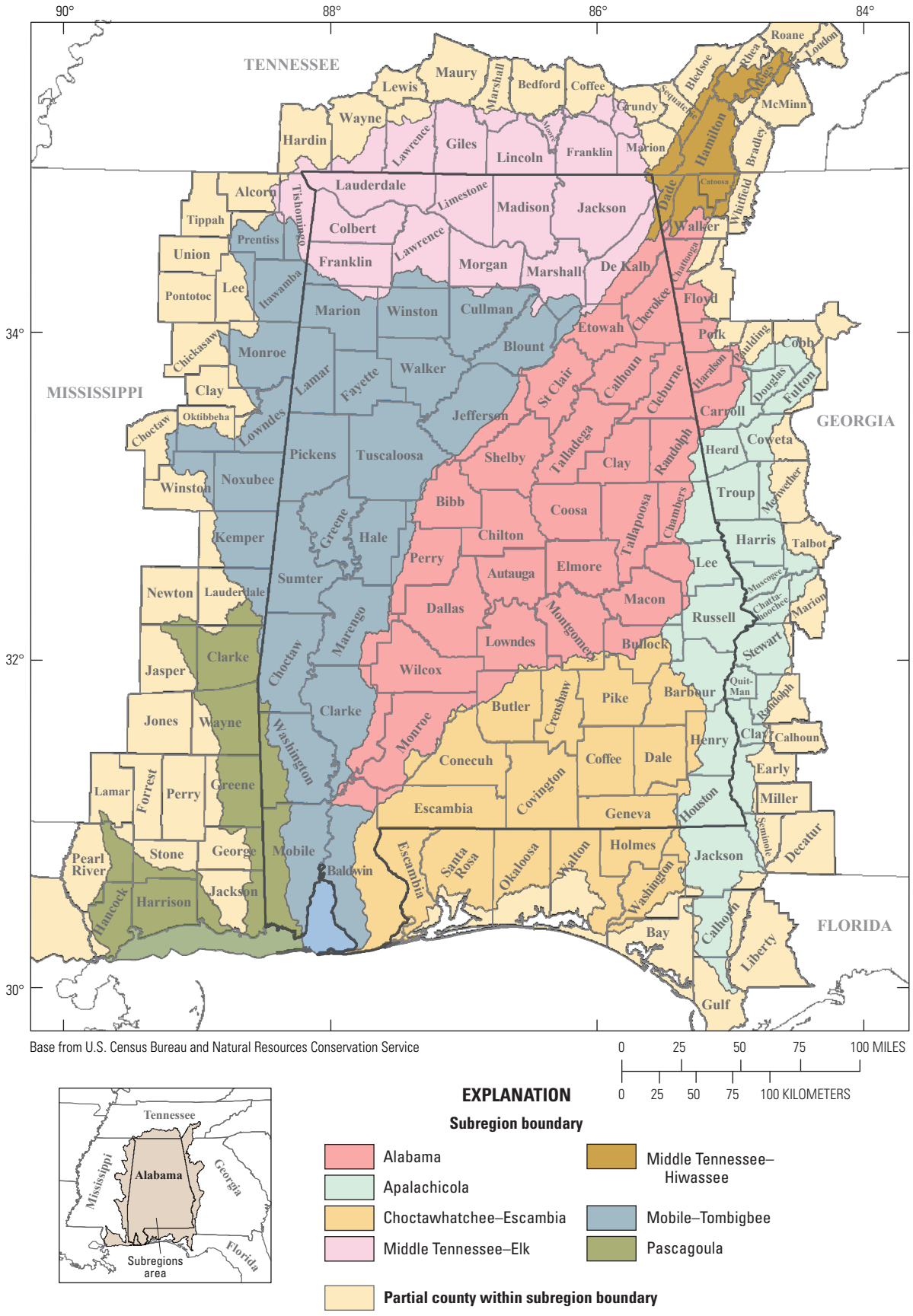


Figure 2. Subregions in Alabama by county.

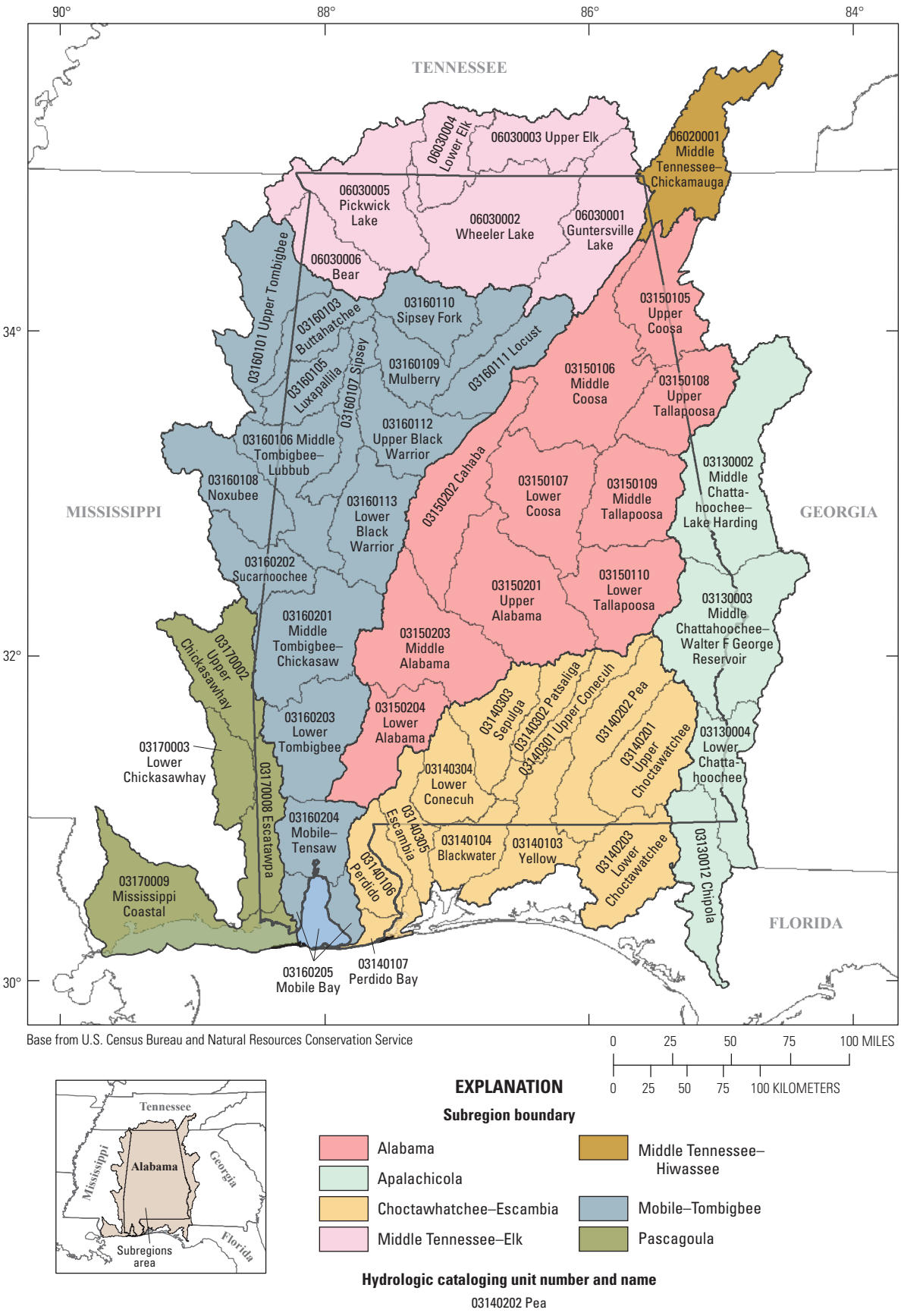


Figure 3. Subregions in Alabama by subbasin.

Figure 4. Major rivers and tributaries in Alabama.

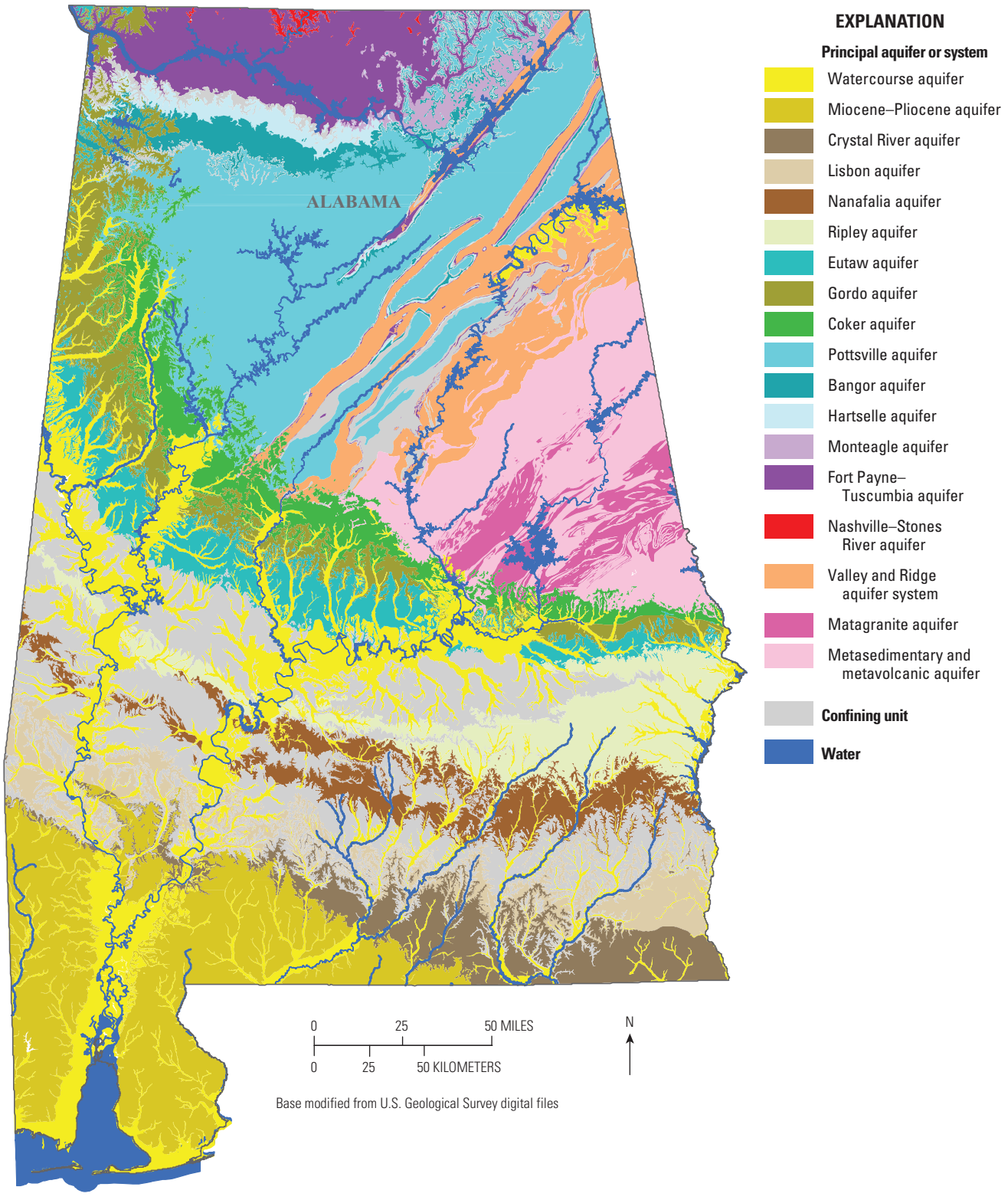


Figure 5. Principal aquifers in Alabama (provided by Geological Survey of Alabama, 2008).

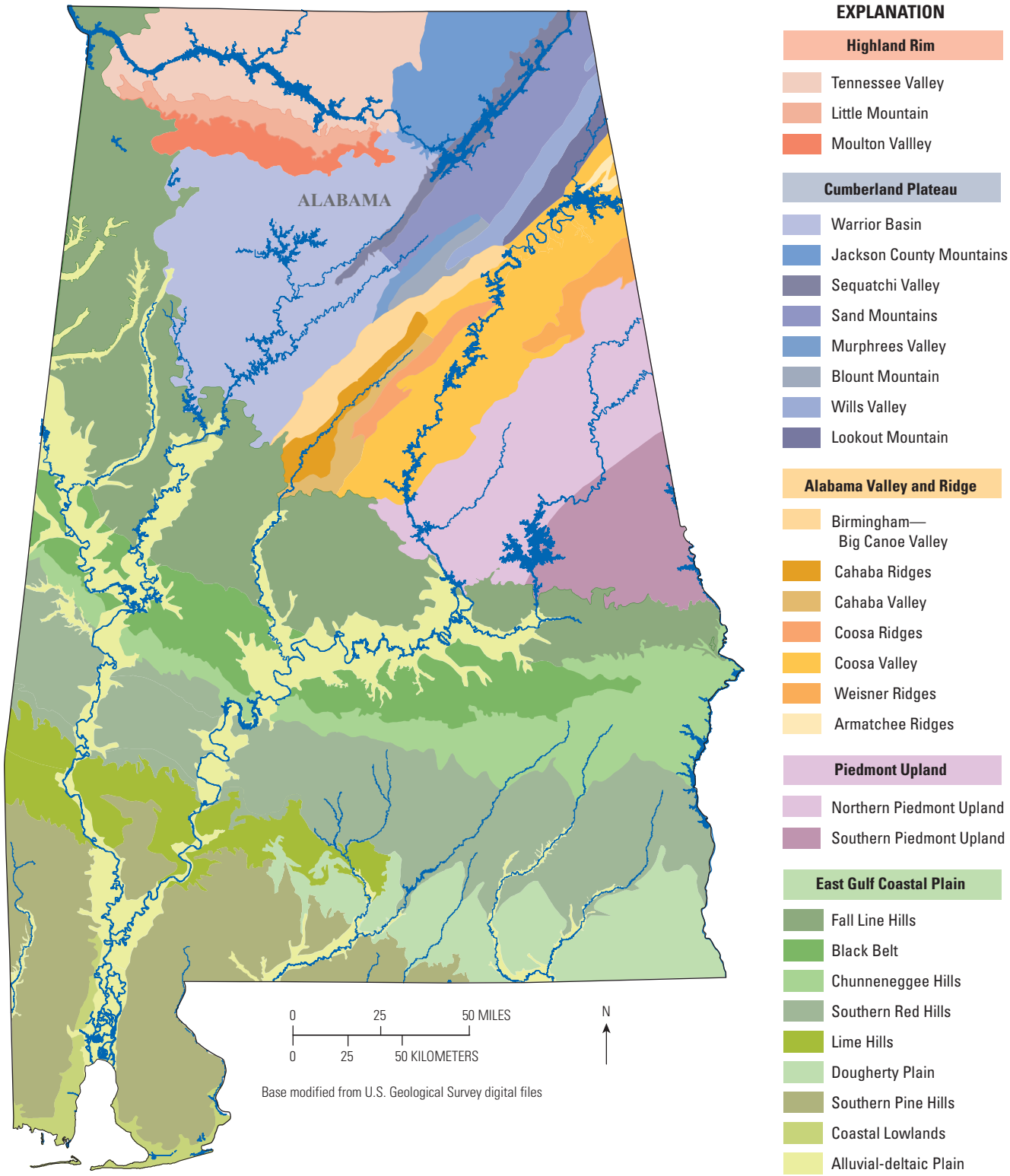


Figure 6. Alabama physiography (provided by Geological Survey of Alabama, 2008).

Acknowledgments

The authors thank the personnel from the many Federal, State, and local agencies and universities in Alabama that contributed data, maps, and photographs. In particular, the authors thank Kevin Pautler and Greg Herbek, U.S. Department of Agriculture, National Agricultural Statistics Service, Montgomery Office, for help in understanding the complexities of the 2002 Census of Agriculture and the 2003 Farm and Ranch Survey databases; Dennis Harrison and George Cox, Drinking Water Branch-Alabama Department of Environmental Management, for access to the U.S. Environmental Protection Agency 2005 public-supply monthly operation reports; Jared A. Bostic, GIS Specialist, Alabama Department of Economic and Community Affairs, Office of Water Resources, GIS Branch, for creating the base maps and choropleths; and Phillip Henderson, Chief, Alabama Department of Economic and Community Affairs, Office of Water Resources, GIS Branch, for the spatial analysis associated with the irrigation, livestock, and population datasets.

Data Compilation, Sources of Information, and Methodology

Water-use data were compiled for eight categories by county and for five categories by hydrologic subregion and subbasin (figs. 2 and 3; Appendix C). **Site-specific data** were used as a basis for estimates for public supply, public-supplied deliveries, self-supplied industrial, mining, thermoelectric power, and golf course, nursery, and sod irrigation. **Aggregated** county-level data were used as a basis for estimates for self-supplied residential, crop irrigation, livestock, and aquaculture. This section contains a detailed description of the methodology and sources of data used for determining total population; public-supply and residential water-use amounts; population served and self-supplied residential population; irrigation withdrawals and irrigated acreage; livestock, aquaculture, and mining withdrawals; and thermoelectric-power and self-supplied industrial withdrawals.

Data category by source and type of data are listed in table 1. Some sources, such as Alabama OWR, provided site-specific water withdrawal and source of water data for public suppliers, industries, and thermoelectric plants. Some sources, such as U.S. Department of Agriculture (USDA), provided county-level ancillary data, such as crop acreage, crop type, and crop application rate, which could be used to estimate an aggregated county irrigation water withdrawal. Some categories, such as irrigation, depended on several sources of data to estimate total water withdrawals. Sources of information are more specifically discussed in the following category sections.

The terms and units used in this report are similar to those used in previous USGS reports (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Solley and others, 1983, 1988, 1993, 1998; Hutson and others, 2004a) and are defined in the Glossary at the end of the report. For 2005, water use is defined as water withdrawals except for **total residential water use** (residential water use is used in place of **domestic water use** in this report) and **total industrial water use**. Total residential use is a combination of public-supplied residential deliveries and self-supplied residential withdrawals. Total industrial water use, calculated at the State level only, combines self-supplied industrial and **commercial** withdrawals and public-supplied industrial and commercial deliveries. The term "**public supplier**" is the preferred term used in place of either public water system or community water system. A public supplier is defined as a water system that furnishes water year-round to at least 25 people or has a minimum of 15 connections. All water withdrawals in this report were compiled as **freshwater**, although some low-salinity and high-salinity withdrawals for aquaculture and low-salinity withdrawals for mining occurred in the State.

Water withdrawals are reported to the county, four-digit hydrologic subregion, and eight-digit subbasin level (U.S. Department of Agriculture, Soil Conservation Service, 1993; U.S. Department of Agriculture, 2004; U.S. Geological Survey, 2007). Annual water use is expressed in terms of million gallons per day. Irrigation application rate is expressed as acre-feet per acre. Water use is normalized as a per capita use statistic (gallons per capita per day) in five different ways.

- Total water use is divided by the total population to yield gross per capita use, and includes water used to generate electricity, support industrial and agricultural activities, and provide drinking water.
- Public-supply water use is divided by the population served by public suppliers to yield **gross public-supply per capita use** and includes water delivered to the residential, industrial, commercial, and thermoelectric power sectors and public use and losses.
- Public-supply residential deliveries are divided by the population served to yield **public-supplied residential per capita use**.
- Self-supplied residential water withdrawals are divided by self-supplied population to yield **self-supplied residential per capita use**.
- Public-supplied residential deliveries plus self-supplied residential withdrawals are divided by the total population to yield **residential per capita use**.

In the tables, State, county, subregion, subbasin, and facility data are presented to two-decimal places. In the text, water withdrawal totals are reported as whole numbers unless the use of decimals is needed to improve clarity. Percentages are based on the two-digit values in the tables and are expressed as whole numbers. All values are rounded independently; therefore, the sums of individually rounded numbers may not equal the totals given in this report.

Total Population

The 2005 estimate of population by subbasin was derived from the 2000 and 2005 county census numbers (U.S. Census Bureau, Geography Division, 2001; U.S. Census Bureau, 2006). Using **geographic information system** (GIS) spatial techniques, a percent change in population was determined and the percent difference was applied to each 2000 **census block group** (table 1). The 2005 block-group population estimate then was converted to the geometric centroid and aggregated to the subbasin. Using this methodology, the total population summarized by subbasin was 0.3 percent (14,638 people) less than the population summarized by county. No attempt was made to balance the subbasin and county populations because the difference was due to methodology and the resulting rounding differences produced for 67 counties compared to 53 subbasins.

Table 1. Summary of data sources by category and type of data.

[OWR, Office of Water Resources; ADEM, Alabama Department of Environmental Management; ARWA, Alabama Rural Water Association; USEPA–SDWIS, U.S. Environmental Protection Agency, Safe Drinking Water Information System; USDA–NASS, U.S. Department of Agriculture, National Agricultural Statistics Service; ADAI, Alabama Department of Agriculture and Industries; USGS–NWUIP, U.S. Geological Survey; National Water Use Information Program; DOE–EIA, Department of Energy, Energy Information Administration]

Water-use category	Data sources	Type of data
Public supply	OWR	Active public suppliers
		Monthly average-daily water withdrawals
		Source of water
		Public-supplier water deliveries by sector
	ADEM	Active public suppliers
		Monthly average-daily water withdrawals
		Source of water
	ARWA	Active public suppliers
	USEPA–SDWIS	Active and inactive public suppliers
	U.S. Census Bureau	Total population, total number of housing units, percentage of households on public supply, 1990
		Persons per household, 2000
		County population estimates, 2005
Residential	OWR	Public-supplier water deliveries by sector
	U.S. Census Bureau	Percentage of households on public supply by county, 1990
		Persons per household by county, 2000
		County population estimates, 2005
Irrigation	OWR	Source of water for crops, nurseries, and sod farms
	USDA–NASS	Irrigated acreage and crop types by county, 2002 and 2003; application rates, sprinkler system types by State, 2002 and 2003
	ADAI	Nursery and sod farm listing
	http://www.thegolfcourses.net/golfcourses/AL/Alabama.htm	Golf course listings and ancillary information
Livestock	USGS–NWUIP	County estimates of water withdrawals by source and quality of water
Aquaculture	USGS–NWUIP	County estimates of water withdrawals by source and quality of water
Mining	USGS–NWUIP	County estimates of water withdrawals by source and quality of water
	OWR	Some mine sites, monthly average-daily water withdrawals
Industry	OWR	Water withdrawals by source of water
Thermoelectric power	DOE–EIA	Water withdrawals by source and quality of water; power generation
	OWR	Water withdrawals
	Thermoelectric-power plants	Power generation

Public-Supply and Residential Water Use

For public supply, estimates were made for ground-water and surface-water withdrawals at the county and subbasin levels, for residential deliveries and population served at the county level, and for industrial and commercial deliveries and public use and losses at the State level. Public-supply withdrawal estimates mostly were based on site-specific data (table 1). Raw water pumpage, or the finished water production upon which water withdrawals were estimated, was metered and reported as monthly average-daily rates of withdrawal to Alabama OWR through mandatory yearly AWURP reports, and to the Drinking Water Branch-Alabama Department of Environmental Management (DWB-ADEM) through mandatory **monthly operation reports** (MORs). Water sold to or purchased from other public suppliers was not included in this study. To ensure that the water withdrawals were compiled for the geographical area in which the withdrawals occurred, the county and subbasin locations of the water plants, surface-water intakes, wells, or well fields were verified using GIS techniques. A comprehensive list of public suppliers was compiled from records from Alabama OWR, DWB-ADEM, Alabama Rural Water Association (ARWA), and the web-based Safe Drinking Water Information System (SDWIS) maintained by U.S. Environmental Protection Agency (USEPA; U.S. Environmental Protection Agency, 2009).

Residential and industrial/commercial deliveries and public use and loss estimates were based on a survey of the public suppliers conducted by Alabama OWR (Appendix D, fig. D–1). More than 60 percent of the suppliers responded, including all of the suppliers serving 50,000 people or more. Responses from public suppliers were used to estimate residential deliveries for public suppliers with similar demographic and geographic characteristics who had not responded. Water withdrawals and residential deliveries were counted in the county or subbasin in which they occurred. Public use and losses were estimated at the county level and reported only at the State level. Industrial/commercial deliveries were calculated by subtracting total residential deliveries and public use and losses from total public-supply water withdrawals.

Residential water use is the sum of residential deliveries plus self-supplied residential withdrawals. Self-supplied residential withdrawals were not reported as part of the AWURP and were not collected as part of this study. Instead, self-supplied residential withdrawals were estimated from a self-supplied population and a per household use coefficient for each county. The self-supplied population was divided by the number of persons per household in 2000 to yield the number of self-supplied housing units in 2005. The per household use coefficients were derived from a subset of the OWR Alabama Water System Survey consisting of the small public suppliers with primarily rural residential deliveries. Self-supplied households were assumed to use the same amount of water as public-supplied rural households. For 2005, the average monthly rural household use by county ranged from 2,696 to 10,500 gallons per month.

Population Served and Self-Supplied Residential Population

No reliable estimates of population served by public supplier were available for 2005 (U.S. Environmental Protection Agency, 2009). Population served by public supplier, therefore, was estimated using the 1990 county census population numbers, number of housing units, and percentage of housing units on public supply (U.S. Census Bureau, 1992) and the 2005 county census population (U.S. Census Bureau, 2006; table 1). The change in county population from 1990 to 2005 is a proxy for the change in the number of housing units on public supply during the same period. The methodology for estimating the 2005 population served assumes that any population increase from 1990 to 2005 was served by a public supplier. A simplified example of this method is as follows. The percentage of population served by public supply in the following example county increased from 60 percent in 1990 to 73 percent (11,000 population served in 2005 divided by 2005 county population, 15,000) in 2005.

For any county in Alabama

Census Data

1990 CP	10,000
1990 HH, total	2,000
1990 PCTHH-PS	60
1990 P-HH	5
2005 CP	15,000

Calculations

1990 HH-PS

$$HH_{1990} * PCTHH\text{-}PS_{1990} \quad (1)$$
$$1{,}200 = 2{,}000 * 0.6$$

1990 PP-PS

$$HH\text{-}PS_{1990} * P\text{-}HH \quad (2)$$
$$6{,}000 = 1{,}200 * 5$$

2005 PP-PS

$$PP\text{-}PS_{1990} + (CP_{2005} - CP_{1990}) \quad (3)$$
$$11{,}000 = 6{,}000 + (15{,}000 - 10{,}000)$$

where,

CP	is county population for years 1990 and 2005
HH	is number of housing units for year 1990
PCTHH-PS	is percent housing units on public supply for year 1990
P-HH	is persons per housing unit for year 1990
HH-PS	is number of housing units on public supply in 1990, and
PP-PS	is population served by public supply for years 1990 and 2005.

Self-supplied population was calculated as the difference between total county population and total county population served by public suppliers.

Irrigation

The irrigation category consists of surface-water and ground-water withdrawals and the number of acres by irrigation-system type for crops, nurseries, sod farms, and golf courses. Estimates of water withdrawals by county for crops were derived from the estimated number of acres in 2002 and a statewide or watershed crop application rate by irrigation-system type (U.S. Department of Agriculture, National Agricultural Statics Service, 2004a; U.S. Department of Agriculture, National Agricultural Statistics Service, 2004b; table 1). Crop application rates for **sprinkler irrigation systems** ranged from 0.3 to 0.8 acre-feet per acre; **microirrigation systems**, from 1.1 to 2.1 acre-feet per acre; and for **surface irrigation systems** was 0.7 acre-feet per acre. The statewide average application rate for crops was 0.7 acre-feet per acre. Sprinkler systems typically were used to irrigate corn, cotton, soybeans, and vegetables; microirrigation systems typically were used to irrigate fruits, nuts, and vegetables; and surface systems typically were used to irrigate vegetables. In the short-term, application rates are likely to vary annually according to the amount and timing of precipitation, antecedent soil conditions, and crop type. Over the long-term, application rates are influenced by changes in technology and farming practices and climate.

Water withdrawals for nursery and sod farm operations were estimated from the number of acres per operation (Alabama Department of Agriculture and Industries, Division of Plant Industry, 2007) and by using the following annual application rates: for nurseries, 3.74 acre-feet per acre; for sod farms, 1,948 gal/d per acre. The nursery and sod farm application rates were derived from site-specific water withdrawals for 2005 as reported to AWURP and from additional information collected from owners of selected nurseries and sod farms about their irrigation practices. The percentage of surface-water and ground-water withdrawals by county was determined independently for crops, nurseries, and sod farms from site-specific data in eWater, local water-supply characteristics, and historical water-use patterns. Crop (food and feed crops), nursery, and sod farm water withdrawals and acreage by irrigation-system type were combined in the crop irrigation subcategory.

Water withdrawals for golf courses were estimated from site-specific data in eWater, a web search (TheGolfCourses.net, 2007), an Alabama OWR golf course water-use survey, and interviews with selected golf course staff on watering practices. All water withdrawals were assumed to be from surface water and applied with sprinkler systems because reliable source-of-supply data were limited; however, some golf courses were known to use ground water in 2005. The 320 golf courses, covering approximately 26,720 acres, were classified into three tiers: Tier 1, extensive watering; Tier 2, frequent watering; and Tier 3, essential watering (table 2). A water withdrawal was estimated for each golf course based on a number of holes and a tier classification coefficient.

Table 2. Golf course classification and tier classification coefficients.

[Classification coefficient is amount applied, in million gallons per year]

Golf course classification	Tier classification coefficients	Acres irrigated
Tier 1 extensive watering	0.106	110
Tier 2 frequent watering	0.063	100
Tier 3 essential watering	0.015	55

For example, an 18-hole golf course in Tier 1 would have withdrawn 0.106 Mgal/d in 2005. Although the dataset from which the application rates were derived indicated individual differences in withdrawal amounts across the State according to geographic location, soil types, and management practices, the tier classification represents typical golf course usage based on watering practices.

In Alabama, some golf courses are able to water greens, tees, fairways, and, often, driving ranges, and ornamental plants and shrubs because of the installation of an extensive irrigation system and plentiful water (Tier 1). Other golf courses water less extensively, often only tees and greens (Tier 2). The remaining golf courses, because of cost or a limited water supply, confine watering to greens and sometimes tees and fairways if the viability of the turf is threatened and water is available (Tier 3). Generally, watering for all tiers occurs every 3 days; however, weather conditions can affect the watering schedule. Warmer and drier weather necessitates more watering and cooler or wetter weather necessitates less watering. Most of the watering occurs May through October; any additional watering from November through April is generally to aid in application of fertilizer or herbicides.

Water withdrawals by subbasin were determined for each subcategory crop, which includes crops, nurseries, and sod farms, by applying GIS techniques. The subbasin boundaries were superimposed on the county boundaries to create a subbasin/county areal unit. Each subbasin/county unit represents a percent of the subbasin area within a county. Surface-water and ground-water withdrawals were distributed among the subbasin/county units based on the assigned areal percentage. Water withdrawals for each subbasin/county unit were summarized by subbasin. The difference in the county and subbasin totals was 0.01 Mgal/d (–0.05 Mgal/d for ground water and +0.04 Mgal/d for surface water). No attempt was made to balance the withdrawals because the difference in totals was due to methodology and the resulting rounding differences produced for 67 counties compared to 53 subbasins. Addresses obtained from the master list for golf courses were used to assign the estimated withdrawals for the specific sites to the correct subbasin.

Livestock, Aquaculture, and Mining

County-level water withdrawals by source for livestock, aquaculture, and mining were from estimates determined by the USGS National Water Use Information Program (NWUIP) as part of the Federal effort to estimate water use for the United States for 2005. Livestock withdrawals are not reported as a specific category within the AWURP and were not collected as part of this study. Estimates of livestock withdrawals by county were calculated from the 2005 livestock census by U.S. Department of Agriculture, National Agricultural Statistics Service (USDA-NASS) and statewide drinking water-requirement coefficients, such as those for dairy cattle (35 gallons per capita per day [gpcd]), other cattle (12 gpcd), horses and other equine (12 gpcd), hogs (5 gpcd), sheep and goats (2 gpcd), and poultry (0.05 gpcd) (Kammerer, 1976; Mooty and Richardson, 1998). The coefficients do not reflect the effect of climate on animal watering across the State or facility maintenance needs.

Water withdrawals for livestock by subbasin were determined by applying GIS techniques. The subbasin boundaries were superimposed on the county boundaries to create a subbasin/county areal unit. Each subbasin/county unit represents a percent of the subbasin area within a county. Surface-water and ground-water withdrawals were distributed among the subbasin/county units based on the assigned areal percentage. Water withdrawals for each subbasin/county unit were summarized by subbasin. The difference in the county and subbasin totals was 0.05 Mgal/d (+0.02 Mgal/d for ground water and +0.03 Mgal/d for surface water). No attempt was made to balance the withdrawals because the difference in totals was due to methodology and the resulting rounding differences produced for 67 counties compared to 53 subbasins.

Aquaculture withdrawals were estimated from the commercial and non-commercial operations datasets produced by USDA-NASS for the 2005 Census of Aquaculture. County-level data for commercial operations included number of raceways, average flow rates to raceways, pond acreage, number of tanks, average tank volumes, and the number of farms using ground water and surface water. Water-withdrawal estimates for local, State, and Federal hatcheries were based on the coefficients applied to the number of pounds and types of fish and eggs produced. Ground-water and surface-water data were divided according to the divisions for the commercial operation as reported to USDA-NASS or according to the USGS estimates for source of water for aquaculture for Alabama for 2000 (U.S. Geological Survey, 2004). Mining water use was estimated from per ton water-use coefficients and crude ore production in tons for 2004 from the USGS Minerals Information Team, from coal production in tons from the Department of Energy, Energy Information Administration (DOE-EIA), and from site-specific mining withdrawal data reported to the AWURP.

Thermoelectric Power and Industrial

Thermoelectric-power and industrial water use were estimated from site-specific data. The primary sources of data for thermoelectric-power water withdrawals and power produced were the DOE-EIA, the AWURP database—eWater, and the individual thermoelectric-power facilities (table 1). Water withdrawals were reported in the county or subbasin in which the withdrawals occurred. It was not possible to separate the power for a nuclear plant that used both **once-through cooling** and **recirculating cooling**. All power, therefore, was reported with the larger withdrawals associated with once-through cooling instead of the smaller withdrawals associated with recirculating cooling.

The AWURP database, eWater, stores monthly average-daily water withdrawals, source of water, and location information. For 2005, steam-electric plants with a name-plate rating of 100 megawatts or more provided information about cooling type, water withdrawal, **return flow**, and **consumptive use** by generating unit (except for nuclear power plants) to DOE-EIA, and all power plants provided power generation by generating unit (Energy Information Administration, 2008; Energy Information Administration, 2009a; Energy Information Administration, 2009b).

Total industrial water use is the sum of self-supplied industrial and commercial withdrawals and public-supplied industrial and commercial deliveries. Monthly self-supplied industrial withdrawals by source were reported by individual industries to the AWURP for 2005. SIC codes for those industries were obtained from the Alabama Directory of Manufacturers (Alabama Development Office, 2004). One commercial facility reported withdrawals in 2005. **Public-supply deliveries** to industrial and commercial users were determined at the State level from the OWR Alabama Water System Survey for 2005 (Appendix D, fig. D–1).

Water Use

Water in river and reservoir systems can be used instream for hydroelectric power generation, navigation, recreation, maintaining minimum streamflows to support fish and wildlife habitat, and for wastewater assimilation. Ground water provides flow to streams and rivers by discharging to seeps and springs. Water also can be withdrawn from the rivers, reservoirs, and aquifers to meet offstream needs for public supply, self-supplied residential, irrigation, livestock, aquaculture, self-supplied industrial, mining, and thermoelectric-power generation. The term “water use” in this report is limited to offstream **water-use transactions**. The interrelation of water-using entities and water-use transactions to sources of supply is described in figure 7. Only the withdrawal-delivery transaction from either a ground-water or a surface-water source to a water-using entity is accounted for in this report (*A* to *B* in fig. 7). Additional water-use transactions are **delivery-release** (*B* to *C*), release-delivery (*C* to *B*), and release-return (*C* to *D*, fig. 7).

Instream use occurs without diverting or withdrawing water from surface-water sources. Although assessing instream water use in the Alabama subbasins was beyond the scope of this report, some hydroelectric power and navigation instream-use statistics were included because instream uses compete with offstream uses and can affect the quality and quantity of available water. Hydroelectric power is generated in Alabama by the Alabama Electric Cooperative, Alabama Power Company, Tennessee Valley Authority (TVA), and U.S. Army Corps of Engineers (USACE)–Mobile District at 21 mainstem and tributary locations (Appendix E, table E–1; fig. E–1). Georgia Power Company and the USACE generate power from six facilities located on the Chattahoochee River bordering Alabama. Total generating capacity for the 27 plants is 3.55 gigawatts.

Navigation maintenance within Alabama is important for commercial shipping and recreational boating. USACE maintains a year-round 9-foot (ft) channel on the navigable stretches of the rivers in the Mobile watershed, TVA maintains an 11-ft channel on the mainstem of the Tennessee River, and the U.S. Coast Guard maintains a 12-ft channel in the intracoastal waterway. Passage also is maintained on many miles of secondary channels for recreational use. The instream use of hydroelectric power and navigation does not affect consumptive use because the water remains in the river systems.

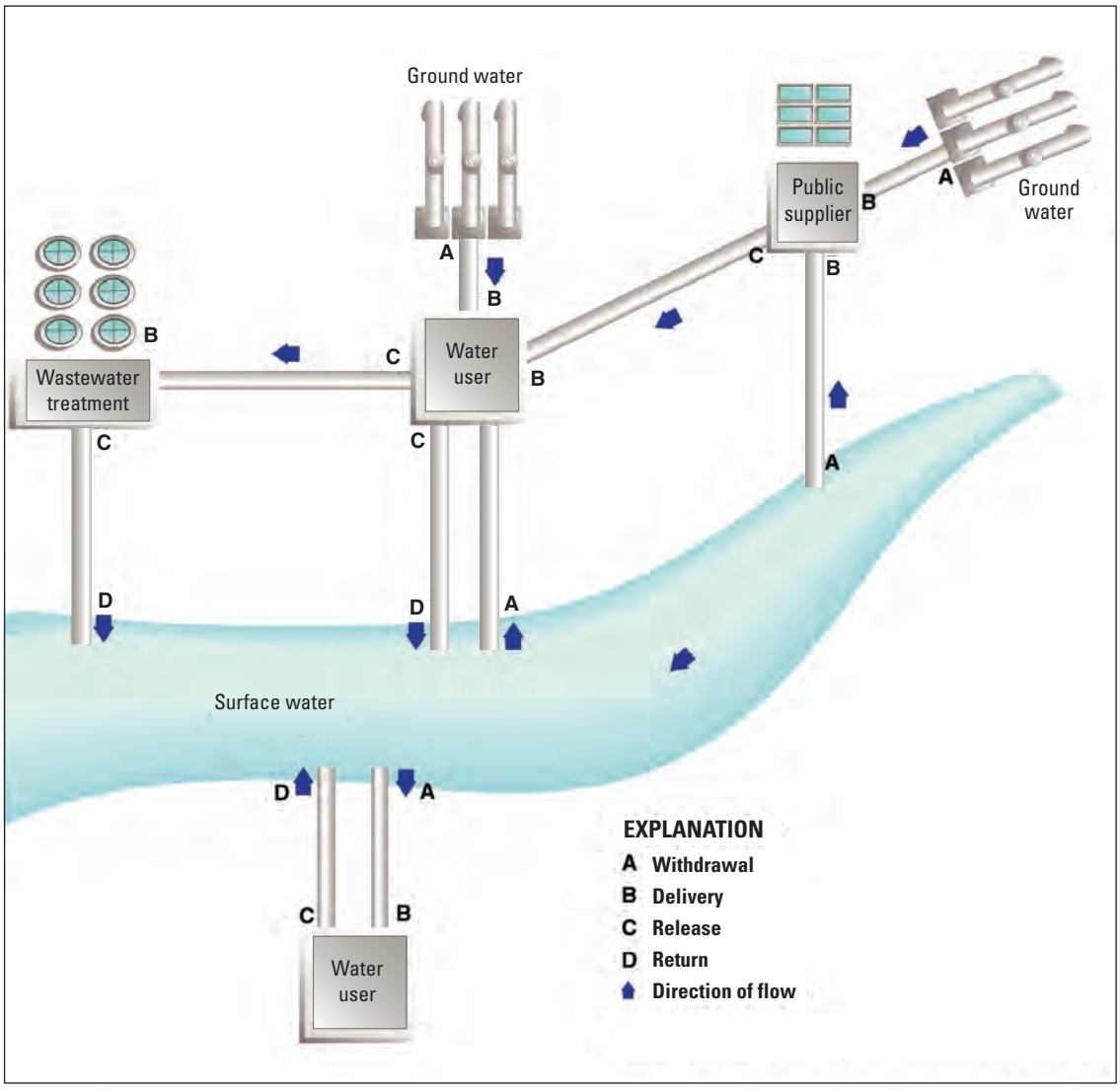


Figure 7. Schematic showing the interrelation of water-using sites and water-use transactions to sources of supply (modified from Hutson and others, 2004b).

Total Water Use

Total water use in Alabama for 2005 was determined from estimates of water withdrawals for eight categories—public supply, self-supplied residential, irrigation, livestock, aquaculture, self-supplied industrial, mining, and thermoelectric power. Total freshwater withdrawals were estimated to be 9,958 Mgal/d. Estimates of withdrawals by source indicate that total surface-water withdrawals were 95 percent of the total (9,467 Mgal/d), and the remaining 5 percent was from ground water (491 Mgal/d; fig. 8). Gross per capita use averaged 2,185 gal/d for the 4,557,808 residents in Alabama (U.S. Census Bureau, 2006). Gross per capita use is the total water withdrawn divided by the total population. The large per capita use is a result of the large thermoelectric-power withdrawals in relation to the population size. Values may not sum to total estimated use(s) because of rounding.

Total residential water use, which is a combination of public-supplied residential deliveries and self-supplied residential withdrawals, was 365 Mgal/d (see the "Residential" section in this report). Total industrial water use, which is a combination of self-supplied industrial and commercial withdrawals (550 Mgal/d) and public-supplied industrial and commercial deliveries (355 Mgal/d), was 906 Mgal/d (see the "Industrial" section in this report).

Total withdrawals by source and category for counties and hydrologic subbasins are listed in tables 3–6. For 2005, thermoelectric power accounted for 83 percent of the total water withdrawals or 8,274 Mgal/d (table 5; fig. 9). Combined, the public supply and self-supplied industrial categories accounted for about 14 percent of the total withdrawals (802 Mgal/d and 550 Mgal/d, respectively) and irrigation, aquaculture, self-supplied residential, livestock, and mining the remaining approximate 3 percent. More surface water than ground water was used in all categories except aquaculture, mining, and self-supplied residential (tables 7–10). About 87 percent of the surface-water withdrawals were for thermoelectric power, and the largest surface-water withdrawals were in Limestone County (table 7). About 63 percent of the surface-water withdrawals—primarily for thermoelectric power—occurred in Limestone, Jackson, Colbert (Middle Tennessee–Elk subregion), and Mobile (Mobile–Tombigbee subregion) Counties. Most of the ground-water withdrawals, 56 percent, were for public supply (table 9). About 13 percent (62 Mgal/d) of the statewide ground-water use was in Baldwin County; about 60 percent of Baldwin County's ground-water use was for irrigation, and 35 percent was for public supply. The 10 counties withdrawing 10 Mgal/d or more of ground water, primarily for public supply and irrigation, accounted for 51 percent of the total ground-water withdrawals in the State (table 9).

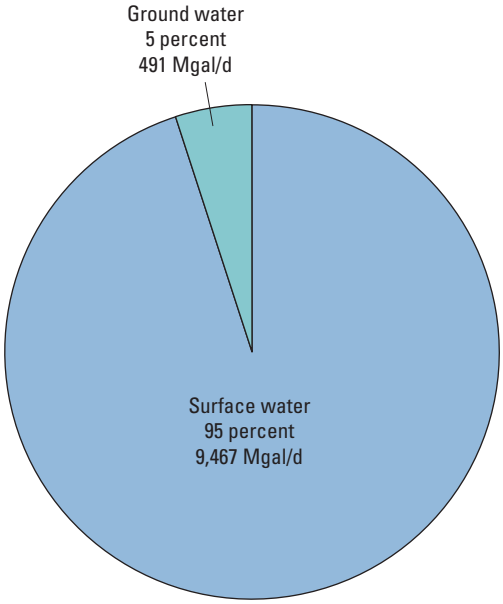


Figure 8. Sources of water used in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

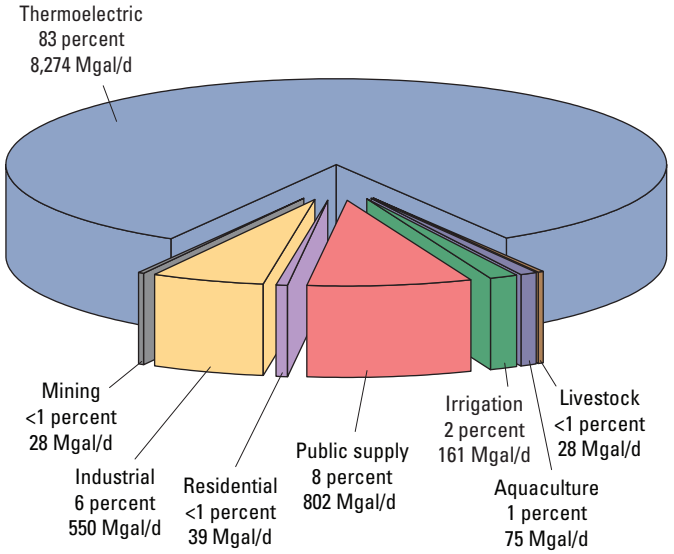


Figure 9. Comparison of freshwater withdrawals by category of use in Alabama, 2005. [Values may not sum to total estimated use because of rounding]

The geographic distribution of total, ground-water, and surface-water withdrawals by county and by hydrologic subbasin is shown in figures 10 and 11. The largest total water withdrawals occurred in Limestone, Jackson, Colbert, and Mobile Counties, 60 percent of the total, primarily to meet the cooling needs at thermoelectric-power plants. Excluding thermoelectric power, the largest withdrawals occurred in Morgan, Mobile, Jefferson, Talladega, and Madison Counties (table 5).

Estimates of public supply, irrigation, livestock, self-supplied industrial, and thermoelectric-power withdrawals by source of water for hydrologic subregion and subbasin and are shown in tables 6, 8, and 10. These categories accounted for nearly 99 percent (9,816 Mgal/d) of the total estimated

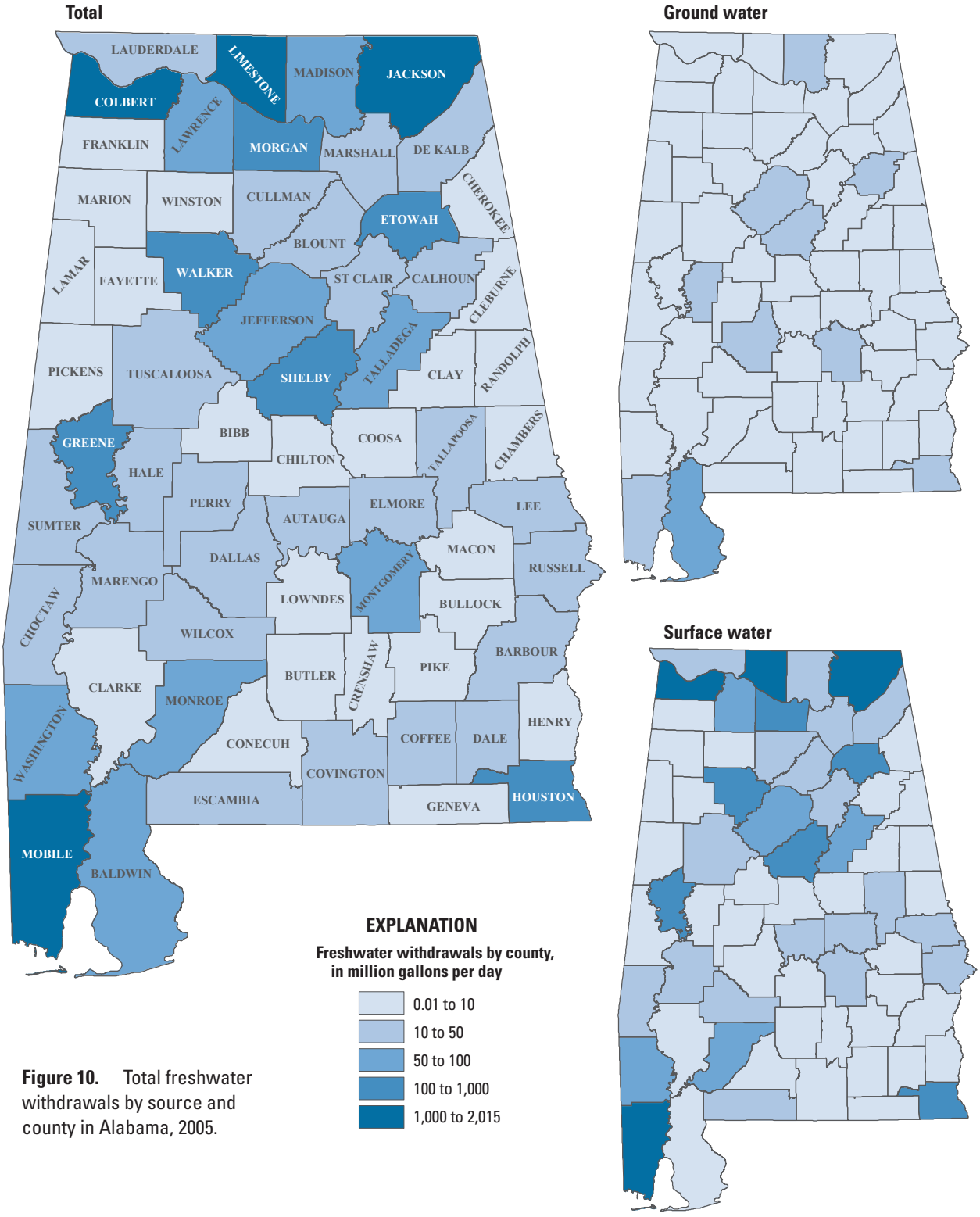


Figure 10. Total freshwater withdrawals by source and county in Alabama, 2005.

withdrawals. The exclusion of the small unestimated withdrawal amounts by subbasin—for aquaculture (75 Mgal/d in 2005), mining (28 Mgal/d in 2005), and self-supplied residential (39 Mgal/d in 2005)—does not affect the understanding of the overall distribution pattern of water use in the State. The Middle Tennessee–Elk subregion accounted for about 53 percent (5,184 Mgal/d) of the 9,816 Mgal/d total estimated withdrawals. About 92 percent of that water was for thermoelectric power, and nearly all of the water was surface water. Excluding thermoelectric power, the Middle Tennessee–Elk subregion accounted for 27 percent of the water withdrawals statewide. The second largest use category in the Middle Tennessee–Elk subregion was self-supplied industrial, about 51 percent (214 Mgal/d) of the nonpower water withdrawal in the subregion.

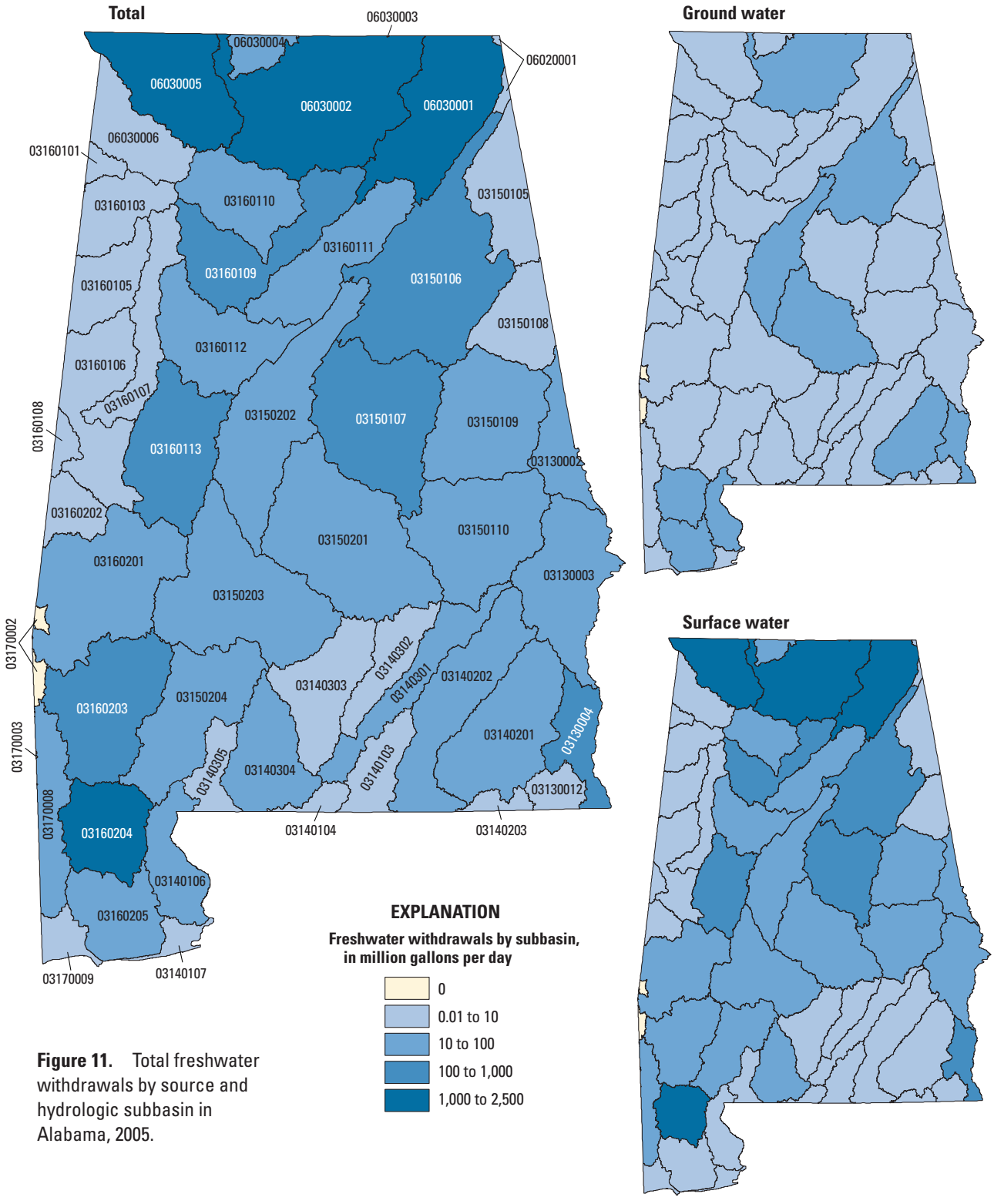


Figure 11. Total freshwater withdrawals by source and hydrologic subbasin in Alabama, 2005.

Table 3. Total freshwater withdrawals by source and county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Population	Withdrawals by source, in million gallons per day			Gross per capita use, in gallons per person per day
		Ground water	Surface water	Total	
Autauga	48,612	8.09	35.57	43.66	898
Baldwin	162,586	61.67	7.34	69.01	424
Barbour	28,414	7.51	8.98	16.49	580
Bibb	21,516	4.52	0.46	4.98	231
Blount	55,725	4.54	14.41	18.95	340
Bullock	11,055	3.73	1.71	5.44	492
Butler	20,766	3.68	0.71	4.39	211
Calhoun	112,141	21.99	6.96	28.95	258
Chambers	35,460	0.82	7.58	8.40	237
Cherokee	24,522	3.22	3.98	7.20	294
Chilton	41,744	4.10	2.15	6.25	150
Choctaw	14,807	1.97	47.60	49.57	3,348
Clarke	27,269	2.88	2.02	4.90	180
Clay	13,964	0.53	2.17	2.70	193
Cleburne	14,460	1.60	0.77	2.37	164
Coffee	45,567	9.40	3.55	12.95	284
Colbert	54,660	3.56	1,359.60	1,363.16	24,939
Conecuh	13,257	2.19	0.18	2.37	179
Coosa	11,162	0.43	0.57	1.00	90
Covington	37,003	8.34	5.20	13.54	366
Crenshaw	13,727	2.51	0.72	3.23	235
Cullman	79,886	2.99	29.67	32.66	409
Dale	48,748	9.90	2.33	12.23	251
Dallas	44,366	13.90	3.88	17.78	401
De Kalb	67,271	5.30	11.13	16.43	244
Elmore	73,937	3.19	11.63	14.82	200
Escambia	38,082	9.81	33.03	42.84	1,125
Etowah	103,189	5.19	168.67	173.86	1,685
Fayette	18,228	0.58	3.35	3.93	216
Franklin	30,737	2.38	4.72	7.10	231
Geneva	25,735	4.84	2.77	7.61	296
Greene	9,661	7.71	390.87	398.58	41,257
Hale	18,316	19.70	8.69	28.39	1,550
Henry	16,610	4.09	1.73	5.82	350
Houston	94,249	24.00	107.78	131.78	1,398

Table 3. Total freshwater withdrawals by source and county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Population	Withdrawals by source, in million gallons per day			Gross per capita use, in gallons per person per day
		Ground water	Surface water	Total	
Jackson	53,650	1.98	1,496.26	1,498.24	27,926
Jefferson	657,229	11.18	69.83	81.01	123
Lamar	14,962	1.91	0.34	2.25	150
Lauderdale	87,691	3.67	13.50	17.17	196
Lawrence	34,605	1.42	66.01	67.43	1,949
Lee	123,254	2.23	19.28	21.51	175
Limestone	70,469	7.89	2,005.99	2,013.88	28,578
Lowndes	13,076	2.16	3.81	5.97	457
Macon	22,810	4.75	5.19	9.94	436
Madison	298,192	27.06	43.45	70.51	236
Marengo	21,879	6.61	20.18	26.79	1,224
Marion	30,154	1.79	6.05	7.84	260
Marshall	85,634	4.51	22.55	27.06	316
Mobile	401,427	20.77	1,110.17	1,130.94	2,817
Monroe	23,733	5.18	54.83	60.01	2,529
Montgomery	221,619	31.75	37.98	69.73	315
Morgan	113,740	2.46	122.34	124.80	1,097
Perry	11,371	7.58	4.81	12.39	1,090
Pickens	20,178	4.44	1.23	5.67	281
Pike	29,639	5.79	1.20	6.99	236
Randolph	22,717	0.78	2.00	2.78	122
Russell	49,326	2.75	40.97	43.72	886
St. Clair	72,330	9.60	11.41	21.01	290
Shelby	171,465	20.54	812.71	833.25	4,860
Sumter	13,819	5.81	4.46	10.27	743
Talladega	80,457	9.93	68.35	78.28	973
Tallapoosa	40,717	0.36	14.28	14.64	360
Tuscaloosa	168,908	2.96	33.06	36.02	213
Walker	70,117	1.14	968.32	969.46	13,826
Washington	17,773	8.14	91.03	99.17	5,580
Wilcox	12,937	2.12	21.53	23.65	1,828
Winston	24,498	0.72	1.20	1.92	78
Total	**4,557,808**	**490.84**	**9,466.80**	**9,957.64**	**2,185**

Table 4. Total freshwater withdrawals by source and hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Population	Withdrawals by source, in million gallons per day		
		Ground water	Surface water	Total
Apalachicola				
03130002	52,842	0.27	14.54	14.81
03130003	95,496	6.72	42.93	49.65
03130004	37,036	12.33	107.40	119.73
03130012	24,348	4.46	1.08	5.54
Subtotal	*209,722*	*23.78*	*165.95*	*189.73*
Choctawhatchee–Escambia				
03140103	19,015	2.62	0.44	3.06
03140104	584	0.26	0.12	0.38
03140106	34,750	16.03	2.41	18.44
03140107	25,801	8.61	0.61	9.22
03140201	146,125	27.23	6.16	33.39
03140202	50,881	9.72	4.78	14.50
03140203	6,195	1.01	0.61	1.62
03140301	27,731	8.02	5.55	13.57
03140302	13,291	2.02	0.73	2.75
03140303	23,353	3.89	0.81	4.70
03140304	26,655	5.81	32.68	38.49
03140305	16,443	2.51	0.25	2.76
Subtotal	*390,824*	*87.73*	*55.15*	*142.88*
Alabama				
03150105	41,579	2.49	5.62	8.11
03150106	335,013	40.17	250.54	290.71
03150107	123,826	5.82	829.62	835.44
03150108	23,143	1.40	1.45	2.85
03150109	68,184	0.36	19.93	20.29
03150110	160,180	7.83	44.95	52.78
03150201	322,442	47.92	49.85	97.77
03150202	376,792	27.30	56.64	83.94
03150203	30,670	4.24	23.25	27.49
03150204	24,347	7.17	55.27	62.44
Subtotal	*1,506,176*	*144.70*	*1,337.12*	*1,481.82*
Mobile–Tombigbee				
03160101	3,832	0.31	0.09	0.40
03160103	23,300	0.68	2.32	3.00
03160105	19,232	1.64	2.80	4.44

Table 4. Total freshwater withdrawals by source and hydrologic subregion and subbasin, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Population	Withdrawals by source, in million gallons per day		
		Ground water	Surface water	Total
Mobile–Tombigbee (Continued)				
03160106	28,333	4.67	0.79	5.46
03160107	16,506	0.79	0.85	1.64
03160108	949	0.25	0.05	0.30
03160109	132,396	2.20	984.37	986.57
03160110	51,869	1.27	16.00	17.27
03160111	329,844	4.41	14.67	19.08
03160112	280,509	0.97	43.08	44.05
03160113	101,984	6.52	388.83	395.35
03160201	36,189	4.75	65.98	70.73
03160202	7,296	0.07	1.34	1.41
03160203	37,199	8.79	92.96	101.75
03160204	195,350	22.08	1,046.11	1,068.19
03160205	234,104	24.52	2.28	26.80
Subtotal	*1,498,892*	*83.92*	*2,662.52*	*2,746.44*
Pascagoula				
03170002	0	0.00	0.00	0.00
03170003	0	0.00	0.00	0.00
03170008	64,253	2.79	65.33	68.12
03170009	14,406	0.66	0.17	0.83
Subtotal	*78,659*	*3.45*	*65.50*	*68.95*
Middle Tennessee–Hiwassee				
06020001	2,482	0.77	0.16	0.93
Subtotal	*2,482*	*0.77*	*0.16*	*0.93*
Middle Tennessee–Elk				
06030001	139,796	5.32	1,519.77	1,525.09
06030002	513,383	34.67	2,223.58	2,258.25
06030003	0	0.00	0.00	0.00
06030004	16,750	0.81	10.93	11.74
06030005	152,863	4.84	1,375.27	1,380.11
06030006	33,623	1.67	8.12	9.79
Subtotal	*856,415*	*47.31*	*5,137.67*	*5,184.98*
Total	**4,543,170**	**391.66**	**9,424.07**	**9,815.73**

Table 5. Total freshwater withdrawals by category of use and county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day								
	Public supply	Residential	Irrigation	Livestock	Aqua-culture	Industrial	Mining	Thermo-electric	Total
Autauga	3.18	0.32	2.78	0.22	0.30	32.29	0.43	4.14	43.66
Baldwin	21.59	2.48	43.82	0.44	0.05	0.00	0.63	0.00	69.01
Barbour	4.15	0.11	3.59	0.35	5.91	1.18	1.20	0.00	16.49
Bibb	4.16	0.13	0.09	0.07	0.36	0.00	0.17	0.00	4.98
Blount	16.19	0.77	0.76	0.96	0.00	0.00	0.27	0.00	18.95
Bullock	2.04	0.06	3.12	0.16	0.00	0.00	0.06	0.00	5.44
Butler	3.00	0.19	0.54	0.35	0.00	0.31	0.00	0.00	4.39
Calhoun	22.10	0.83	4.28	0.29	0.07	1.10	0.28	0.00	28.95
Chambers	5.24	0.58	0.22	0.20	0.00	2.16	0.00	0.00	8.40
Cherokee	3.21	0.70	2.62	0.28	0.39	0.00	0.00	0.00	7.20
Chilton	4.34	0.58	0.64	0.22	0.00	0.00	0.47	0.00	6.25
Choctaw	1.30	0.63	0.06	0.09	0.08	47.41	0.00	0.00	49.57
Clarke	4.00	0.56	0.08	0.08	0.07	0.00	0.11	0.00	4.90
Clay	1.87	0.39	0.11	0.32	0.01	0.00	0.00	0.00	2.70
Cleburne	0.51	0.72	0.06	0.37	0.00	0.71	0.00	0.00	2.37
Coffee	6.67	0.38	3.46	0.84	0.74	0.86	0.00	0.00	12.95
Colbert	9.56	0.31	2.34	0.30	0.02	56.44	0.05	1,294.14	1,363.16
Conecuh	1.60	0.40	0.06	0.18	0.02	0.00	0.11	0.00	2.37
Coosa	0.46	0.28	0.03	0.07	0.00	0.00	0.16	0.00	1.00
Covington	4.38	1.04	2.57	0.62	0.20	0.43	0.00	4.30	13.54
Crenshaw	2.15	0.12	0.38	0.58	0.00	0.00	0.00	0.00	3.23
Cullman	27.01	0.21	1.26	2.23	0.00	1.79	0.16	0.00	32.66
Dale	8.78	0.57	2.45	0.33	0.10	0.00	0.00	0.00	12.23
Dallas	6.60	0.75	2.06	0.40	7.14	0.00	0.83	0.00	17.78
De Kalb	9.92	1.46	2.29	2.04	0.01	0.65	0.06	0.00	16.43
Elmore	12.46	0.38	1.27	0.22	0.18	0.00	0.31	0.00	14.82
Escambia	6.30	0.47	1.42	0.15	0.05	33.78	0.67	0.00	42.84
Etowah	19.32	0.32	1.04	0.45	0.02	9.87	0.16	142.68	173.86
Fayette	2.41	0.42	0.06	0.20	0.04	0.00	0.80	0.00	3.93
Franklin	4.93	0.33	0.50	0.77	0.00	0.00	0.57	0.00	7.10
Geneva	1.92	0.58	3.93	0.85	0.30	0.00	0.03	0.00	7.61
Greene	1.18	0.18	0.20	0.25	10.63	0.00	0.00	386.14	398.58
Hale	2.88	0.22	0.10	0.33	24.80	0.02	0.04	0.00	28.39
Henry	1.89	0.25	2.94	0.25	0.00	0.46	0.03	0.00	5.82
Houston	15.85	1.49	8.59	0.32	0.00	0.00	0.00	105.53	131.78

Table 5. Total freshwater withdrawals by category of use and county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day								
	Public supply	Residential	Irrigation	Livestock	Aqua-culture	Industrial	Mining	Thermo-electric	Total
Jackson	10.72	0.91	0.71	0.72	0.00	8.78	0.10	1,476.30	1,498.24
Jefferson	73.34	0.39	2.82	0.08	0.58	0.40	3.40	0.00	81.01
Lamar	1.47	0.30	0.28	0.13	0.00	0.07	0.00	0.00	2.25
Lauderdale	14.19	1.30	1.17	0.48	0.03	0.00	0.00	0.00	17.17
Lawrence	6.91	0.49	1.79	0.75	0.08	57.18	0.23	0.00	67.43
Lee	16.35	0.70	1.60	0.10	0.15	2.23	0.38	0.00	21.51
Limestone	13.39	1.05	8.26	0.44	0.00	0.00	0.50	1,990.24	2,013.88
Lowndes	0.96	0.06	3.84	0.65	0.02	0.00	0.44	0.00	5.97
Macon	4.07	0.20	5.31	0.13	0.00	0.05	0.18	0.00	9.94
Madison	62.56	1.12	4.91	0.33	0.00	0.89	0.70	0.00	70.51
Marengo	2.71	0.55	0.15	0.38	3.64	19.08	0.28	0.00	26.79
Marion	6.30	0.92	0.08	0.41	0.00	0.00	0.13	0.00	7.84
Marshall	24.15	0.38	0.68	1.20	0.01	0.36	0.28	0.00	27.06
Mobile	76.82	3.01	1.10	0.27	0.00	5.67	0.46	1,043.61	1,130.94
Monroe	3.85	0.31	0.46	0.20	0.07	55.01	0.11	0.00	60.01
Montgomery	64.47	0.36	1.17	0.66	1.14	0.01	1.92	0.00	69.73
Morgan	30.42	0.30	0.86	0.73	0.10	90.65	0.54	1.20	124.80
Perry	1.82	0.32	0.05	0.21	9.99	0.00	0.00	0.00	12.39
Pickens	2.71	0.48	0.73	0.63	1.00	0.12	0.00	0.00	5.67
Pike	4.68	0.42	1.34	0.55	0.00	0.00	0.00	0.00	6.99
Randolph	1.68	0.53	0.08	0.49	0.00	0.00	0.00	0.00	2.78
Russell	8.11	0.26	6.05	0.10	0.00	28.52	0.68	0.00	43.72
St. Clair	8.13	0.72	7.37	0.39	0.03	3.50	0.87	0.00	21.01
Shelby	14.12	0.52	2.19	0.15	0.05	0.00	3.90	812.32	833.25
Sumter	1.82	0.10	0.10	0.35	4.29	1.22	2.39	0.00	10.27
Talladega	18.48	1.26	2.53	0.29	0.00	54.62	1.10	0.00	78.28
Tallapoosa	12.55	0.28	0.39	0.12	1.30	0.00	0.00	0.00	14.64
Tuscaloosa	28.29	0.84	4.44	0.21	0.07	1.92	0.25	0.00	36.02
Walker	40.34	0.54	0.49	0.31	0.09	0.00	0.41	927.28	969.46
Washington	1.19	0.51	0.11	0.19	0.08	9.64	0.91	86.54	99.17
Wilcox	1.02	0.34	0.36	0.21	0.68	21.04	0.00	0.00	23.65
Winston	0.89	0.44	0.06	0.47	0.00	0.00	0.06	0.00	1.92
Total	**801.66**	**39.12**	**161.20**	**28.11**	**74.89**	**550.42**	**27.82**	**8,274.42**	**9,957.64**

Table 6. Total freshwater withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.

[Statewide, total freshwater withdrawals for self-supplied residential, aquaculture, and mining were 39.12 million gallons per day (Mgal/d), 74.89 Mgal/d, and 27.82 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Apalachicola						
03130002	11.88	0.58	0.19	2.16	0.00	14.81
03130003	10.49	9.11	0.35	29.70	0.00	49.65
03130004	8.39	5.27	0.29	0.25	105.53	119.73
03130012	1.64	3.75	0.15	0.00	0.00	5.54
Subtotal	*32.40*	*18.71*	*0.98*	*32.11*	*105.53*	*189.73*
Choctawhatchee–Escambia						
03140103	1.06	1.25	0.32	0.43	0.00	3.06
03140104	0.06	0.27	0.05	0.00	0.00	0.38
03140106	4.06	14.23	0.15	0.00	0.00	18.44
03140107	5.49	3.69	0.04	0.00	0.00	9.22
03140201	23.42	8.55	1.20	0.22	0.00	33.39
03140202	6.30	6.05	1.29	0.86	0.00	14.50
03140203	0.52	0.91	0.19	0.00	0.00	1.62
03140301	6.80	1.89	0.58	0.00	4.30	13.57
03140302	1.60	0.64	0.51	0.00	0.00	2.75
03140303	3.21	0.76	0.42	0.31	0.00	4.70
03140304	3.81	0.81	0.18	33.69	0.00	38.49
03140305	2.24	0.37	0.06	0.09	0.00	2.76
Subtotal	*58.57*	*39.42*	*4.99*	*35.60*	*4.30*	*142.88*
Alabama						
03150105	4.14	3.25	0.72	0.00	0.00	8.11
03150106	68.44	10.05	1.57	67.97	142.68	290.71
03150107	15.17	5.60	0.60	1.75	812.32	835.44
03150108	0.90	0.52	0.72	0.71	0.00	2.85
03150109	19.09	0.64	0.56	0.00	0.00	20.29
03150110	41.96	8.07	0.47	2.28	0.00	52.78
03150201	52.56	7.36	1.41	32.30	4.14	97.77
03150202	79.21	3.91	0.42	0.40	0.00	83.94
03150203	2.92	2.73	0.80	21.04	0.00	27.49
03150204	3.62	3.77	0.04	55.01	0.00	62.44
Subtotal	*288.01*	*45.90*	*7.31*	*181.46*	*959.14*	*1,481.82*
Mobile–Tombigbee						
03160101	0.23	0.06	0.11	0.00	0.00	0.40
03160103	2.56	0.14	0.30	0.00	0.00	3.00
03160105	3.92	0.25	0.20	0.07	0.00	4.44

Table 6. Total freshwater withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.—Continued

[Statewide, total freshwater withdrawals for self-supplied residential, aquaculture, and mining were 39.12 million gallons per day (Mgal/d), 74.89 Mgal/d, and 27.82 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Mobile–Tombigbee (Continued)						
03160106	3.94	0.69	0.71	0.12	0.00	5.46
03160107	0.55	0.79	0.30	0.00	0.00	1.64
03160108	0.22	0.03	0.05	0.00	0.00	0.30
03160109	54.48	1.30	1.72	1.79	927.28	986.57
03160110	14.87	0.93	1.47	0.00	0.00	17.27
03160111	15.56	2.20	1.00	0.32	0.00	19.08
03160112	40.43	3.21	0.21	0.20	0.00	44.05
03160113	5.49	1.46	0.52	1.74	386.14	395.35
03160201	3.53	0.22	0.49	66.49	0.00	70.73
03160202	0.00	0.04	0.15	1.22	0.00	1.41
03160203	5.08	0.29	0.20	9.64	86.54	101.75
03160204	8.72	10.27	0.19	5.40	1,043.61	1,068.19
03160205	13.85	12.50	0.18	0.27	0.00	26.80
Subtotal	*173.43*	*34.38*	*7.80*	*87.26*	*2,443.57*	*2,746.44*
Pascagoula						
03170002	0.00	0.00	0.00	0.00	0.00	0.00
03170003	0.00	0.00	0.00	0.00	0.00	0.00
03170008	67.65	0.34	0.13	0.00	0.00	68.12
03170009	0.62	0.17	0.04	0.00	0.00	0.83
Subtotal	*68.27*	*0.51*	*0.17*	*0.00*	*0.00*	*68.95*
Middle Tennessee–Hiwassee						
06020001	0.66	0.14	0.13	0.00	0.00	0.93
Subtotal	*0.66*	*0.14*	*0.13*	*0.00*	*0.00*	*0.93*
Middle Tennessee–Elk						
06030001	35.38	2.22	2.37	8.82	1,476.30	1,525.09
06030002	103.13	12.62	2.34	148.72	1,991.44	2,258.25
06030003	0.00	0.00	0.00	0.00	0.00	0.00
06030004	8.84	2.72	0.18	0.00	0.00	11.74
06030005	25.07	3.42	1.04	56.44	1,294.14	1,380.11
06030006	7.87	1.17	0.75	0.00	0.00	9.79
Subtotal	*180.29*	*22.15*	*6.68*	*213.98*	*4,761.88*	*5,184.98*
Total	**801.63**	**161.21**	**28.06**	**550.41**	**8,274.42**	**9,815.73**

Table 7. Total fresh surface-water withdrawals by category of use and county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day							
	Public supply	Irrigation	Livestock	Aqua-culture	Industrial	Mining	Thermo-electric	Total
Autauga	0.00	0.38	0.13	0.15	30.63	0.14	4.14	35.57
Baldwin	0.00	7.05	0.24	0.05	0.00	0.00	0.00	7.34
Barbour	0.00	2.69	0.21	5.70	0.00	0.38	0.00	8.98
Bibb	0.00	0.06	0.04	0.36	0.00	0.00	0.00	0.46
Blount	13.45	0.46	0.50	0.00	0.00	0.00	0.00	14.41
Bullock	0.00	1.59	0.10	0.00	0.00	0.02	0.00	1.71
Butler	0.00	0.50	0.21	0.00	0.00	0.00	0.00	0.71
Calhoun	2.35	4.28	0.17	0.07	0.00	0.09	0.00	6.96
Chambers	5.24	0.06	0.12	0.00	2.16	0.00	0.00	7.58
Cherokee	1.19	2.62	0.17	0.00	0.00	0.00	0.00	3.98
Chilton	1.79	0.08	0.13	0.00	0.00	0.15	0.00	2.15
Choctaw	0.00	0.06	0.05	0.08	47.41	0.00	0.00	47.60
Clarke	1.87	0.06	0.05	0.04	0.00	0.00	0.00	2.02
Clay	1.87	0.11	0.18	0.01	0.00	0.00	0.00	2.17
Cleburne	0.51	0.06	0.20	0.00	0.00	0.00	0.00	0.77
Coffee	0.00	2.81	0.48	0.26	0.00	0.00	0.00	3.55
Colbert	8.27	1.40	0.17	0.00	55.57	0.05	1,294.14	1,359.60
Conecuh	0.00	0.06	0.11	0.01	0.00	0.00	0.00	0.18
Coosa	0.46	0.02	0.04	0.00	0.00	0.05	0.00	0.57
Covington	0.00	0.44	0.36	0.10	0.00	0.00	4.30	5.20
Crenshaw	0.00	0.38	0.34	0.00	0.00	0.00	0.00	0.72
Cullman	26.51	0.15	1.10	0.00	1.79	0.12	0.00	29.67
Dale	0.00	2.04	0.19	0.10	0.00	0.00	0.00	2.33
Dallas	0.00	1.24	0.24	2.14	0.00	0.26	0.00	3.88
De Kalb	8.57	1.46	1.08	0.00	0.00	0.02	0.00	11.13
Elmore	10.29	0.94	0.12	0.18	0.00	0.10	0.00	11.63
Escambia	0.00	0.86	0.09	0.01	32.07	0.00	0.00	33.03
Etowah	14.86	0.94	0.25	0.02	9.87	0.05	142.68	168.67
Fayette	2.36	0.06	0.11	0.02	0.00	0.80	0.00	3.35
Franklin	3.88	0.22	0.44	0.00	0.00	0.18	0.00	4.72
Geneva	0.00	2.22	0.48	0.06	0.00	0.01	0.00	2.77
Greene	0.00	0.17	0.15	4.46	0.00	0.00	386.09	390.87
Hale	0.00	0.08	0.18	8.43	0.00	0.00	0.00	8.69
Henry	0.00	1.57	0.15	0.00	0.00	0.01	0.00	1.73
Houston	0.00	2.23	0.19	0.00	0.00	0.00	105.36	107.78

Table 7. Total fresh surface-water withdrawals by category of use and county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day							
	Public supply	Irrigation	Livestock	Aqua-culture	Industrial	Mining	Thermo-electric	Total
Jackson	10.08	0.67	0.40	0.00	8.78	0.03	1,476.30	1,496.26
Jefferson	65.02	2.73	0.05	0.56	0.00	1.47	0.00	69.83
Lamar	0.00	0.27	0.07	0.00	0.00	0.00	0.00	0.34
Lauderdale	12.79	0.43	0.28	0.00	0.00	0.00	0.00	13.50
Lawrence	6.91	1.42	0.43	0.00	57.18	0.07	0.00	66.01
Lee	15.53	1.24	0.06	0.10	2.23	0.12	0.00	19.28
Limestone	8.84	6.16	0.25	0.00	0.00	0.50	1,990.24	2,005.99
Lowndes	0.00	3.26	0.39	0.02	0.00	0.14	0.00	3.81
Macon	2.71	2.34	0.08	0.00	0.00	0.06	0.00	5.19
Madison	38.85	3.30	0.19	0.00	0.89	0.22	0.00	43.45
Marengo	0.00	0.14	0.23	1.64	18.08	0.09	0.00	20.18
Marion	5.66	0.06	0.24	0.00	0.00	0.09	0.00	6.05
Marshall	21.17	0.68	0.60	0.01	0.00	0.09	0.00	22.55
Mobile	65.45	0.96	0.15	0.00	0.00	0.00	1,043.61	1,110.17
Monroe	0.00	0.06	0.12	0.04	54.61	0.00	0.00	54.83
Montgomery	35.57	0.82	0.39	0.59	0.00	0.61	0.00	37.98
Morgan	30.42	0.74	0.40	0.05	89.36	0.17	1.20	122.34
Perry	0.00	0.02	0.12	4.67	0.00	0.00	0.00	4.81
Pickens	0.00	0.41	0.32	0.50	0.00	0.00	0.00	1.23
Pike	0.00	0.88	0.32	0.00	0.00	0.00	0.00	1.20
Randolph	1.68	0.06	0.26	0.00	0.00	0.00	0.00	2.00
Russell	7.04	6.05	0.06	0.00	27.60	0.22	0.00	40.97
St. Clair	0.00	7.37	0.23	0.03	3.50	0.28	0.00	11.41
Shelby	0.00	0.25	0.09	0.05	0.00	0.00	812.32	812.71
Sumter	0.00	0.08	0.21	2.19	1.22	0.76	0.00	4.46
Talladega	12.12	2.36	0.16	0.00	53.36	0.35	0.00	68.35
Tallapoosa	12.55	0.39	0.07	1.27	0.00	0.00	0.00	14.28
Tuscaloosa	27.49	4.06	0.12	0.00	1.14	0.25	0.00	33.06
Walker	40.22	0.26	0.18	0.07	0.00	0.31	927.28	968.32
Washington	0.00	0.08	0.10	0.00	4.31	0.00	86.54	91.03
Wilcox	0.00	0.02	0.13	0.34	21.04	0.00	0.00	21.53
Winston	0.89	0.06	0.25	0.00	0.00	0.00	0.00	1.20
Total	**524.46**	**86.98**	**15.72**	**34.38**	**522.80**	**8.26**	**8,274.20**	**9,466.80**

Table 8. Total fresh surface-water withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.

[Statewide, total fresh surface-water withdrawals for aquaculture and mining were 34.38 million gallons per day (Mgal/d) and 8.29 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Apalachicola						
03130002	11.88	0.39	0.11	2.16	0.00	14.54
03130003	7.04	8.08	0.21	27.60	0.00	42.93
03130004	0.00	1.87	0.17	0.00	105.36	107.40
03130012	0.00	0.99	0.09	0.00	0.00	1.08
Subtotal	*18.92*	*11.33*	*0.58*	*29.76*	*105.36*	*165.95*
Choctawhatchee–Escambia						
03140103	0.00	0.26	0.18	0.00	0.00	0.44
03140104	0.00	0.09	0.03	0.00	0.00	0.12
03140106	0.00	2.33	0.08	0.00	0.00	2.41
03140107	0.00	0.59	0.02	0.00	0.00	0.61
03140201	0.00	5.47	0.69	0.00	0.00	6.16
03140202	0.00	4.04	0.74	0.00	0.00	4.78
03140203	0.00	0.50	0.11	0.00	0.00	0.61
03140301	0.00	0.91	0.34	0.00	4.30	5.55
03140302	0.00	0.43	0.30	0.00	0.00	0.73
03140303	0.00	0.56	0.25	0.00	0.00	0.81
03140304	0.00	0.50	0.11	32.07	0.00	32.68
03140305	0.00	0.21	0.04	0.00	0.00	0.25
Subtotal	*0.00*	*15.89*	*2.89*	*32.07*	*4.30*	*55.15*
Alabama						
03150105	2.12	3.10	0.40	0.00	0.00	5.62
03150106	33.24	7.91	0.88	65.83	142.68	250.54
03150107	10.96	5.10	0.35	0.89	812.32	829.62
03150108	0.90	0.15	0.40	0.00	0.00	1.45
03150109	19.09	0.52	0.32	0.00	0.00	19.93
03150110	38.22	4.22	0.28	2.23	0.00	44.95
03150201	10.40	3.84	0.84	30.63	4.14	49.85
03150202	52.90	3.49	0.25	0.00	0.00	56.64
03150203	0.00	1.73	0.48	21.04	0.00	23.25
03150204	0.00	0.64	0.02	54.61	0.00	55.27
Subtotal	*167.83*	*30.70*	*4.22*	*175.23*	*959.14*	*1,337.12*
Mobile–Tombigbee						
03160101	0.00	0.03	0.06	0.00	0.00	0.09
03160103	2.01	0.13	0.18	0.00	0.00	2.32
03160105	2.46	0.23	0.11	0.00	0.00	2.80

Table 8. Total fresh surface-water withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.—Continued

[Statewide, total fresh surface-water withdrawals for aquaculture and mining were 34.38 million gallons per day (Mgal/d) and 8.29 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Mobile–Tombigbee (Continued)						
03160106	0.00	0.41	0.38	0.00	0.00	0.79
03160107	0.00	0.68	0.17	0.00	0.00	0.85
03160108	0.00	0.02	0.03	0.00	0.00	0.05
03160109	53.96	0.46	0.88	1.79	927.28	984.37
03160110	14.87	0.38	0.75	0.00	0.00	16.00
03160111	12.24	1.91	0.52	0.00	0.00	14.67
03160112	39.99	2.97	0.12	0.00	0.00	43.08
03160113	0.00	1.31	0.29	1.14	386.09	388.83
03160201	0.00	0.20	0.29	65.49	0.00	65.98
03160202	0.00	0.03	0.09	1.22	0.00	1.34
03160203	1.87	0.13	0.11	4.31	86.54	92.96
03160204	0.48	1.92	0.10	0.00	1,043.61	1,046.11
03160205	0.00	2.18	0.10	0.00	0.00	2.28
Subtotal	*127.88*	*12.99*	*4.18*	*73.95*	*2,443.52*	*2,662.52*
Pascagoula						
03170002	0.00	0.00	0.00	0.00	0.00	0.00
03170003	0.00	0.00	0.00	0.00	0.00	0.00
03170008	64.97	0.29	0.07	0.00	0.00	65.33
03170009	0.00	0.15	0.02	0.00	0.00	0.17
Subtotal	*64.97*	*0.44*	*0.09*	*0.00*	*0.00*	*65.50*
Middle Tennessee–Hiwassee						
06020001	0.00	0.09	0.07	0.00	0.00	0.16
Subtotal	*0.00*	*0.09*	*0.07*	*0.00*	*0.00*	*0.16*
Middle Tennessee–Elk						
06030001	31.72	1.72	1.25	8.78	1,476.30	1,519.77
06030002	74.26	9.17	1.28	147.43	1,991.44	2,223.58
06030003	0.00	0.00	0.00	0.00	0.00	0.00
06030004	8.84	1.99	0.10	0.00	0.00	10.93
06030005	22.98	1.98	0.60	55.57	1,294.14	1,375.27
06030006	7.05	0.64	0.43	0.00	0.00	8.12
Subtotal	*144.85*	*15.50*	*3.66*	*211.78*	*4,761.88*	*5,137.67*
Total	**524.45**	**86.94**	**15.69**	**522.79**	**8,274.20**	**9,424.07**

Table 9. Total fresh ground-water withdrawals by category of use and county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day								
	Public supply	Residential	Industrial	Thermo-electric	Mining	Livestock	Aqua-culture	Irrigation	Total
Autauga	3.18	0.32	1.66	0.00	0.29	0.09	0.15	2.40	8.09
Baldwin	21.59	2.48	0.00	0.00	0.63	0.20	0.00	36.77	61.67
Barbour	4.15	0.11	1.18	0.00	0.82	0.14	0.21	0.90	7.51
Bibb	4.16	0.13	0.00	0.00	0.17	0.03	0.00	0.03	4.52
Blount	2.74	0.77	0.00	0.00	0.27	0.46	0.00	0.30	4.54
Bullock	2.04	0.06	0.00	0.00	0.04	0.06	0.00	1.53	3.73
Butler	3.00	0.19	0.31	0.00	0.00	0.14	0.00	0.04	3.68
Calhoun	19.75	0.83	1.10	0.00	0.19	0.12	0.00	0.00	21.99
Chambers	0.00	0.58	0.00	0.00	0.00	0.08	0.00	0.16	0.82
Cherokee	2.02	0.70	0.00	0.00	0.00	0.11	0.39	0.00	3.22
Chilton	2.55	0.58	0.00	0.00	0.32	0.09	0.00	0.56	4.10
Choctaw	1.30	0.63	0.00	0.00	0.00	0.04	0.00	0.00	1.97
Clarke	2.13	0.56	0.00	0.00	0.11	0.03	0.03	0.02	2.88
Clay	0.00	0.39	0.00	0.00	0.00	0.14	0.00	0.00	0.53
Cleburne	0.00	0.72	0.71	0.00	0.00	0.17	0.00	0.00	1.60
Coffee	6.67	0.38	0.86	0.00	0.00	0.36	0.48	0.65	9.40
Colbert	1.29	0.31	0.87	0.00	0.00	0.13	0.02	0.94	3.56
Conecuh	1.60	0.40	0.00	0.00	0.11	0.07	0.01	0.00	2.19
Coosa	0.00	0.28	0.00	0.00	0.11	0.03	0.00	0.01	0.43
Covington	4.38	1.04	0.43	0.00	0.00	0.26	0.10	2.13	8.34
Crenshaw	2.15	0.12	0.00	0.00	0.00	0.24	0.00	0.00	2.51
Cullman	0.50	0.21	0.00	0.00	0.04	1.13	0.00	1.11	2.99
Dale	8.78	0.57	0.00	0.00	0.00	0.14	0.00	0.41	9.90
Dallas	6.60	0.75	0.00	0.00	0.57	0.16	5.00	0.82	13.90
De Kalb	1.35	1.46	0.65	0.00	0.04	0.96	0.01	0.83	5.30
Elmore	2.17	0.38	0.00	0.00	0.21	0.10	0.00	0.33	3.19
Escambia	6.30	0.47	1.71	0.00	0.67	0.06	0.04	0.56	9.81
Etowah	4.46	0.32	0.00	0.00	0.11	0.20	0.00	0.10	5.19
Fayette	0.05	0.42	0.00	0.00	0.00	0.09	0.02	0.00	0.58
Franklin	1.05	0.33	0.00	0.00	0.39	0.33	0.00	0.28	2.38
Geneva	1.92	0.58	0.00	0.00	0.02	0.37	0.24	1.71	4.84
Greene	1.18	0.18	0.00	0.05	0.00	0.10	6.17	0.03	7.71
Hale	2.88	0.22	0.02	0.00	0.04	0.15	16.37	0.02	19.70
Henry	1.89	0.25	0.46	0.00	0.02	0.10	0.00	1.37	4.09
Houston	15.85	1.49	0.00	0.17	0.00	0.13	0.00	6.36	24.00

Table 9. Total fresh ground-water withdrawals by category of use and county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by category, in million gallons per day								
	Public supply	Residential	Industrial	Thermo-electric	Mining	Livestock	Aqua-culture	Irrigation	Total
Jackson	0.64	0.91	0.00	0.00	0.07	0.32	0.00	0.04	1.98
Jefferson	8.32	0.39	0.40	0.00	1.93	0.03	0.02	0.09	11.18
Lamar	1.47	0.30	0.07	0.00	0.00	0.06	0.00	0.01	1.91
Lauderdale	1.40	1.30	0.00	0.00	0.00	0.20	0.03	0.74	3.67
Lawrence	0.00	0.49	0.00	0.00	0.16	0.32	0.08	0.37	1.42
Lee	0.82	0.70	0.00	0.00	0.26	0.04	0.05	0.36	2.23
Limestone	4.55	1.05	0.00	0.00	0.00	0.19	0.00	2.10	7.89
Lowndes	0.96	0.06	0.00	0.00	0.30	0.26	0.00	0.58	2.16
Macon	1.36	0.20	0.05	0.00	0.12	0.05	0.00	2.97	4.75
Madison	23.71	1.12	0.00	0.00	0.48	0.14	0.00	1.61	27.06
Marengo	2.71	0.55	1.00	0.00	0.19	0.15	2.00	0.01	6.61
Marion	0.64	0.92	0.00	0.00	0.04	0.17	0.00	0.02	1.79
Marshall	2.98	0.38	0.36	0.00	0.19	0.60	0.00	0.00	4.51
Mobile	11.37	3.01	5.67	0.00	0.46	0.12	0.00	0.14	20.77
Monroe	3.85	0.31	0.40	0.00	0.11	0.08	0.03	0.40	5.18
Montgomery	28.90	0.36	0.01	0.00	1.31	0.27	0.55	0.35	31.75
Morgan	0.00	0.30	1.29	0.00	0.37	0.33	0.05	0.12	2.46
Perry	1.82	0.32	0.00	0.00	0.00	0.09	5.32	0.03	7.58
Pickens	2.71	0.48	0.12	0.00	0.00	0.31	0.50	0.32	4.44
Pike	4.68	0.42	0.00	0.00	0.00	0.23	0.00	0.46	5.79
Randolph	0.00	0.53	0.00	0.00	0.00	0.23	0.00	0.02	0.78
Russell	1.07	0.26	0.92	0.00	0.46	0.04	0.00	0.00	2.75
St. Clair	8.13	0.72	0.00	0.00	0.59	0.16	0.00	0.00	9.60
Shelby	14.12	0.52	0.00	0.00	3.90	0.06	0.00	1.94	20.54
Sumter	1.82	0.10	0.00	0.00	1.63	0.14	2.10	0.02	5.81
Talladega	6.36	1.26	1.26	0.00	0.75	0.13	0.00	0.17	9.93
Tallapoosa	0.00	0.28	0.00	0.00	0.00	0.05	0.03	0.00	0.36
Tuscaloosa	0.80	0.84	0.78	0.00	0.00	0.09	0.07	0.38	2.96
Walker	0.12	0.54	0.00	0.00	0.10	0.13	0.02	0.23	1.14
Washington	1.19	0.51	5.33	0.00	0.91	0.09	0.08	0.03	8.14
Wilcox	1.02	0.34	0.00	0.00	0.00	0.08	0.34	0.34	2.12
Winston	0.00	0.44	0.00	0.00	0.06	0.22	0.00	0.00	0.72
Total	**277.20**	**39.12**	**27.62**	**0.22**	**19.56**	**12.39**	**40.51**	**74.22**	**490.84**

Table 10. Total fresh ground-water withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.

[Statewide, total fresh ground-water withdrawals for self-supplied residential, aquaculture, and mining were 39.12 million gallons per day (Mgal/d), 40.51 Mgal/d, and 19.56 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Apalachicola						
03130002	0.00	0.19	0.08	0.00	0.00	0.27
03130003	3.45	1.03	0.14	2.10	0.00	6.72
03130004	8.39	3.40	0.12	0.25	0.17	12.33
03130012	1.64	2.76	0.06	0.00	0.00	4.46
Subtotal	*13.48*	*7.38*	*0.40*	*2.35*	*0.17*	*23.78*
Choctawhatchee–Escambia						
03140103	1.06	0.99	0.14	0.43	0.00	2.62
03140104	0.06	0.18	0.02	0.00	0.00	0.26
03140106	4.06	11.90	0.07	0.00	0.00	16.03
03140107	5.49	3.10	0.02	0.00	0.00	8.61
03140201	23.42	3.08	0.51	0.22	0.00	27.23
03140202	6.30	2.01	0.55	0.86	0.00	9.72
03140203	0.52	0.41	0.08	0.00	0.00	1.01
03140301	6.80	0.98	0.24	0.00	0.00	8.02
03140302	1.60	0.21	0.21	0.00	0.00	2.02
03140303	3.21	0.20	0.17	0.31	0.00	3.89
03140304	3.81	0.31	0.07	1.62	0.00	5.81
03140305	2.24	0.16	0.02	0.09	0.00	2.51
Subtotal	*58.57*	*23.53*	*2.10*	*3.53*	*0.00*	*87.73*
Alabama						
03150105	2.02	0.15	0.32	0.00	0.00	2.49
03150106	35.20	2.14	0.69	2.14	0.00	40.17
03150107	4.21	0.50	0.25	0.86	0.00	5.82
03150108	0.00	0.37	0.32	0.71	0.00	1.40
03150109	0.00	0.12	0.24	0.00	0.00	0.36
03150110	3.74	3.85	0.19	0.05	0.00	7.83
03150201	42.16	3.52	0.57	1.67	0.00	47.92
03150202	26.31	0.42	0.17	0.40	0.00	27.30
03150203	2.92	1.00	0.32	0.00	0.00	4.24
03150204	3.62	3.13	0.02	0.40	0.00	7.17
Subtotal	*120.18*	*15.20*	*3.09*	*6.23*	*0.00*	*144.70*
Mobile–Tombigbee						
03160101	0.23	0.03	0.05	0.00	0.00	0.31
03160103	0.55	0.01	0.12	0.00	0.00	0.68
03160105	1.46	0.02	0.09	0.07	0.00	1.64

Table 10. Total fresh ground-water withdrawals by category of use and hydrologic subregion and subbasin, Alabama, 2005.—Continued

[Statewide, total fresh ground-water withdrawals for self-supplied residential, aquaculture, and mining were 39.12 million gallons per day (Mgal/d), 40.51 Mgal/d, and 19.56 Mgal, respectively. Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by category, in million gallons per day					
	Public supply	Irrigation	Livestock	Industrial	Thermoelectric	Total
Mobile–Tombigbee (Continued)						
03160106	3.94	0.28	0.33	0.12	0.00	4.67
03160107	0.55	0.11	0.13	0.00	0.00	0.79
03160108	0.22	0.01	0.02	0.00	0.00	0.25
03160109	0.52	0.84	0.84	0.00	0.00	2.20
03160110	0.00	0.55	0.72	0.00	0.00	1.27
03160111	3.32	0.29	0.48	0.32	0.00	4.41
03160112	0.44	0.24	0.09	0.20	0.00	0.97
03160113	5.49	0.15	0.23	0.60	0.05	6.52
03160201	3.53	0.02	0.20	1.00	0.00	4.75
03160202	0.00	0.01	0.06	0.00	0.00	0.07
03160203	3.21	0.16	0.09	5.33	0.00	8.79
03160204	8.24	8.35	0.09	5.40	0.00	22.08
03160205	13.85	10.32	0.08	0.27	0.00	24.52
Subtotal	*45.55*	*21.39*	*3.62*	*13.31*	*0.05*	*83.92*
Pascagoula						
03170002	0.00	0.00	0.00	0.00	0.00	0.00
03170003	0.00	0.00	0.00	0.00	0.00	0.00
03170008	2.68	0.05	0.06	0.00	0.00	2.79
03170009	0.62	0.02	0.02	0.00	0.00	0.66
Subtotal	*3.30*	*0.07*	*0.08*	*0.00*	*0.00*	*3.45*
Middle Tennessee–Hiwassee						
06020001	0.66	0.05	0.06	0.00	0.00	0.77
Subtotal	*0.66*	*0.05*	*0.06*	*0.00*	*0.00*	*0.77*
Middle Tennessee–Elk						
06030001	3.66	0.50	1.12	0.04	0.00	5.32
06030002	28.87	3.45	1.06	1.29	0.00	34.67
06030003	0.00	0.00	0.00	0.00	0.00	0.00
06030004	0.00	0.73	0.08	0.00	0.00	0.81
06030005	2.09	1.44	0.44	0.87	0.00	4.84
06030006	0.82	0.53	0.32	0.00	0.00	1.67
Subtotal	*35.44*	*6.65*	*3.02*	*2.20*	*0.00*	*47.31*
Total	**277.18**	**74.27**	**12.37**	**27.62**	**0.22**	**391.66**

Figure 12 provides an overview of the sources and use of water in Alabama. In this figure, the eight water-use categories mentioned above have been grouped into four categories of similar water uses: thermoelectric power, industrial (combined self-supplied industrial, commercial, and mining withdrawals and industrial, commercial, and thermoelectric-power deliveries), residential (combined self-supplied residential withdrawals, public-supplied residential deliveries, and public use and losses), and agriculture (aquaculture, irrigation, and livestock). The figure shows that surface water was the source for 9,467 Mgal/d (table 7); of this total, 8,274 Mgal/d was used for thermoelectric power. The 802 Mgal/d (table 5) withdrawn by public supply was distributed to industrial users (355.47 Mgal/d) and residential users (446 Mgal/d—325.94 Mgal/d total residential deliveries [table 11] and 120.25 Mgal/d public use and losses; self-supplied residential withdrawals, 39.12 Mgal/d [table 9]). Ground water was a source for thermoelectric, industrial, residential, and agriculture water.

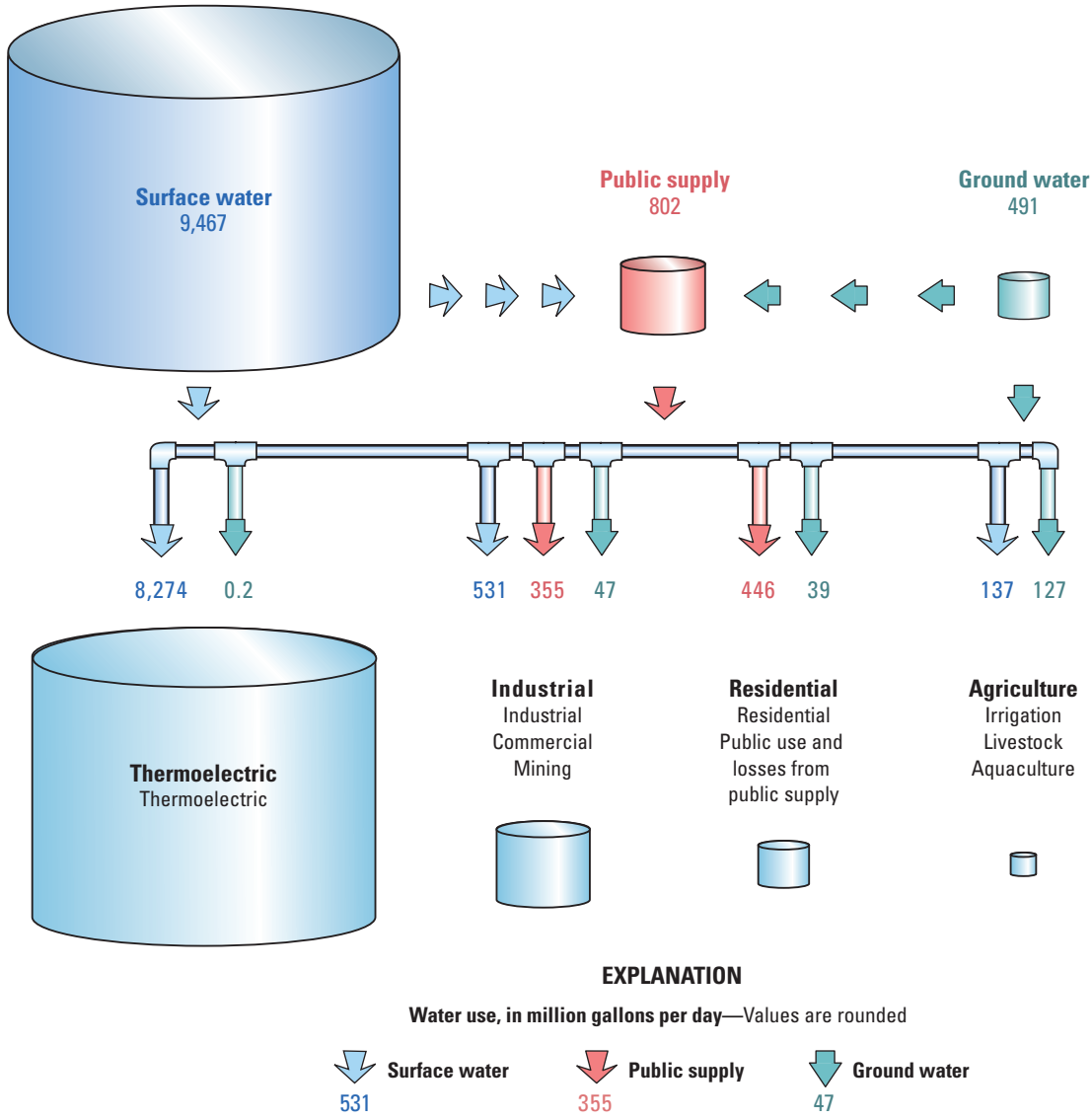


Figure 12. Sources and use of water in Alabama.

Public Supply

Public supply refers to water that is withdrawn, treated, and distributed by public suppliers. Public suppliers provide water for a variety of uses, such as residential, commercial, industrial, thermoelectric power, and public-water use. Thermoelectric-power delivery amounts have not been estimated separately for this report, but are included in the industrial/commercial deliveries.

Public-supply withdrawals, residential deliveries, and population served are listed by county in table 11 and by hydrologic subbasin in table 12. For 2005, public-supply withdrawals were 802 Mgal/d. Public-supply withdrawals were 8 percent of total withdrawals and about 48 percent of total withdrawals for all categories excluding thermoelectric power (table 5). The majority of the public-supply water (524 Mgal/d, or 65 percent) was withdrawn from surface-water sources (fig. 13). The remaining 277 Mgal/d, or 35 percent, was withdrawn from wells and springs. In 2005, about 4.04 million people, or 89 percent of the population, depended on water from public suppliers. The percentage of population served by public supply by county is shown in figure 14. The total delivery to residential customers was 326 Mgal/d, or about 41 percent of the total withdrawals by public suppliers; combined industrial and commercial deliveries were 355 Mgal/d, or 44 percent; and public use and losses accounted for the remaining 120 Mgal/d, or 15 percent (fig. 13). See the "Residential" and "Industrial" sections for additional details.

The geographic distribution of the total, ground-water, and surface-water withdrawals for public supply by county is shown in figure 15. Counties containing cities with large populations had the largest amounts of withdrawal. Mobile (City of Mobile), Jefferson (Birmingham), Montgomery (City of Montgomery), Madison (Huntsville), and Walker (source of water for metropolitan Birmingham) Counties accounted for 40 percent of the water withdrawn and 39 percent of the population served by public suppliers (figs. 15 and 16, table 11). Jefferson County had the highest percentage of population served by a public supply (99 percent) and was 1 of 20 counties whose public suppliers collectively served more than 90 percent of their respective county populations (fig. 14). The largest surface-water withdrawals occurred in Mobile and Jefferson Counties (combined 130 Mgal/d), and the largest ground-water withdrawals were in Montgomery and Madison Counties (combined 53 Mgal/d).

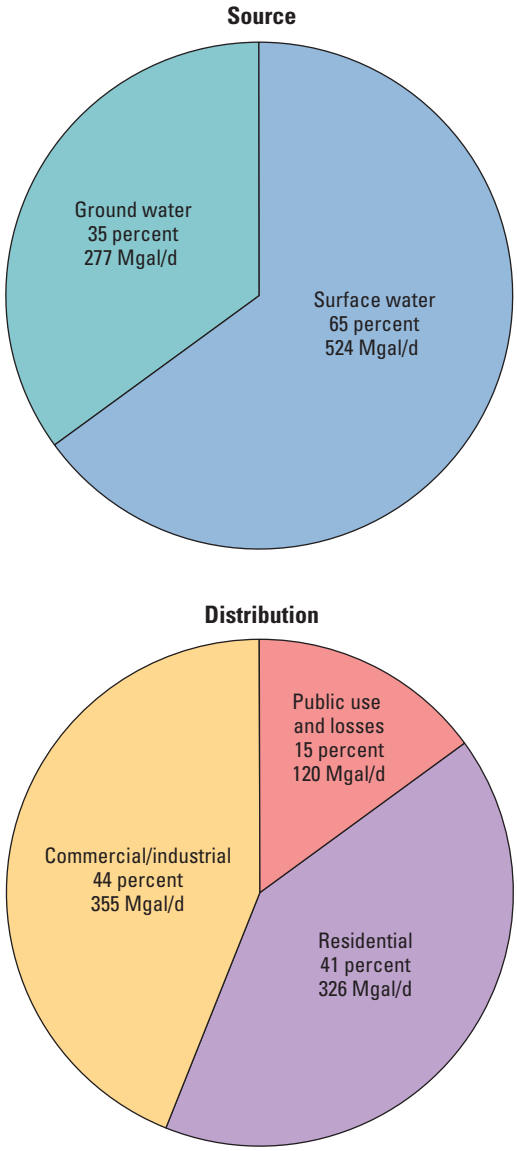


Figure 13. Source and distribution of public-supply water in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

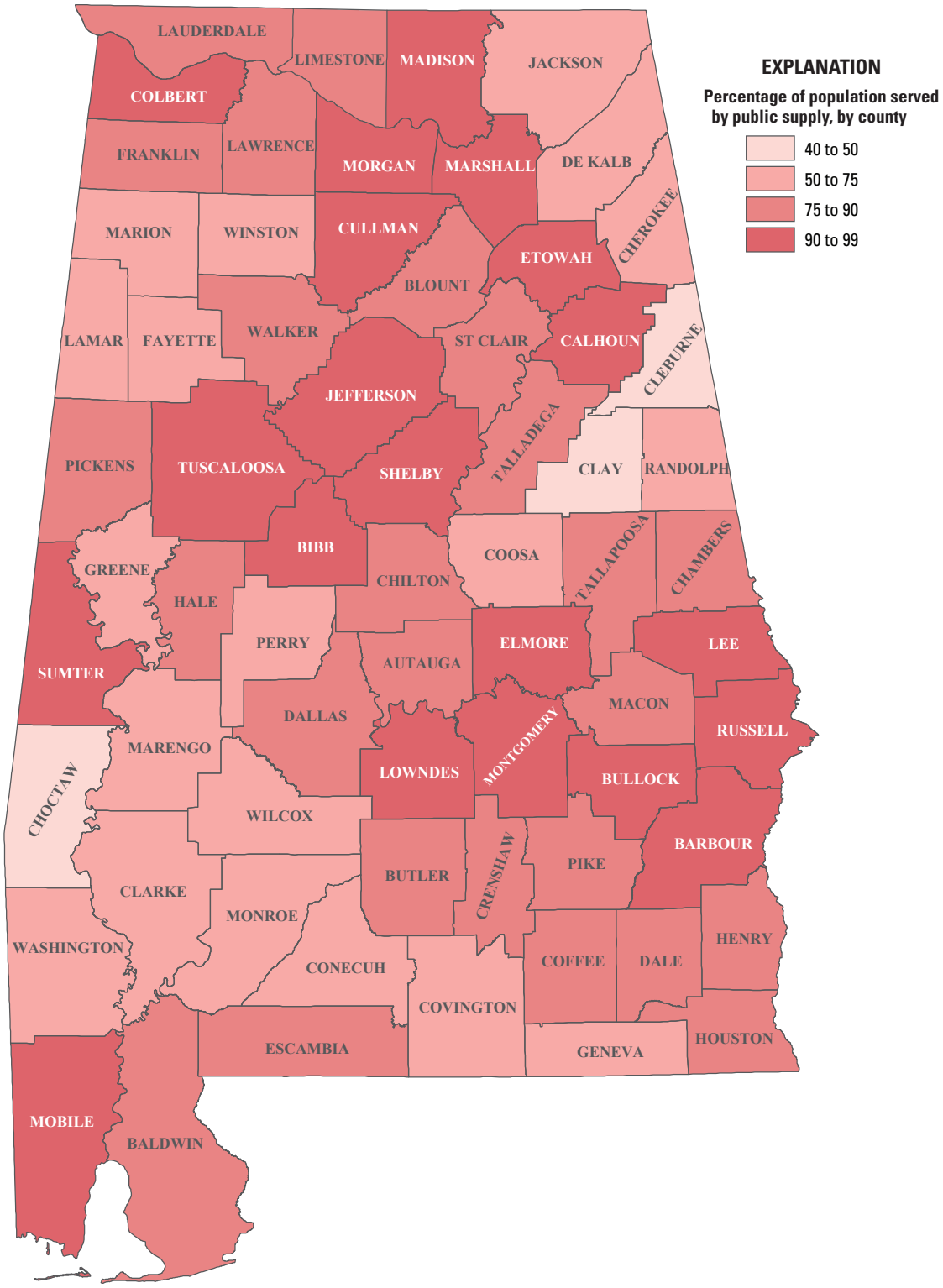


Figure 14. Percentage of population served by public suppliers in Alabama, 2005.

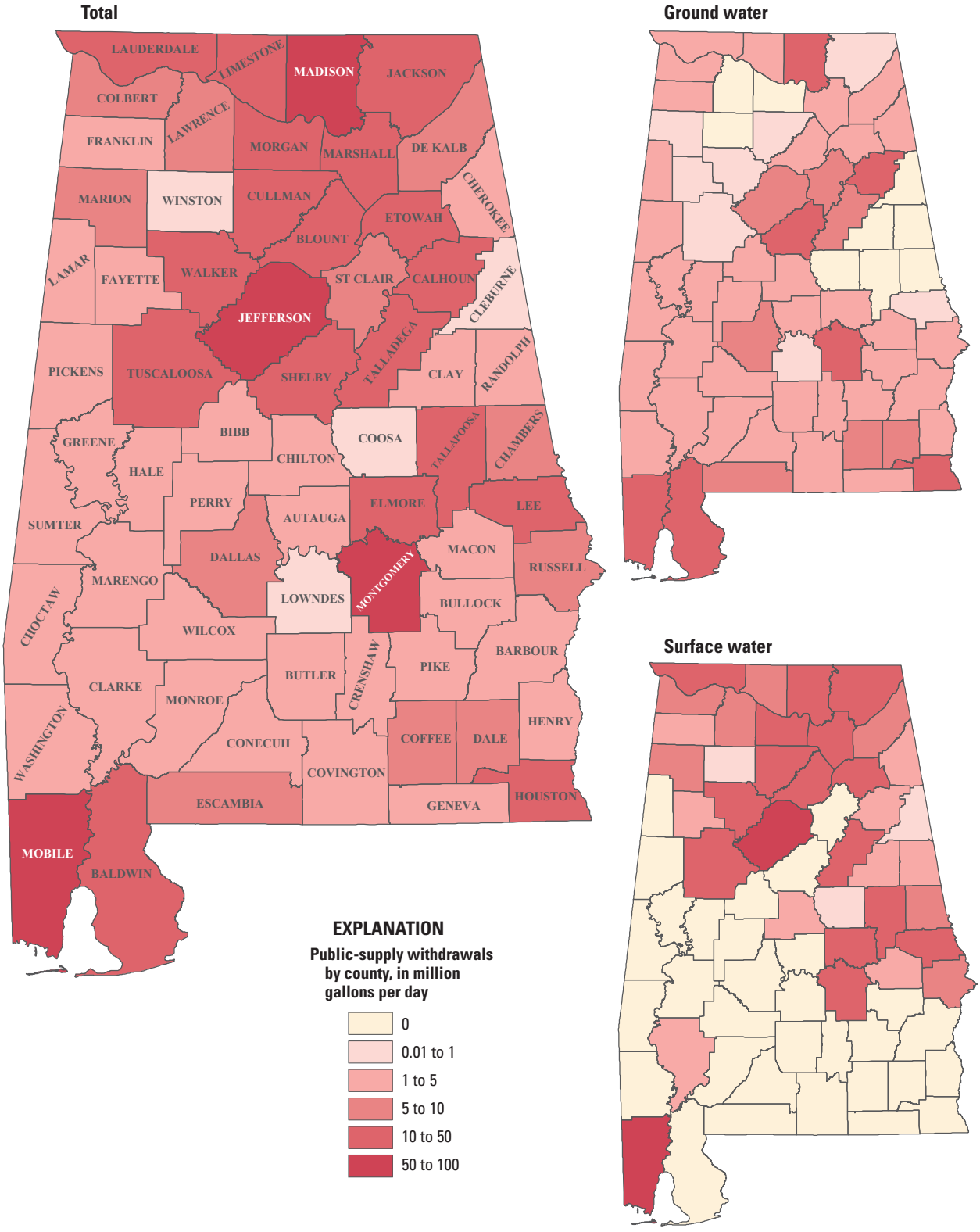


Figure 15. Public-supply withdrawals by source and county in Alabama, 2005.

Table 11. Public-supply freshwater use by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Population	Population served by public supply		Withdrawals by source, in million gallons per day			Gross public supply per capita use, in gallons per day	Residential deliveries, in million gallons per day
		Total	Percentage	Ground water	Surface water	Total		
Autauga	48,612	42,956	88	3.18	0.00	3.18	74	3.18
Baldwin	162,586	136,892	84	21.59	0.00	21.59	158	11.61
Barbour	28,414	26,447	93	4.15	0.00	4.15	157	1.76
Bibb	21,516	19,979	93	4.16	0.00	4.16	208	2.06
Blount	55,725	43,224	78	2.74	13.45	16.19	375	3.76
Bullock	11,055	10,307	93	2.04	0.00	2.04	198	0.71
Butler	20,766	17,445	84	3.00	0.00	3.00	172	1.52
Calhoun	112,141	106,294	95	19.75	2.35	22.10	208	10.89
Chambers	35,460	26,817	76	0.00	5.24	5.24	195	2.50
Cherokee	24,522	16,866	69	2.02	1.19	3.21	190	1.52
Chilton	41,744	32,837	79	2.55	1.79	4.34	132	2.12
Choctaw	14,807	6,077	41	1.30	0.00	1.30	214	0.45
Clarke	27,269	19,967	73	2.13	1.87	4.00	200	1.48
Clay	13,964	6,361	46	0.00	1.87	1.87	294	0.31
Cleburne	14,460	6,343	44	0.00	0.51	0.51	80	0.54
Coffee	45,567	37,584	82	6.67	0.00	6.67	177	2.72
Colbert	54,660	50,704	93	1.29	8.27	9.56	189	3.31
Conecuh	13,257	7,560	57	1.60	0.00	1.60	212	0.72
Coosa	11,162	6,435	58	0.00	0.46	0.46	71	0.33
Covington	37,003	23,627	64	4.38	0.00	4.38	185	1.87
Crenshaw	13,727	10,422	76	2.15	0.00	2.15	206	0.78
Cullman	79,886	77,321	97	0.50	26.51	27.01	349	5.97
Dale	48,748	39,923	82	8.78	0.00	8.78	220	3.17
Dallas	44,366	34,829	79	6.60	0.00	6.60	190	2.66
De Kalb	67,271	48,950	73	1.35	8.57	9.92	203	4.93
Elmore	73,937	68,719	93	2.17	10.29	12.46	181	5.27
Escambia	38,082	31,176	82	6.30	0.00	6.30	202	2.32
Etowah	103,189	99,232	96	4.46	14.86	19.32	195	8.52
Fayette	18,228	10,811	59	0.05	2.36	2.41	223	0.76
Franklin	30,737	24,248	79	1.05	3.88	4.93	203	1.54
Geneva	25,735	14,941	58	1.92	0.00	1.92	129	1.13
Greene	9,661	6,777	70	1.18	0.00	1.18	174	0.41
Hale	18,316	14,937	82	2.88	0.00	2.88	193	0.92
Henry	16,610	12,845	77	1.89	0.00	1.89	147	1.19
Houston	94,249	76,104	81	15.85	0.00	15.85	208	5.82

Table 11. Public-supply freshwater use by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Population	Population served by public supply		Withdrawals by source, in million gallons per day			Gross public supply per capita use, in gallons per day	Residential deliveries, in million gallons per day
		Total	Percentage	Ground water	Surface water	Total		
Jackson	53,650	39,924	74	0.64	10.08	10.72	269	2.69
Jefferson	657,229	651,192	99	8.32	65.02	73.34	113	47.27
Lamar	14,962	9,601	64	1.47	0.00	1.47	153	0.67
Lauderdale	87,691	73,713	84	1.40	12.79	14.19	193	6.01
Lawrence	34,605	29,078	84	0.00	6.91	6.91	238	2.37
Lee	123,254	115,001	93	0.82	15.53	16.35	142	8.84
Limestone	70,469	59,659	85	4.55	8.84	13.39	224	4.25
Lowndes	13,076	12,214	93	0.96	0.00	0.96	79	0.76
Macon	22,810	19,820	87	1.36	2.71	4.07	205	1.35
Madison	298,192	288,901	97	23.71	38.85	62.56	217	30.91
Marengo	21,879	13,071	60	2.71	0.00	2.71	207	0.83
Marion	30,154	20,465	68	0.64	5.66	6.30	308	1.73
Marshall	85,634	80,071	94	2.98	21.17	24.15	302	5.38
Mobile	401,427	364,178	91	11.37	65.45	76.82	211	25.17
Monroe	23,733	17,666	74	3.85	0.00	3.85	218	1.13
Montgomery	221,619	217,044	98	28.90	35.57	64.47	297	17.29
Morgan	113,740	109,912	97	0.00	30.42	30.42	277	9.09
Perry	11,371	6,840	60	1.82	0.00	1.82	266	0.42
Pickens	20,178	15,797	78	2.71	0.00	2.71	172	1.51
Pike	29,639	26,053	88	4.68	0.00	4.68	180	2.76
Randolph	22,717	12,026	53	0.00	1.68	1.68	140	1.01
Russell	49,326	45,389	92	1.07	7.04	8.11	179	2.95
St. Clair	72,330	64,529	89	8.13	0.00	8.13	126	4.66
Shelby	171,465	165,447	96	14.12	0.00	14.12	85	13.60
Sumter	13,819	12,629	91	1.82	0.00	1.82	144	1.00
Talladega	80,457	60,505	75	6.36	12.12	18.48	305	3.56
Tallapoosa	40,717	34,765	85	0.00	12.55	12.55	361	2.86
Tuscaloosa	168,908	158,950	94	0.80	27.49	28.29	178	20.54
Walker	70,117	62,174	89	0.12	40.22	40.34	649	4.36
Washington	17,773	10,045	57	1.19	0.00	1.19	118	0.67
Wilcox	12,937	7,985	62	1.02	0.00	1.02	128	0.68
Winston	24,498	15,869	65	0.00	0.89	0.89	56	0.87
Total	**4,557,808**	**4,036,470**	**89**	**277.20**	**524.46**	**801.66**		**325.94**
Average							**199**	

Table 12. Public-supply freshwater use by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Total population	Withdrawals by source, in million gallons per day		
		Ground water	Surface water	Total
Apalachicola				
03130002	52,842	0.00	11.88	11.88
03130003	95,496	3.45	7.04	10.49
03130004	37,036	8.39	0.00	8.39
03130012	24,348	1.64	0.00	1.64
Subtotal	*209,722*	*13.48*	*18.92*	*32.40*
Choctawhatchee–Escambia				
03140103	19,015	1.06	0.00	1.06
03140104	584	0.06	0.00	0.06
03140106	34,750	4.06	0.00	4.06
03140107	25,801	5.49	0.00	5.49
03140201	146,125	23.42	0.00	23.42
03140202	50,881	6.30	0.00	6.30
03140203	6,195	0.52	0.00	0.52
03140301	27,731	6.80	0.00	6.80
03140302	13,291	1.60	0.00	1.60
03140303	23,353	3.21	0.00	3.21
03140304	26,655	3.81	0.00	3.81
03140305	16,443	2.24	0.00	2.24
Subtotal	*390,824*	*58.57*	*0.00*	*58.57*
Alabama				
03150105	41,579	2.02	2.12	4.14
03150106	335,013	35.20	33.24	68.44
03150107	123,826	4.21	10.96	15.17
03150108	23,143	0.00	0.90	0.90
03150109	68,184	0.00	19.09	19.09
03150110	160,180	3.74	38.22	41.96
03150201	322,442	42.16	10.40	52.56
03150202	376,792	26.31	52.90	79.21
03150203	30,670	2.92	0.00	2.92
03150204	24,347	3.62	0.00	3.62
Subtotal	*1,506,176*	*120.18*	*167.83*	*288.01*
Mobile–Tombigbee				
03160101	3,832	0.23	0.00	0.23
03160103	23,300	0.55	2.01	2.56
03160105	19,232	1.46	2.46	3.92

Table 12. Public-supply freshwater use by hydrologic subregion and subbasin, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Total population	Withdrawals by source, in million gallons per day		
		Ground water	Surface water	Total
Mobile–Tombigbee (Continued)				
03160106	28,333	3.94	0.00	3.94
03160107	16,506	0.55	0.00	0.55
03160108	949	0.22	0.00	0.22
03160109	132,396	0.52	53.96	54.48
03160110	51,869	0.00	14.87	14.87
03160111	329,844	3.32	12.24	15.56
03160112	280,509	0.44	39.99	40.43
03160113	101,984	5.49	0.00	5.49
03160201	36,189	3.53	0.00	3.53
03160202	7,296	0.00	0.00	0.00
03160203	37,199	3.21	1.87	5.08
03160204	195,350	8.24	0.48	8.72
03160205	234,104	13.85	0.00	13.85
Subtotal	*1,498,892*	*45.55*	*127.88*	*173.43*
Pascagoula				
03170002	0	0.00	0.00	0.00
03170003	0	0.00	0.00	0.00
03170008	64,253	2.68	64.97	67.65
03170009	14,406	0.62	0.00	0.62
Subtotal	*78,659*	*3.30*	*64.97*	*68.27*
Middle Tennessee–Hiwassee				
06020001	2,482	0.66	0.00	0.66
Subtotal	*2,482*	*0.66*	*0.00*	*0.66*
Middle Tennessee–Elk				
06030001	139,796	3.66	31.72	35.38
06030002	513,383	28.87	74.26	103.13
06030003	0	0.00	0.00	0.00
06030004	16,750	0.00	8.84	8.84
06030005	152,863	2.09	22.98	25.07
06030006	33,623	0.82	7.05	7.87
Subtotal	*856,415*	*35.44*	*144.85*	*180.29*
Total	**4,543,170**	**277.18**	**524.45**	**801.63**

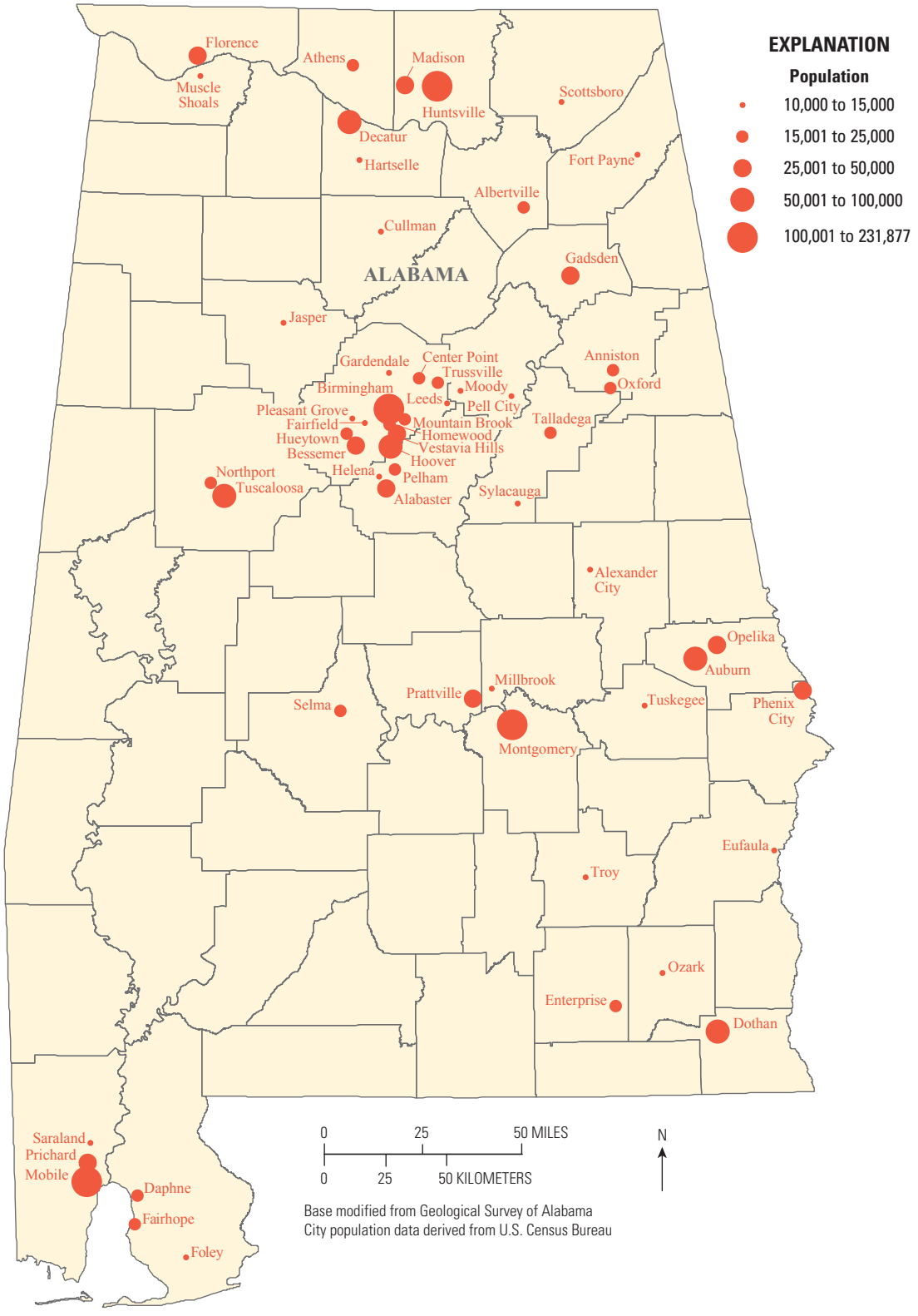


Figure 16. Alabama cities with populations of 10,000 and greater, 2005.

The rank and associated cumulative percentile of total public-supply withdrawals by county are shown in figure 17. Mobile, Jefferson, Montgomery, and Madison Counties accounted for 35 percent of the public-supply withdrawals (table 11; figs. 15 and 17). The remaining 63 counties accounted for the remaining 65 percent of the public-supply withdrawals. For comparison purposes, shading in the **choropleth map** ranges in figure 15 corresponds to shading in the cumulative percentile ranges in figure 17.

The geographic distribution of the total, ground-water, and surface-water withdrawals for public supply by hydrologic subbasin is shown in figure 18. The rank and associated cumulative percentile of total public-supply withdrawals by subbasin are shown in figure 19. The Wheeler Lake (06030002, in the Middle Tennessee–Elk subregion, City of Huntsville), Cahaba (03150202, in the Alabama subregion, metropolitan Birmingham), Middle Coosa (03150106, in the Alabama subregion, Cities of Talladega and Anniston), Escatawpa (03170008, in the Pascagoula subregion, source of water for City of Mobile), Mulberry Fork (03160109, in the Mobile–Tombigbee subregion, Cities of Jasper and Cullman), and the Upper Alabama (03150201, in the Alabama subregion, Cities of Montgomery and Prattville) subbasins accounted for 53 percent of the public-supply withdrawals, and the remaining 47 subbasins accounted for the other 47 percent (table 12; figs. 18 and 19). Similar to figures 15 and 17, the choropleth map shading in figure 18 corresponds to the percentile shading in figure 19.

Several sources of data were used to estimate public-supply withdrawals, deliveries, and population served. A comprehensive list of public-suppliers was compiled from records from Alabama OWR, DWB-ADEM, ARWA, and USEPA-SDWIS. The primary sources for water withdrawals and public-supply deliveries were Alabama OWR and DWB-ADEM. Population served was estimated from U.S. Census estimates of population for 1990 and 2005, the number of housing units in 1990, and percentage of housing units on public supply in 1990. Details are in the "Public-Supply and Residential Water Use" and "Population Served and Self-Supplied Residential Population" sections in the "Data Compilation, Sources of Information, and Methodology" section in this report.

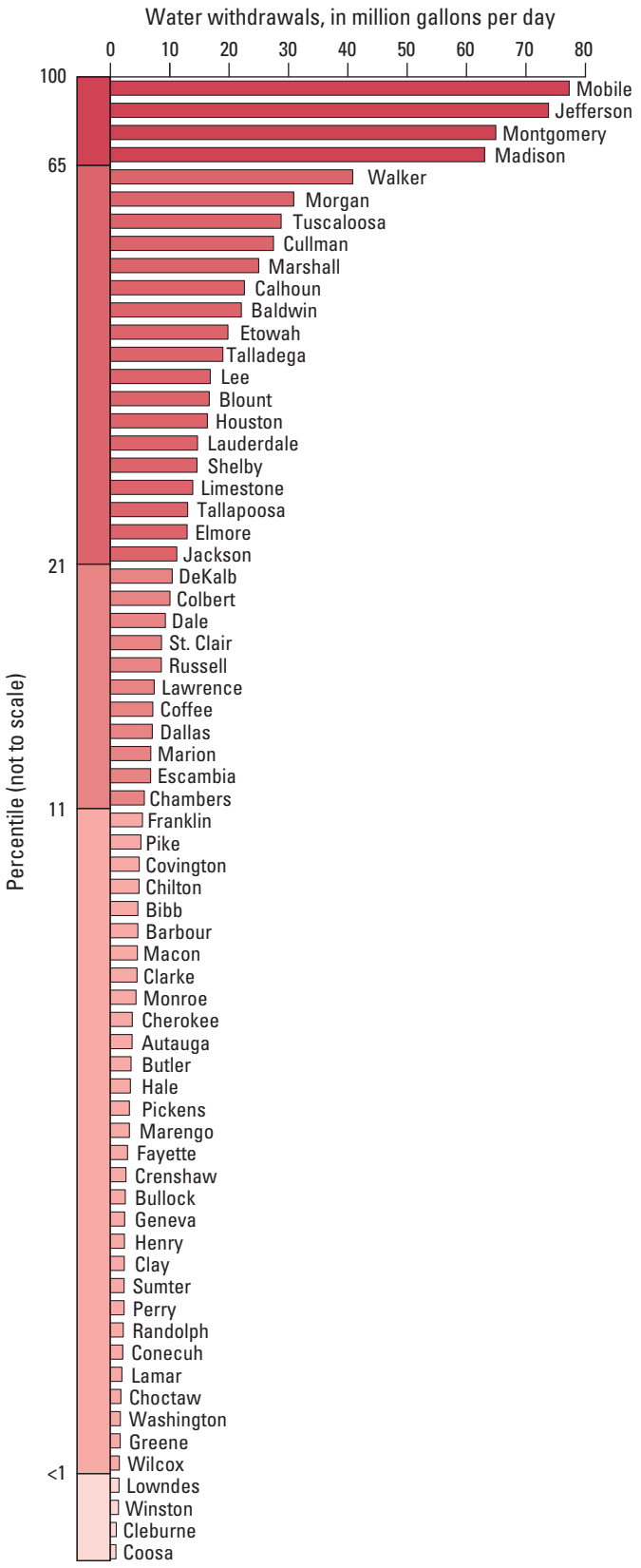


Figure 17. Public-supply water withdrawals by rank and percentile for counties in Alabama, 2005.

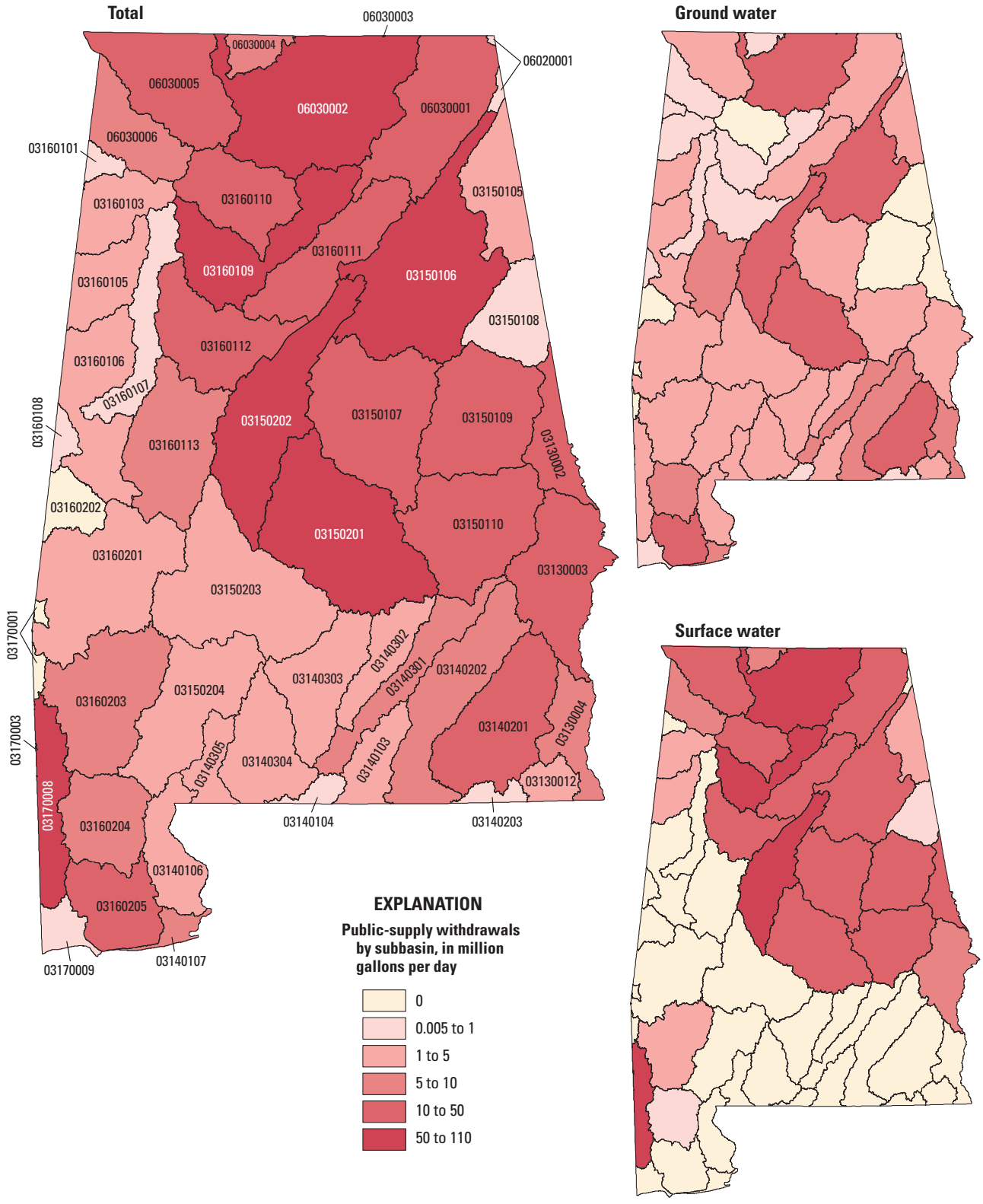
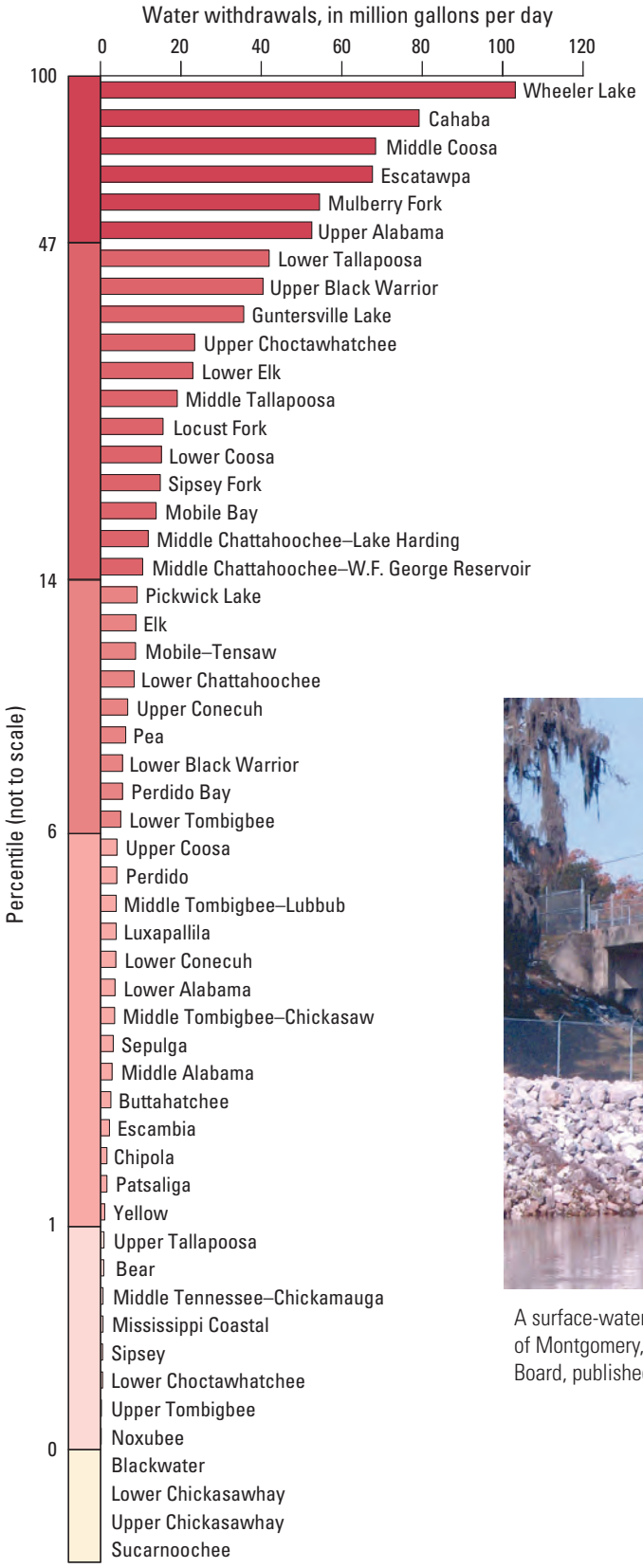


Figure 18. Public-supply withdrawals by source and hydrologic subbasin in Alabama, 2005.



A surface-water intake on the Tallapoosa River is one of several sources of water for the City of Montgomery, Alabama. (Photo courtesy of Montgomery Water Works and Sanitary Sewer Board, published with permission.)

Figure 19. Public-supply water withdrawals by rank and percentile for subbasins in Alabama, 2005.

Residential

Residential water refers to the water that is used for all indoor household purposes, such as drinking, preparing food, bathing, washing clothes and dishes, and flushing toilets, and outdoor purposes, such as watering lawns and gardens. Residential water use is defined in this report as public-supplied residential deliveries plus self-supplied residential withdrawals.

Public-supplied residential deliveries and self-supplied residential water withdrawals were 365 Mgal/d in 2005 (table 13). Public suppliers delivered 89 percent, or 326 Mgal/d, of residential water. The remaining 39 Mgal/d of residential water was self-supplied from ground water. Self-supplied residential withdrawals were less than 1 percent of the total water withdrawals and about 2 percent of the withdrawals for all categories except thermoelectric power (table 5). About 11 percent of the population (or 521,338 people) relied on private wells for their drinking water.

The geographic distribution of ground-water withdrawals for self-supplied residential use, self-supplied residential population as a percentage of the total State population, and self-supplied residential population by county is shown in figures 20 and 21, respectively. The largest aggregated self-supplied residential withdrawals were in Mobile and Baldwin Counties. These two counties represented about 14 percent of the total self-supplied residential withdrawals and 12 percent of the self-supplied residential population. Although Mobile County had the largest number of people (37,249) with private wells, that number represented only about 9 percent of the population of that county. Conversely, although a much smaller population in Choctaw County relied on private wells (8,730 people), this number represented about 59 percent of the county population—a much higher percentage than Mobile County.

Residential per capita use—public-supplied residential deliveries plus self-supplied residential withdrawals divided by the total population—was 80 gal/d. Public-supplied residential per capita use—public-supplied residential deliveries divided by population served—was 81 gal/d and ranged from 49 gal/d for Clay County to 129 gal/d for Tuscaloosa County. Counties with small gallons per capita per day uses, such as Clay, Coosa, and Winston Counties, tended to be predominantly rural. Counties such as Tuscaloosa and Madison with greater gallons per capita per day use tended to be associated with urban and suburban areas. Self-supplied residential per capita use—self-supplied residential withdrawals divided by self-supplied residential population was—75 gal/d.

The sources of information and methodology for estimating public-supply residential deliveries, population served by public suppliers, self-supplied residential withdrawals, and self-supplied population are detailed in the "Public supply and Residential Water Use" and "Population Served and Self-Supplied Residential Population" sections in the "Data Compilation, Sources of Information, and Methodology" section of this report.

Public suppliers and private wells provide plentiful water to the residents and visitors of Alabama. (Photo courtesy of Glenn Phillips, published with permission.)

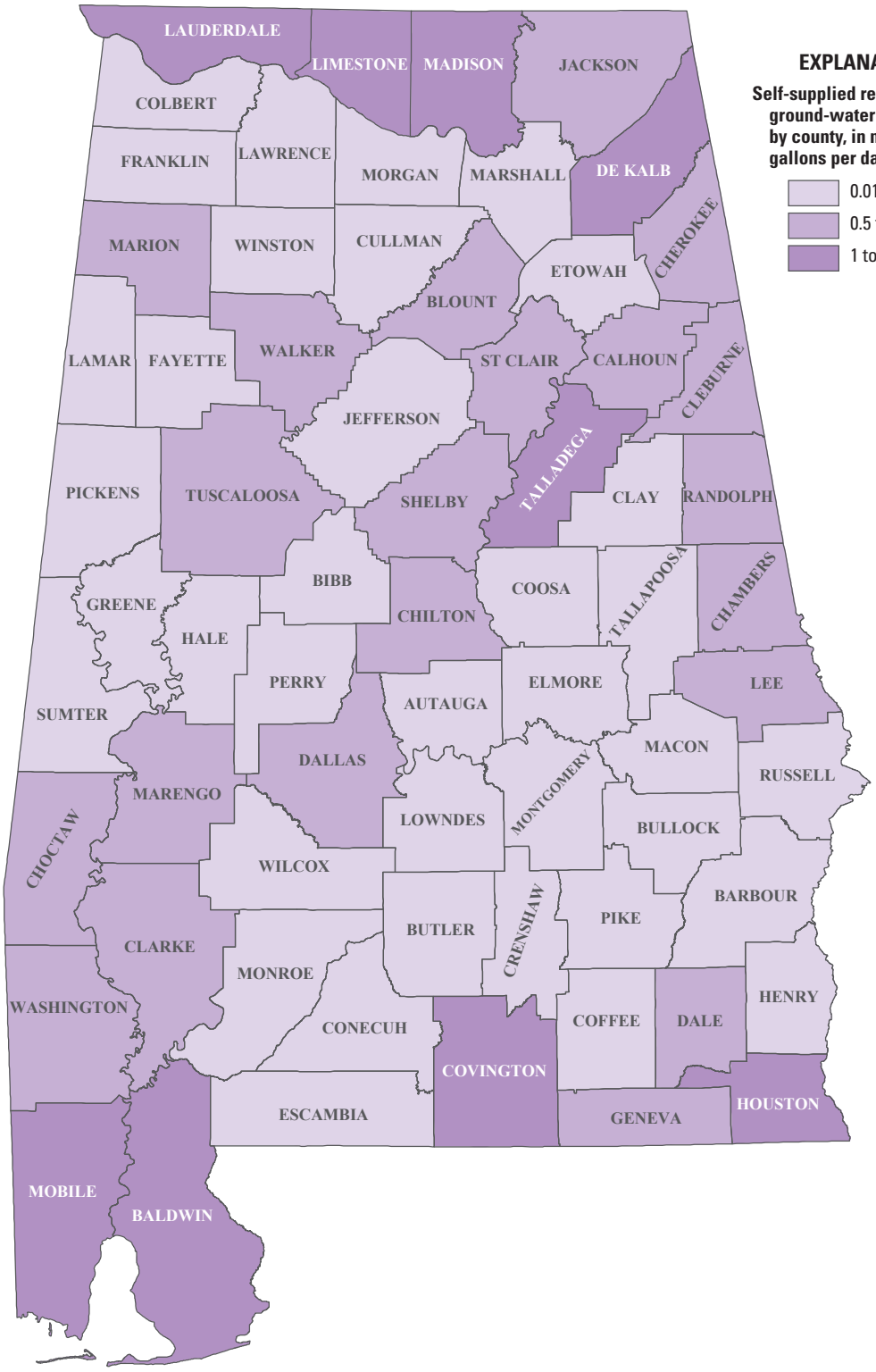


Figure 20. Self-supplied residential ground-water withdrawals by county in Alabama, 2005.

Table 13. Residential freshwater use by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Population			
	Total	Served by public supply	Self-supplied	Self-supplied, in percent
Autauga	48,612	42,956	5,656	12
Baldwin	162,586	136,892	25,694	16
Barbour	28,414	26,447	1,967	7
Bibb	21,516	19,979	1,537	7
Blount	55,725	43,224	12,501	22
Bullock	11,055	10,307	748	7
Butler	20,766	17,445	3,321	16
Calhoun	112,141	106,294	5,847	5
Chambers	35,460	26,817	8,643	24
Cherokee	24,522	16,866	7,656	31
Chilton	41,744	32,837	8,907	21
Choctaw	14,807	6,077	8,730	59
Clarke	27,269	19,967	7,302	27
Clay	13,964	6,361	7,603	54
Cleburne	14,460	6,343	8,117	56
Coffee	45,567	37,584	7,983	18
Colbert	54,660	50,704	3,956	7
Conecuh	13,257	7,560	5,697	43
Coosa	11,162	6,435	4,727	42
Covington	37,003	23,627	13,376	36
Crenshaw	13,727	10,422	3,305	24
Cullman	79,886	77,321	2,565	3
Dale	48,748	39,923	8,825	18
Dallas	44,366	34,829	9,537	21
De Kalb	67,271	48,950	18,321	27
Elmore	73,937	68,719	5,218	7
Escambia	38,082	31,176	6,906	18
Etowah	103,189	99,232	3,957	4
Fayette	18,228	10,811	7,417	41
Franklin	30,737	24,248	6,489	21
Geneva	25,735	14,941	10,794	42
Greene	9,661	6,777	2,884	30
Hale	18,316	14,937	3,379	18
Henry	16,610	12,845	3,765	23
Houston	94,249	76,104	18,145	19

Table 13. Residential freshwater use by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Residential water use, in million gallons per day			Residential per capita use, in gallons per day		
	Ground-water withdrawals	Residential deliveries	Combined	Self-supplied	Public-supplied	Combined
Autauga	0.32	3.18	3.50	57	74	72
Baldwin	2.48	11.61	14.09	97	85	87
Barbour	0.11	1.76	1.87	56	67	66
Bibb	0.13	2.06	2.19	85	103	102
Blount	0.77	3.76	4.53	62	87	81
Bullock	0.06	0.71	0.77	80	69	70
Butler	0.19	1.52	1.71	57	87	82
Calhoun	0.83	10.89	11.72	142	102	105
Chambers	0.58	2.50	3.08	67	93	87
Cherokee	0.70	1.52	2.22	91	90	91
Chilton	0.58	2.12	2.70	65	65	65
Choctaw	0.63	0.45	1.08	72	74	73
Clarke	0.56	1.48	2.04	77	74	75
Clay	0.39	0.31	0.70	51	49	50
Cleburne	0.72	0.54	1.26	89	85	87
Coffee	0.38	2.72	3.10	48	72	68
Colbert	0.31	3.31	3.62	78	65	66
Conecuh	0.40	0.72	1.12	70	95	84
Coosa	0.28	0.33	0.61	59	51	55
Covington	1.04	1.87	2.91	78	79	79
Crenshaw	0.12	0.78	0.90	36	75	66
Cullman	0.21	5.97	6.18	82	77	77
Dale	0.57	3.17	3.74	65	79	77
Dallas	0.75	2.66	3.41	79	76	77
De Kalb	1.46	4.93	6.39	80	101	95
Elmore	0.38	5.27	5.65	73	77	76
Escambia	0.47	2.32	2.79	68	74	73
Etowah	0.32	8.52	8.84	81	86	86
Fayette	0.42	0.76	1.18	57	70	65
Franklin	0.33	1.54	1.87	51	64	61
Geneva	0.58	1.13	1.71	54	76	66
Greene	0.18	0.41	0.59	62	60	61
Hale	0.22	0.92	1.14	65	62	62
Henry	0.25	1.19	1.44	66	93	87
Houston	1.49	5.82	7.31	82	76	78

Table 13. Residential freshwater use by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Population			
	Total	Served by public supply	Self-supplied	Self-supplied, in percent
Jackson	53,650	39,924	13,726	26
Jefferson	657,229	651,192	6,037	1
Lamar	14,962	9,601	5,361	36
Lauderdale	87,691	73,713	13,978	16
Lawrence	34,605	29,078	5,527	16
Lee	123,254	115,001	8,253	7
Limestone	70,469	59,659	10,810	15
Lowndes	13,076	12,214	862	7
Macon	22,810	19,820	2,990	13
Madison	298,192	288,901	9,291	3
Marengo	21,879	13,071	8,808	40
Marion	30,154	20,465	9,689	32
Marshall	85,634	80,071	5,563	6
Mobile	401,427	364,178	37,249	9
Monroe	23,733	17,666	6,067	26
Montgomery	221,619	217,044	4,575	2
Morgan	113,740	109,912	3,828	3
Perry	11,371	6,840	4,531	40
Pickens	20,178	15,797	4,381	22
Pike	29,639	26,053	3,586	12
Randolph	22,717	12,026	10,691	47
Russell	49,326	45,389	3,937	8
St. Clair	72,330	64,529	7,801	11
Shelby	171,465	165,447	6,018	4
Sumter	13,819	12,629	1,190	9
Talladega	80,457	60,505	19,952	25
Tallapoosa	40,717	34,765	5,952	15
Tuscaloosa	168,908	158,950	9,958	6
Walker	70,117	62,174	7,943	11
Washington	17,773	10,045	7,728	43
Wilcox	12,937	7,985	4,952	38
Winston	24,498	15,869	8,629	35
Total	**4,557,808**	**4,036,470**	**521,338**	
Percent		**89**	**11**	
Average				

Table 13. Residential freshwater use by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Residential water use, in million gallons per day			Residential per capita use, in gallons per day		
	Ground-water withdrawals	Residential deliveries	Combined	Self-supplied	Public-supplied	Combined
Jackson	0.91	2.69	3.60	66	67	67
Jefferson	0.39	47.27	47.66	65	73	73
Lamar	0.3	0.67	0.97	56	70	65
Lauderdale	1.3	6.01	7.31	93	82	83
Lawrence	0.49	2.37	2.86	89	82	83
Lee	0.70	8.84	9.54	85	77	77
Limestone	1.05	4.25	5.30	97	71	75
Lowndes	0.06	0.76	0.82	70	62	63
Macon	0.2	1.35	1.55	67	68	68
Madison	1.12	30.91	32.03	121	107	107
Marengo	0.55	0.83	1.38	62	63	63
Marion	0.92	1.73	2.65	95	85	88
Marshall	0.38	5.38	5.76	68	67	67
Mobile	3.01	25.17	28.18	81	69	70
Monroe	0.31	1.13	1.44	51	64	61
Montgomery	0.36	17.29	17.65	79	80	80
Morgan	0.30	9.09	9.39	78	83	83
Perry	0.32	0.42	0.74	71	61	65
Pickens	0.48	1.51	1.99	110	96	99
Pike	0.42	2.76	3.18	117	106	107
Randolph	0.53	1.01	1.54	50	84	68
Russell	0.26	2.95	3.21	66	65	65
St. Clair	0.72	4.66	5.38	92	72	74
Shelby	0.52	13.60	14.12	86	82	82
Sumter	0.10	1.00	1.10	84	79	80
Talladega	1.26	3.56	4.82	63	59	60
Tallapoosa	0.28	2.86	3.14	47	82	77
Tuscaloosa	0.84	20.54	21.38	84	129	127
Walker	0.54	4.36	4.90	68	70	70
Washington	0.51	0.67	1.18	66	67	66
Wilcox	0.34	0.68	1.02	69	85	79
Winston	0.44	0.87	1.31	51	55	53
Total	**39.12**	**325.94**	**365.06**			
Percent Average				**75**	**81**	**80**

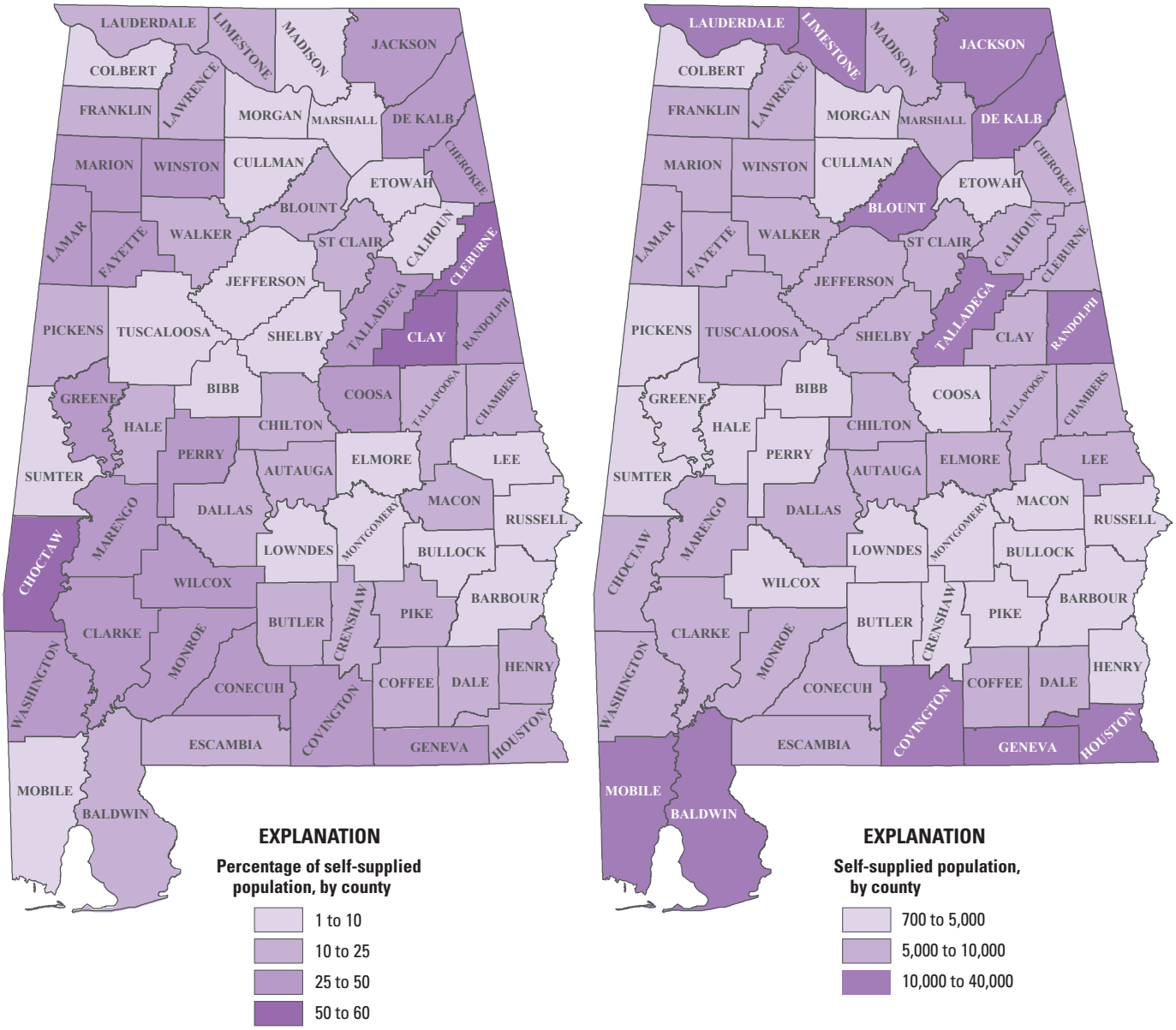


Figure 21. Self-supplied residential population as a percentage of total population and self-supplied residential population by county in Alabama, 2005.

Irrigation

Irrigation water refers to water that is applied by an irrigation system to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands such as parks and golf courses. Irrigation includes water that is applied for pre-irrigation, frost protection, chemical application, weed control, field preparation, crop cooling, harvesting, dust suppression, the leaching of salts from the root zone, and water lost in conveyance. **Conveyance loss** was not reported for 2005. Although annual water-use data are expressed in terms of million gallons per day, irrigation water is applied, generally, only during part of each year and at variable rates; therefore, the actual rate of application during the growing season would be more than the daily rate expressed as million gallons per day.

Irrigation withdrawals and irrigated acres by irrigation system by county and subbasin are shown, respectively in tables 14 and 15. For 2005, total withdrawals were 161 Mgal/d. Irrigation withdrawals were about 2 percent of total withdrawals and about 10 percent of total withdrawals for all categories excluding thermoelectric power (table 5). Of the total irrigation withdrawals, 54 percent, or 87 Mgal/d, was from surface water, and the remaining 46 percent, or 74 Mgal/d, was from ground water (fig. 22). Consumptive use was estimated to be 100 percent. About 135,800 acres were irrigated in 2005. Of this total acreage, about 97 percent, or 132,380 acres, was irrigated with sprinkler irrigation systems; more than 2 percent, or 3,250 acres, was irrigated with microirrigation systems; and less than 1 percent, or 170 acres, was irrigated with surface irrigation systems. Average application rates were calculated by dividing total irrigation withdrawals—determined separately for crops, (crops, nursery stock, and sod) and golf courses—for each county by the number of acres. The statewide average application rate was 1.33 acre-feet per acre per year. The highest application rate was for nursery stock, 3.74 acre-feet per acre per year.

The geographic distribution of total, ground-water, and surface-water withdrawals for irrigation by county and by hydrologic subbasin is shown respectively in figures 23 and 24. Nearly half of the counties (32 counties) withdrew less than 1 Mgal/d for irrigation. Baldwin County withdrew 27 percent (44 Mgal/d) of the irrigation water and most of the water (37 Mgal/d) was from ground-water sources (table 14). Six counties (total 79 Mgal/d) each withdrew more than 5 Mgal/d, and as a group, withdrew nearly half of the irrigation total for the State. The Perdido subbasin (03140106, in the Choctawhatchee–Escambia subregion), which includes Baldwin County, withdrew the most water for irrigation—about 9 percent of the total. Five subbasins, each withdrawing 10.0 Mgal/d or more, accounted for about 37 percent of the estimated withdrawals (table 15).

About 33 percent (43,970 acres) of the total irrigated acreage (135,800 acres), and about 37 percent of total crop irrigated acreage (40,280 acres of the 109,080 acres) were in Baldwin (primarily nursery stock and sod), Houston (primarily cotton, peanuts, and vegetables), Limestone (primarily corn, cotton, nursery stock, and sod), and Geneva (primarily corn, cotton, and peanuts) Counties (U.S. Department of Agriculture, National Agricultural Statistics Service, 2004a; table 16). One half (median) of the counties statewide irrigated 640 acres or less. The range in acreage was from 80 acres in Coosa County to 16,400 acres in Baldwin County in 2005.

Nursery stock and sod are important to the agricultural economy of the State and in 2005 were the top commodity for cash receipts for crops and ranked third for overall farm commodities (U.S. Department of Agriculture, National Agricultural Statistics Service, 2006a). In 2005, nursery stock and sod accounted for 29 percent (31,633 acres) of the crop acreage statewide. About 39 percent of that acreage was in Baldwin County. In comparison to most crops in the State, all of the commercial nursery and sod and golf course acreages were irrigated; these businesses were located in nearly every county in Alabama.

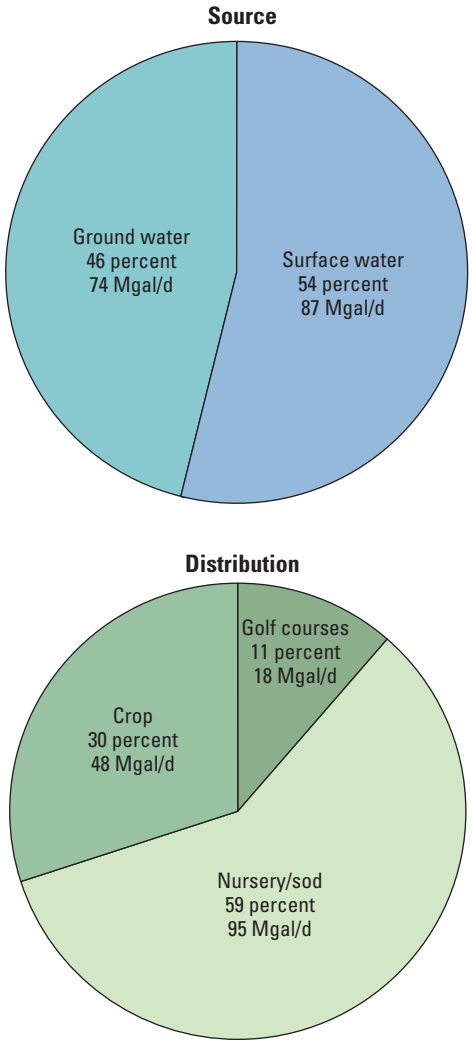


Figure 22. Source and distribution of water for irrigation use in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

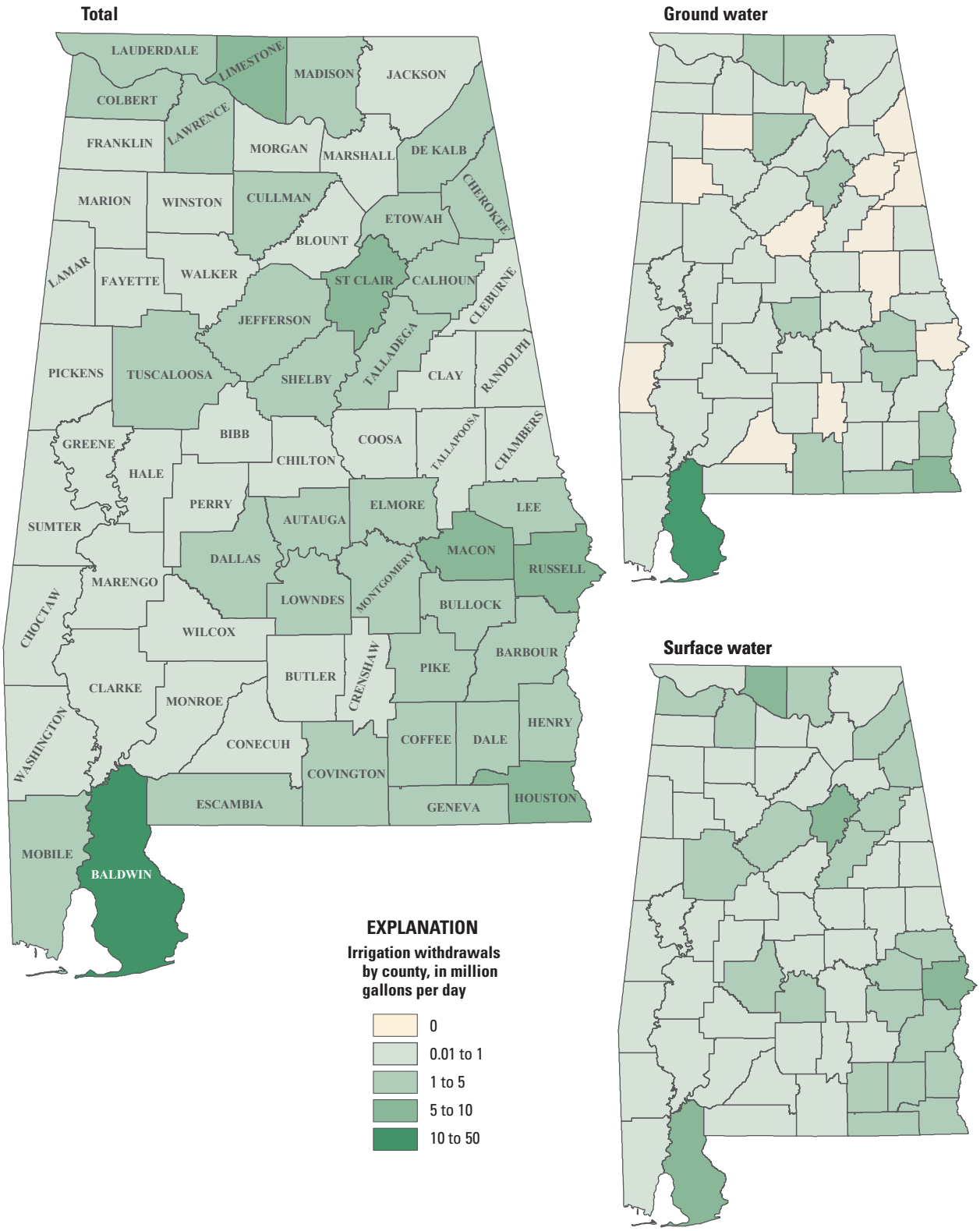


Figure 23. Irrigation withdrawals by source and county in Alabama, 2005.

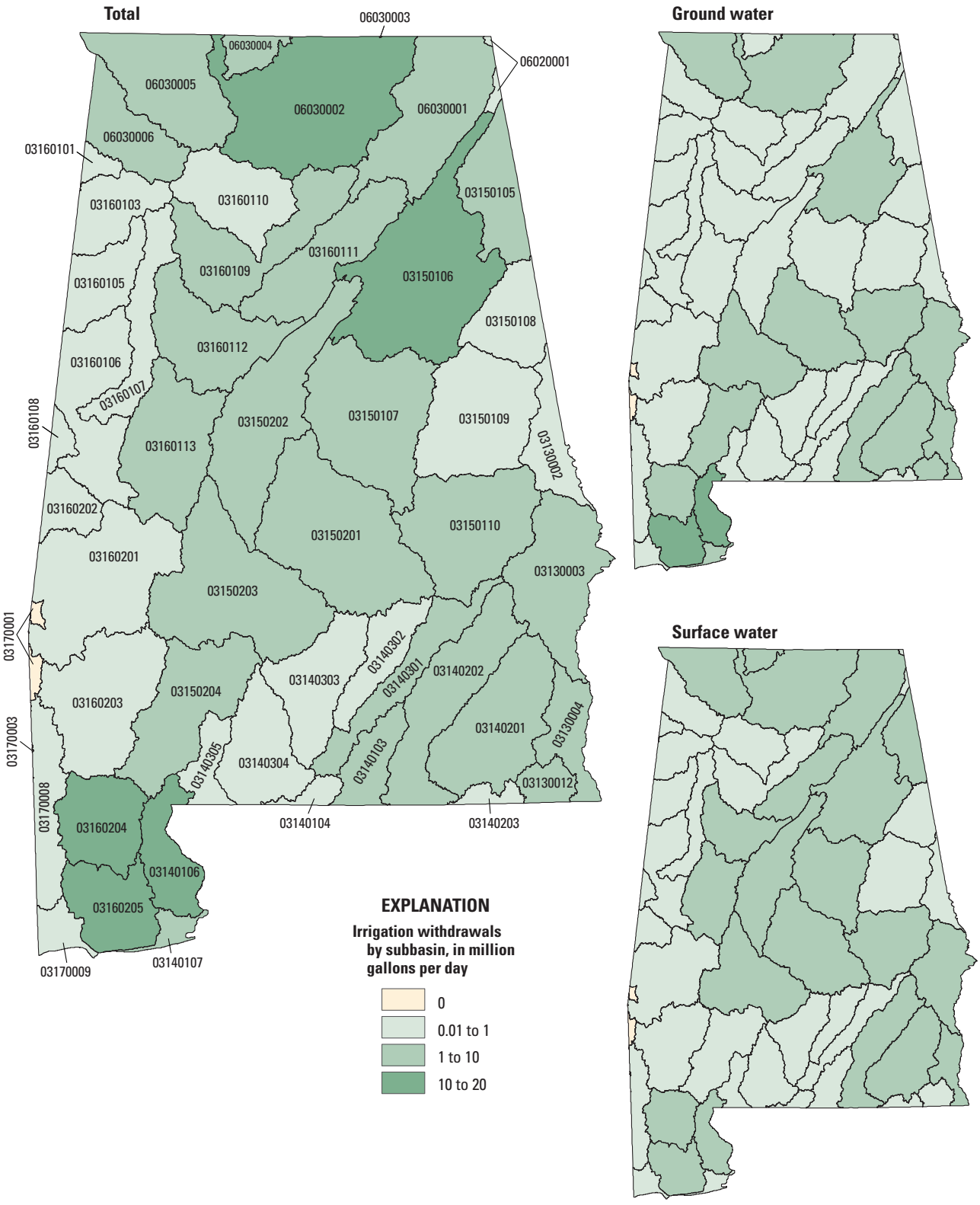


Figure 24. Irrigation withdrawals by source and subbasin in Alabama, 2005 .

Table 14. Total irrigation freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) or estimated acreage because of rounding]

County	Irrigated land by type of irrigation, in thousand acres				Withdrawals by source, in million gallons per day			Application rate, in acre-feet per acre
	Sprinkler	Micro-irrigation	Surface	Total	Ground water	Surface water	Total	
Autauga	1.45	0.04	0.00	1.49	2.40	0.38	2.78	2.09
Baldwin	16.07	0.36	0.01	16.44	36.77	7.05	43.82	2.99
Barbour	5.39	0.01	0.00	5.40	0.90	2.69	3.59	0.75
Bibb	0.12	0.02	0.00	0.14	0.03	0.06	0.09	0.72
Blount	0.40	0.17	0.02	0.59	0.30	0.46	0.76	1.44
Bullock	0.92	0.01	0.00	0.93	1.53	1.59	3.12	3.76
Butler	0.51	0.00	0.00	0.51	0.04	0.50	0.54	1.19
Calhoun	2.45	0.01	0.00	2.46	0.00	4.28	4.28	1.95
Chambers	0.19	0.04	0.00	0.23	0.16	0.06	0.22	1.07
Cherokee	2.21	0.01	0.00	2.22	0.00	2.62	2.62	1.32
Chilton	0.48	0.21	0.00	0.69	0.56	0.08	0.64	1.04
Choctaw	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.67
Clarke	0.14	0.00	0.00	0.14	0.02	0.06	0.08	0.64
Clay	0.22	0.00	0.00	0.22	0.00	0.11	0.11	0.56
Cleburne	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.67
Coffee	5.71	0.05	0.00	5.76	0.65	2.81	3.46	0.67
Colbert	2.64	0.00	0.00	2.64	0.94	1.40	2.34	0.99
Conecuh	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.67
Coosa	0.07	0.01	0.00	0.08	0.01	0.02	0.03	0.42
Covington	1.54	0.05	0.00	1.59	2.13	0.44	2.57	1.81
Crenshaw	0.63	0.00	0.00	0.63	0.00	0.38	0.38	0.68
Cullman	0.70	0.04	0.00	0.74	1.11	0.15	1.26	1.91
Dale	4.19	0.04	0.01	4.24	0.41	2.04	2.45	0.65
Dallas	2.06	0.01	0.00	2.07	0.82	1.24	2.06	1.12
De Kalb	1.22	0.01	0.00	1.23	0.83	1.46	2.29	2.09
Elmore	1.34	0.01	0.00	1.35	0.33	0.94	1.27	1.05
Escambia	1.39	0.02	0.00	1.41	0.56	0.86	1.42	1.13
Etowah	1.15	0.04	0.00	1.19	0.10	0.94	1.04	0.98
Fayette	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.67
Franklin	0.56	0.00	0.00	0.56	0.28	0.22	0.50	1.00
Geneva	6.90	0.10	0.01	7.01	1.71	2.22	3.93	0.63
Greene	0.13	0.00	0.00	0.13	0.03	0.17	0.20	1.72
Hale	0.11	0.00	0.00	0.11	0.02	0.08	0.10	1.02
Henry	3.81	0.02	0.00	3.83	1.37	1.57	2.94	0.86
Houston	10.75	0.94	0.09	11.78	6.36	2.23	8.59	0.82

Table 14. Total irrigation freshwater withdrawals by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) or estimated acreage because of rounding]

County	Irrigated land by type of irrigation, in thousand acres				Withdrawals by source, in million gallons per day			Application rate, in acre-feet per acre
	Sprinkler	Micro-irrigation	Surface	Total	Ground water	Surface water	Total	
Jackson	0.95	0.00	0.00	0.95	0.04	0.67	0.71	0.84
Jefferson	3.66	0.00	0.00	3.66	0.09	2.73	2.82	0.86
Lamar	0.63	0.00	0.00	0.63	0.01	0.27	0.28	0.50
Lauderdale	1.15	0.01	0.00	1.16	0.74	0.43	1.17	1.13
Lawrence	2.38	0.00	0.00	2.38	0.37	1.42	1.79	0.84
Lee	1.98	0.00	0.00	1.98	0.36	1.24	1.60	0.91
Limestone	8.66	0.08	0.00	8.74	2.10	6.16	8.26	1.06
Lowndes	1.63	0.37	0.00	2.00	0.58	3.26	3.84	2.15
Macon	3.23	0.09	0.00	3.32	2.97	2.34	5.31	1.79
Madison	5.55	0.01	0.00	5.56	1.61	3.30	4.91	0.99
Marengo	0.28	0.00	0.00	0.28	0.01	0.14	0.15	0.60
Marion	0.14	0.00	0.00	0.14	0.02	0.06	0.08	0.64
Marshall	1.28	0.00	0.00	1.28	0.00	0.68	0.68	0.60
Mobile	4.06	0.11	0.00	4.17	0.14	0.96	1.10	0.30
Monroe	0.65	0.04	0.00	0.69	0.40	0.06	0.46	0.75
Montgomery	1.60	0.00	0.00	1.60	0.35	0.82	1.17	0.82
Morgan	1.35	0.04	0.00	1.39	0.12	0.74	0.86	0.69
Perry	0.13	0.00	0.00	0.13	0.03	0.02	0.05	0.43
Pickens	0.86	0.00	0.00	0.86	0.32	0.41	0.73	0.95
Pike	2.41	0.01	0.00	2.42	0.46	0.88	1.34	0.62
Randolph	0.18	0.00	0.00	0.18	0.02	0.06	0.08	0.50
Russell	2.66	0.02	0.00	2.68	0.00	6.05	6.05	2.53
St. Clair	2.60	0.15	0.02	2.77	0.00	7.37	7.37	2.98
Shelby	1.33	0.03	0.00	1.36	1.94	0.25	2.19	1.81
Sumter	0.21	0.00	0.00	0.21	0.02	0.08	0.10	0.53
Talladega	2.42	0.00	0.00	2.42	0.17	2.36	2.53	1.17
Tallapoosa	0.62	0.00	0.00	0.62	0.00	0.39	0.39	0.71
Tuscaloosa	2.88	0.01	0.00	2.89	0.38	4.06	4.44	1.72
Walker	0.69	0.06	0.01	0.76	0.23	0.26	0.49	0.72
Washington	0.10	0.00	0.00	0.10	0.03	0.08	0.11	1.23
Wilcox	0.16	0.00	0.00	0.16	0.34	0.02	0.36	2.52
Winston	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.67
Total	**132.38**	**3.25**	**0.17**	**135.80**	**74.22**	**86.98**	**161.20**	
Average								**1.33**

Table 15. Total irrigation freshwater withdrawals by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Apalachicola			
03130002	0.19	0.39	0.58
03130003	1.03	8.08	9.11
03130004	3.40	1.87	5.27
03130012	2.76	0.99	3.75
Subtotal	*7.38*	*11.33*	*18.71*
Choctawhatchee–Escambia			
03140103	0.99	0.26	1.25
03140104	0.18	0.09	0.27
03140106	11.90	2.33	14.23
03140107	3.10	0.59	3.69
03140201	3.08	5.47	8.55
03140202	2.01	4.04	6.05
03140203	0.41	0.50	0.91
03140301	0.98	0.91	1.89
03140302	0.21	0.43	0.64
03140303	0.20	0.56	0.76
03140304	0.31	0.50	0.81
03140305	0.16	0.21	0.37
Subtotal	*23.53*	*15.89*	*39.42*
Alabama			
03150105	0.15	3.10	3.25
03150106	2.14	7.91	10.05
03150107	0.50	5.10	5.60
03150108	0.37	0.15	0.52
03150109	0.12	0.52	0.64
03150110	3.85	4.22	8.07
03150201	3.52	3.84	7.36
03150202	0.42	3.49	3.91
03150203	1.00	1.73	2.73
03150204	3.13	0.64	3.77
Subtotal	*15.20*	*30.70*	*45.90*
Mobile–Tombigbee			
03160101	0.03	0.03	0.06
03160103	0.01	0.13	0.14
03160105	0.02	0.23	0.25
Mobile–Tombigbee (Continued)			
03160106	0.28	0.41	0.69
03160107	0.11	0.68	0.79
03160108	0.01	0.02	0.03
03160109	0.84	0.46	1.30
03160110	0.55	0.38	0.93
03160111	0.29	1.91	2.20
03160112	0.24	2.97	3.21
03160113	0.15	1.31	1.46
03160201	0.02	0.20	0.22
03160202	0.01	0.03	0.04
03160203	0.16	0.13	0.29
03160204	8.35	1.92	10.27
03160205	10.32	2.18	12.50
Subtotal	*21.39*	*12.99*	*34.38*
Pascagoula			
03170002	0.00	0.00	0.00
03170003	0.00	0.00	0.00
03170008	0.05	0.29	0.34
03170009	0.02	0.15	0.17
Subtotal	*0.07*	*0.44*	*0.51*
Middle Tennessee–Hiwassee			
06020001	0.05	0.09	0.14
Subtotal	*0.05*	*0.09*	*0.14*
Middle Tennessee–Elk			
06030001	0.50	1.72	2.22
06030002	3.45	9.17	12.62
06030003	0.00	0.00	0.00
06030004	0.73	1.99	2.72
06030005	1.44	1.98	3.42
06030006	0.53	0.64	1.17
Subtotal	*6.65*	*15.50*	*22.15*
Total	**74.27**	**86.94**	**161.21**

A series of stepped, gated, and spring-fed and rain-fed ponds supply irrigation water to a nursery in Cleburne County, Alabama. In 2005, nursery stock and sod sales were higher than for any other crop in Alabama. (Photo courtesy of Michael J. Harper, Alabama Office of Water Resources, published with permission.)

Sprinkler irrigation systems, like this lateral move system, provide supplementary water for crops such as the cotton grown in the Tennessee River watershed. (Photo courtesy of Larry Curtis, Auburn University, published with permission.)

Golf course ponds collect rainfall and runoff. In addition to enhancing the beauty of the course and adding challenge to the game, water from ponds similar to the one pictured is used to maintain tees, fairways, greens, and landscaping. Shown is Craft Farms Golf Resort, Cypress Bend Golf Course, Foley, Alabama. (Photo courtesy of Alabama Bureau of Tourism & Travel, published with permission.)

Table 16. Crop and golf course irrigated land and freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) or estimated acreage because of rounding]

County	Crop							Golf course	
	Irrigated land by type of irrigation, in thousand acres				Withdrawals by source, in million gallons per day			Irrigated land, in thousand acres	Withdrawals, (in million gallons per day)
	Sprinkler	Micro-irrigation	Surface	Total	Ground water	Surface water	Total	Sprinkler irrigation systems	Surface water
Autauga	1.02	0.04	0.00	1.06	2.40	0.00	2.40	0.43	0.38
Baldwin	13.59	0.36	0.01	13.96	36.77	5.15	41.92	2.48	1.90
Barbour	5.09	0.01	0.00	5.10	0.90	2.50	3.40	0.30	0.19
Bibb	0.02	0.02	0.00	0.04	0.03	0.00	0.03	0.10	0.06
Blount	0.40	0.17	0.02	0.59	0.30	0.27	0.57	0.00	0.19
Bullock	0.92	0.01	0.00	0.93	1.53	1.53	3.06	0.00	0.06
Butler	0.02	0.00	0.00	0.02	0.04	0.01	0.05	0.49	0.49
Calhoun	1.73	0.01	0.00	1.74	0.00	3.83	3.83	0.72	0.45
Chambers	0.09	0.04	0.00	0.13	0.16	0.00	0.16	0.10	0.06
Cherokee	2.11	0.01	0.00	2.12	0.00	2.56	2.56	0.10	0.06
Chilton	0.32	0.21	0.00	0.53	0.56	0.00	0.56	0.16	0.08
Choctaw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06
Clarke	0.04	0.00	0.00	0.04	0.02	0.00	0.02	0.10	0.06
Clay	0.16	0.00	0.00	0.16	0.00	0.09	0.09	0.06	0.02
Cleburne	0.10	0.00	0.00	0.10	0.00	0.06	0.06	0.00	0.00
Coffee	5.41	0.05	0.00	5.46	0.65	2.62	3.27	0.30	0.19
Colbert	2.05	0.00	0.00	2.05	0.94	0.94	1.88	0.59	0.46
Conecuh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06
Coosa	0.01	0.01	0.00	0.02	0.01	0.00	0.01	0.06	0.02
Covington	1.28	0.05	0.00	1.33	2.13	0.30	2.43	0.26	0.14
Crenshaw	0.63	0.00	0.00	0.63	0.00	0.38	0.38	0.00	0.00
Cullman	0.49	0.04	0.00	0.53	1.11	0.06	1.17	0.21	0.09
Dale	3.49	0.04	0.01	3.54	0.41	1.60	2.01	0.70	0.44
Dallas	1.80	0.01	0.00	1.81	0.82	1.10	1.92	0.26	0.14
De Kalb	0.91	0.01	0.00	0.92	0.83	1.30	2.13	0.31	0.16
Elmore	0.98	0.01	0.00	0.99	0.33	0.74	1.07	0.36	0.20
Escambia	1.19	0.02	0.00	1.21	0.56	0.73	1.29	0.20	0.13
Etowah	0.24	0.04	0.00	0.28	0.10	0.19	0.29	0.91	0.75
Fayette	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06
Franklin	0.40	0.00	0.00	0.40	0.28	0.14	0.42	0.16	0.08
Geneva	6.84	0.10	0.01	6.95	1.71	2.20	3.91	0.06	0.02
Greene	0.13	0.00	0.00	0.13	0.03	0.11	0.14	0.00	0.06
Hale	0.01	0.00	0.00	0.01	0.02	0.02	0.04	0.10	0.06
Henry	3.71	0.02	0.00	3.73	1.37	1.51	2.88	0.10	0.06
Houston	10.01	0.94	0.09	11.04	6.36	1.56	7.92	0.74	0.67

Table 16. Crop and golf course irrigated land and freshwater withdrawals by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) or estimated acreage because of rounding]

County	Crop							Golf course	
	Irrigated land by type of irrigation, in thousand acres				Withdrawals by source, in million gallons per day			Irrigated land, in thousand acres	Withdrawals, (in million gallons per day)
	Sprinkler	Micro-irrigation	Surface	Total	Ground water	Surface water	Total	Sprinkler irrigation systems	Surface water
Jackson	0.44	0.00	0.00	0.44	0.04	0.34	0.38	0.51	0.33
Jefferson	0.03	0.00	0.00	0.03	0.09	0.01	0.10	3.63	2.72
Lamar	0.53	0.00	0.00	0.53	0.01	0.21	0.22	0.10	0.06
Lauderdale	0.63	0.01	0.00	0.64	0.74	0.10	0.84	0.52	0.33
Lawrence	2.22	0.00	0.00	2.22	0.37	1.34	1.71	0.16	0.08
Lee	1.25	0.00	0.00	1.25	0.36	0.65	1.01	0.73	0.59
Limestone	8.25	0.08	0.00	8.33	2.10	5.94	8.04	0.41	0.22
Lowndes	1.63	0.37	0.00	2.00	0.58	3.26	3.84	0.00	0.00
Macon	3.23	0.09	0.00	3.32	2.97	2.34	5.31	0.00	0.00
Madison	4.02	0.01	0.00	4.03	1.61	2.21	3.82	1.53	1.09
Marengo	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.26	0.14
Marion	0.04	0.00	0.00	0.04	0.02	0.00	0.02	0.10	0.06
Marshall	0.28	0.00	0.00	0.28	0.00	0.05	0.05	1.00	0.63
Mobile	2.82	0.11	0.00	2.93	0.14	0.05	0.19	1.24	0.91
Monroe	0.55	0.04	0.00	0.59	0.40	0.00	0.40	0.10	0.06
Montgomery	0.52	0.00	0.00	0.52	0.35	0.16	0.51	1.08	0.66
Morgan	0.75	0.04	0.00	0.79	0.12	0.36	0.48	0.60	0.38
Perry	0.07	0.00	0.00	0.07	0.03	0.00	0.03	0.06	0.02
Pickens	0.76	0.00	0.00	0.76	0.32	0.35	0.67	0.10	0.06
Pike	2.15	0.01	0.00	2.16	0.46	0.74	1.20	0.26	0.14
Randolph	0.12	0.00	0.00	0.12	0.02	0.04	0.06	0.06	0.02
Russell	2.40	0.02	0.00	2.42	0.00	5.91	5.91	0.26	0.14
St. Clair	2.40	0.15	0.02	2.57	0.00	7.24	7.24	0.20	0.13
Shelby	0.83	0.03	0.00	0.86	1.94	0.00	1.94	0.50	0.25
Sumter	0.05	0.00	0.00	0.05	0.02	0.00	0.02	0.16	0.08
Talladega	1.71	0.00	0.00	1.71	0.17	1.88	2.05	0.71	0.48
Tallapoosa	0.42	0.00	0.00	0.42	0.00	0.26	0.26	0.20	0.13
Tuscaloosa	2.10	0.01	0.00	2.11	0.38	3.52	3.90	0.78	0.54
Walker	0.11	0.06	0.01	0.18	0.23	0.00	0.23	0.58	0.26
Washington	0.04	0.00	0.00	0.04	0.03	0.06	0.09	0.06	0.02
Wilcox	0.10	0.00	0.00	0.10	0.34	0.00	0.34	0.06	0.02
Winston	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.06
Total	**105.66**	**3.25**	**0.17**	**109.08**	**74.22**	**68.52**	**142.74**	**26.72**	**18.46**

Golf courses applied an estimated 18 Mgal/d to 26,720 acres in 2005 (table 16). For this study, it was assumed that all golf course irrigation was from surface water and that the water was applied by sprinkler systems. Golf courses were classified as Tier 1, 2, or 3 (table 2) depending on a number of factors such as turf and landscape watering practices, which, are in turn, guided by the season of the year, antecedent soil moisture, weather conditions, and operational costs. Tier 1 golf courses water more extensively than Tier 2 and Tier 3 courses. The effect of precipitation on watering practices in 2005 is shown in figure 25. A composite of average monthly watering by Tier is compared to statewide average rainfall amounts expressed as departure from normal in inches for 2005 (National Oceanic and Atmospheric Administration, 2009). The above-normal rainfall (4.5 inches above normal) in July 2005 associated with Hurricane Dennis reduced irrigation at all courses, but considerably more at the Tier 1 courses. For the Tier 1 courses, little irrigation water was applied in April because of above-normal rainfall; some irrigation was required during May because of below-normal rainfall; and less irrigation water was required during June compared to May as rainfall increased to above-normal; irrigation was higher in August than in July as rainfall amounts were comparatively less; below normal rainfall in September resulted in increased irrigation; and irrigation was required in October because of below-normal rainfall. The less maintained Tier 2 courses began to reduce irrigation after September. Tier 3 courses, which use relatively little water for irrigation, were, minimally affected by the rainfall amounts during 2005.

Some irrigation withdrawals were reported to the OWR AWURP. Mostly irrigation withdrawals were estimated from ancillary data, such as crop type, State or regional crop application coefficients, and irrigated acreage. The sources for these ancillary data were an OWR golf course mail and telephone survey, Alabama Department of Agriculture and Industries listing of 2006–2007 certified nursery growers and nursery dealers, and the U.S. Department of Agriculture, National Agricultural Statistics Service censuses—Census of Agriculture (2002) and Farm and Ranch Survey (2003).

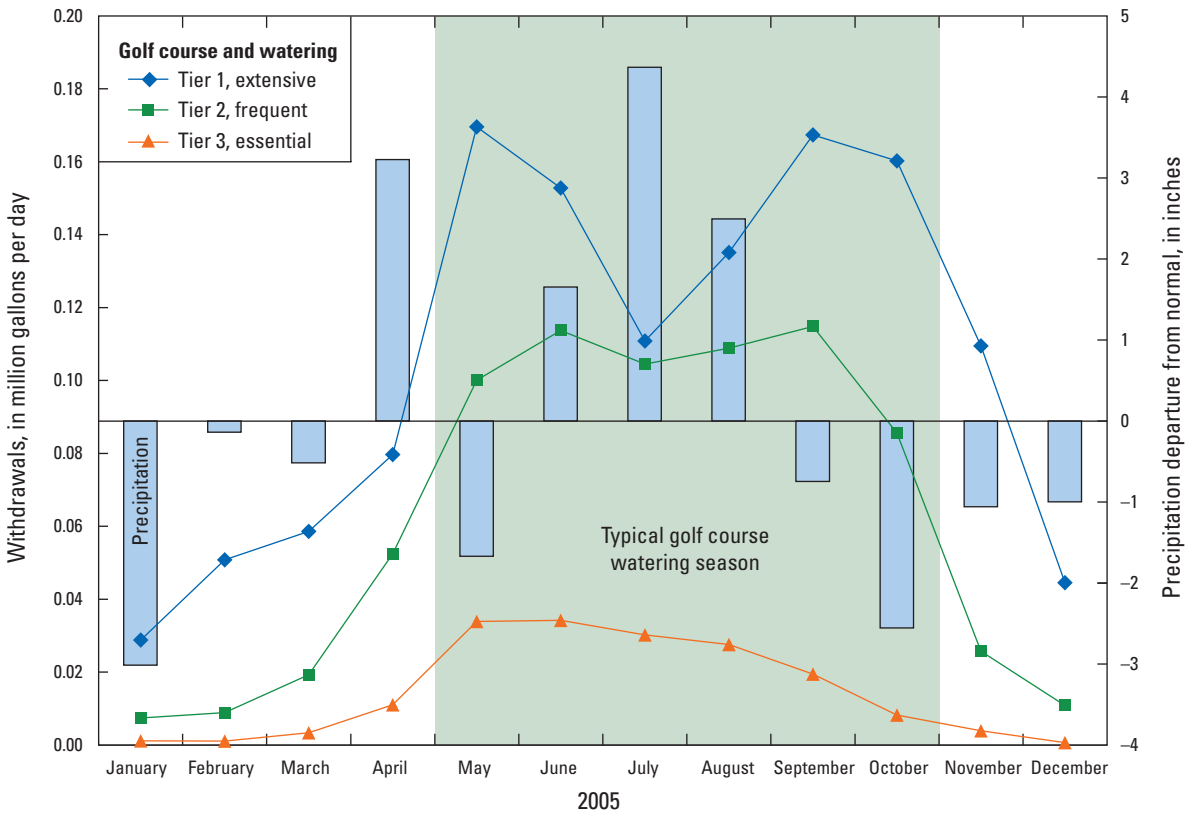


Figure 25. Comparison of seasonal water use by golf course type in Alabama, 2005.

Livestock

Livestock water is water associated with livestock watering, feedlots, dairy operations, and other on-farm needs. The associated activities include cooling of the facilities for the animals and products, dairy sanitation and cleaning of facilities, animal waste-disposal systems, and incidental water loss. The primary livestock types in Alabama include poultry, beef cattle and calves, dairy cows and heifers, hogs and pigs, and horses and ponies. For 2005, all withdrawals were considered to be freshwater. The livestock category excludes on-farm residential use (residential category) and irrigation water use.

During 2005, livestock withdrawals were 28 Mgal/d (tables 17 and 18). Surface water was the source for 56 percent (16 Mgal/d) of the livestock withdrawals, and ground water was the source for the remaining 44 percent (12 Mgal/d) (fig. 26). Livestock withdrawals were less than 1 percent of total withdrawals and were nearly 2 percent of total withdrawals excluding thermoelectric power (table 5).

The geographic distribution of total, ground-water, and surface water withdrawals by county and by hydrologic subbasin is shown in figures 27 and 28. The counties with large water withdrawals for livestock mostly corresponded to the areas of Alabama with major producers of broilers, cattle and calves, and hogs and pigs (U.S. Department of Agriculture, National Agricultural Statistics Service, 2006a). Blount, Cullman, De Kalb, and Marshall Counties, the top four broiler chicken producers in Alabama, accounted for about 23 percent of the total livestock water withdrawals (U.S. Department of Agriculture, National Agricultural Statistics Service, 2006b). In 2005, a record number of broilers were raised in Alabama and cash receipts from broilers and eggs were about 80 percent of the livestock and poultry cash receipts and about 64 percent of the total agricultural commodity receipts. In 2002, Cullman County ranked second in the group of 3,078 counties in the United States in broiler production (U.S. Department of Agriculture, National Agricultural Statistics Service, 2002).

Ten of the hydrologic subbasins withdrew 1 Mgal/d or more and accounted for 55 percent (15 Mgal/d) of the total livestock withdrawals. The largest withdrawals by subregion occurred in the Mobile–Tombigbee (28 percent, or 7.8 Mgal/d), Alabama (26 percent, or 7.3 Mgal/d), and Middle Tennessee–Elk (24 percent, or 6.7 Mgal/d; table 18).

Estimates of livestock withdrawals by county were determined by the USGS-NWUIP as part of the national effort to estimate water use for the United States for 2005. Water withdrawals were calculated from the 2005 livestock census by USDA-NASS and statewide drinking water requirement coefficients as described in the "Livestock, Aquaculture, and Mining" section in the "Data Compilation, Sources of Information, and Methodology" section of this report.

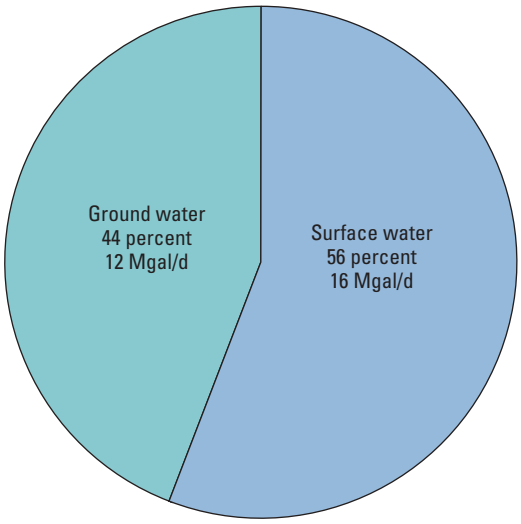


Figure 26. Source of water for livestock use in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

Breeder chickens in Cleburne County, Alabama. In 2005, the poultry industry was the leading agricultural business in Alabama (U.S. Department of Agriculture, National Agricultural Statistics Service, 2006a, photo by Michael J. Harper, Alabama Office of Water Resources)

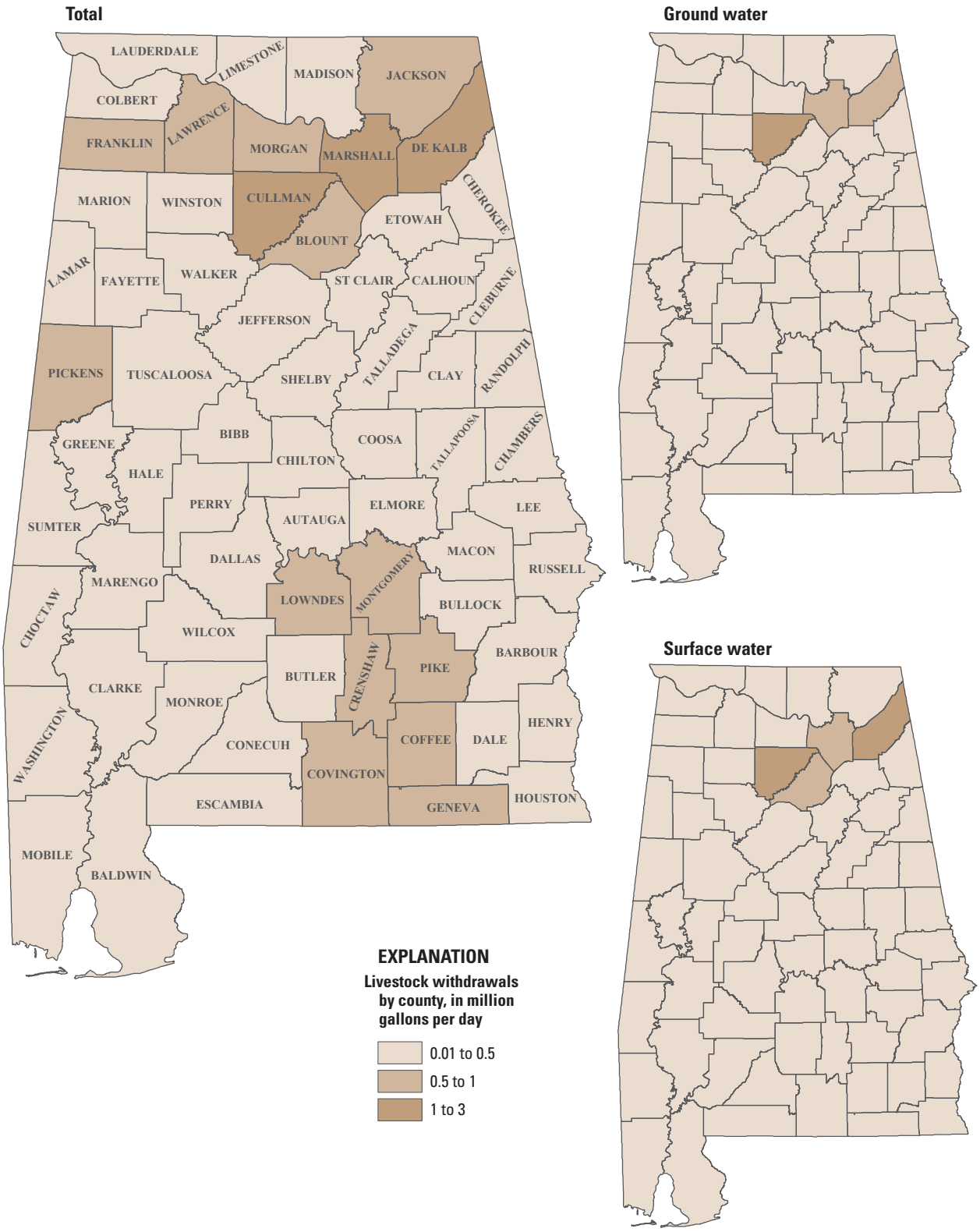


Figure 27. Livestock freshwater withdrawals by source and county in Alabama, 2005.

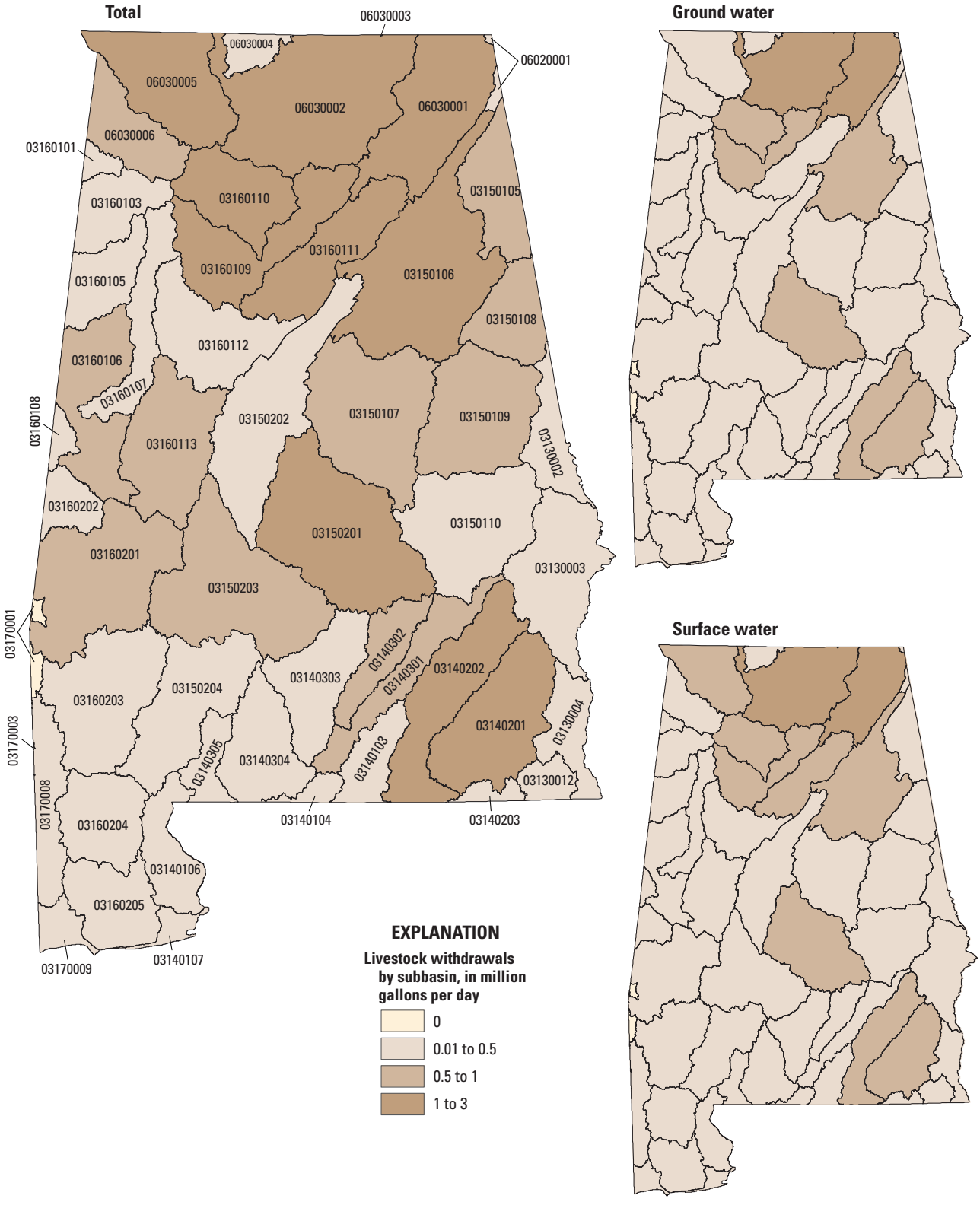


Figure 28. Livestock freshwater withdrawals by source and subbasin in Alabama, 2005.

Table 17. Livestock freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Autauga	0.09	0.13	0.22
Baldwin	0.20	0.24	0.44
Barbour	0.14	0.21	0.35
Bibb	0.03	0.04	0.07
Blount	0.46	0.50	0.96
Bullock	0.06	0.10	0.16
Butler	0.14	0.21	0.35
Calhoun	0.12	0.17	0.29
Chambers	0.08	0.12	0.20
Cherokee	0.11	0.17	0.28
Chilton	0.09	0.13	0.22
Choctaw	0.04	0.05	0.09
Clarke	0.03	0.05	0.08
Clay	0.14	0.18	0.32
Cleburne	0.17	0.20	0.37
Coffee	0.36	0.48	0.84
Colbert	0.13	0.17	0.30
Conecuh	0.07	0.11	0.18
Coosa	0.03	0.04	0.07
Covington	0.26	0.36	0.62
Crenshaw	0.24	0.34	0.58
Cullman	1.13	1.10	2.23
Dale	0.14	0.19	0.33
Dallas	0.16	0.24	0.40
De Kalb	0.96	1.08	2.04
Elmore	0.10	0.12	0.22
Escambia	0.06	0.09	0.15
Etowah	0.20	0.25	0.45
Fayette	0.09	0.11	0.20
Franklin	0.33	0.44	0.77
Geneva	0.37	0.48	0.85
Greene	0.10	0.15	0.25
Hale	0.15	0.18	0.33
Henry	0.10	0.15	0.25
Houston	0.13	0.19	0.32
Jackson	0.32	0.40	0.72
Jefferson	0.03	0.05	0.08
Lamar	0.06	0.07	0.13
Lauderdale	0.20	0.28	0.48
Lawrence	0.32	0.43	0.75
Lee	0.04	0.06	0.10
Limestone	0.19	0.25	0.44
Lowndes	0.26	0.39	0.65
Macon	0.05	0.08	0.13
Madison	0.14	0.19	0.33
Marengo	0.15	0.23	0.38
Marion	0.17	0.24	0.41
Marshall	0.60	0.60	1.20
Mobile	0.12	0.15	0.27
Monroe	0.08	0.12	0.20
Montgomery	0.27	0.39	0.66
Morgan	0.33	0.40	0.73
Perry	0.09	0.12	0.21
Pickens	0.31	0.32	0.63
Pike	0.23	0.32	0.55
Randolph	0.23	0.26	0.49
Russell	0.04	0.06	0.10
St. Clair	0.16	0.23	0.39
Shelby	0.06	0.09	0.15
Sumter	0.14	0.21	0.35
Talladega	0.13	0.16	0.29
Tallapoosa	0.05	0.07	0.12
Tuscaloosa	0.09	0.12	0.21
Walker	0.13	0.18	0.31
Washington	0.09	0.10	0.19
Wilcox	0.08	0.13	0.21
Winston	0.22	0.25	0.47
Total	**12.39**	**15.72**	**28.11**

Table 18. Livestock freshwater withdrawals by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Apalachicola			
03130002	0.08	0.11	0.19
03130003	0.14	0.21	0.35
03130004	0.12	0.17	0.29
03130012	0.06	0.09	0.15
Subtotal	*0.40*	*0.58*	*0.98*
Choctawhatchee–Escambia			
03140103	0.14	0.18	0.32
03140104	0.02	0.03	0.05
03140106	0.07	0.08	0.15
03140107	0.02	0.02	0.04
03140201	0.51	0.69	1.20
03140202	0.55	0.74	1.29
03140203	0.08	0.11	0.19
03140301	0.24	0.34	0.58
03140302	0.21	0.30	0.51
03140303	0.17	0.25	0.42
03140304	0.07	0.11	0.18
03140305	0.02	0.04	0.06
Subtotal	*2.10*	*2.89*	*4.99*
Alabama			
03150105	0.32	0.40	0.72
03150106	0.69	0.88	1.57
03150107	0.25	0.35	0.60
03150108	0.32	0.40	0.72
03150109	0.24	0.32	0.56
03150110	0.19	0.28	0.47
03150201	0.57	0.84	1.41
03150202	0.17	0.25	0.42
03150203	0.32	0.48	0.80
03150204	0.02	0.02	0.04
Subtotal	*3.09*	*4.22*	*7.31*
Mobile–Tombigbee			
03160101	0.05	0.06	0.11
03160103	0.12	0.17	0.29
03160105	0.09	0.11	0.20
Mobile–Tombigbee (Continued)			
03160106	0.33	0.38	0.71
03160107	0.13	0.17	0.30
03160108	0.02	0.03	0.05
03160109	0.84	0.88	1.72
03160110	0.72	0.76	1.48
03160111	0.48	0.52	1.00
03160112	0.09	0.12	0.21
03160113	0.23	0.29	0.52
03160201	0.20	0.30	0.50
03160202	0.06	0.09	0.15
03160203	0.09	0.10	0.19
03160204	0.09	0.10	0.19
03160205	0.08	0.10	0.18
Subtotal	*3.62*	*4.18*	*7.80*
Pascagoula			
03170002	0.00	0.00	0.00
03170003	0.00	0.00	0.00
03170008	0.06	0.07	0.13
03170009	0.02	0.02	0.04
Subtotal	*0.08*	*0.09*	*0.17*
Middle Tennessee–Hiwassee			
06020001	0.06	0.07	0.13
Subtotal	*0.06*	*0.07*	*0.13*
Middle Tennessee–Elk			
06030001	1.12	1.25	2.37
06030002	1.06	1.28	2.34
06030003	0.00	0.00	0.00
06030004	0.08	0.10	0.18
06030005	0.44	0.60	1.04
06030006	0.32	0.43	0.75
Subtotal	*3.02*	*3.66*	*6.68*
Total	**12.37**	**15.69**	**28.06**

Aquaculture

Aquaculture water refers to water that is associated with the farming of organisms, such as finfish and shellfish, that live in water and offstream water withdrawals associated with fish hatcheries for food, restoration, conservation, or sport. Aquaculture occurs under controlled feeding, sanitation, and harvesting procedures primarily in ponds, flow-through raceways, and, to a lesser extent, cages, net pens, and closed-recirculation tanks. All withdrawals were considered to be freshwater.

Freshwater withdrawals for aquaculture are listed by county in table 19. For 2005, the quantity of water withdrawn for aquaculture was about 75 Mgal/d. Ground water was the source for 54 percent of the total, or 41 Mgal/d, and surface water was the source for the remaining 46 percent, or 34 Mgal/d (fig. 29). Aquaculture withdrawals were nearly 1 percent of total withdrawals and about 4 percent of total withdrawals for all categories excluding thermoelectric power (table 5).

The geographic distribution of total, ground-water, and surface-water withdrawals by county is shown in figure 30. Greene, Hale, and Perry Counties, which are located in the west-central part of the State in an area of moderate climate, abundant water, and heavy clay soils ideal for constructing earthen ponds (Kidd and Lambeth, 1995; Boyd and others, 2000; Alabama Education Aquaculture Recreational Fishing, ALEARN, 2008), accounted for 61 percent (45 Mgal/d) of the aquaculture withdrawals. Catfish farming predominates in this area where rainfall and runoff filled more than 75 percent of the ponds and water levels were maintained in dry weather by ground water (Boyd and others, 2000). Other ponds in the area were embankment ponds filled with ground water.

In 2005, the pond surface area in Alabama was 25,001 acres and approximately 230 catfish farms were operating (Alabama Cooperative Extension System, 2006). Alabama ranked second only to Mississippi in catfish production nationwide, and Hale County ranked sixth nationally among counties (U.S. Department of Agriculture, National Agricultural Statistics Service, 2006a). Although all water withdrawals were compiled as freshwater for this study, approximately 75 acres of ponds were filled with low-salinity ground water for the production of 4,000 pounds per acre of marine shrimp in west-central Alabama, including Greene County, and some catfish ponds in the area were filled with high-salinity (commonly 5,000 to 6,000 milligrams per liter) ground water derived from the Coker Formation (Boyd and others, 2000; McNevin and others, 2004; Boyd and others, 2006; Boyd and others, 2007).

Estimates of aquaculture water withdrawals by source of supply were determined by the USGS-NWUIP as part of the national effort to estimate water use for the United States for 2005. Water withdrawals were estimated from the commercial and non-commercial operations datasets produced by NASS for the 2005 Census of Aquaculture as described in the "Livestock, Aquaculture, and Mining" section in the "Data Compilation, Sources of Information, and Methodology" section of this report. Ground water and surface water were determined according to the USGS estimates for source of water for aquaculture for 2000 (U.S. Geological Survey, 2004).

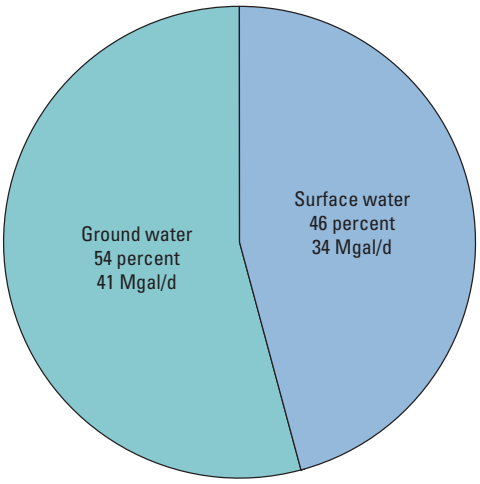


Figure 29. Source of water for aquaculture use in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

Catfish ponds built and operated by Auburn University. (Photo courtesy of Alan Wilson, Department of Fisheries and Allied Aquacultures at Auburn University, Auburn, Alabama, published with permission.)

Catfish harvesting in Perry County, Alabama. In 2005, Alabama had about 25,000 water acres of fish farms where nearly 250 commercial farmers raised 25 different aquatic species. Farm-raised catfish was the dominant species, with Alabama ranking second in the United States in annual catfish sales (Alabama Farmers Federation, Alabama Catfish Producers, 2008; photo courtesy of Debra Davis, Alabama Farmers Federation, published with permission).

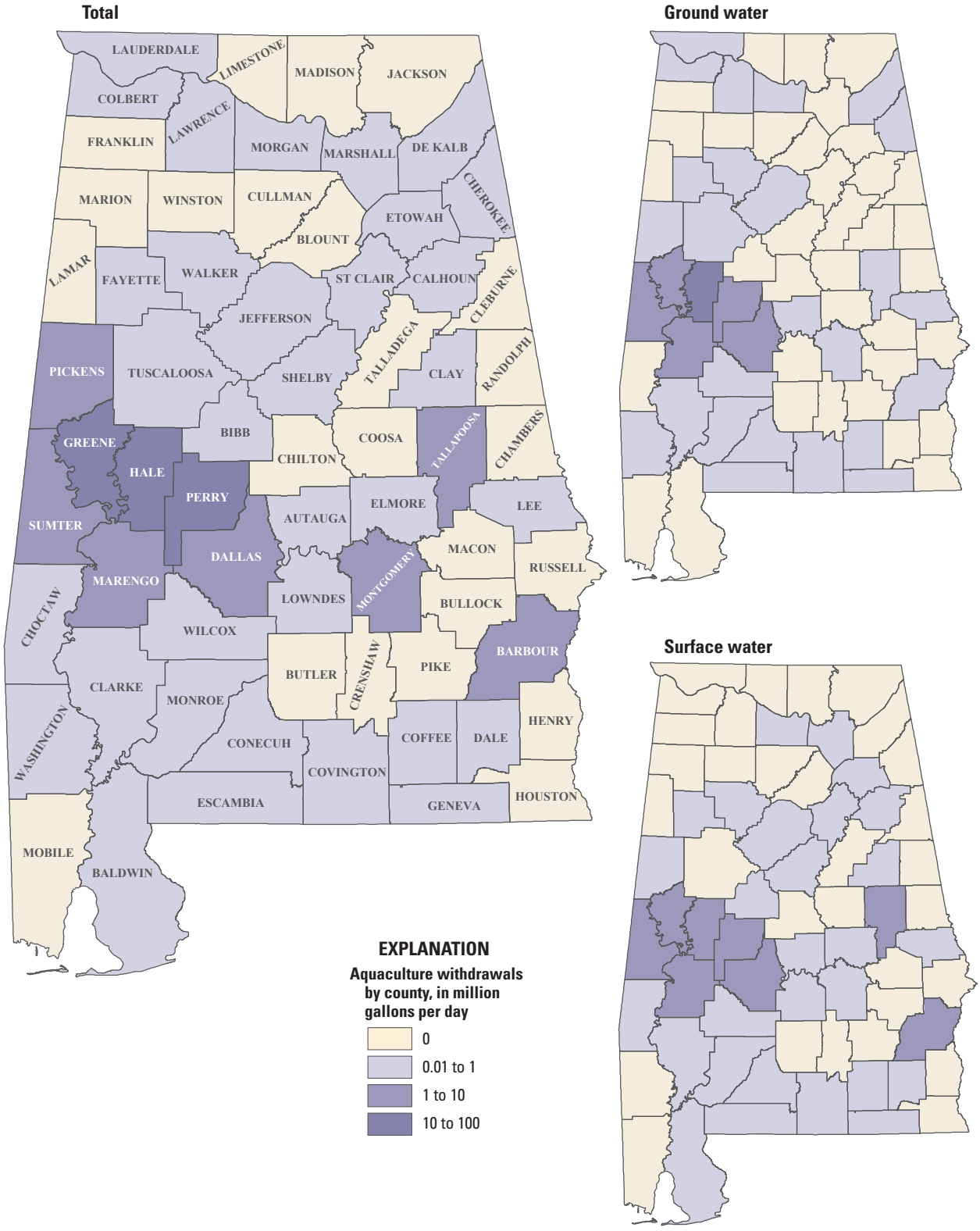


Figure 30. Aquaculture freshwater withdrawals by source and county in Alabama, 2005.

Table 19. Aquaculture freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Autauga	0.15	0.15	0.30
Baldwin	0.00	0.05	0.05
Barbour	0.21	5.70	5.91
Bibb	0.00	0.36	0.36
Blount	0.00	0.00	0.00
Bullock	0.00	0.00	0.00
Butler	0.00	0.00	0.00
Calhoun	0.00	0.07	0.07
Chambers	0.00	0.00	0.00
Cherokee	0.39	0.00	0.39
Chilton	0.00	0.00	0.00
Choctaw	0.00	0.08	0.08
Clarke	0.03	0.04	0.07
Clay	0.00	0.01	0.01
Cleburne	0.00	0.00	0.00
Coffee	0.48	0.26	0.74
Colbert	0.02	0.00	0.02
Conecuh	0.01	0.01	0.02
Coosa	0.00	0.00	0.00
Covington	0.10	0.10	0.20
Crenshaw	0.00	0.00	0.00
Cullman	0.00	0.00	0.00
Dale	0.00	0.10	0.10
Dallas	5.00	2.14	7.14
De Kalb	0.01	0.00	0.01
Elmore	0.00	0.18	0.18
Escambia	0.04	0.01	0.05
Etowah	0.00	0.02	0.02
Fayette	0.02	0.02	0.04
Franklin	0.00	0.00	0.00
Geneva	0.24	0.06	0.30
Greene	6.17	4.46	10.63
Hale	16.37	8.43	24.80
Henry	0.00	0.00	0.00
Houston	0.00	0.00	0.00
Jackson	0.00	0.00	0.00
Jefferson	0.02	0.56	0.58
Lamar	0.00	0.00	0.00
Lauderdale	0.03	0.00	0.03
Lawrence	0.08	0.00	0.08
Lee	0.05	0.10	0.15
Limestone	0.00	0.00	0.00
Lowndes	0.00	0.02	0.02
Macon	0.00	0.00	0.00
Madison	0.00	0.00	0.00
Marengo	2.00	1.64	3.64
Marion	0.00	0.00	0.00
Marshall	0.00	0.01	0.01
Mobile	0.00	0.00	0.00
Monroe	0.03	0.04	0.07
Montgomery	0.55	0.59	1.14
Morgan	0.05	0.05	0.10
Perry	5.32	4.67	9.99
Pickens	0.50	0.50	1.00
Pike	0.00	0.00	0.00
Randolph	0.00	0.00	0.00
Russell	0.00	0.00	0.00
St. Clair	0.00	0.03	0.03
Shelby	0.00	0.05	0.05
Sumter	2.10	2.19	4.29
Talladega	0.00	0.00	0.00
Tallapoosa	0.03	1.27	1.30
Tuscaloosa	0.07	0.00	0.07
Walker	0.02	0.07	0.09
Washington	0.08	0.00	0.08
Wilcox	0.34	0.34	0.68
Winston	0.00	0.00	0.00
Total	**40.51**	**34.38**	**74.89**

Industrial

Industrial water is water used for fabrication, processing, washing, and cooling and includes such industries as chemical and allied products, food, paper and allied products, petroleum refining, and steel. Total industrial water use is the sum of public-supplied industrial and commercial deliveries and self-supplied industrial and commercial withdrawals. For this study, total industrial use and public-supplied industrial/commercial deliveries were estimated at the State level only.

Self-supplied industrial withdrawals are listed by county and by hydrologic subbasin in tables 20 and 21, respectively. For 2005, self-supplied industrial withdrawals were 550 Mgal/d, which is about 6 percent of total withdrawals and about 33 percent of total withdrawals excluding thermoelectric power (table 5). Surface water was the source for 95 percent (523 Mgal/d) of the withdrawals, and ground water was the source of the remaining 5 percent (28 Mgal/d; fig. 31). Statewide, combined public-supplied industrial and commercial deliveries were 355 Mgal/d. Total industrial water use was 906 Mgal/d.

The geographic distribution of total, ground-water, and surface-water withdrawals for self-supplied industrial use by county and by hydrologic subbasin is shown, respectively, in figures 32 and 33. Withdrawals for self-supplied industrial use occurred in 37 counties. About 90 percent of the total withdrawals and 88 percent of the surface-water withdrawals occurred in the 11 counties that withdrew more than 10 Mgal/d or more (fig. 32). The largest withdrawals occurred in Morgan, Colbert (primarily chemical and allied products), Lawrence, Monroe, and Talladega Counties (primarily paper and allied products), with withdrawals that were more than 50 Mgal/d each. Withdrawals in these counties accounted for about 57 percent (314 Mgal/d) of the total self-supplied industrial withdrawals.

The Middle Tennessee–Elk hydrologic subregion accounted for 39 percent (214 Mgal/d) of the total self-supplied industrial withdrawals and 41 percent (212 Mgal/d) of the surface-water withdrawals, mostly by the chemical, paper, and the allied industries (table 21). Within the Middle Tennessee–Elk hydrologic subregion, the largest total withdrawals occurred in the Wheeler (06030002) and Pickwick Lake (06030005) subbasins. The largest ground-water withdrawals were in the Mobile–Tombigbee hydrologic subregion (13 Mgal/d; primarily paper and allied products) and accounted for about 48 percent of the statewide self-supplied industrial ground-water withdrawals.

Paper and allied products (SIC 26, 304 Mgal/d), chemical and allied products (SIC 28, 152 Mgal/d), and lumber and wood products (SIC 24, 52 Mgal/d) accounted for 92 percent of total self-supplied industrial withdrawals (fig. 34). Paper and allied products accounted for the largest self-supplied industrial surface-water withdrawals (301 Mgal/d), and chemical and allied products (12 Mgal/d) accounted for the largest self-supplied industrial ground-water withdrawals. The largest withdrawals for paper and allied products, SIC 26, occurred in Lawrence County. Detailed water use by SIC for counties and hydrologic subbasins can be found in Appendixes A and B, respectively.

A progressive shift in source of water for industrial and commercial use from self-supplied to public-supplied water has occurred from 1975 (1,770 Mgal/d, highest value of total industrial and commercial use since 1950) through 2005 (906 Mgal/d; Murray and Reeves, 1977; Solley and others, 1983; Solley and others, 1988; Solley and others, 1993; and Solley and others, 1998). The historical data show that public-supply deliveries to the industrial and commercial sector have increased, for example, from about 15 percent of total industrial and commercial use in 1975, to about 25 percent in 1985, and about 40 percent in 2005 (Murray and Reeves, 1977; Solley and other, 1998). No public-supply delivery data were collected for 2000.

OWR AWURP was the source for site-specific industrial water withdrawal and ancillary data. The Alabama Directory of Manufacturers provided nearly all of the SIC codes for specific industries. Public-supply deliveries to commercial and industrial users were determined at a State level from the Alabama Water System Survey for 2005 (Appendix D). Details are in the "Thermoelectric Power and Industrial" section in the "Data Compilation, Sources of Information, and Methodology" section in this report.

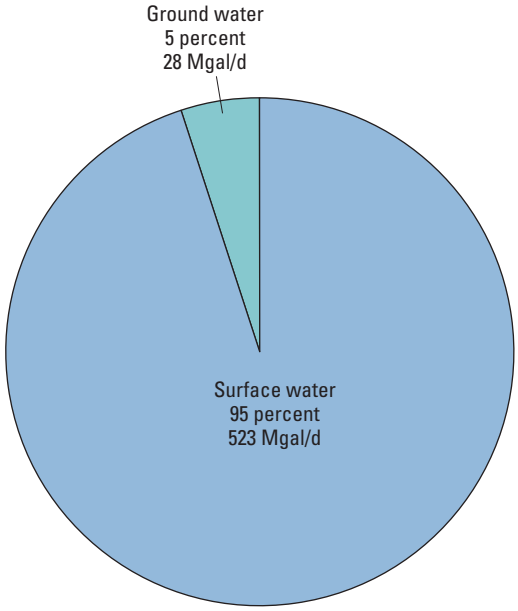


Figure 31. Source of water for self-supplied industrial use in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

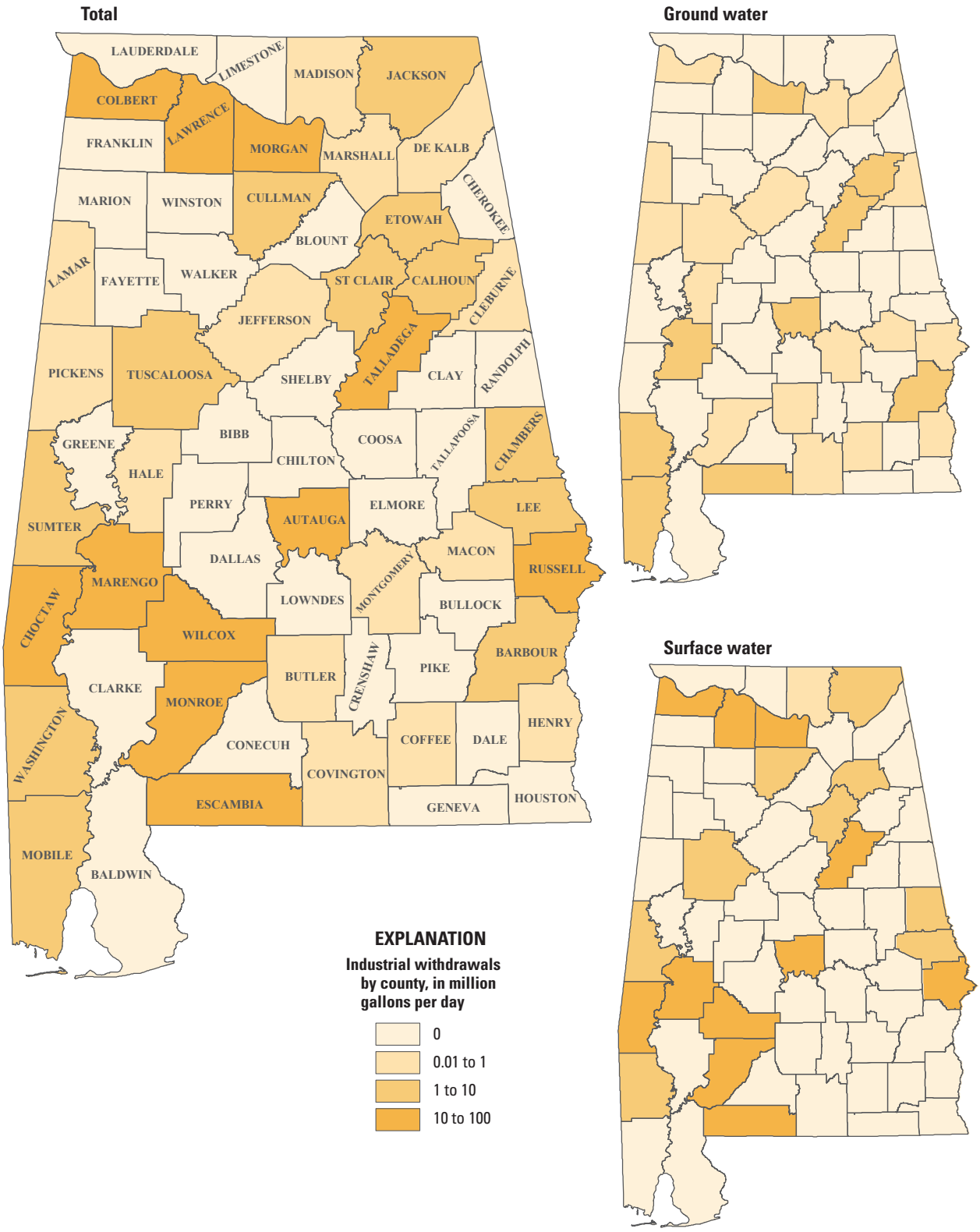


Figure 32. Self-supplied industrial freshwater withdrawals by county in Alabama, 2005.

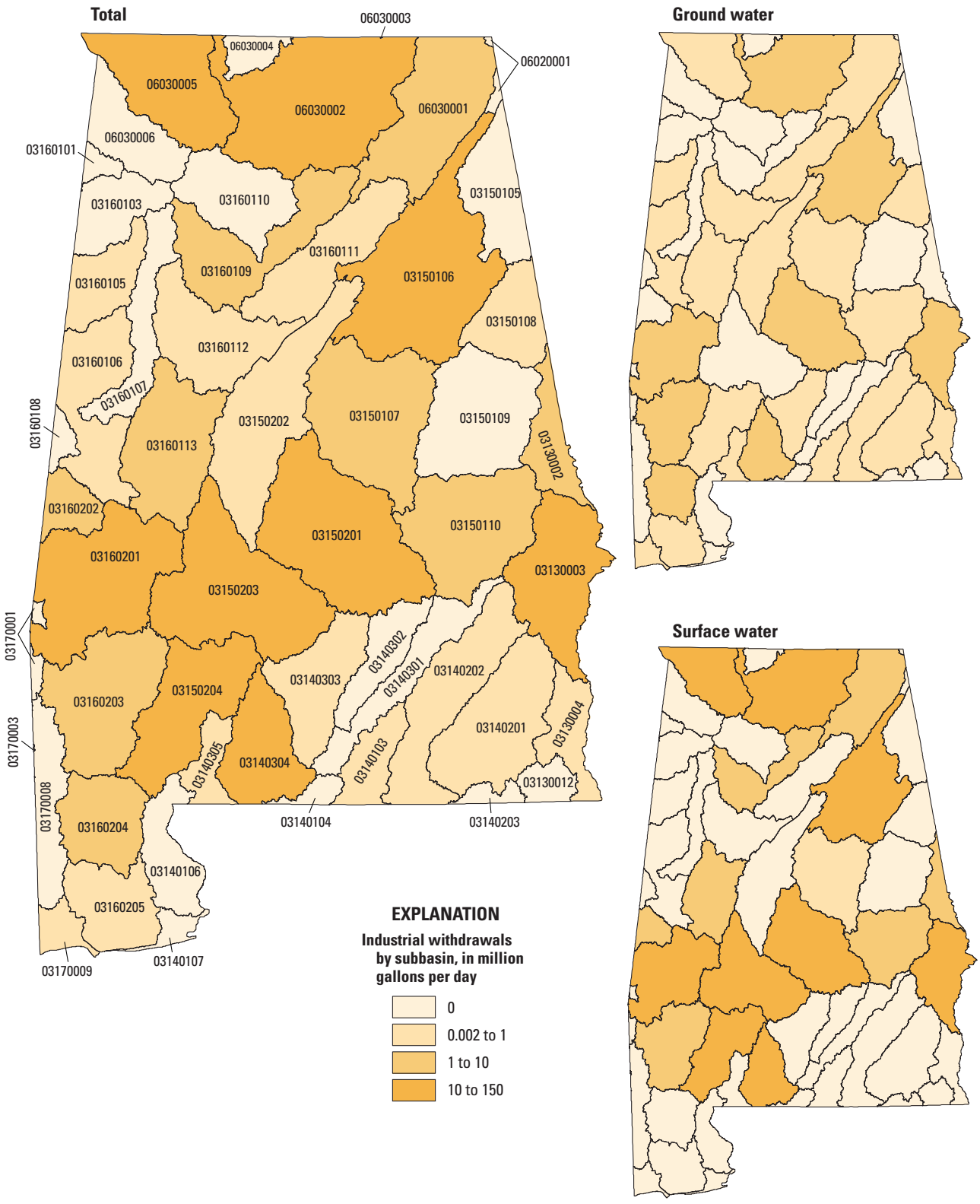


Figure 33. Self-supplied industrial freshwater withdrawals by subbasin in Alabama, 2005.

Table 20. Self-supplied industrial freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Autauga	1.66	30.63	32.29
Baldwin	0.00	0.00	0.00
Barbour	1.18	0.00	1.18
Bibb	0.00	0.00	0.00
Blount	0.00	0.00	0.00
Bullock	0.00	0.00	0.00
Butler	0.31	0.00	0.31
Calhoun	1.10	0.00	1.10
Chambers	0.00	2.16	2.16
Cherokee	0.00	0.00	0.00
Chilton	0.00	0.00	0.00
Choctaw	0.00	47.41	47.41
Clarke	0.00	0.00	0.00
Clay	0.00	0.00	0.00
Cleburne	0.71	0.00	0.71
Coffee	0.86	0.00	0.86
Colbert	0.87	55.57	56.44
Conecuh	0.00	0.00	0.00
Coosa	0.00	0.00	0.00
Covington	0.43	0.00	0.43
Crenshaw	0.00	0.00	0.00
Cullman	0.00	1.79	1.79
Dale	0.00	0.00	0.00
Dallas	0.00	0.00	0.00
De Kalb	0.65	0.00	0.65
Elmore	0.00	0.00	0.00
Escambia	1.71	32.07	33.78
Etowah	0.00	9.87	9.87
Fayette	0.00	0.00	0.00
Franklin	0.00	0.00	0.00
Geneva	0.00	0.00	0.00
Greene	0.00	0.00	0.00
Hale	0.02	0.00	0.02
Henry	0.46	0.00	0.46
Houston	0.00	0.00	0.00
Jackson	0.00	8.78	8.78
Jefferson	0.40	0.00	0.40
Lamar	0.07	0.00	0.07
Lauderdale	0.00	0.00	0.00
Lawrence	0.00	57.18	57.18
Lee	0.00	2.23	2.23
Limestone	0.00	0.00	0.00
Lowndes	0.00	0.00	0.00
Macon	0.05	0.00	0.05
Madison	0.00	0.89	0.89
Marengo	1.00	18.08	19.08
Marion	0.00	0.00	0.00
Marshall	0.36	0.00	0.36
Mobile	5.67	0.00	5.67
Monroe	0.40	54.61	55.01
Montgomery	0.01	0.00	0.01
Morgan	1.29	89.36	90.65
Perry	0.00	0.00	0.00
Pickens	0.12	0.00	0.12
Pike	0.00	0.00	0.00
Randolph	0.00	0.00	0.00
Russell	0.92	27.60	28.52
St. Clair	0.00	3.50	3.50
Shelby	0.00	0.00	0.00
Sumter	0.00	1.22	1.22
Talladega	1.26	53.36	54.62
Tallapoosa	0.00	0.00	0.00
Tuscaloosa	0.78	1.14	1.92
Walker	0.00	0.00	0.00
Washington	5.33	4.31	9.64
Wilcox	0.00	21.04	21.04
Winston	0.00	0.00	0.00
Total	**27.62**	**522.80**	**550.42**

Table 21. Self-supplied industrial freshwater withdrawals by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Apalachicola			
03130002	0.00	2.16	2.16
03130003	2.10	27.60	29.70
03130004	0.25	0.00	0.25
03130012	0.00	0.00	0.00
Subtotal	*2.35*	*29.76*	*32.11*
Choctawhatchee–Escambia			
03140103	0.43	0.00	0.43
03140104	0.00	0.00	0.00
03140106	0.00	0.00	0.00
03140107	0.00	0.00	0.00
03140201	0.22	0.00	0.22
03140202	0.86	0.00	0.86
03140203	0.00	0.00	0.00
03140301	0.00	0.00	0.00
03140302	0.00	0.00	0.00
03140303	0.31	0.00	0.31
03140304	1.62	32.07	33.69
03140305	0.09	0.00	0.09
Subtotal	*3.53*	*32.07*	*35.60*
Alabama			
03150105	0.00	0.00	0.00
03150106	2.14	65.83	67.97
03150107	0.86	0.89	1.75
03150108	0.71	0.00	0.71
03150109	0.00	0.00	0.00
03150110	0.05	2.23	2.28
03150201	1.67	30.63	32.30
03150202	0.40	0.00	0.40
03150203	0.00	21.04	21.04
03150204	0.40	54.61	55.01
Subtotal	*6.23*	*175.23*	*181.46*
Mobile–Tombigbee			
03160101	0.00	0.00	0.00
03160103	0.00	0.00	0.00
03160105	0.07	0.00	0.07
03160106	0.12	0.00	0.12
03160107	0.00	0.00	0.00
03160108	0.00	0.00	0.00
03160109	0.00	1.79	1.79
03160110	0.00	0.00	0.00
03160111	0.32	0.00	0.32
03160112	0.20	0.00	0.20
03160113	0.60	1.14	1.74
03160201	1.00	65.49	66.49
03160202	0.00	1.22	1.22
03160203	5.33	4.31	9.64
03160204	5.40	0.00	5.40
03160205	0.27	0.00	0.27
Subtotal	*13.31*	*73.95*	*87.26*
Pascagoula			
03170002	0.00	0.00	0.00
03170003	0.00	0.00	0.00
03170008	0.00	0.00	0.00
03170009	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*
Middle Tennessee–Hiwassee			
06020001	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*
Middle Tennessee–Elk			
06030001	0.04	8.78	8.82
06030002	1.29	147.43	148.72
06030003	0.00	0.00	0.00
06030004	0.00	0.00	0.00
06030005	0.87	55.57	56.44
06030006	0.00	0.00	0.00
Subtotal	*2.20*	*211.78*	*213.98*
Total	**27.62**	**522.79**	**550.41**

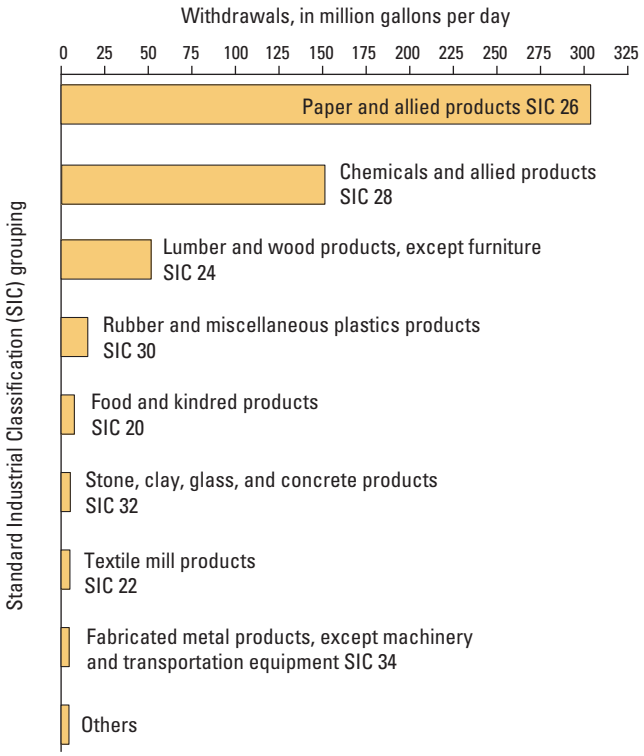


Figure 34. Distribution of total industrial withdrawals by Standard Industrial Classification grouping in Alabama, 2005.

A primary clarifier removes waste fiber associated with paperboard production, Mahrt Mill, Cottonton, Alabama. (Photo courtesy of Tony Owen, MeadWestvaco Corporation, published with permission.)

Boise Paper Mill in Jackson, Alabama. (Photo courtesy of Boise Papers, published with permission.)

Mining

Mining water refers to water that is used for the extraction of naturally occurring minerals including solids, such as coal, sand, gravel, and other ores; liquids, such as crude petroleum; and gases, such as natural gas. Mining also includes uses associated with quarrying, milling, and other preparations customarily done at a mine site or as part of a mining activity. Mining water use does not include water associated with dewatering of an aquifer that is not put to beneficial use and also does not include water used in processing, such as smelting, refining petroleum, or slurry pipeline operations. These processing uses are included in the industrial category.

Mining water withdrawals are listed by county in table 22. For 2005, total mining withdrawals were 28 Mgal/d, which is less than 1 percent of total withdrawals and nearly 2 percent of total withdrawals for all categories excluding thermoelectric power (table 5). Ground water was the source of about 70 percent (20 Mgal/d) of withdrawals, and surface water was the source of the remaining 30 percent (8 Mgal/d) (fig. 35). All water withdrawals were considered fresh although some low-salinity ground water has been tapped in parts of the State (Marlon Cook, Alabama Geological Survey, oral commun., January 2008).

The geographic distribution of total, ground-water, and surface-water withdrawals for mining use by county is shown in figure 36. Barbour, Jefferson, Montgomery, Shelby, Sumter, and Talladega Counties accounted for about half of the total mining water withdrawals. Most of the remaining counties withdrew less than 1.0 Mgal/d, and 20 counties had no mining water use. Coal mining and coal-bed methane production are important to the mining economy in the State. Coal is mined in 17 of the northern counties, and most of the coal is used in-state as fuel for the thermoelectric plants and for coke for the steel industry (Richard Carroll, Alabama Geological Survey, oral commun., September 10, 2008; Geological Survey of Alabama, 2008a; fig. 36). No coal was mined in Cherokee County in 2005.

Coal-bed methane has been produced in Alabama since 1980 in Bibb, Fayette, Jefferson, Shelby, Tuscaloosa, and Walker Counties, primarily in the Black Warrior subregion (Geological Survey of Alabama, 2008a). In 2005, more than 67.6 million barrels of water (about 5.83 Mgal/d) were produced along with 117 million cubic feet of gas (Geological Survey of Alabama, 2008b, c). The produced water estimate was determined at the State-level only, and is not included in the total mining withdrawals (table 22).

Mining water use was estimated by the USGS-NWUIP from per ton coefficients and from crude ore production in tons for 2004 from the USGS Minerals Information Team and coal production in tons from the DOE-EIA. The estimates were part of the USGS NWUIP national effort to estimate water use for the United States for 2005. Some mine site date were from OWR AWURP.

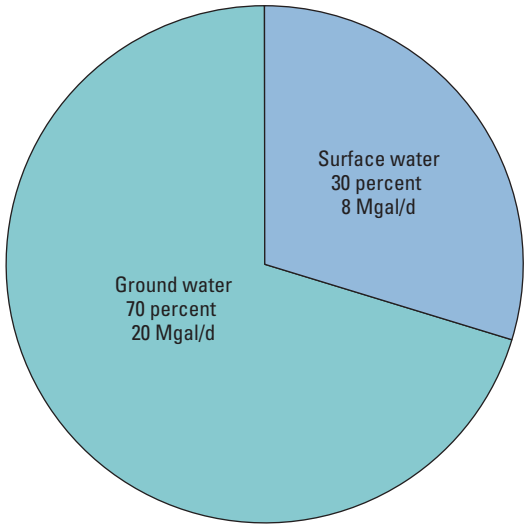


Figure 35. Source of water for mining use in Alabama, 2005. [Mgal/d, million gallons per day; values may not sum to total estimated use because of rounding]

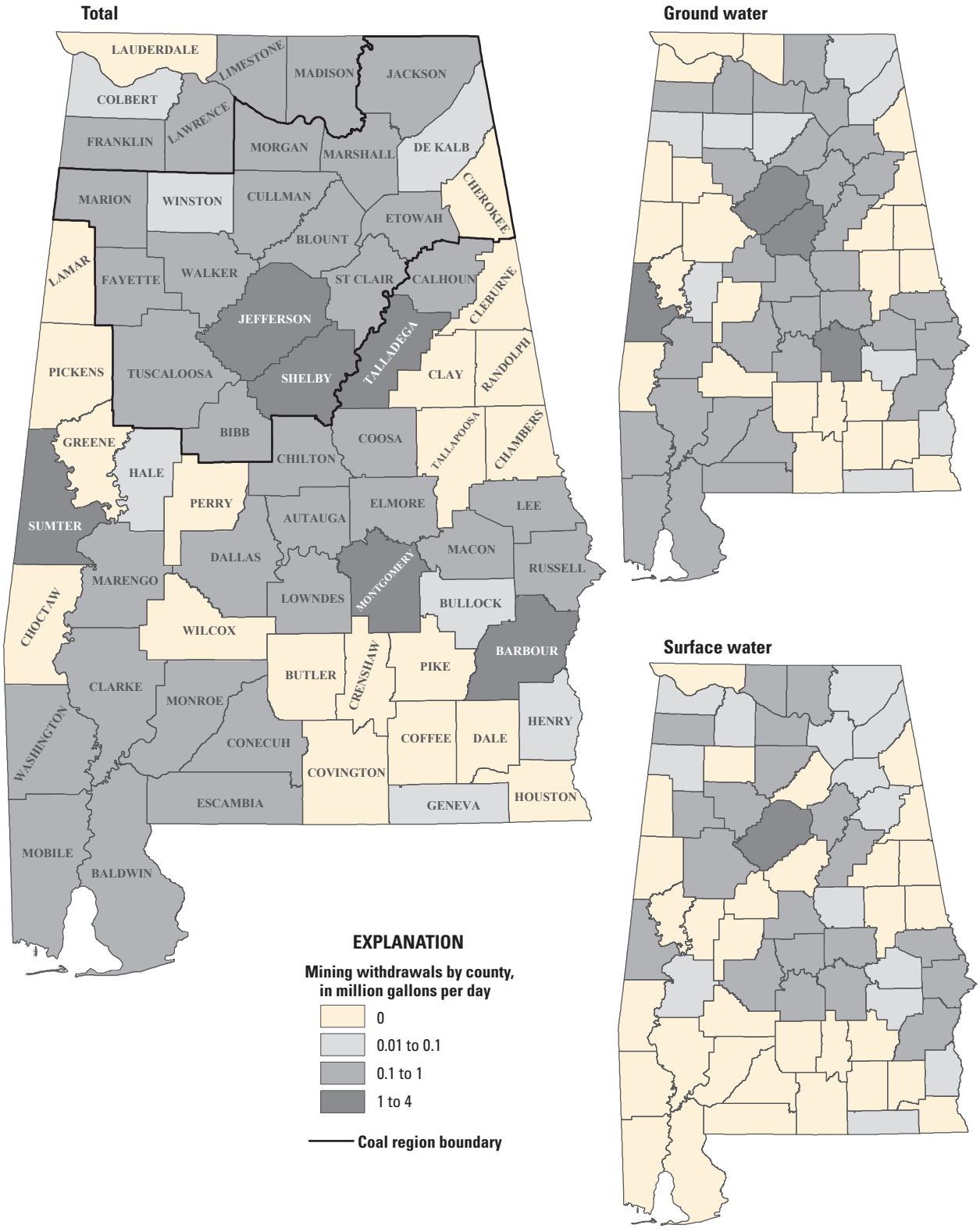


Figure 36. Mining freshwater withdrawals by county in Alabama, 2005.

Table 22. Mining freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Autauga	0.29	0.14	0.43
Baldwin	0.63	0.00	0.63
Barbour	0.82	0.38	1.20
Bibb	0.17	0.00	0.17
Blount	0.27	0.00	0.27
Bullock	0.04	0.02	0.06
Butler	0.00	0.00	0.00
Calhoun	0.19	0.09	0.28
Chambers	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00
Chilton	0.32	0.15	0.47
Choctaw	0.00	0.00	0.00
Clarke	0.11	0.00	0.11
Clay	0.00	0.00	0.00
Cleburne	0.00	0.00	0.00
Coffee	0.00	0.00	0.00
Colbert	0.00	0.05	0.05
Conecuh	0.11	0.00	0.11
Coosa	0.11	0.05	0.16
Covington	0.00	0.00	0.00
Crenshaw	0.00	0.00	0.00
Cullman	0.04	0.12	0.16
Dale	0.00	0.00	0.00
Dallas	0.57	0.26	0.83
De Kalb	0.04	0.02	0.06
Elmore	0.21	0.10	0.31
Escambia	0.67	0.00	0.67
Etowah	0.11	0.05	0.16
Fayette	0.00	0.80	0.80
Franklin	0.39	0.18	0.57
Geneva	0.02	0.01	0.03
Greene	0.00	0.00	0.00
Hale	0.04	0.00	0.04
Henry	0.02	0.01	0.03
Houston	0.00	0.00	0.00
Jackson	0.07	0.03	0.10
Jefferson	1.93	1.47	3.40
Lamar	0.00	0.00	0.00
Lauderdale	0.00	0.00	0.00
Lawrence	0.16	0.07	0.23
Lee	0.26	0.12	0.38
Limestone	0.00	0.50	0.50
Lowndes	0.30	0.14	0.44
Macon	0.12	0.06	0.18
Madison	0.48	0.22	0.70
Marengo	0.19	0.09	0.28
Marion	0.04	0.09	0.13
Marshall	0.19	0.09	0.28
Mobile	0.46	0.00	0.46
Monroe	0.11	0.00	0.11
Montgomery	1.31	0.61	1.92
Morgan	0.37	0.17	0.54
Perry	0.00	0.00	0.00
Pickens	0.00	0.00	0.00
Pike	0.00	0.00	0.00
Randolph	0.00	0.00	0.00
Russell	0.46	0.22	0.68
St. Clair	0.59	0.28	0.87
Shelby	3.90	0.00	3.90
Sumter	1.63	0.76	2.39
Talladega	0.75	0.35	1.10
Tallapoosa	0.00	0.00	0.00
Tuscaloosa	0.00	0.25	0.25
Walker	0.10	0.31	0.41
Washington	0.91	0.00	0.91
Wilcox	0.00	0.00	0.00
Winston	0.06	0.00	0.06
Total	**19.56**	**8.26**	**27.82**

This series of photographs illustrates various uses of water for production processes and air-pollution control on mining sites in Alabama. (All photos courtesy of Joe Howle, Vulcan Construction Materials, published with permission.)

Production. Sand screw used to classify manufactured sand.

Air-pollution control. Water spray nozzle used for dust suppression.

Production. Wash screen used to clean and classify different sizes of stone.

Air pollution control. Truck wheel wash system used for dust suppression on roads.

Air pollution control. Water truck used for dust suppression on roads.

Thermoelectric Power

Thermoelectric-power water is water used in the process of generating electricity with steam-driven turbine generators and for other onsite needs. For 2005, thermoelectric-power water withdrawals were compiled by **cooling-system type** because cooling system type is the primary determinant for the amount of consumptive use relative to withdrawals. Once-through cooling (also known as open-loop cooling) refers to **cooling systems** in which water is withdrawn from a source, circulated through heat exchangers, and then returned to a surface-water body. Recirculating cooling (also known as **closed-loop cooling**) refers to cooling systems in which water is withdrawn from a source, circulated through heat exchangers, cooled, and then recycled. Subsequent water withdrawals for a recirculating-cooling system are used to replace water lost to evaporation, blowdown, drift, and leakage. Thermoelectric-power withdrawals were reported by the USGS by condenser cooling water use from 1950 to 1980, by fuel-type from 1985 through 1995, and by cooling type for 2000 and 2005.

Total thermoelectric-power water withdrawals are listed by county and hydrologic subbasin in tables 23 and 24. Total thermoelectric-power water withdrawals by cooling type are listed by county and hydrologic subbasin in tables 25 and 26. The total quantity of water withdrawn for thermoelectric power in 2005 was 8,274 Mgal/d. Surface water was the source for more than 99 percent of the water. Ground water was the source for 0.22 Mgal/d. Thermoelectric-power withdrawals accounted for 83 percent of total water withdrawals and 87 percent of total surface-water withdrawals. Thermoelectric-power plants that used self-supplied water produced 114,144 net gigawatt-hours of energy in 2005.

The geographic distribution of total, ground-water, and surface-water withdrawals for thermoelectric power by county and hydrologic subbasin are shown respectively in figures 37 and 38. Although some power generation occurs in every hydrologic subregion with the exception of Pascagoula, water was used in power generation in only 13 counties (tables 23 and 24). For the Middle Tennessee–Hiwassee subregion, power was generated in the State of Tennessee (fig. 3). The largest total and surface-water withdrawals were in Limestone, Jackson, Colbert (Middle Tennessee–Elk subregion), and Mobile (Mobile–Tombigbee subregion) Counties.

Power plants equipped with once-through cooling systems accounted for 98 percent of water withdrawals for thermoelectric power in Alabama (tables 25 and 26). The percentage of consumptive use from generating units with once-through cooling ranged from zero to nearly 7 percent (median, 0.1 percent) compared to the percentage of consumptive use from generating units with recirculating cooling, which ranged from about 30 percent to 65 percent (median 44 percent; Energy Information Administration, 2008). Recirculating-cooling units require less water. For 2005, water use ranged from about 1.0 Mgal/d per recirculating-cooling generating unit to a little more than 40 Mgal/d per generating unit; water use ranged from slightly less than 60 Mgal/d to nearly 1,500 Mgal/d per once-through generating unit. A comparison of a once-through cooling plant to a recirculating-cooling plant showed that a once-through cooling generating unit typically used about 60 gallons of water to produce 1 kilowatt-hour (kWh) of electricity; a recirculating-cooling generating unit typically used about 20 gallons of water to produce 1 kWh of electricity (Energy Information Administration, 2008).

Sources of data for thermoelectric power were OWR-AWURP, DOE-EIA, and individual facilities. The AWURP eWater database included monthly average-daily water withdrawals, source of water, and location information. For 2005, steam-electric plants generating 100 megawatts or more provided cooling type, water withdrawal, **return flow**, and consumptive use by generating unit (except for nuclear power plants) to DOE-EIA and all power plants provided power generation by generating unit (Energy Information Administration, 2008, 2009a, b). Details are in the "Thermoelectric Power and Industrial" section in the "Data Compilation, Sources of Information, and Methodology" section in this report.

The coal-fired James H. Miller Steam Plant employs a recirculating-induced draft tower to cool water before release as return flow to the Mulberry Fork of the Black Warrior River. (Photo courtesy of Sheila A. Garrett, Alabama Power Company, published with permission.)

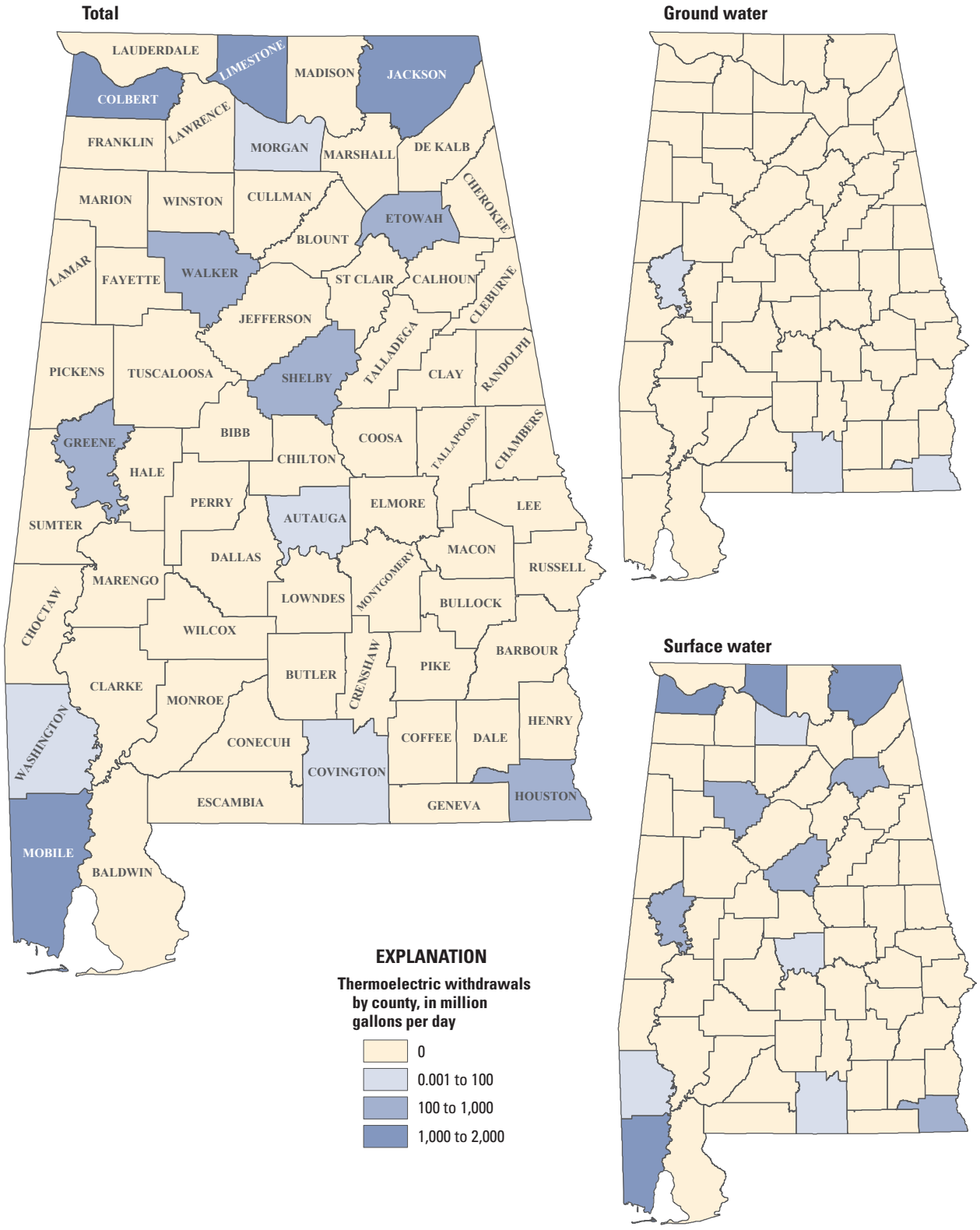


Figure 37. Thermoelectric-power freshwater withdrawals by source and county in Alabama, 2005.

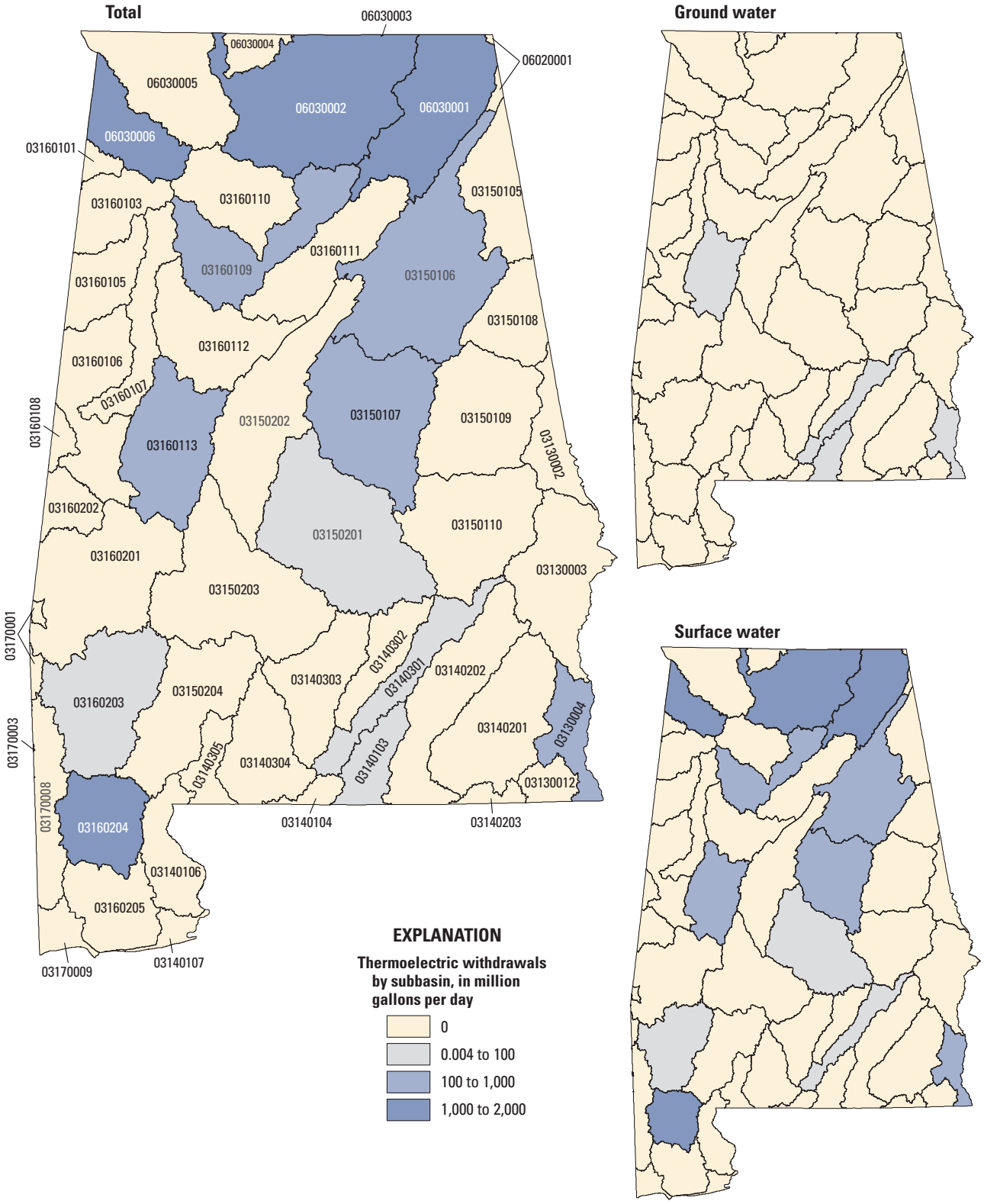


Figure 38. Thermoelectric-power freshwater withdrawals by source and subbasin in Alabama, 2005.

Table 23. Total thermoelectric-power freshwater withdrawals by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Withdrawals by source, in million gallons per day			Net power produced, in gigawatt-hours
	Ground water	Surface water	Total	
Autauga	0.00	4.14	4.14	1,613.60
Baldwin	0.00	0.00	0.00	0.00
Barbour	0.00	0.00	0.00	0.00
Bibb	0.00	0.00	0.00	0.00
Blount	0.00	0.00	0.00	0.00
Bullock	0.00	0.00	0.00	0.00
Butler	0.00	0.00	0.00	0.00
Calhoun	0.00	0.00	0.00	0.00
Chambers	0.00	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00
Chilton	0.00	0.00	0.00	0.00
Choctaw	0.00	0.00	0.00	0.00
Clarke	0.00	0.00	0.00	0.00
Clay	0.00	0.00	0.00	0.00
Cleburne	0.00	0.00	0.00	0.00
Coffee	0.00	0.00	0.00	0.00
Colbert	0.00	1,294.14	1,294.14	7,743.00
Conecuh	0.00	0.00	0.00	0.00
Coosa	0.00	0.00	0.00	0.00
Covington	0.00	4.30	4.30	679.56
Crenshaw	0.00	0.00	0.00	0.00
Cullman	0.00	0.00	0.00	0.00
Dale	0.00	0.00	0.00	0.00
Dallas	0.00	0.00	0.00	0.00
De Kalb	0.00	0.00	0.00	0.00
Elmore	0.00	0.00	0.00	0.00
Escambia	0.00	0.00	0.00	0.00
Etowah	0.00	142.68	142.68	429.83
Fayette	0.00	0.00	0.00	0.00
Franklin	0.00	0.00	0.00	0.00
Geneva	0.00	0.00	0.00	0.00
Greene	0.05	386.09	386.14	3,785.51
Hale	0.00	0.00	0.00	0.00
Henry	0.00	0.00	0.00	0.00
Houston	0.17	105.36	105.53	13,739.54
Jackson	0.00	1,476.30	1,476.30	9,835.00
Jefferson	0.00	0.00	0.00	0.00
Lamar	0.00	0.00	0.00	0.00
Lauderdale	0.00	0.00	0.00	0.00
Lawrence	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00
Limestone	0.00	1,990.24	1,990.24	17,955.00
Lowndes	0.00	0.00	0.00	0.00
Macon	0.00	0.00	0.00	0.00
Madison	0.00	0.00	0.00	0.00
Marengo	0.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	0.00
Marshall	0.00	0.00	0.00	0.00
Mobile	0.00	1,043.61	1,043.61	12,773.03
Monroe	0.00	0.00	0.00	0.00
Montgomery	0.00	0.00	0.00	0.00
Morgan	0.00	1.20	1.20	1,214.00
Perry	0.00	0.00	0.00	0.00
Pickens	0.00	0.00	0.00	0.00
Pike	0.00	0.00	0.00	0.00
Randolph	0.00	0.00	0.00	0.00
Russell	0.00	0.00	0.00	0.00
St. Clair	0.00	0.00	0.00	0.00
Shelby	0.00	812.32	812.32	11,273.37
Sumter	0.00	0.00	0.00	0.00
Talladega	0.00	0.00	0.00	0.00
Tallapoosa	0.00	0.00	0.00	0.00
Tuscaloosa	0.00	0.00	0.00	0.00
Walker	0.00	927.28	927.28	29,236.25
Washington	0.00	86.54	86.54	3,865.85
Wilcox	0.00	0.00	0.00	0.00
Winston	0.00	0.00	0.00	0.00
Total	**0.22**	**8,274.20**	**8,274.42**	**114,143.54**

Table 24. Total thermoelectric-power freshwater withdrawals by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total
Apalachicola			
03130002	0.00	0.00	0.00
03130003	0.00	0.00	0.00
03130004	0.17	105.36	105.53
03130012	0.00	0.00	0.00
Subtotal	*0.17*	*105.36*	*105.53*
Choctawhatchee–Escambia			
03140103	0.00	0.00	0.00
03140104	0.00	0.00	0.00
03140106	0.00	0.00	0.00
03140107	0.00	0.00	0.00
03140201	0.00	0.00	0.00
03140202	0.00	0.00	0.00
03140203	0.00	0.00	0.00
03140301	0.00	4.30	4.30
03140302	0.00	0.00	0.00
03140303	0.00	0.00	0.00
03140304	0.00	0.00	0.00
03140305	0.00	0.00	0.00
Subtotal	*0.00*	*4.30*	*4.30*
Alabama			
03150105	0.00	0.00	0.00
03150106	0.00	142.68	142.68
03150107	0.00	812.32	812.32
03150108	0.00	0.00	0.00
03150109	0.00	0.00	0.00
03150110	0.00	0.00	0.00
03150201	0.00	4.14	4.14
03150202	0.00	0.00	0.00
03150203	0.00	0.00	0.00
03150204	0.00	0.00	0.00
Subtotal	*0.00*	*959.14*	*959.14*
Mobile–Tombigbee			
03160101	0.00	0.00	0.00
03160103	0.00	0.00	0.00
03160105	0.00	0.00	0.00
Mobile–Tombigbee (Continued)			
03160106	0.00	0.00	0.00
03160107	0.00	0.00	0.00
03160108	0.00	0.00	0.00
03160109	0.00	927.28	927.28
03160110	0.00	0.00	0.00
03160111	0.00	0.00	0.00
03160112	0.00	0.00	0.00
03160113	0.05	386.09	386.14
03160201	0.00	0.00	0.00
03160202	0.00	0.00	0.00
03160203	0.00	86.54	86.54
03160204	0.00	1,043.61	1,043.61
03160205	0.00	0.00	0.00
Subtotal	*0.05*	*2,443.52*	*2,443.57*
Pascagoula			
03170002	0.00	0.00	0.00
03170003	0.00	0.00	0.00
03170008	0.00	0.00	0.00
03170009	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*
Middle Tennessee–Hiwassee			
06020001	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*
Middle Tennessee–Elk			
06030001	0.00	1,476.30	1,476.30
06030002	0.00	1,991.44	1,991.44
06030003	0.00	0.00	0.00
06030004	0.00	0.00	0.00
06030005	0.00	0.00	0.00
06030006	0.00	1,294.14	1,294.14
Subtotal	*0.00*	*4,761.88*	*4,761.88*
Total	**0.22**	**8,274.20**	**8,274.42**

Table 25. Thermoelectric-power freshwater withdrawals by cooling type and by county, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

County	Once-through cooling withdrawals by source, in million gallons per day			Recirculating cooling withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total	Ground water	Surface water	Total
Autauga	0.00	0.00	0.00	0.00	4.14	4.14
Baldwin	0.00	0.00	0.00	0.00	0.00	0.00
Barbour	0.00	0.00	0.00	0.00	0.00	0.00
Bibb	0.00	0.00	0.00	0.00	0.00	0.00
Blount	0.00	0.00	0.00	0.00	0.00	0.00
Bullock	0.00	0.00	0.00	0.00	0.00	0.00
Butler	0.00	0.00	0.00	0.00	0.00	0.00
Calhoun	0.00	0.00	0.00	0.00	0.00	0.00
Chambers	0.00	0.00	0.00	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00	0.00	0.00
Chilton	0.00	0.00	0.00	0.00	0.00	0.00
Choctaw	0.00	0.00	0.00	0.00	0.00	0.00
Clarke	0.00	0.00	0.00	0.00	0.00	0.00
Clay	0.00	0.00	0.00	0.00	0.00	0.00
Cleburne	0.00	0.00	0.00	0.00	0.00	0.00
Coffee	0.00	0.00	0.00	0.00	0.00	0.00
Colbert	0.00	1,294.14	1,294.14	0.00	0.00	0.00
Conecuh	0.00	0.00	0.00	0.00	0.00	0.00
Coosa	0.00	0.00	0.00	0.00	0.00	0.00
Covington	0.00	0.00	0.00	0.00	4.30	4.30
Crenshaw	0.00	0.00	0.00	0.00	0.00	0.00
Cullman	0.00	0.00	0.00	0.00	0.00	0.00
Dale	0.00	0.00	0.00	0.00	0.00	0.00
Dallas	0.00	0.00	0.00	0.00	0.00	0.00
De Kalb	0.00	0.00	0.00	0.00	0.00	0.00
Elmore	0.00	0.00	0.00	0.00	0.00	0.00
Escambia	0.00	0.00	0.00	0.00	0.00	0.00
Etowah	0.00	142.68	142.68	0.00	0.00	0.00
Fayette	0.00	0.00	0.00	0.00	0.00	0.00
Franklin	0.00	0.00	0.00	0.00	0.00	0.00
Geneva	0.00	0.00	0.00	0.00	0.00	0.00
Greene	0.05	386.09	386.14	0.00	0.00	0.00
Hale	0.00	0.00	0.00	0.00	0.00	0.00
Henry	0.00	0.00	0.00	0.00	0.00	0.00
Houston	0.00	0.00	0.00	0.17	105.36	105.53

Table 25. Thermoelectric-power freshwater withdrawals by cooling type and by county, Alabama, 2005.—Continued

[Values may not sum to total estimated use(s) because of rounding]

County	Once-through cooling withdrawals by source, in million gallons per day			Recirculating cooling withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total	Ground water	Surface water	Total
Jackson	0.00	1,476.30	1,476.30	0.00	0.00	0.00
Jefferson	0.00	0.00	0.00	0.00	0.00	0.00
Lamar	0.00	0.00	0.00	0.00	0.00	0.00
Lauderdale	0.00	0.00	0.00	0.00	0.00	0.00
Lawrence	0.00	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00	0.00	0.00
Limestone	0.00	1,990.24	1,990.24	0.00	0.00	0.00
Lowndes	0.00	0.00	0.00	0.00	0.00	0.00
Macon	0.00	0.00	0.00	0.00	0.00	0.00
Madison	0.00	0.00	0.00	0.00	0.00	0.00
Marengo	0.00	0.00	0.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	0.00	0.00	0.00
Marshall	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	1,040.70	1,040.70	0.00	2.91	2.91
Monroe	0.00	0.00	0.00	0.00	0.00	0.00
Montgomery	0.00	0.00	0.00	0.00	0.00	0.00
Morgan	0.00	1.20	1.20	0.00	0.00	0.00
Perry	0.00	0.00	0.00	0.00	0.00	0.00
Pickens	0.00	0.00	0.00	0.00	0.00	0.00
Pike	0.00	0.00	0.00	0.00	0.00	0.00
Randolph	0.00	0.00	0.00	0.00	0.00	0.00
Russell	0.00	0.00	0.00	0.00	0.00	0.00
St. Clair	0.00	0.00	0.00	0.00	0.00	0.00
Shelby	0.00	800.66	800.66	0.00	11.66	11.66
Sumter	0.00	0.00	0.00	0.00	0.00	0.00
Talladega	0.00	0.00	0.00	0.00	0.00	0.00
Tallapoosa	0.00	0.00	0.00	0.00	0.00	0.00
Tuscaloosa	0.00	0.00	0.00	0.00	0.00	0.00
Walker	0.00	901.35	901.35	0.00	25.93	25.93
Washington	0.00	62.76	62.76	0.00	23.78	23.78
Wilcox	0.00	0.00	0.00	0.00	0.00	0.00
Winston	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**8,096.12**	**8,096.17**	**0.17**	**178.08**	**178.25**

Table 26. Thermoelectric-power freshwater withdrawals by cooling type and by hydrologic subregion and subbasin, Alabama, 2005.

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Once-through cooling withdrawals by source, in million gallons per day			Recirculating cooling withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total	Ground water	Surface water	Total
Apalachicola						
03130002	0.00	0.00	0.00	0.00	0.00	0.00
03130003	0.00	0.00	0.00	0.00	0.00	0.00
03130004	0.00	0.00	0.00	0.17	105.36	105.53
03130012	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*	*0.17*	*105.36*	*105.53*
Choctawhatchee–Escambia						
03140103	0.00	0.00	0.00	0.00	0.00	0.00
03140104	0.00	0.00	0.00	0.00	0.00	0.00
03140106	0.00	0.00	0.00	0.00	0.00	0.00
03140107	0.00	0.00	0.00	0.00	0.00	0.00
03140201	0.00	0.00	0.00	0.00	0.00	0.00
03140202	0.00	0.00	0.00	0.00	0.00	0.00
03140203	0.00	0.00	0.00	0.00	0.00	0.00
03140301	0.00	0.00	0.00	0.00	4.30	4.30
03140302	0.00	0.00	0.00	0.00	0.00	0.00
03140303	0.00	0.00	0.00	0.00	0.00	0.00
03140304	0.00	0.00	0.00	0.00	0.00	0.00
03140305	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*	*0.00*	*4.30*	*4.30*
Alabama						
03150105	0.00	0.00	0.00	0.00	0.00	0.00
03150106	0.00	142.68	142.68	0.00	0.00	0.00
03150107	0.00	800.66	800.66	0.00	11.66	11.66
03150108	0.00	0.00	0.00	0.00	0.00	0.00
03150109	0.00	0.00	0.00	0.00	0.00	0.00
03150110	0.00	0.00	0.00	0.00	0.00	0.00
03150201	0.00	0.00	0.00	0.00	4.14	4.14
03150202	0.00	0.00	0.00	0.00	0.00	0.00
03150203	0.00	0.00	0.00	0.00	0.00	0.00
03150204	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.00*	*943.34*	*943.34*	*0.00*	*15.80*	*15.80*
Mobile–Tombigbee						
03160101	0.00	0.00	0.00	0.00	0.00	0.00
03160103	0.00	0.00	0.00	0.00	0.00	0.00
03160105	0.00	0.00	0.00	0.00	0.00	0.00

Table 26. Thermoelectric-power freshwater withdrawals by cooling type and by hydrologic subregion and subbasin, Alabama, 2005. —Continued

[Values may not sum to total estimated use(s) because of rounding]

Hydrologic subregion and subbasin	Once-through cooling withdrawals by source, in million gallons per day			Recirculating cooling withdrawals by source, in million gallons per day		
	Ground water	Surface water	Total	Ground water	Surface water	Total
Mobile–Tombigbee (Continued)						
03160106	0.00	0.00	0.00	0.00	0.00	0.00
03160107	0.00	0.00	0.00	0.00	0.00	0.00
03160108	0.00	0.00	0.00	0.00	0.00	0.00
03160109	0.00	901.35	901.35	0.00	25.93	25.93
03160110	0.00	0.00	0.00	0.00	0.00	0.00
03160111	0.00	0.00	0.00	0.00	0.00	0.00
03160112	0.00	0.00	0.00	0.00	0.00	0.00
03160113	0.05	386.09	386.14	0.00	0.00	0.00
03160201	0.00	0.00	0.00	0.00	0.00	0.00
03160202	0.00	0.00	0.00	0.00	0.00	0.00
03160203	0.00	62.76	62.76	0.00	23.78	23.78
03160204	0.00	1,040.70	1,040.70	0.00	2.91	2.91
03160205	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.05*	*2,390.90*	*2,390.95*	*0.00*	*52.62*	*52.62*
Pascagoula						
03170002	0.00	0.00	0.00	0.00	0.00	0.00
03170003	0.00	0.00	0.00	0.00	0.00	0.00
03170008	0.00	0.00	0.00	0.00	0.00	0.00
03170009	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Middle Tennessee–Hiwassee						
06020001	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
Middle Tennessee–Elk						
06030001	0.00	1,476.30	1,476.30	0.00	0.00	0.00
06030002	0.00	1,991.44	1,991.44	0.00	0.00	0.00
06030003	0.00	0.00	0.00	0.00	0.00	0.00
06030004	0.00	0.00	0.00	0.00	0.00	0.00
06030005	0.00	0.00	0.00	0.00	0.00	0.00
06030006	0.00	1,294.14	1,294.14	0.00	0.00	0.00
Subtotal	*0.00*	*4,761.88*	*4,761.88*	*0.00*	*0.00*	*0.00*
Total	**0.05**	**8,096.12**	**8,096.17**	**0.17**	**178.08**	**178.25**

Comparison of 2000 and 2005 Water-Use Data

Data compiled across water-use categories in 2005, were more comprehensive than previous compilations for Alabama. The comparison of the 2000 and 2005 data in this section documents important changes within the water-use categories and is a beginning step in the process of assuring the quality of the data over time. As consistent methods are applied from year-to-year to collecting data and estimating water use, additional years of compilation could provide a better understanding of the trends in Alabama water use and the factors affecting the trends. Water withdrawals are affected by the day-to-day water needs. Over time, the water needs are influenced by changes in socioeconomic and demographic factors, weather conditions, and public policy.

Total Water Use

Overall, total water use in 2005 varied little from total use in 2000, although water withdrawals were estimated for livestock and mining for 2005, but not for 2000. In 1995, estimates of water withdrawals for these two categories amounted to 46 Mgal/d, or less than 1 percent of the total water use. Even with that small omission in 2000, total water withdrawals decreased less than 1 percent in 2005 (9,958 Mgal/d) compared to 2000 (9,990 Mgal/d) (fig. 1). All water use reported in 2000 and 2005 was freshwater; however, some saline ground-water use (9.1 Mal/d) was reported for mining in 1995. Surface-water withdrawals decreased less than 5 percent, from 9,550 Mgal/d in 2000 to 9,467 Mgal/d in 2005. In contrast, ground-water withdrawals increased about 12 percent from 440 Mgal/d in 2000 to 491 Mgal/d in 2005.

Public-Supply and Residential Water Use

Total public-supply water withdrawals decreased 4 percent from 834 Mgal/d in 2000 to 802 Mgal/d in 2005 (table 27; Hutson and others, 2004a). Changes in ground-water withdrawals ranged from a decrease of 6.25 Mgal/d in Madison County to an increase of 7.8 Mgal/d in Montgomery County (table 27). Changes in surface-water withdrawals ranged from a decrease of 59.6 Mgal/d in Mobile County to an increase of 19.8 Mgal/d in Jefferson County. Further county-by-county comparisons can be made by using the aggregated county-level data for 2000 at *http://water.usgs.gov/watuse.*

The higher 2000 statewide value of 834 Mgal/d may reflect some increased warm-weather watering due to drought or a reduction in public-supplied deliveries to the industrial sector. Differences in the withdrawal estimates from 2000 to 2005 also can be attributed to a more complete inventory of the public suppliers, use of withdrawal data from both the AWURP database and USEPA MOR records from ADEM, application of GIS techniques and other mapping routines to better locate wells and intakes within the correct county and hydrologic subbasin, improved metering of water withdrawals at the facilities, and changes in water demand in 2005.

At the county level, based on the population served by the public suppliers as reported to DWB-ADEM and USEPA-SDWIS in 2005, the population served for a county often exceeded the county population, or was less than the population served as reported in the 1990 U.S. Census Bureau estimate of percentage of housing units on public supply. An alternative method was devised to estimate population served based on percentage of housing units on public supply, number of housing units in 1990, and 1990 and 2005 populations (U.S. Census Bureau, 1992, 2006). A change in methodology for determining population served by public suppliers also affected the estimate for self-supplied population as detailed in the section on "Population Served and Self-Supplied Population" in the "Data Compilation, Sources of Information, and Methodology" section of this report. Population served by public suppliers increased 13 percent from 3,579,550 in 2000 to 4,036,440 in 2005. The change in values partly was the result of a change in methodology and partly was caused by an actual change in population. The estimates of population served by county from 2000 to 2005 ranged from a decrease of 10,173 persons in Covington County to an increase of 55,192 persons in Jefferson County (U.S. Geological Survey, 2004).

Self-supplied population was computed as the difference between total population and population served. Because self-supplied residential withdrawals were based on the estimate of the self-supplied population, any change in methodology for determining population served affects not only the estimate of the self-supplied population but also self-supplied residential withdrawals. The estimate for self-supplied population decreased 40 percent from 867,590 in 2000 to 521,350 in 2005, the difference partly being an artifact of the methodologies. Correspondingly, the self-supplied residential withdrawals declined about 50 percent (from 78.9 Mgal/d in 2000 to 39.12 Mgal/d in 2005). For 2000, data-entry errors for ground-water withdrawals for Autauga, Madison, Monroe, and Russell Counties resulted in a higher overall State-level self-supplied residential per capita use of 91 gal/d for 2000 (U.S. Geological Survey, 2004). The statewide residential self-supplied per capita use for 2005 was 75 gal/d.

Table 27. Comparison of 2000 and 2005 public-supply water use and self-supplied industrial water use, Alabama.

[Values may not sum to total estimated use(s) because of rounding. A negative number means less water was used in 2005 than 2000]

Public supply									
County	Ground water				County	Surface water			
	2000	2005	2005 and 2000 difference	Percent difference		2000	2005	2005 and 2000 difference	Percent difference
	Million gallons per day					Million gallons per day			
All counties	281.30	277.22	–4.08	–1	All counties	553.15	524.46	–28.69	–5
Increase greater than 1 million gallons per day (Mgal/d)									
Montgomery	21.10	28.90	7.80	37	Jefferson	45.18	65.02	19.84	44
Shelby	11.19	14.12	2.93	26	Madison	20.00	38.85	18.85	94
St. Clair	5.54	8.13	2.59	47	Montgomery	23.20	35.57	12.37	53
Dale	6.88	8.78	1.90	28	Elmore	2.10	10.29	8.19	390
Baldwin	19.70	21.59	1.89	10	Marshall	15.60	21.17	5.57	36
Limestone	2.72	4.55	1.83	67	Lawrence	2.10	6.91	4.81	229
Macon	0.36	1.36	1.00	278	Tuscaloosa	23.20	27.49	4.29	18
					Jackson	5.95	10.08	4.13	69
					Lee	11.50	15.53	4.03	35
					Talladega	8.40	12.12	3.72	44
					Tallapoosa	10.70	12.55	1.85	17
					Clarke	0.29	1.87	1.58	545
Decrease greater than 1 million gallons per day									
Elmore	3.33	2.17	–1.16	–35	Shelby	1.54	0.00	–1.54	–100
Monroe	5.30	3.85	–1.45	–27	Morgan	32.72	30.42	–2.30	–7
Covington	6.63	4.38	–2.25	–34	Etowah	19.00	14.86	–4.14	–22
Autauga	5.70	3.18	–2.52	–44	De Kalb	15.60	8.57	–7.03	–45
Tuscaloosa	3.37	0.80	–2.57	–76	Cullman	39.60	26.51	–13.09	–33
Houston	18.92	15.85	–3.07	–16	Blount	29.26	13.45	–15.81	–54
Dallas	10.02	6.60	–3.42	–34	Walker	58.34	40.22	–18.12	–31
Jefferson	13.90	8.32	–5.58	–40	Mobile	125.00	65.45	–59.55	–48
Madison	29.96	23.71	–6.25	–21					

Total public supply 2000	834.50
Total public supply 2005	801.66
2005 and 2000 difference (Mgal/d)	–32.84
2005 and 2000 difference (percent)	–4

Table 27. Comparison of 2000 and 2005 public-supply water use and self-supplied industrial water use, Alabama.—Continued

[Values may not sum to total estimated use(s) because of rounding. A negative number means less water was used in 2005 than 2000; —, no value in 2000]

Self-supplied industrial									
County	Ground water				County	Surface water			
	2000	2005	2005 and 2000 difference	Percent difference		2000	2005	2005 and 2000 difference	Percent difference
	Million gallons per day					Million gallons per day			
All counties	56.03	27.62	–28.41	–51	All counties	777.06	522.80	–254.26	–33
Ground-water increase greater than 0.5 million gallons per day and surface water increase greater than 1 million gallons per day									
Russell	0.11	0.92	0.81	736	Russell	22.80	27.60	4.80	21
					Autauga	26.60	30.63	4.03	15
					St. Clair	0.00	3.50	3.50	—
					Lawrence	55.80	57.18	1.38	2
					Sumter	0.00	1.22	1.22	—
Decrease greater than 1 million gallons per day									
Baldwin	0.79	0.00	–0.79	–100	Escambia	34.00	32.07	–1.93	–6
Conecuh	0.82	0.00	–0.82	–100	Wilcox	23.00	21.04	–1.96	–9
Houston	1.33	0.00	–1.33	–100	Choctaw	50.00	47.41	–2.59	–5
Morgan	3.12	1.29	–1.83	–59	Chambers	5.70	2.16	–3.54	–62
Colbert	3.00	0.87	–2.13	–71	Monroe	59.00	54.61	–4.39	–7
Coffee	3.00	0.86	–2.14	–71	Baldwin	5.70	0.00	–5.70	–100
Washington	9.17	5.33	–3.84	–42	Mobile	18.00	0.00	–18.00	–100
Mobile	21.18	5.67	–15.51	–73	Clarke	20.00	0.00	–20.00	–100
					Talladega	73.60	53.36	–20.24	–28
					Colbert	82.60	55.57	–27.03	–33
					Morgan	124.32	89.36	–34.96	–28
					Dallas	40.00	0.00	–40.00	–100
					Etowah	95.70	9.87	–85.83	–90

Total self-supplied industrial 2000	833.09
Total self-supplied industrial 2005	550.42
2005 and 2000 difference (Mgal/d)	–282.67
2005 and 2000 difference (percent)	–34

Irrigation and Aquaculture

Water withdrawals for irrigation increased about 274 percent from 43.1 Mgal/d in 2000 to 161.2 Mgal/d in 2005. Ground-water withdrawals increased about 412 percent, and surface-water withdrawals increased about 203 percent. The increase in estimated water withdrawals was the result of a more complete inventory of golf courses, nurseries, and sod farms by the Alabama OWR and the use of the USDA-NASS irrigation databases for 2002 and 2003. The changes in total irrigation water withdrawals by county ranged from a decrease of 1.16 Mgal/d in Greene County to an increase of 37.84 Mgal/d in Baldwin County (U.S. Geological Survey, 2004).

Total irrigated acreage from 2000 to 2005 increased about 94 percent from 70,010 acres to 135,800 acres, primarily as a result of the inclusion of more golf courses, nurseries, and sod farms. The changes in irrigated acreage ranged from a reduction of 2,040 acres in Greene County to an increase of 6,860 acres in Baldwin County (U.S. Geological Survey, 2004).

Aquaculture withdrawals were 10.4 Mgal/d in 2000 and 74.89 Mgal/d in 2005. The change in water use was a result of the inclusion of more fish farms and fish hatcheries in the estimation, than in 2000. In 2000, 86 percent of the source of water was ground water (Hutson and others, 2004a). In 2005, only 54 percent (40.51 Mgal/d) was ground water.

Industrial

In 2000, 57 self-supplied industries reported withdrawals to the AWURP compared with 66 industries in 2005. Although the number of industries increased in 2005, the amount of water withdrawals decreased 34 percent from 833 Mgal/d in 2000 to 550 Mgal/d in 2005 (table 27). Ground-water withdrawals were 51 percent less in 2005 (27.6 Mgal/d) than in 2000 (56 Mgal/d). Surface water withdrawals were 33 percent less in 2005 (523 Mgal/d) than in 2000 (777 Mgal/d). Several industries reported reduced withdrawals from 2000 to 2005. Possible reasons for reduced water withdrawals include reduced production, increased water conservation, or improved metering and reporting. Although drought conditions occurred in 2000, drought conditions to date have rarely, affected self-supplied industrial withdrawals in Alabama. The changes in total self-supplied industrial withdrawals by county ranged from a decrease of about 85.8 Mgal/d (surface water) in Etowah County to an increase of 5.61 Mgal/d (combined surface and ground water) in Russell County (U.S. Geological Survey, 2004).

Thermoelectric Power

Thermoelectric-power generation requires a large amount of water for cooling purposes. The amount of water depends on the amount of power generated, cooling-system type, and, for once-through cooling, the temperature of the receiving stream at the time of the planned cooling-water discharge. In 2000, total thermoelectric-power water withdrawals were 8,190 Mgal/d compared with 8,274 Mgal/d in 2005, which was an increase of about 1 percent. Ground-water withdrawals of 0.22 Mgal/d were reported in 2005, but none were reported in 2000.

Summary

Water use by source of supply and eight categories of use—public supply, self-supplied residential, irrigation, livestock, aquaculture, self-supplied industrial, mining, and thermoelectric power—was estimated for the State of Alabama for 2005. Site-specific data were used as a basis for estimates for public supply, public-supplied deliveries, self-supplied industrial, mining, thermoelectric power, and golf course, nursery, and sod irrigation. Aggregated county-level data were used as a basis for estimates for self-supplied residential, crop irrigation, livestock, and aquaculture.

Total water use was about 9,958 million gallons per day (Mgal/d) during 2005. Surface water was the source for about 95 percent of the total withdrawals (9,467 Mgal/d) and the remaining 5 percent (491 Mgal/d) was from ground water. More surface water than ground water was used in all categories except aquaculture, mining, and self-supplied residential. Estimated water withdrawals by category and in descending order were thermoelectric power, 8,274 Mgal/d; public supply, 802 Mgal/d; self-supplied industrial, 550 Mgal/d; irrigation, 161 Mgal/d; aquaculture, 75 Mgal/d; self-supplied residential, 39 Mgal/d; livestock, 28 Mgal/d; and mining, 28 Mgal/d.[3]

A comparison of gallons per day per person of the total, public supply, public-supplied residential, and self-supplied residential water use shows that for water used to generate electricity, support industrial and agricultural activities, and provide drinking water (9,958 Mgal/d), per capita use was 2,185 gallons per day (gal/d) for the estimated 4.56 million residents in Alabama. For the public-supplied water delivered to the residential, industrial, and commercial sectors and public use and losses (802 Mgal/d), per capita use was 199 gal/d for the 4.04 million residents served by public supply. For the public-supplied residential deliveries (326 Mgal/d), per capita use was 81 gal/d; and for self-supplied residential (39 Mgal/d), per capita use was 75 gal/d for the 0.52 million residents with private wells. Average residential per capita use was 80 gal/d.

Thermoelectric-power plants located in all but two of the seven hydrologic subregions in Alabama—the Pascagoula and the Tennessee-Hiwassee—withdrew 83 percent (8,274 Mgal/d) of the total water withdrawn to generate 114,144 net gigawatt-hours of energy. Surface water provided nearly all of the water (8,274 Mgal/d). About 98 percent of the thermoelectric-power withdrawals was used for once-through cooling. The percent consumptive use from once-through cooling generating units ranged from zero to nearly 7 percent (median, 0.1 percent) compared to recirculating-cooling generating units that have a consumptive use ranging from 30 to 65 percent (median, 44 percent). A comparison of a once-through cooling plant to a recirculating-cooling plant in Alabama shows that a once-through cooling unit typically uses about 60 gallons of water to produce 1 kilowatt-hour of electricity; a recirculating-cooling unit typically uses about 20 gallons of water to produce 1 kilowatt-hour of electricity.

Public-supply withdrawals were 8 percent of total freshwater withdrawals and 48 percent of total withdrawals for all categories excluding thermoelectric power. Surface-water sources provided 65 percent of the water, and ground water provided the remaining 35 percent. Public supply accounted for 56 percent of the total ground-water withdrawals in the State. Public-supply deliveries to residential customers were 41 percent of total public-supply withdrawals, or about 326 Mgal/d; combined industrial and commercial deliveries were 44 percent, or about 355 Mgal/d; and public use and losses accounted for the remaining 15 percent, or about 120 Mgal/d. Mobile, Jefferson, Montgomery, Madison, and Walker Counties accounted for about 40 percent of public-supply withdrawals and 39 percent of the population served.

Total industrial water use was 906 Mgal/d in 2005. Self-supplied industrial withdrawals were 6 percent of total withdrawals (550 Mgal/d) and 33 percent of total withdrawals excluding thermoelectric power. Surface water was the source for 95 percent of the self-supplied industrial water withdrawals. Statewide, combined public-supplied industrial and commercial deliveries were 355 Mgal/d. Paper and allied products accounted for the largest self-supplied surface-water withdrawals (301 Mgal/d), and chemical and allied products (12 Mgal/d) accounted for the largest self-supplied ground-water withdrawals. The largest withdrawals occurred in Morgan, Colbert (primarily chemical and allied products), Lawrence, Monroe, and Talladega (primarily paper and allied products) Counties with withdrawals that were more than 50 Mgal/d for each county. Withdrawals in these counties were 57 percent of the total self-supplied industrial withdrawals.

Irrigation withdrawals were about 2 percent of total withdrawals and about 10 percent of total withdrawals for all categories excluding thermoelectric power. More than half of the water, 54 percent, was from surface water. Baldwin County withdrew 27 percent (44 Mgal/d) of the irrigation water, primarily for nursery stock and sod. Most of that water (37 Mgal/d) was from ground water. About 135,800 acres of crops (food and feed crops, nursery stock

[3]Values may not sum to total estimated use(s) or acreage because of rounding.

and sod) and golf courses were irrigated in 2005. Nursery stock and sod accounted for 29 percent of the irrigated crop acreage (31,633 of the 109,080 acres) statewide. Golf courses applied about 18 Mgal/d to 26,720 acres in 2005. About 97 percent of the total acreage was irrigated with sprinkler irrigation systems. The statewide average application rate was 1.33 acre-feet per acre per year. The highest application rate, 3.74 acre-feet per acre per year, was for nursery stock.

Aquaculture withdrawals were less than 1 percent (75 Mgal/d) of the total freshwater withdrawals and were about 4 percent of the total freshwater withdrawals excluding thermoelectric power. Ground water provided more than half, 54 percent, of the water used. All aquaculture withdrawals were considered fresh in 2005, although some ponds were filled with low-to-high salinity ground water.

Self-supplied residential withdrawals also were less than 1 percent (39 Mgal/d) of total water withdrawals, but about 2 percent of total water withdrawals for all categories excluding thermoelectric power. All of the water withdrawn for self-supplied residential purposes was from ground water. The largest self-supplied residential withdrawals were in Baldwin and Mobile Counties. These two counties represented about 14 percent of the total self-supplied residential withdrawals in Alabama and 12 percent of the self-supplied residential population.

Livestock withdrawals were less than 1 percent (28 Mgal/d) of the total freshwater withdrawals and were nearly 2 percent of the total freshwater withdrawals excluding thermoelectric power. Surface water was the source for more than half, 56 percent, of the water used. Two of the seven of the hydrologic subregions—the Mobile–Tombigbee (7.8 Mgal/d) and the Alabama (7.3 Mgal/d)—accounted for 54 percent of the livestock withdrawals.

Similarly, mining withdrawals were less than 1 percent of total water withdrawals (28 Mgal/d) and nearly 2 percent of total water withdrawals for all categories excluding thermoelectric power. Ground water was the source of about 70 percent of mining withdrawals. All mining withdrawals were considered fresh in 2005, although some low-salinity ground water has been tapped in parts of the State.

Most of the large water withdrawals were concentrated in a few counties. Limestone, Jackson, Colbert, and Mobile Counties accounted for 60 percent of the total withdrawals—primarily to meet the cooling needs at thermoelectric-power plants. Excluding thermoelectric power, the largest withdrawals by county occurred in Morgan, Mobile, Jefferson, Talladega, and Madison Counties.

Water use was compiled by hydrologic subbasin for all categories except aquaculture, mining, and self-supplied residential. As a result of estimating fewer categories, total withdrawals by subbasin were 9,816 Mgal/d compared to total withdrawals by county. The Middle Tennessee–Elk subregion accounted for about 53 percent (5,185 Mgal/d) of the estimated total withdrawals by subregion. About 92 percent of that water use was for thermoelectric power, and more than 99 percent of the water was from surface water. Excluding thermoelectric power, the Middle Tennessee–Elk subregion accounted for 27 percent of the water withdrawals statewide. About 51 percent of the nonpower withdrawals in the Middle Tennessee–Elk subbasin was for self-supplied industrial use.

Overall, total water use in 2005 varied little from total use in 2000. Total water withdrawals decreased less than 1 percent from 2000 to 2005 (from 9,990 Mgal/d to 9,958 Mgal/d, respectively). Surface-water withdrawals were about 5 percent less in 2005 than in 2000 (from 9,467 Mgal/d to 9,950 Mgal/d, respectively). Ground-water withdrawals increased about 12 percent from 2000 to 2005 (from 440 Mgal/d to 491 Mgal/d, respectively). By category, withdrawals for

- Public supply declined 4 percent from 834 Mgal/d in 2000 to 802 Mgal/d in 2005.
- Self-supplied residential declined about 50 percent from 78.89 Mgal/d in 2000 to 39.12 Mgal/d in 2005.
- Irrigation increased almost four-fold from 43 Mgal/d in 2000 to 161 Mgal/d in 2005. Most of the increase was a result of the inclusion of more golf courses, nurseries, and sod farms in the water-use estimation. Over the same period, total irrigated acreage increased about 94 percent from 70,010 acres in 2000 to 135,800 acres in 2005.
- Aquaculture increased more than six-fold from 10.4 Mgal/d in 2000 to 74.9 Mgal/d in 2005. Most of the increase was the result of the inclusion of more fish farms and fish hatcheries in the water-use estimation.
- Self-supplied industrial declined 34 percent from 833 Mgal/d in 2000 to 550 Mgal/d in 2005.
- Thermoelectric power increased about 1 percent from 8,190 Mgal/d in 2000 to 8,274 Mgal/d in 2005.

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Glossary

The following terms pertain to or are referenced in the text.

Alabama Water Use Reporting Program All public water systems and major non-public and irrigation water users who have the capacity to withdraw 100,000 gallons per day or more of surface or ground water in Alabama are required to register with the Alabama Office of Water Resources. A Certificate of Use is issued to each user who is then required to report their usage annually. *See also* eWater.

aggregated data summarized values for a specific data element either by spatial area or category of use.

aquaculture water use water use associated with the farming of organisms, such as finfish and shellfish, that live in water and offstream water use associated with fish hatcheries. *See also* fish farm water use, fish hatchery water use, and offstream use.

census block group U.S. Census Bureau census accounting unit that generally contains between 600 and 3,000 people, with an optimum size of 1,500 people (U.S. Census, 2009).

choropleth map a data map that presents data values as discrete areal ranges.

closed-loop cooling *See* recirculating cooling.

commercial water use water for motels, hotels, restaurants, office buildings, other commercial facilities, and military and nonmilitary institutions. Water may be obtained from a public supplier or may be self-supplied. *See also* nonresidential water use, public-supply deliveries, public-supply water use, and offstream use.

community water system water system furnishing water year-round to at least 25 people or having a minimum of 15 connections. *See also* public-supply deliveries, non-community water system, public-supply water use, and public supplier.

consumptive crop irrigation requirement the amount of water, in addition to rainfall, that must be applied to meet a crop's evapotranspiration needs without significant reduction in yield (Smajstrla and Zazueta, 2002). *See also* irrigation water use.

consumptive use the part of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the environment. Consumptive use also is referred to as water consumed.

conveyance loss water that is lost in transit from a pipe, canal, conduit, or ditch by leakage or evaporation. Generally, the water is not available for further use; however, leakage from an irrigation ditch, for example, may percolate to a ground-water source and be available for further use. *See also* irrigation water use.

cooling system an equipment system that provides water for cooling purposes, such as for condensers at power plants or at factories, and includes water intakes and outlets, cooling towers, and ponds, pumps, and pipes. *See also* cooling-system type, industrial water use, once-through cooling, recirculating cooling, thermoelectric-power water use.

cooling-system type once-through or recirculating are cooling system types. *See also* cooling system, industrial water use, once-through cooling, recirculating cooling, and thermoelectric-power water use.

delivery-release the amount of water delivered to the point of use and the amount released after use; the difference between these amounts is usually the same as consumptive use. *See also* consumptive use.

domestic water use *See* total residential water use.

eWater the client server application developed and maintained by the Alabama Office of Water Resources to support the Alabama Water Use Reporting Program. *See also* Alabama Water Use Reporting Program

fish farm water use water used for the production of finfish and shellfish under controlled feeding, sanitation, and harvesting procedures for commercial purposes. Water use by fish farms is classified in the aquaculture category. *See also* aquaculture water use and fish hatchery water use.

fish hatchery water use water used for raising fish for later release and in association with the

operation of fish hatcheries or fishing preserves. Fish hatchery water use is classified in the aquaculture category. *See also* aquaculture water use and fish farm water use.

freshwater water that contains less than 1,000 milligrams per liter (mg/L) of dissolved salts; generally, more than 500 mg/L of dissolved solids is undesirable for drinking and for many industrial uses. *See also* saline water.

geographic information system a computer system designed to collect, manage, manipulate, analyze, and display spatially referenced data. A GIS includes both attribute and geospatial data.

gross per capita use total amount of water withdrawn for all uses including generating electricity and residential, commercial, industrial, and agricultural purposes divided by the total population. *See also* gross public-supply per capita use; public-supplied residential per capita use; residential per capita use; and, self-supplied residential per capita use.

gross public-supply per capita use total amount of water billed by a public supplier for all uses including generating electricity, residential, commercial, industrial, public and agricultural purposes, and losses divided by the number of people served by a public supplier. This statistic normalizes deliveries from a public supplier by population served and can be used to compare the relative size of nonresidential deliveries among public suppliers. A high statistical value could indicate large deliveries to the nonresidential sector. *See also* gross per capita use, public-supplied residential per capita use, residential per capita use, and self-supplied residential per capita use.

industrial water use water used for fabrication, processing, washing, and cooling and includes such industries as chemical and allied products, food, mining, paper and allied products, petroleum refining, and steel. *See also* cooling system, cooling-system type, mining water use, public-supply deliveries, nonresidential water use, offstream use, public-supply water use, thermoelectric-power water use, and total industrial water use.

instream use water that is used, but not withdrawn, from a surface-water source for such purposes as hydroelectric-power generation, navigation, water-quality improvement, fish propagation, and recreation. *See also* offstream use and water use.

irrigation water use water that is applied by an irrigation system to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands such as parks and golf courses. Irrigation includes water that is applied for pre-irrigation, frost protection, chemical application, weed control, field preparation, crop cooling, harvesting, dust suppression, the leaching of salts from the root zone, and water lost in conveyance. *See also* conveyance loss, microirrigation system, sprinkler irrigation system, surface irrigation system, and offstream use.

livestock water use water for livestock watering, feedlots, dairy operations, and other on-farm needs. Types of livestock include dairy cows and heifers, beef cattle and calves, sheep and lambs, goats, hogs and pigs, horses and poultry. *See also* offstream use.

microirrigation system an irrigation system that wets only a discrete portion of the soil surface in the vicinity of the plant by means of applicators, such as orifices, emitters, porous tubing, and perforated pipe operated under low pressure. The applicators can be placed on or below the surface of the ground or can be suspended from supports. *See also* irrigation water use, sprinkler irrigation system, and surface irrigation system.

mining water use water use for the extraction of naturally occurring minerals including solids, such as coal, sand, gravel, and other ores; liquids, such as crude petroleum; and gases, such as natural gas. Also includes uses associated with quarrying, milling, and other preparations customarily done at the mine site or as part of a mining activity. Does not include water associated with dewatering of the aquifer that is not put to beneficial use. Also does not include water used in processing, such as smelting, refining petroleum, or slurry pipeline operations. These processing uses are included in industrial water use. *See also* industrial water use and offstream use.

monthly operation report monthly data report of average daily water withdrawals or water purchases submitted by each public supplier to the Alabama Department of Environmental Management.

non-community water system water system furnishing water to fewer than 25 people or fewer than15 connections, but not year-round. *See also* community water supplier, public-supply deliveries, public-supply water use, and public supplier.

non-public a water-use classification in the Alabama Water Use Reporting Program system for a water-using entity that is neither a public supplier nor an irrigator.

nonresidential water use water delivered from a public supplier to commercial, industrial or thermoelectric power customers. *See also* commercial water use, industrial water use, public-supply water use, and residential water use.

offstream use water withdrawn or diverted from a ground-water or surface-water source for aquaculture water use, commercial water use, irrigation water use, livestock water use, mining water use, public-supply water use, industrial water use, residential water use, thermoelectric power, and other uses. *See also* entries for each of the previously mentioned uses and self-supplied water use.

once-through cooling process in which the water is withdrawn from a source, circulated through the heat exchangers, and then returned to a body of water at a higher temperature. Once-through cooling systems may be referred to as open-loop systems. *See also* cooling system, industrial water use, recirculating cooling, and thermoelectric-power water use.

public-supplied residential per capita use total amount of public-supply withdrawals for residential, commercial, industrial, and thermoelectric-power purposes and public use and losses divided by the associated population served by a public supply. *See also* gross per capita use, gross public supply per capita use, residential per capita use, and self-supplied residential per capita use.

public supplier *See* community water system.

public-supply deliveries amount of water delivered from a public supplier to users for residential, commercial, industrial, thermoelectric-power, or public-use purposes. *See also* commercial water use, industrial water use, public-supply water use, public water use, residential water use, and thermoelectric-power water use.

public-supply water use water withdrawn, treated, and distributed by public suppliers. Public suppliers provide water for a variety of uses such as residential, commercial, industrial, thermoelectric power, and public water use. *See also* commercial water use, domestic water use, industrial water use, public-supply deliveries, public water use, thermoelectric-power water use, total industrial water use, and offstream use.

public use and losses water supplied from a public supplier and used for such purposes as firefighting, street washing, flushing of water lines, and maintaining municipal parks and swimming pools. *See also* public-supply deliveries and public-supply water use.

public water system *See* community water system or public supplier.

recirculating cooling cooling process where water is withdrawn from a source, circulated through heat exchangers, then cooled, and recycled. Subsequent water withdrawals are used to replace water lost to evaporation, blowdown, drift, and leakage and, accordingly, results in a much smaller return flow than once-through cooling. Related terms include closed-loop cooling and contact cooling. *See also* closed-loop cooling, cooling system, cooling-system type, industrial water use, and thermoelectric-power water use.

reclaimed wastewater wastewater treatment plant effluent that has been diverted for beneficial use before it reaches a natural waterway or aquifer. *See also* water use.

residential per capita use public-supplied residential deliveries plus self-supplied residential withdrawals divided by total population. *See also* gross per capita use, gross public-supply per capita use, public-supplied residential per capita use, and self-supplied residential per capita use.

residential water use water used for indoor household purposes, such as drinking, preparing food, bathing, washing clothes and dishes, and flushing toilets and outdoor purposes, such as watering lawns and gardens. Residential water use is the combined public-supplied residential deliveries and self-supplied residential withdrawals. Residential water use is the same as domestic water use, but is the preferred term for this report. *See also* domestic water use, public-supply deliveries, public-supply water use, and offstream use.

return flow water that reaches a ground-water or surface-water source after release from the point of use and thus becomes available for further use. *See also* water use.

saline water water that contains 1,000 milligrams per liter or more of dissolved salts. *See also* freshwater.

self-supplied residential per capita use total amount of water withdrawn for self-supplied residential purposes divided by the associated self-supplied residential population. *See also* gross per capita use, gross public-supply per capita use, public-supplied residential per capita use, and residential per capita use.

self-supplied water use water withdrawn from a ground-water or surface-water source by a user rather than being obtained from a public supply. *See also* offstream use.

site-specific data data for an individual water-using entity.

sprinkler irrigation system an irrigation system in which water is applied by means of perforated pipes or nozzles operated under pressure so as to form a spray pattern. *See also* irrigation water use, microirrigation system, and surface irrigation system.

Standard Industrial Classification (SIC) codes four-digit codes established by the Office of Management and Budget, published in 1987, and used in the classification of businesses by type of activity in which they are engaged.

surface irrigation system irrigation by means of flood, furrow, or gravity. Flood irrigation is the application of irrigation water in which the entire soil surface is covered by ponded water. Furrow is a partial surface-flooding method of irrigation normally used with clean-tilled crops in which water is applied in furrows or rows of sufficient capacity to contain the design irrigation stream. Gravity is an irrigation method in which water is not pumped, but flows in ditches or pipes and is distributed by gravity. *See also* irrigation water use, microirrigation system, and sprinkler irrigation system.

thermoelectric-power water use water used in the process of generating electricity with steam-driven turbine generators. The total water use is a combination of public-supply deliveries to thermoelectric-power plants and self-supplied thermoelectric-power withdrawals. For this report, thermoelectric-power water use refers only to self-supplied thermoelectric-power withdrawals. *See also* cooling system, cooling-system type, once-through cooling, public-supply water use, recirculating cooling, and offstream use.

total industrial water use self-supplied industrial withdrawals plus public-supplied industrial and commercial deliveries. *See also* public-supply water use.

total residential water use self-supplied residential withdrawals plus public-supplied residential deliveries. *See also* public-supply water use.

wastewater-treatment return flow water returned to the hydrologic system by wastewater-treatment facilities. *See also* water use.

water transfer artificial conveyance of water from one area to another.

water use (1) in a restrictive sense, the term refers to water that is used for a specific purpose, such as for residential use, irrigation, thermoelectric-power cooling, or industrial processing. In this report, the quantity of water use for a specific category is the water withdrawal by that category of users, and public supply is considered a category of water use. (2) More broadly, water use pertains to the interaction of humans with and their influence on the hydrologic cycle, and includes elements such as water withdrawal, delivery, consumptive use, wastewater release, reclaimed wastewater, return flow, and instream use. *See also* offstream use and instream use.

water-use transaction a water-use activity that is a water withdrawal, water delivery, water release, return flow, or water transfer. *See also* delivery-release, return flow, wastewater-treatment return flow, water transfer, or water withdrawal.

water withdrawal water removed from the ground-water or diverted from a surface-water source for use. *See also* offstream use and self-supplied water use.

watt-hour (Wh) an electrical energy unit of measure equal to 1 watt of power supplied to, or taken from, an electric circuit for 1 hour.

Appendix A. Alabama Water Use by County

The following one-page summaries of water-use information by county present withdrawals by water-use category, public supplier, and major Standard Industrial Classification (SIC) groups, a pie chart of the distribution of total withdrawals by water-use category, and a map that shows the location of the county within the State. See the first example on the following county page for Autauga. No attempt was made to interpret the water use indicated on the pie chart on an individual basis. Also listed are totals for population, population served by public supply, per capita use, acres irrigated, land area, and water area. The per capita use is the average daily amount of water delivered from a public supplier to residential customers plus the average daily self-supplied residential withdrawals divided by the total population of the county.

In each of the county summaries, a table lists average daily withdrawals for the categories of use. If there are no withdrawals for a particular category, that category is not listed. The withdrawals are totaled by source of water used ground water [GW]) or (surface water [SW] by category, and the percentage of use is indicated.

Each public supplier is listed by the county in which the withdrawal occurs; therefore, a public supplier may be listed in more than one county depending on the location of its water sources. For example, Birmingham WW&SB withdraws surface water from Blount, Cullman, Jefferson, and Walker Counties and is, therefore, listed on each of the corresponding county pages.

In the tables for category, public supplier, and SIC groupings, a value of 0.00 million gallons per day (Mgal/d) was used if the withdrawal was less than 0.01 Mgal/d. As a result, some totaled withdrawals from these tables may be less than the totals shown for public supply or industry in the water-use-category table. Numbers were summed using three-decimal places and then rounded to two decimal places for the final number. Numbers may not sum to total withdrawals because of rounding. “Residential” refers to self-supplied residential withdrawals.

A table of withdrawals by SIC code lists withdrawals by ground water (GW) or surface water (SW). The SIC groupings include the water-use categories of commercial (SIC codes 79 and 91), industrial (SIC codes 20 through 40), mining (SIC code 13), and thermoelectric power (SIC code 49).

Autauga

Population: 48,612

Population served by public supply: 42,956

Per capita use (gallons per person per day): 72

Acres irrigated: 1,490

Land area: 596.0 square miles

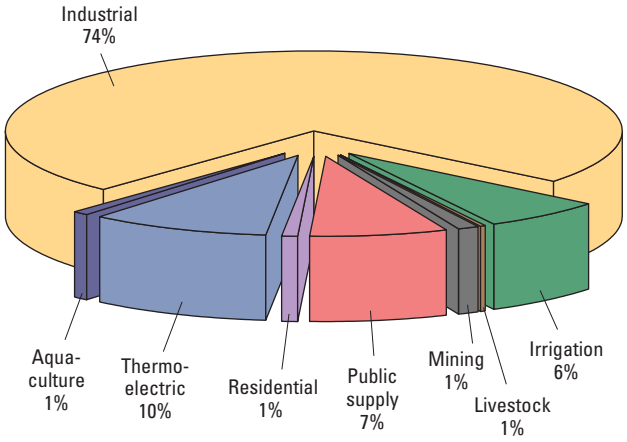
Water area: 8.5 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	3.18	0.00	3.18
	100%	0%	
Residential	0.32	.00	0.32
	100	0	
Irrigation	2.40	.38	2.78
	86	14	
Aquaculture	.15	.15	.30
	50	50	
Livestock	.09	.13	.22
	40	60	
Industrial	1.66	30.63	32.29
	5	95	
Mining	.29	.14	.43
	68	32	
Thermoelectric	.00	4.14	4.14
	0	100	
TOTALS	8.09	35.57	43.66
	19%	81%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Autauga County Water Authority	0.48	0.00	0.48
Autaugaville Water System	.18	.00	.18
Billingsley Water System	.12	.00	.12
Prattville Water Works Board	2.12	.00	2.12
West Autauga Water Authority	.29	.00	.29



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	1.66	30.63	32.29
49 Electric, Gas, and Sanitary Services	0.00	4.14	4.14

Baldwin

Population: 162,586

Population served by public supply: 136,892

Per capita use (gallons per person per day): 87

Acres irrigated: 16,440

Land area: 1,596.4 square miles

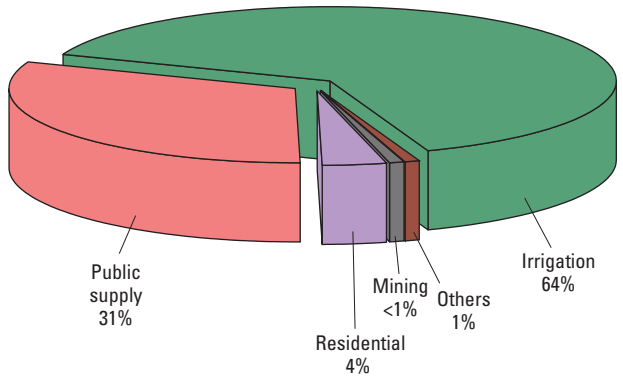
Water area: 430.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	21.59	0.00	21.59
	100%	0%	
Residential	2.48	.00	2.48
	100	0	
Irrigation	36.77	7.05	43.82
	84	16	
Aquaculture	0.00	.05	0.05
	0	100	
Livestock	.20	.24	.44
	46	54	
Mining	.63	.00	.63
	100	0	
TOTALS	61.67	7.34	69.01
	89%	11%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Belforest Water System	0.36	0.00	0.36
Daphne Utilities Board	3.42	.00	3.42
Elberta	.08	.00	.08
Fairhope	3.94	.00	3.94
Foley Utilities Board	2.70	.00	2.70
Gulf Shores Utilities	3.23	.00	3.23
Loxley	.76	.00	.76
North Baldwin Utilities	2.51	.00	2.51
Orange Beach Water, Sewer & Fire Protection	2.76	.00	2.76
Perdido Bay Water, Sewer & Fire Protection District	.47	.00	.47
Robertsdale	.74	.00	.74
Silverhill	.12	.00	.12
Spanish Fort Water System	.41	.00	.41
Summerdale Water Department	.10	.00	.10



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Barbour

Population: 28,414

Population served by public supply: 26,447

Per capita use (gallons per person per day): 66

Acres irrigated: 5,400

Land area: 884.9 square miles

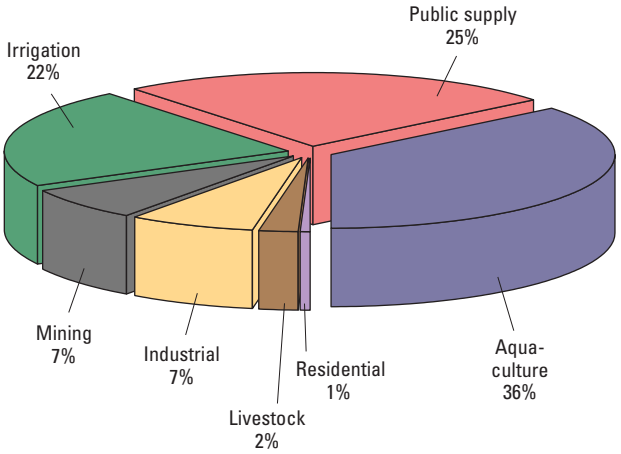
Water area: 19.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.15	0.00	4.15
	100%	0%	
Residential	0.11	.00	0.11
	100	0	
Irrigation	.90	2.69	3.59
	25	75	
Aquaculture	.21	5.70	5.91
	4	96	
Livestock	.14	.21	.35
	41	59	
Industrial	1.18	.00	1.18
	100	0	
Mining	.82	.38	1.20
	68	32	
TOTALS	7.51	8.98	16.49
	46%	54%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Baker Hill Water Authority	0.64	0.00	0.64
Clayton Water Works and Sewer Board	.37	.00	.37
Clio	.49	.00	.49
Cowikee Water Authority	.10	.00	.10
Eufaula Water Works and Sewer Board	2.33	.00	2.33
Louisville Water Works	.14	.00	.14
West Barbour County Water Authority	.07	.00	.07



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	1.18	0.00	1.18

Bibb

Population: 21,516

Population served by public supply: 19,979

Per capita use (gallons per person per day): 102

Acres irrigated: 140

Land area: 623.0 square miles

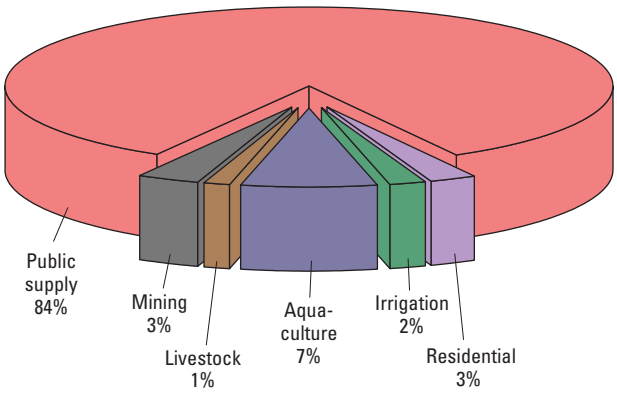
Water area: 3.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.16	0.00	4.16
	100%	0%	
Residential	0.13	.00	0.13
	100	0	
Irrigation	.03	.06	.09
	34	66	
Aquaculture	.00	.36	.36
	0	100	
Livestock	.03	.04	.07
	41	59	
Mining	.17	.00	.17
	100	0	
TOTALS	4.52	0.46	4.98
	91%	9%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Brent Utilities Board	1.00	0.00	1.00
Centreville Water & Sewer Board	0.80	.00	0.80
Citizens' Water Service, Inc.	.96	.00	.96
Green Pond Water System	.54	.00	.54
Warrior River Water Authority	.45	.00	.45
West Blocton Water Works	.42	.00	.42



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Blount

Population: 55,725

Population served by public supply: 43,224

Per capita use (gallons per person per day): 81

Acres irrigated: 590

Land area: 645.6 square miles

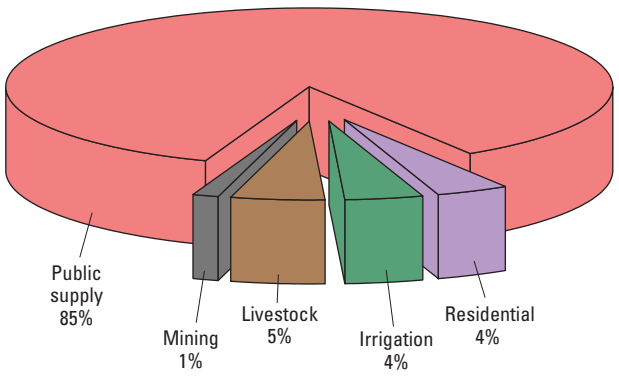
Water area: 5.0 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.74	13.45	16.19
	17%	83%	
Residential	0.77	0.00	0.77
	100	0	
Irrigation	.30	.46	.76
	40	60	
Livestock	.46	.50	.96
	48	52	
Mining	.27	.00	.27
	100	0	
TOTALS	4.54	14.41	18.95
	24%	76%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Allgood Water Works	0.00	0.06	0.06
Altoona Water & Sewer	.12	.00	.12
Birmingham WW&SB	.00	11.38	11.38
Blount County Water Authority	.00	1.21	1.21
Blountsville Utility Board	.47	.00	.47
Cleveland Water Works	.33	.00	.33
Nectar Water Department	.19	.00	.19
Oneonta Utilities Board	1.44	.80	2.24
Snead	.18	.00	.18



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Bullock

Population: 11,055

Population served by public supply: 10,307

Per capita use (gallons per person per day): 70

Acres irrigated: 930

Land area: 625.0 square miles

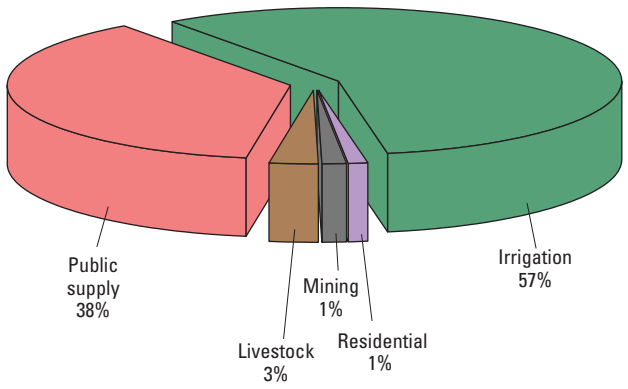
Water area: 1.0 square mile

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.04	0.00	2.04
	100%	0%	
Residential	0.06	.00	0.06
	100	0	
Irrigation	1.53	1.59	3.12
	49	51	
Livestock	.06	.10	.16
	39	61	
Mining	.04	.02	.06
	68	32	
TOTALS	3.73	1.71	5.44
	69%	31%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
South Bullock County Water Authority	0.49	0.00	0.49
Union Springs Utilities Board	1.55	.00	1.55



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Butler

Population: 20,766

Population served by public supply: 17,445

Per capita use (gallons per person per day): 82

Acres irrigated: 510

Land area: 776.9 square miles

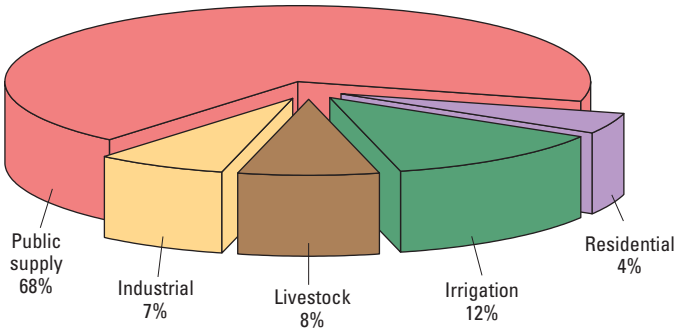
Water area: 1.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	3.00	0.00	3.00
	100%	0%	
Residential	0.19	.00	0.19
	100	0	
Irrigation	.04	.50	.54
	8	92	
Livestock	.14	.21	.35
	40	60	
Industrial	.31	.00	.31
	100	0	
TOTALS	3.68	0.71	4.39
	84%	16%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Butler County Water Authority	1.16	0.00	1.16
Fort Deposit (The Water Works and Sewer Board of the Town of)	0.19	.00	0.19
Georgiana Water Works and Sewer Board	.31	.00	.31
Greenville Water Works and Sewer Board	1.21	.00	1.21
McKenzie - Town Hall (Town of)	.13	.00	.13



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.31	0.00	0.31

Calhoun

Population: 112,141

Population served by public supply: 106,294

Per capita use (gallons per person per day): 105

Acres irrigated: 2,460

Land area: 608.5 square miles

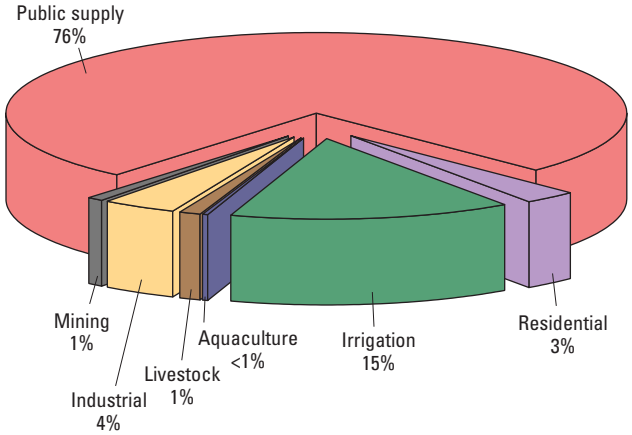
Water area: 3.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	19.75	2.35	22.10
	89%	11%	
Residential	0.83	0.00	0.83
	100	0	
Irrigation	.00	4.28	4.28
	0	100	
Aquaculture	.00	.07	.07
	0	100	
Livestock	.12	.17	.29
	42	58	
Industrial	1.10	.00	1.10
	100	0	
Mining	.19	.09	.28
	68	32	
TOTALS	21.99	6.96	28.95
	76%	24%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Anniston Water Works and Sewer Board	11.91	0.08	11.99
Calhoun County Water Authority	3.08	.00	3.08
Jacksonville Water Works & Sewer Board	0.00	1.34	1.34
Oxford Water Works and Sewer Board	4.04	.00	4.04
Piedmont Water Works and Sewer Board	.00	.93	0.93
Weaver	.72	.00	.72



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.43	0.00	0.43
26 Paper and Allied Products	.53	.00	.53
33 Primary Metal Industries	.14	.00	.14

Chambers

Population: 35,460

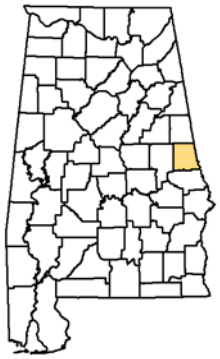
Population served by public supply: 26,817

Per capita use (gallons per person per day): 87

Acres irrigated: 230

Land area: 597.2 square miles

Water area: 5.9 square miles

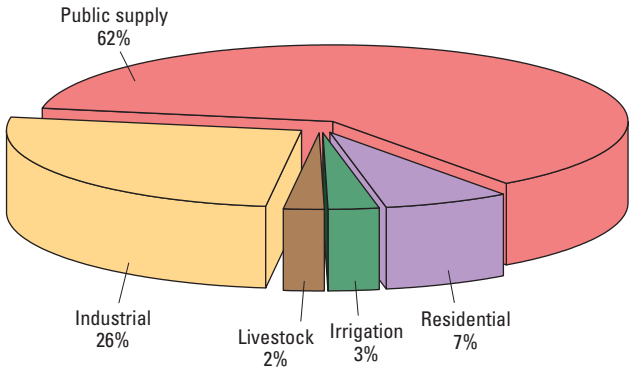


Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	5.24	5.24
	0%	100%	
Residential	.58	0.00	0.58
	100	0	
Irrigation	.16	.06	.22
	72	28	
Livestock	.08	.12	.20
	40	60	
Industrial	.00	2.16	2.16
	0	100	
TOTALS	0.82	7.58	8.40
	10%	90%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Chattahoochee Valley Water Supply District	0.00	4.72	4.72
Lafayette	.00	0.53	0.53



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
23 Apparel and Other Finished Products Made From Fabrics and Similar Materials	0.00	2.16	2.16

Cherokee

Population: 24,522

Population served by public supply: 16,866

Per capita use (gallons per person per day): 91

Acres irrigated: 2,220

Land area: 553.1 square miles

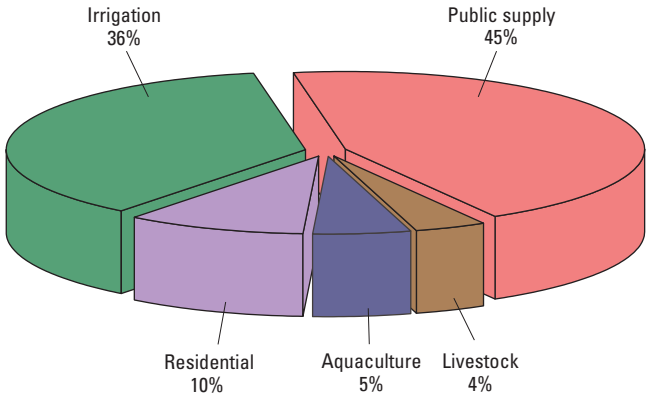
Water area: 46.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.02	1.19	3.21
	63%	37%	
Residential	0.70	0.00	0.70
	100	0	
Irrigation	.00	2.62	2.62
	0	100	
Aquaculture	.39	.00	.39
	100	0	
Livestock	.11	.17	.28
	40	60	
Mining	.00	.00	.00
	60	40	
TOTALS	3.22	3.98	7.20
	45%	55%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Centre Water Works & Sewer Board	0.00	1.19	1.19
Cherokee County Water Authority	.97	0.00	0.97
Northeast Alabama Water, Sewer & F.P.A.	1.06	.00	1.06



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Chilton

Population: 41,744

Population served by public supply: 32,837

Per capita use (gallons per person per day): 65

Acres irrigated: 690

Land area: 694.0 square miles

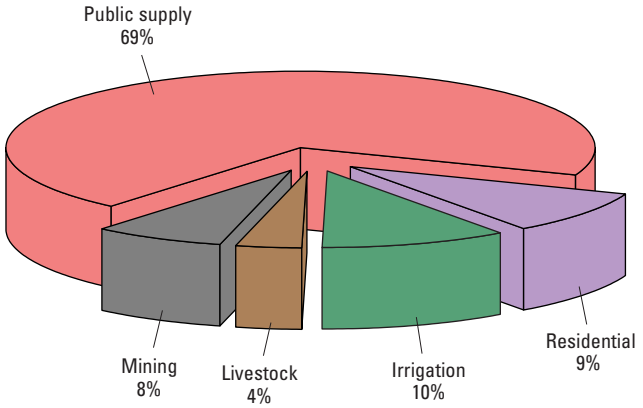
Water area: 6.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.55	1.79	4.34
	59%	41%	
Residential	0.58	0.00	0.58
	100	0	
Irrigation	.56	.08	.64
	88	12	
Livestock	.09	.13	.22
	40	60	
Mining	.32	.15	.47
	68	32	
TOTALS	4.10	2.15	6.25
	66%	34%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Chilton Water Authority	1.84	0.00	1.84
Clanton Waterworks & Sewer Board	0.00	1.79	1.79
Thorsby	.71	.00	0.71



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Choctaw

Population: 14,807

Population served by public supply: 6,077

Per capita use (gallons per person per day): 73

Acres irrigated: 100

Land area: 913.5 square miles

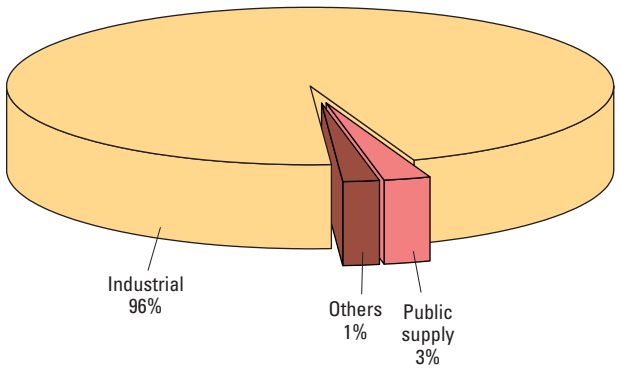
Water area: 7.3 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.30	0.00	1.30
	100%	0%	
Residential	0.63	.00	0.63
	100	0	
Irrigation	.00	.06	.06
	5	95	
Aquaculture	.00	.08	.08
	0	100	
Livestock	.04	.05	.09
	40	60	
Industrial	.00	47.41	47.41
	0	100	
TOTALS	1.97	47.60	49.57
	4%	96%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Butler Utilities Board	0.42	0.00	0.42
Gilbertown Utilities Board	.44	.00	.44
North Choctaw Water Authority	.28	.00	.28
Pennington Utilities Board	.16	.00	.16



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	47.41	47.41

Clarke

Population: 27,269

Population served by public supply: 19,967

Per capita use (gallons per person per day): 75

Acres irrigated: 140

Land area: 1,238.4 square miles

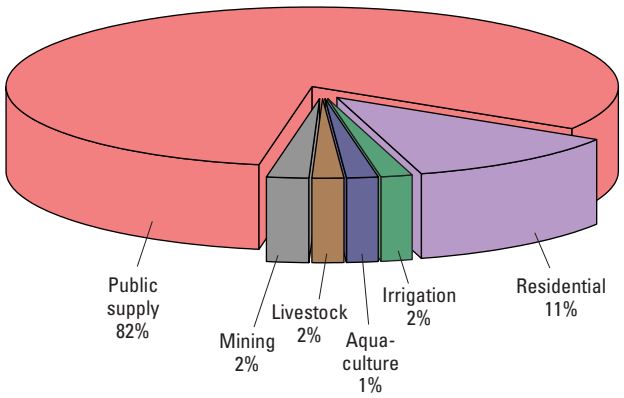
Water area: 14.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.13	1.87	4.00
	53%	47%	
Residential	0.56	0.00	0.56
	100	0	
Irrigation	.02	.06	.08
	21	79	
Aquaculture	.03	.04	.07
	43	57	
Livestock	.03	.05	.08
	38	62	
Mining	.11	.00	.11
	100	0	
TOTALS	2.88	2.02	4.90
	59%	41%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Coffeeville Water Works	0.18	0.00	0.18
Fulton (Utilities Board of the Town of)	.12	.00	.12
Grove Hill Water Works Board	.68	.00	.68
Jackson Water and Sewer Board	1.16	1.87	3.03



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Clay

Population: 13,964

Population served by public supply: 6,361

Per capita use (gallons per person per day): 50

Acres irrigated: 220

Land area: 605.1 square miles

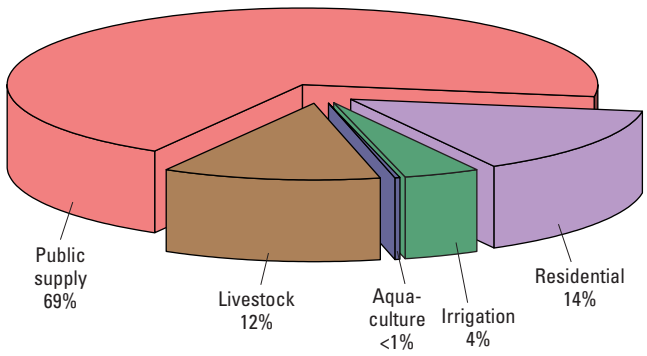
Water area: 0.9 square mile

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	1.87	1.87
	0%	100%	
Residential	.39	0.00	0.39
	100	0	
Irrigation	.00	.11	.11
	0	100	
Aquaculture	.00	.01	.01
	0	100	
Livestock	.14	.18	.32
	43	57	
TOTALS	0.53	2.17	2.70
	20%	80%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Clay County Water Authority	0.00	1.87	1.87



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Cleburne

Population: 14,460

Population served by public supply: 6,343

Per capita use (gallons per person per day): 87

Acres irrigated: 100

Land area: 560.2 square miles

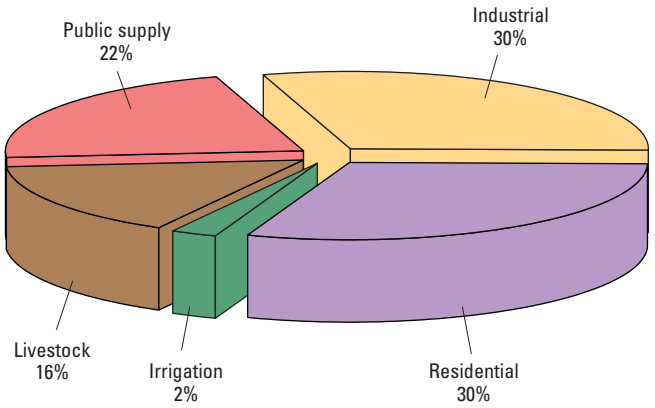
Water area: 0.8 square mile

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	0.51	0.51
	0%	100%	
Residential	.72	.00	.72
	100	0	
Irrigation	.00	.06	.06
	0	100	
Livestock	.17	.20	.37
	46	54	
Industrial	.71	.00	.71
	100	0	
TOTALS	1.60	0.77	2.37
	68%	32%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Heflin Water Works	0.00	0.51	0.51



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.71	0.00	0.71

Coffee

Population: 45,567

Population served by public supply: 37,584

Per capita use (gallons per person per day): 68

Acres irrigated: 5,760

Land area: 679.0 square miles

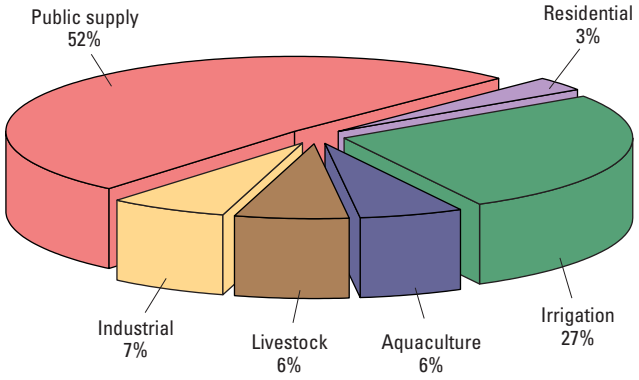
Water area: 1.5 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	6.67	0.00	6.67
	100%	0%	
Residential	0.38	.00	0.38
	100	0	
Irrigation	.65	2.81	3.46
	19	81	
Aquaculture	.48	.26	.74
	65	35	
Livestock	.36	.48	.84
	43	57	
Industrial	.86	.00	.86
	100	0	
TOTALS	9.40	3.55	12.95
	73%	27%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Coffee County Water Authority	0.17	0.00	0.17
Elba Water and Electric Board	.62	.00	.62
Enterprise Water Works Board	4.58	.00	4.58
Jack Water System, Inc.	.08	.00	.08
Kinston	.02	.00	.02
New Brockton Water & Sewer Board	.61	.00	.61
New Hope Water System, Inc.	.07	.00	.07
Opp Utilities Board	.52	.00	.52



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.86	0.00	0.86

Colbert

Population: 54,660

Population served by public supply: 50,704

Per capita use (gallons per person per day): 66

Acres irrigated: 2,640

Land area: 594.5 square miles

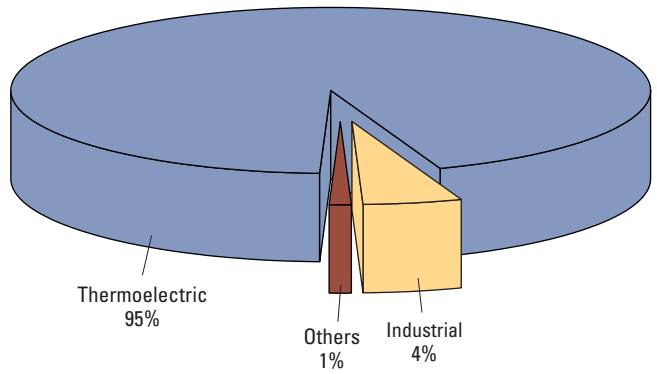
Water area: 29.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.29	8.27	9.56
	13%	87%	
Residential	0.31	0.00	0.31
	100	0	
Irrigation	.94	1.40	2.34
	40	60	
Aquaculture	.02	.00	.02
	100	0	
Livestock	.13	.17	.30
	43	57	
Industrial	.87	55.57	56.44
	2	98	
Mining	.00	.05	.05
	0	100	
Thermoelectric	.00	1,294.14	1,294.14
	0	100	
TOTALS	3.56	1,359.60	1,363.16
	0%	100%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Cherokee Waterworks and Gas Board	0.00	0.36	0.36
Hawk Pride Mountain Water System	1.06	.00	1.06
Leighton Water & Sewer Board	.23	.00	.23
Muscle Shoals Utilities Board	.00	4.09	4.09
Sheffield Utilities	.00	1.98	1.98
Tuscumbia - Water Department	.00	1.84	1.84



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	3.30	3.30
28 Chemicals and Allied Products	.00	48.55	48.55
34 Fabricated Metal Products, Except Machinery and Transportation Equipment	.87	3.72	4.59
49 Electric, Gas, and Sanitary Services	.00	1,294.14	1,294.14

Conecuh

Population: 13,257

Population served by public supply: 7,560

Per capita use (gallons per person per day): 84

Acres irrigated: 100

Land area: 850.8 square miles

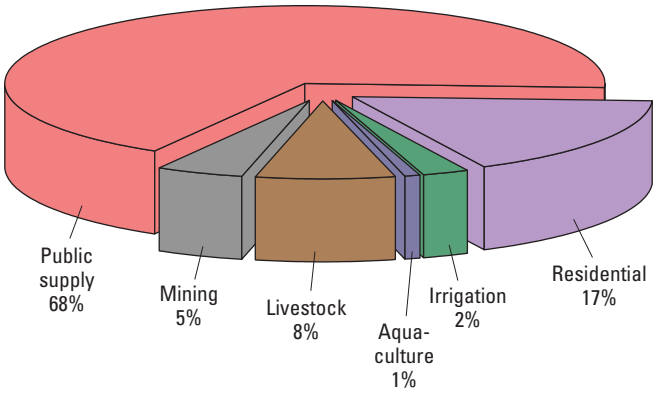
Water area: 1.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.60	0.00	1.60
	100%	0%	
Residential	0.40	.00	0.40
	100	0	
Irrigation	.00	.06	.06
	0	100	
Aquaculture	.01	.01	.02
	50	50	
Livestock	.07	.11	.18
	40	60	
Mining	.11	.00	.11
	100	0	
TOTALS	2.19	0.18	2.37
	92%	8%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Evergreen (City of)	1.18	0.00	1.18
Fairview Water System	0.06	.00	0.06
Hamden Ridge P/A, Inc.	.11	.00	.11
Owassa/Brownville Water and F.P.A. Inc.	.21	.00	.21
Repton	.04	.00	.04



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Coosa

Population: 11,162

Population served by public supply: 6,435

Per capita use (gallons per person per day): 55

Acres irrigated: 80

Land area: 652.4 square miles

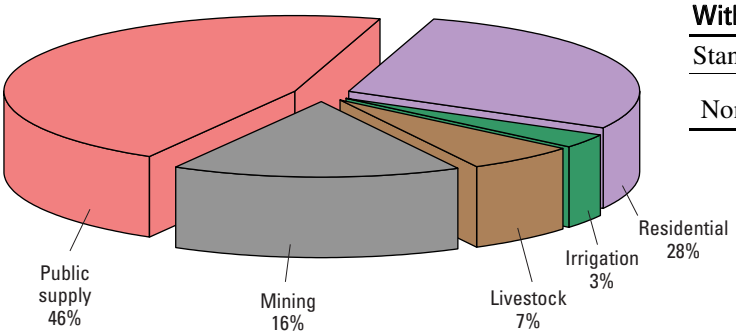
Water area: 13.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	0.46	0.46
	0%	100%	
Residential	.28	.00	.28
	100	0	
Irrigation	.01	.02	.03
	44	56	
Livestock	.03	.04	.07
	42	58	
Mining	.11	.05	.16
	69	31	
TOTALS	0.43	0.57	1.00
	43%	57%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Goodwater Water Works and Sewer Board	0.00	0.46	0.46



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Covington

Population: 37,003

Population served by public supply: 23,627

Per capita use (gallons per person per day): 79

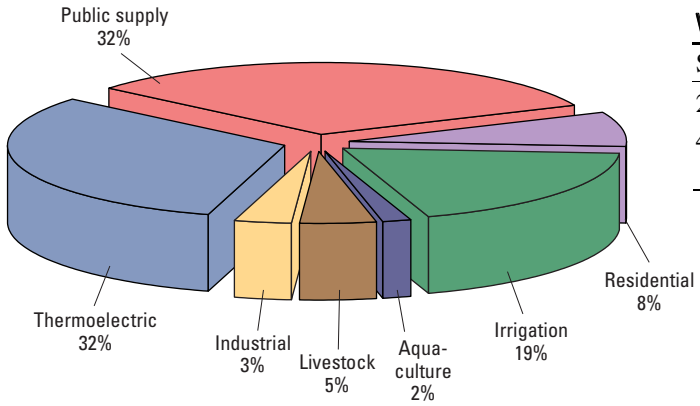
Acres irrigated: 1,590

Land area: 1,033.8 square miles

Water area: 10.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.38	0.00	4.38
	100%	0%	
Residential	1.04	.00	1.04
	100	0	
Irrigation	2.13	.44	2.57
	83	17	
Aquaculture	0.10	.10	0.20
	50	50	
Livestock	.26	.36	.62
	42	58	
Industrial	.43	.00	.43
	100	0	
Mining	.00	.00	.00
	100	0	
Thermoelectric	.00	4.30	4.30
	0	100	
TOTALS	8.34	5.20	13.54
	62%	38%	



Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Andalusia Water Works Board	2.42	0.00	2.42
Covington County Water Department	0.64	.00	0.64
Florala Water Works & Sewer Board	.39	.00	.39
Lockhart	.07	.00	.07
Opp Utilities Board	.69	.00	.69
Red Level	.06	.00	.06
River Falls	.10	.00	.10

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.43	0.00	0.43
49 Electric, Gas, and Sanitary Services	.00	4.30	4.30

Crenshaw

Population: 13,727

Population served by public supply: 10,422

Per capita use (gallons per person per day): 66

Acres irrigated: 630

Land area: 609.6 square miles

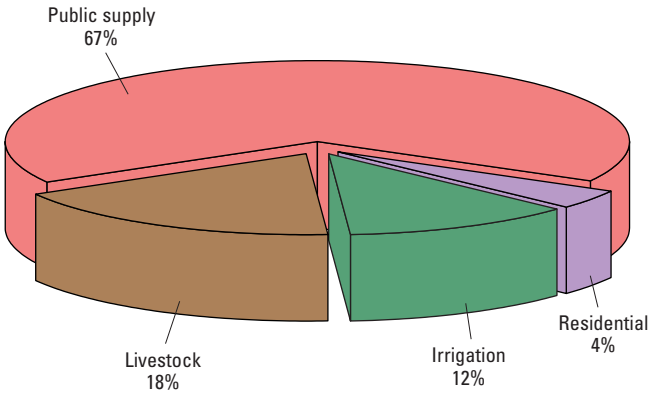
Water area: 1.3 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.15	0.00	2.15
	100%	0%	
Residential	0.12	.00	0.12
	100	0	
Irrigation	.00	.38	.38
	0	100	
Livestock	.24	.34	.58
	41	59	
TOTALS	2.51	0.72	3.23
	78%	22%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Brantley	0.22	0.00	0.22
Dozier Water Works	.04	.00	.04
Glenwood	.01	.00	.01
Luverne Water Works and Sewer Board	.42	.00	.42
Quint-Mar Water Authority	.59	.00	.59
Rutledge	.06	.00	.06
Sellers Station Water System, Inc.	.14	.00	.14
South Crenshaw County Water Authority	.67	.00	.67



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Cullman

Population: 79,886

Population served by public supply: 77,321

Per capita use (gallons per person per day): 77

Acres irrigated: 740

Land area: 738.4 square miles

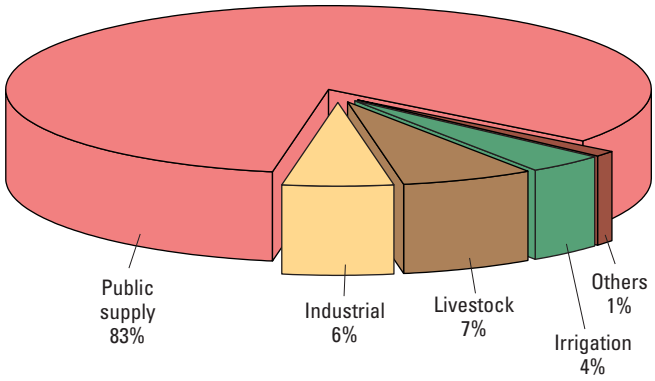
Water area: 16.4 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.50	26.51	27.01
	2%	98%	
Residential	.21	0.00	0.21
	100	0	
Irrigation	1.11	.15	1.26
	88	12	
Livestock	1.13	1.10	2.23
	51	49	
Industrial	.00	1.79	1.79
	0	100	
Mining	.04	.12	.16
	24	76	
TOTALS	2.99	29.67	32.66
	9%	91%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Birmingham WW&SB	0.00	13.98	13.98
Cullman	.00	12.53	12.53
Hanceville Water and Sewer Board	.50	0.00	0.50



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.00	1.79	1.79

Dale

Population: 48,748

Population served by public supply: 39,923

Per capita use (gallons per person per day): 77

Acres irrigated: 4,240

Land area: 561.1 square miles

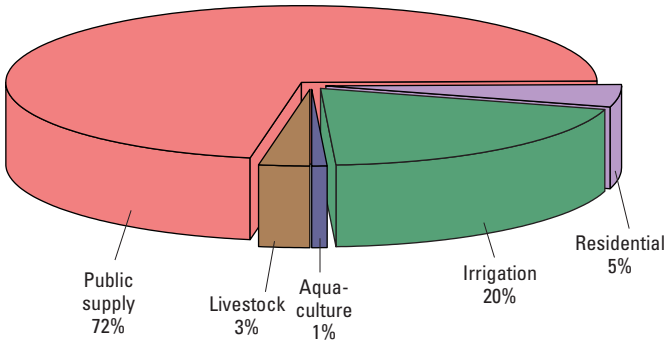
Water area: 1.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	8.78	0.00	8.78
	100%	0%	
Residential	0.57	.00	0.57
	100	0	
Irrigation	.41	2.04	2.45
	17	83	
Aquaculture	.00	.10	.10
	0	100	
Livestock	.14	.19	.33
	42	58	
TOTALS	9.90	2.33	12.23
	81%	19%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Ariton Water Department	0.10	0.00	0.10
Dale County Water Authority	.45	.00	.45
Daleville	.86	.00	.86
Dothan Water System	.78	.00	.78
Level Plains(Town of)	.27	.00	.27
Midland City	.31	.00	.31
Newton Water and Sewer Board	.18	.00	.18
Ozark Utilities Board	2.35	.00	2.35
Pinckard	.10	.00	.10
U.S. Army Fort Rucker	3.39	.00	3.39



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Dallas

Population: 44,366

Population served by public supply: 34,829

Per capita use (gallons per person per day): 77

Acres irrigated: 2,070

Land area: 980.7 square miles

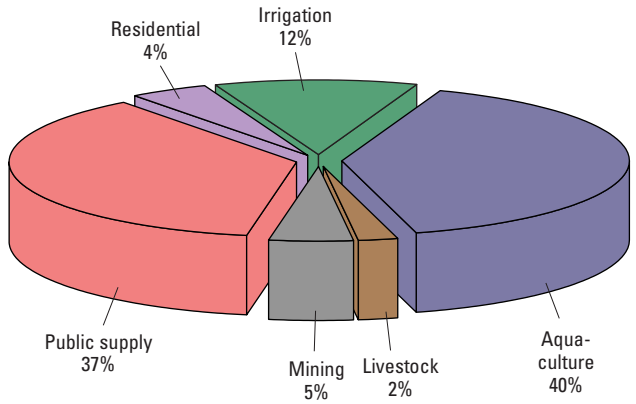
Water area: 12.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	6.60	0.00	6.60
	100%	0%	
Residential	0.75	.00	0.75
	100	0	
Irrigation	.82	1.24	2.06
	40	60	
Aquaculture	5.00	2.14	7.14
	70	30	
Livestock	.16	.24	.40
	40	60	
Mining	.57	.26	.83
	68	32	
TOTALS	13.90	3.88	17.78
	78%	22%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Dallas County Water & Sewer Authority	0.79	0.00	0.79
North Dallas Water Authority	.97	.00	.97
Plantersville Water Board	.09	.00	.09
Selma Water Works & Sewer Board	4.06	.00	4.06
South Dallas Water Authority	.45	.00	.45
West Dallas Water Authority	.23	.00	.23



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

De Kalb

Population: 67,271

Population served by public supply: 48,950

Per capita use (gallons per person per day): 95

Acres irrigated: 1,230

Land area: 777.9 square miles

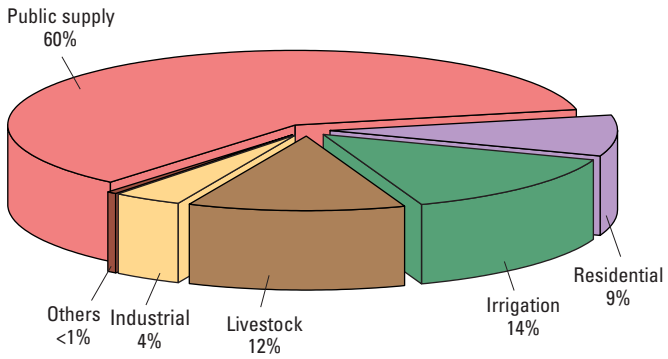
Water area: 0.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.35	8.57	9.92
	14%	86%	
Residential	1.46	0.00	1.46
	100	0	
Irrigation	0.83	1.46	2.29
	36	64	
Aquaculture	.01	.00	0.01
	100	0	
Livestock	.96	1.08	2.04
	47	53	
Industrial	.65	.00	.65
	100	0	
Mining	.04	.02	.06
	69	31	
TOTALS	5.30	11.13	16.43
	32%	68%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Crossville Water Board	0.04	0.00	0.04
Fort Payne Water Works Board	.00	8.57	8.57
Northeast Alabama Water, Sewer & F.P.A.	.65	.00	.65
Valley Head Water Works Board	.66	.00	.66



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.65	0.00	0.65

Elmore

Population: 73,937

Population served by public supply: 68,719

Per capita use (gallons per person per day): 76

Acres irrigated: 1,350

Land area: 621.3 square miles

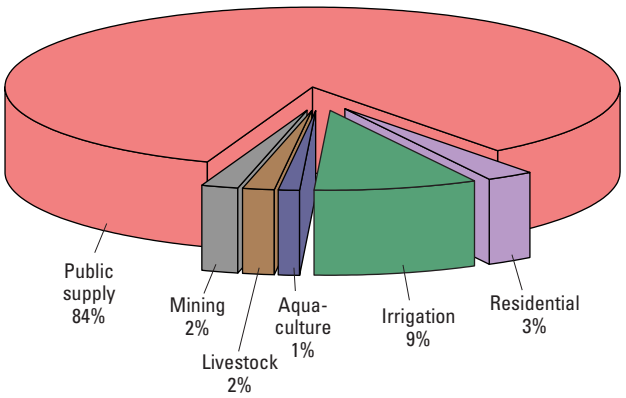
Water area: 36.0 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.17	10.29	12.46
	17%	83%	
Residential	0.38	0.00	0.38
	100	0	
Irrigation	.33	.94	1.27
	26	74	
Aquaculture	.00	.18	.18
	0	100	
Livestock	.10	.12	.22
	44	56	
Mining	.21	.10	.31
	68	32	
TOTALS	3.19	11.63	14.82
	22%	78%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Central Elmore Water & Sewer Authority	0.00	4.83	4.83
Elmore Water Authority	.74	0.00	0.74
Five Star Water Supply	.00	5.46	5.46
Holtville Water System, Inc.	.12	.00	.12
Marbury Water System	.58	.00	.58
Millbrook Utility System	.21	.00	.21
Prattville Water Works Board	.17	.00	.17
Tri-Community Water System	.35	.00	.35



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Escambia

Population: 38,082

Population served by public supply: 31,176

Per capita use (gallons per person per day): 73

Acres irrigated: 1,410

Land area: 947.4 square miles

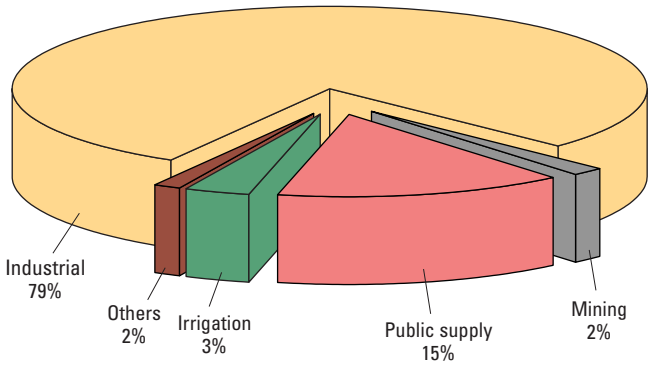
Water area: 5.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	6.30	0.00	6.30
	100%	0%	
Residential	0.47	.00	0.47
	100	0	
Irrigation	.56	.86	1.42
	39	61	
Aquaculture	.04	.01	.05
	76	24	
Livestock	.06	.09	.15
	40	60	
Industrial	1.71	32.07	33.78
	5	95	
Mining	.67	.00	.67
	100	0	
TOTALS	9.81	33.03	42.84
	23%	77%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Atmore Utility Board	2.94	0.00	2.94
Brewton Water Works Board	1.48	.00	1.48
Canoe Water and Fire Protection Authority	0.08	.00	0.08
East Brewton Water and Sewer Board	.30	.00	.30
Flomaton	.22	.00	.22
Freemanville Water System, Inc.	.43	.00	.43
Huxford Water & Fire Protection Authority	.06	.00	.06
McCall Water System	.61	.00	.61
Pollard	.02	.00	.02
Ridge Road Water Authority	.12	.00	.12
Riverview Water System	.05	.00	.05



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	1.17	0.00	1.17
26 Paper and Allied Products	0.27	32.07	32.34
28 Chemicals and Allied Products	.18	.00	0.18
29 Petroleum Refining and Related Industries	.09	.00	.09

Etowah

Population: 103,189

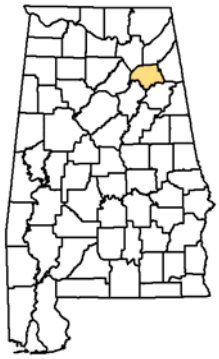
Population served by public supply: 99,232

Per capita use (gallons per person per day): 86

Acres irrigated: 1,190

Land area: 534.8 square miles

Water area: 13.9 square miles

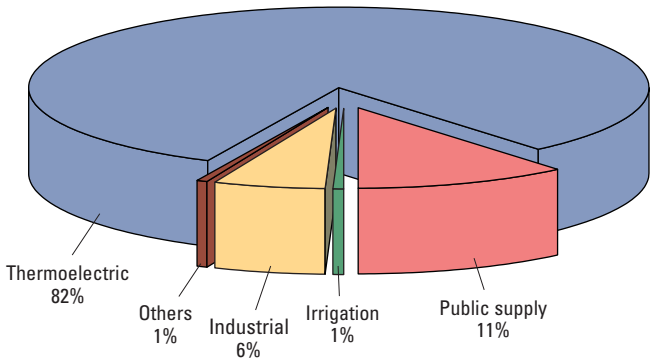


Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.46	14.86	19.32
	23%	77%	
Residential	0.32	0.00	0.32
	100	0	
Irrigation	.10	.94	1.04
	10	90	
Aquaculture	.00	.02	.02
	0	100	
Livestock	.20	.25	.45
	44	56	
Industrial	.00	9.87	9.87
	0	100	
Mining	.11	.05	.16
	68	32	
Thermoelectric	.00	142.68	142.68
	0	100	
TOTALS	5.19	168.67	173.86
	3%	97%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Attalla Water Works Board	1.16	0.00	1.16
Gadsden Water Works & Sewer Board	0.00	14.86	14.86
Glencoe Water and Sewer Works	.72	.00	0.72
Hokes Bluff Water Board	.88	.00	.88
Southside Water Works & Sewer Board	.78	.00	.78
Walnut Grove	.09	.00	.09
West Etowah County Water & Fire Protection Authority	.83	.00	.83



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
30 Rubber and Miscellaneous Plastics Products	0.00	9.87	9.87
49 Electric, Gas, and Sanitary Services	.00	142.68	142.68

Fayette

Population: 18,228

Population served by public supply: 10,811

Per capita use (gallons per person per day): 65

Acres irrigated: 100

Land area: 627.7 square miles

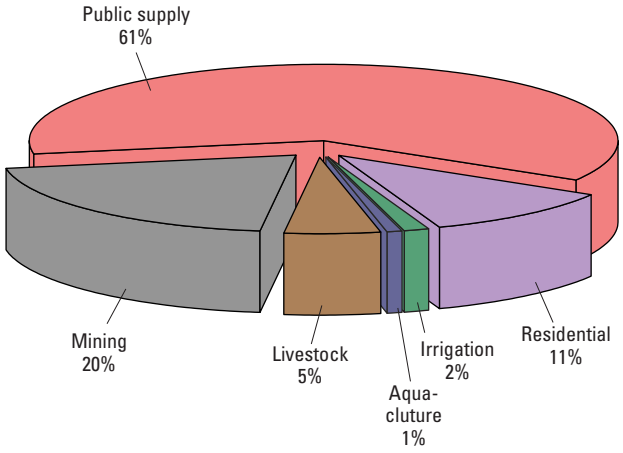
Water area: 1.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.05	2.36	2.41
	2%	98%	
Residential	.42	0.00	0.42
	100	0	
Irrigation	.00	.06	.06
	0	100	
Aquaculture	.02	.02	.04
	50	50	
Livestock	.09	.11	.20
	45	55	
Mining	.00	.80	.80
	0	100	
TOTALS	0.58	3.35	3.93
	15%	85%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Berry	0.00	0.38	0.38
Fayette Water Board	.00	1.98	1.98
Glen Allen	.05	.00	.05



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Franklin

Population: 30,737

Population served by public supply: 24,248

Per capita use (gallons per person per day): 61

Acres irrigated: 560

Land area: 635.6 square miles

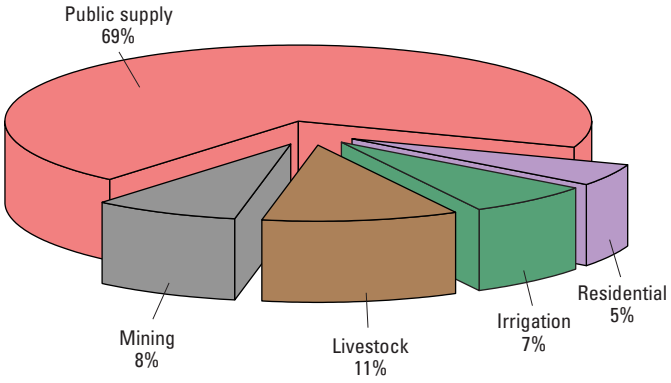
Water area: 10.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.05	3.88	4.93
	21%	79%	
Residential	0.33	0.00	0.33
	100	0	
Irrigation	.28	.22	.50
	56	44	
Livestock	.33	.44	.77
	43	57	
Mining	.39	.18	.57
	68	32	
TOTALS	2.38	4.72	7.10
	34%	66%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Red Bay Water & Gas Board	0.63	0.00	0.63
Russellville Water & Sewer Board	.32	3.88	4.20
Vina Waterworks Board	.10	.00	.10



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Geneva

Population: 25,735

Population served by public supply: 14,941

Per capita use (gallons per person per day): 66

Acres irrigated: 7,010

Land area: 576.3 square miles

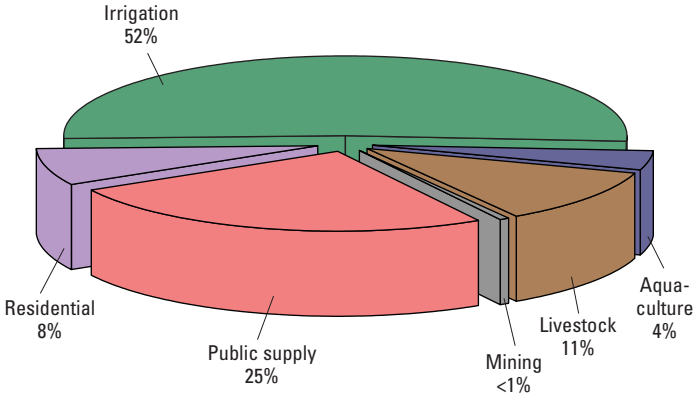
Water area: 2.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.92	0.00	1.92
	100%	0%	
Residential	0.58	.00	0.58
	100	0	
Irrigation	1.71	2.22	3.93
	43	57	
Aquaculture	.24	.06	.30
	80	20	
Livestock	.37	.48	.85
	44	56	
Mining	.02	.01	.03
	69	31	
TOTALS	4.84	2.77	7.61
	64%	36%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Bellwood Water & F.P.A.	0.02	0.00	0.02
Black Water Works	.02	.00	.02
Coffee Springs (Town of)	.03	.00	.03
Geneva Water Works	.53	.00	.53
Hartford	.39	.00	.39
Malvern	.12	.00	.12
North Geneva County Water Authority	.02	.00	.02
Samson	.28	.00	.28
Slocomb Water Works	.24	.00	.24
Taylor (Town of)	.27	.00	.27



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Greene

Population: 9,661

Population served by public supply: 6,777

Per capita use (gallons per person per day): 61

Acres irrigated: 130

Land area: 645.9 square miles

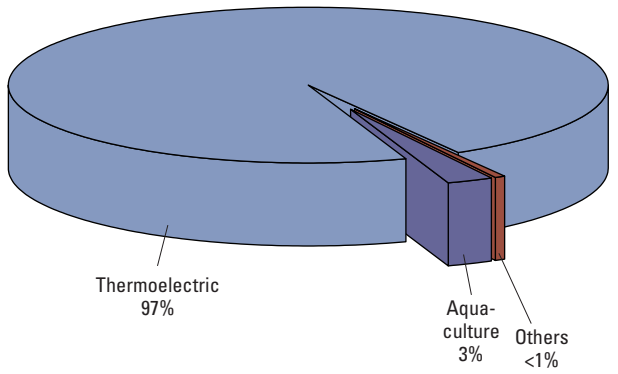
Water area: 14.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.18	0.00	1.18
	100%	0%	
Residential	0.18	.00	0.18
	100	0	
Irrigation	.03	.17	.20
	14	86	
Aquaculture	6.17	4.46	10.63
	58	42	
Livestock	.10	.15	.25
	41	59	
Thermoelectric	.05	386.09	386.14
	0	100	
TOTALS	7.71	390.87	398.58
	2%	98%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Eutaw Water Department	1.04	0.00	1.04
Forkland Water System	0.10	.00	0.10
Greene County Housing Authority	.05	.00	.05



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.05	386.09	386.14

Hale

Population: 18,316

Population served by public supply: 14,937

Per capita use (gallons per person per day): 62

Acres irrigated: 110

Land area: 643.7 square miles

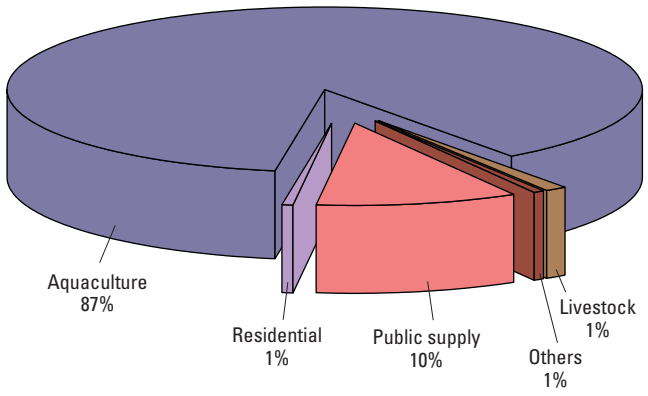
Water area: 12.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.88	0.00	2.88
	100%	0%	
Residential	0.22	.00	0.22
	100	0	
Irrigation	.02	.08	.10
	20	80	
Aquaculture	16.37	8.43	24.80
	66	34	
Livestock	.15	.18	.33
	45	55	
Industrial	.02	.00	.02
	100	0	
Mining	.04	.00	.04
	100	0	
TOTALS	19.70	8.69	28.39
	69%	31%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Greensboro Utilities Board	0.90	0.00	0.90
Hale County Water Authority	.63	.00	.63
Moundville	1.35	.00	1.35



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.02	0.00	0.02

Henry

Population: 16,610

Population served by public supply: 12,845

Per capita use (gallons per person per day): 87

Acres irrigated: 3,830

Land area: 561.8 square miles

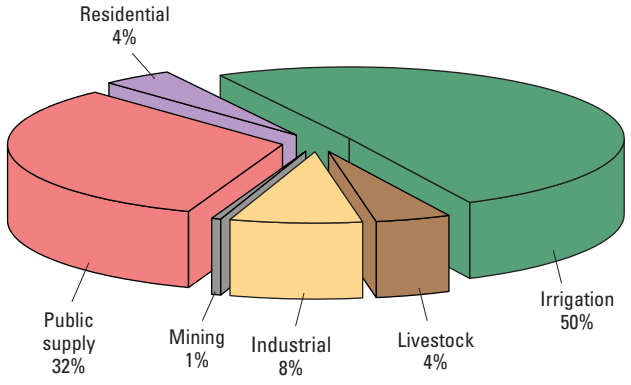
Water area: 6.5 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.89	0.00	1.89
	100%	0%	
Residential	0.25	.00	0.25
	100	0	
Irrigation	1.37	1.57	2.94
	47	53	
Livestock	.10	.15	.25
	41	59	
Industrial	.46	.00	.46
	100	0	
Mining	.02	.01	.03
	67	33	
TOTALS	4.09	1.73	5.82
	70%	30%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Abbeville Waterworks and Sewer Board	0.64	0.00	0.64
Headland Water Works Board	.44	.00	.44
Henry County Water Authority	.67	.00	.67
Newville	.13	.00	.13



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.46	0.00	0.46

Houston

Population: 94,249

Population served by public supply: 76,104

Per capita use (gallons per person per day): 78

Acres irrigated: 11,780

Land area: 580.4 square miles

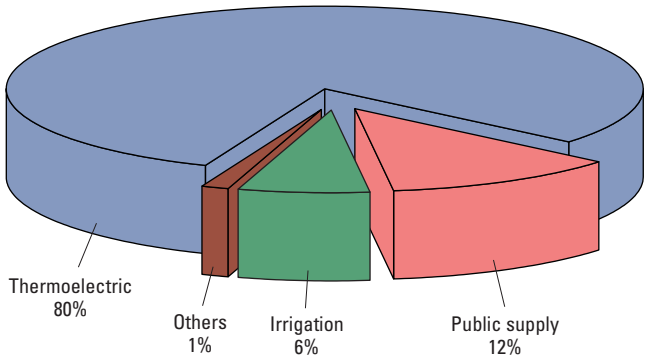
Water area: 1.3 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	15.85	0.00	15.85
	100%	0%	
Residential	1.49	.00	1.49
	100	0	
Irrigation	6.36	2.23	8.59
	74	26	
Livestock	0.13	.19	0.32
	41	59	
Thermoelectric	.17	105.36	105.53
	0	100	
TOTALS	24.00	107.78	131.78
	18%	82%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Ashford Water Works	0.33	0.00	0.33
Columbia Water Works & Sewer Board	.07	.00	.07
Cottonwood	.22	.00	.22
Cowarts	.32	.00	.32
Dothan Water System	14.07	.00	14.07
Gordon Water Works	.05	.00	.05
Houston County Water Authority	.25	.00	.25
Kinsey	.16	.00	.16
Taylor (Town of)	.20	.00	.20
Webb Water System	.17	.00	.17



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.17	105.36	105.53

Jackson

Population: 53,650

Population served by public supply: 39,924

Per capita use (gallons per person per day): 67

Acres irrigated: 950

Land area: 1,078.7 square miles

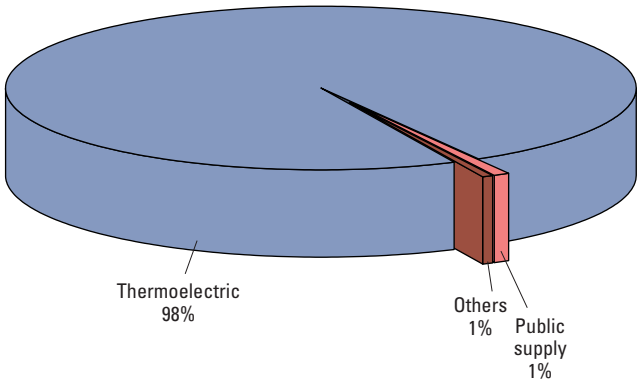
Water area: 48.0 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.64	10.08	10.72
	6%	94%	
Residential	.91	0.00	0.91
	100	0	
Irrigation	.04	.67	.71
	5	95	
Livestock	.32	.40	.72
	44	56	
Industrial	.00	8.78	8.78
	0	100	
Mining	.07	.03	.10
	68	32	
Thermoelectric	.00	1,476.30	1,476.30
	0	100	
TOTALS	1.98	1,496.26	1,498.24
	0%	100%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Bridgeport Utilities Board	0.20	2.36	2.56
Pisgah	.09	0.00	0.09
Scottsboro Water Board	.00	4.66	4.66
Section & Dutton Water Boards	.00	3.06	3.06
Stevenson Utilities Board	.34	.00	.34



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.00	0.25	0.25
26 Paper and Allied Products	.00	8.53	8.53
49 Electric, Gas, and Sanitary Services	.00	1,476.30	1,476.30

Jefferson

Population: 657,229

Population served by public supply: 651,192

Per capita use (gallons per person per day): 73

Acres irrigated: 3,660

Land area: 1,112.6 square miles

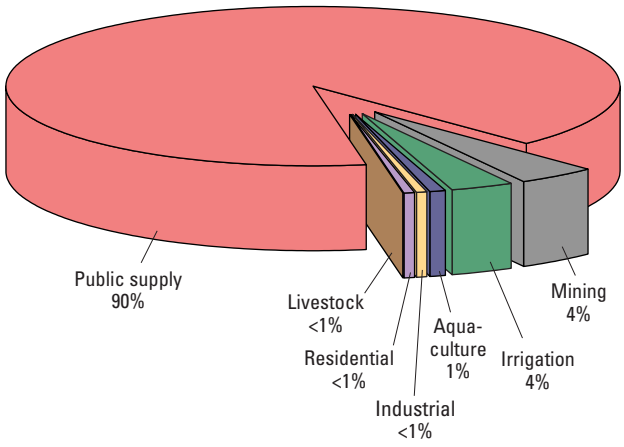
Water area: 11.2 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	8.32	65.02	73.34
	11%	89%	
Residential	0.39	0.00	0.39
	100	0	
Irrigation	.09	2.73	2.82
	3	97	
Aquaculture	.02	.56	.58
	3	97	
Livestock	.03	.05	.08
	40	60	
Industrial	.40	.00	.40
	100	0	
Mining	1.93	1.47	3.40
	57	43	
TOTALS	11.18	69.83	81.01
	14%	86%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Bessemer (G.U.S.C.)	0.00	9.56	9.56
Birmingham WW&SB	.00	52.90	52.90
Irondale Water System	1.36	0.00	1.36
Leeds	1.21	.00	1.21
Trussville Utilities Board	4.82	.00	4.82
Warrior River Water Authority	.93	2.56	3.49



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.40	0.00	0.40

Lamar

Population: 14,962

Population served by public supply: 9,601

Per capita use (gallons per person per day): 65

Acres irrigated: 630

Land area: 604.9 square miles

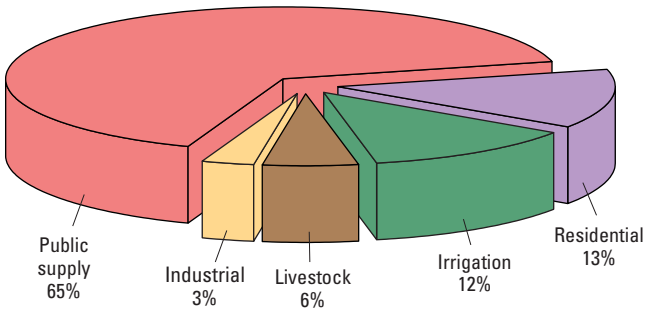
Water area: 0.6 square mile

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.47	0.00	1.47
	100%	0%	
Residential	0.30	.00	0.30
	100	0	
Irrigation	.01	.27	.28
	2	98	
Livestock	.06	.07	.13
	45	55	
Industrial	.07	.00	.07
	100	0	
TOTALS	1.91	0.34	2.25
	85%	15%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Detroit Water Department	0.03	0.00	0.03
Kennedy	.16	.00	.16
Millport	.21	.00	.21
Sulligent	.32	.00	.32
Vernon Water & Sewer	.75	.00	.75



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.07	0.00	0.07

Lauderdale

Population: 87,691

Population served by public supply: 73,713

Per capita use (gallons per person per day): 83

Acres irrigated: 1,160

Land area: 669.5 square miles

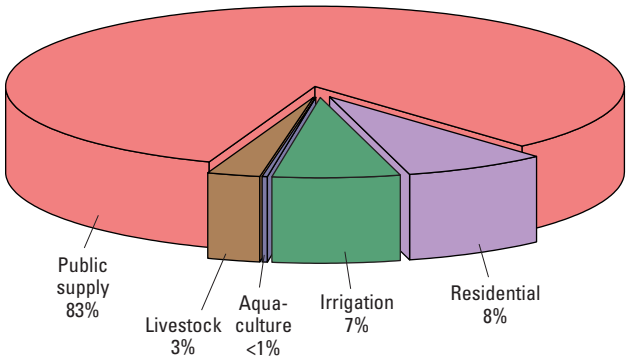
Water area: 49.3 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.40	12.79	14.19
	10%	90%	
Residential	1.30	0.00	1.30
	100	0	
Irrigation	0.74	.43	1.17
	63	37	
Aquaculture	.03	.00	0.03
	100	0	
Livestock	.20	.28	.48
	41	59	
TOTALS	3.67	13.50	17.17
	21%	79%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Florence Water & Sewer Department	0.31	12.79	13.10
Greenhill Water System	.49	0.00	0.49
Rogersville Water & Sewer Board	.60	.00	.60



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Lawrence

Population: 34,605

Population served by public supply: 29,078

Per capita use (gallons per person per day): 83

Acres irrigated: 2,380

Land area: 693.4 square miles

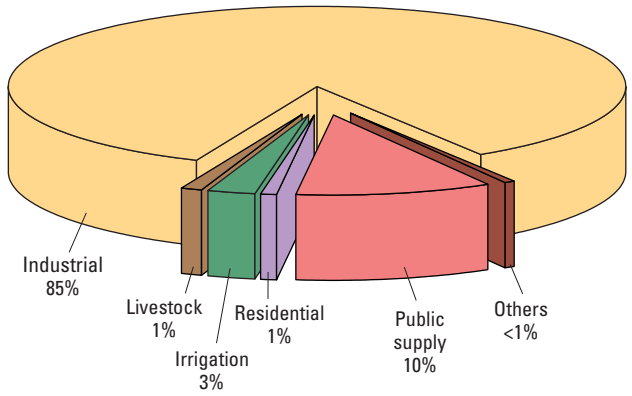
Water area: 24.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	6.91	6.91
	0%	100%	
Residential	.49	0.00	0.49
	100	0	
Irrigation	.37	1.42	1.79
	21	79	
Aquaculture	.08	.00	.08
	100	0	
Livestock	.32	.43	.75
	42	58	
Industrial	.00	57.18	57.18
	0	100	
Mining	.16	.07	.23
	68	32	
TOTALS	1.42	66.01	67.43
	2%	98%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Moulton Water Works Board	0.00	1.92	1.92
West Morgan East Lawrence Water & Sewer Authority	.00	4.99	4.99



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	57.18	57.18

Lee

Population: 123,254

Population served by public supply: 115,001

Per capita use (gallons per person per day): 77

Acres irrigated: 1,980

Land area: 608.7 square miles

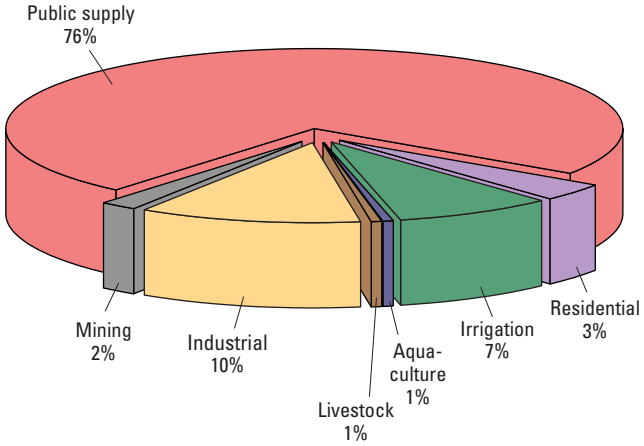
Water area: 6.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.82	15.53	16.35
	5%	95%	
Residential	.70	0.00	0.70
	100	0	
Irrigation	.36	1.24	1.60
	22	78	
Aquaculture	.05	.10	.15
	33	67	
Livestock	.04	.06	.10
	39	61	
Industrial	.00	2.23	2.23
	0	100	
Mining	.26	.12	.38
	68	32	
TOTALS	2.23	19.28	21.51
	10%	90%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Auburn Water Works Board	0.07	5.75	5.82
Beauregard Water Authority	.75	0.00	0.75
Opelika Water Works Board	.00	7.48	7.48
Smiths Station Water System	.00	2.29	2.29



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.00	2.23	2.23

Limestone

Population: 70,469

Population served by public supply: 59,659

Per capita use (gallons per person per day): 75

Acres irrigated: 8,740

Land area: 568.1 square miles

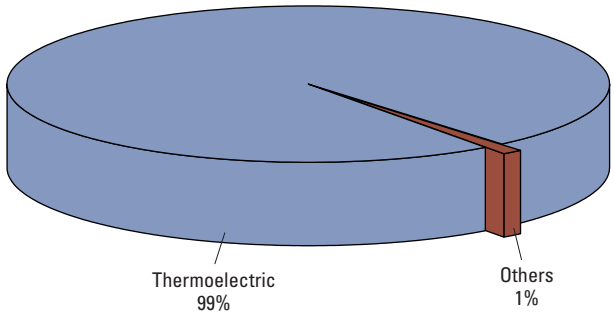
Water area: 39.0 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.55	8.84	13.39
	34%	66%	
Residential	1.05	0.00	1.05
	100	0	
Irrigation	2.10	6.16	8.26
	25	75	
Livestock	0.19	.25	0.44
	44	56	
Mining	.00	.50	.50
	0	100	
Thermoelectric	.00	1,990.24	1,990.24
	0	100	
TOTALS	7.89	2,005.99	2,013.88
	0%	100%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Ardmore Water System	0.20	0.00	0.20
Athens Utilities	.00	5.74	5.74
Limestone County Water Authority	2.44	3.10	5.54
Madison Water and Wastewater Board	1.88	.00	1.88
Swan Creek Community	.03	.00	.03



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.00	1,990.24	1,990.24

Lowndes

Population: 13,076

Population served by public supply: 12,214

Per capita use (gallons per person per day): 63

Acres irrigated: 2,000

Land area: 717.9 square miles

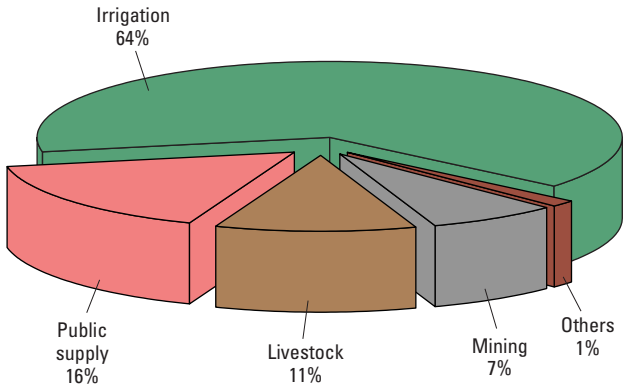
Water area: 7.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.96	0.00	0.96
	100%	0%	
Residential	.06	.00	.06
	100	0	
Irrigation	.58	3.26	3.84
	15	85	
Aquaculture	.00	.02	.02
	0	100	
Livestock	.26	.39	.65
	40	60	
Mining	.30	.14	.44
	68	32	
TOTALS	2.16	3.81	5.97
	36%	64%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Hayneville	0.33	0.00	0.33
Lowndes County Water Authority	.27	.00	.27
Lowndesboro	.06	.00	.06
Mosses Water Authority	.16	.00	.16
White Hall	.15	.00	.15



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Macon

Population: 22,810

Population served by public supply: 19,820

Per capita use (gallons per person per day): 68

Acres irrigated: 3,320

Land area: 610.5 square miles

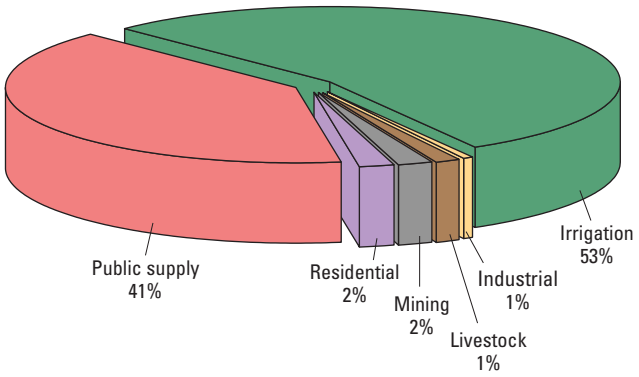
Water area: 2.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.36	2.71	4.07
	33%	67%	
Residential	0.20	0.00	0.20
	100	0	
Irrigation	2.97	2.34	5.31
	56	44	
Livestock	.05	.08	.13
	40	60	
Industrial	.05	.00	.05
	100	0	
Mining	.12	.06	.18
	69	31	
TOTALS	4.75	5.19	9.94
	48%	52%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Loachapoka Water Authority	0.65	0.00	0.65
Macon County Water Authority	.52	.00	.52
Star Mindingall Water Authority	.20	.00	.20
Tuskegee Utilities	.00	2.71	2.71



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
79 Amusement and Recreation Services	0.05	0.00	0.05

Madison

Population: 298,192

Population served by public supply: 288,901

Per capita use (gallons per person per day): 107

Acres irrigated: 5,560

Land area: 804.9 square miles

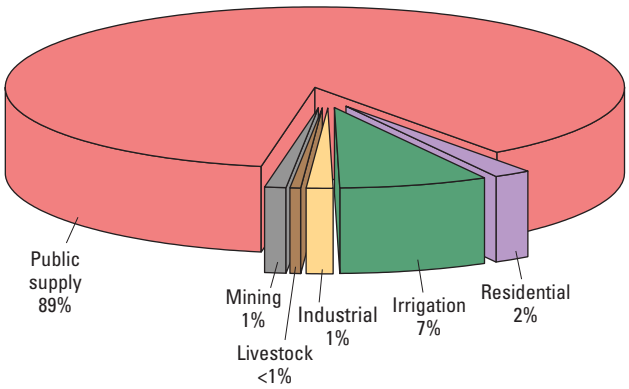
Water area: 7.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	23.71	38.85	62.56
	38%	62%	
Residential	1.12	0.00	1.12
	100	0	
Irrigation	1.61	3.30	4.91
	33	67	
Aquaculture	0.00	.00	0.00
	100	0	
Livestock	.14	.19	.33
	43	57	
Industrial	.00	.89	.89
	0	100	
Mining	.48	.22	.70
	68	32	
TOTALS	27.06	43.45	70.51
	38%	62%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Harvest-Monrovia Water Authority	3.99	0.00	3.99
Huntsville Utilities Water Department	7.82	31.01	38.83
Madison County Water Department	7.02	.00	7.02
Madison Water and Wastewater Board	4.04	.00	4.04
Owens Cross Roads Water Authority	0.84	.00	0.84
U.S. Army Missle Command (Redstone Arsenal)	.00	7.84	7.84



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.00	0.89	0.89

Marengo

Population: 21,879

Population served by public supply: 13,071

Per capita use (gallons per person per day): 63

Acres irrigated: 280

Land area: 977.0 square miles

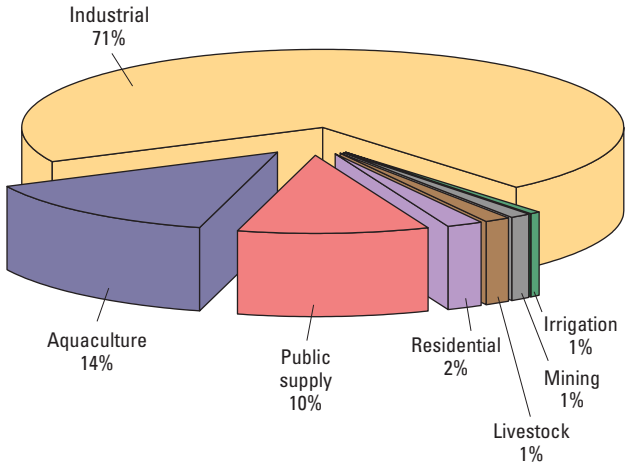
Water area: 5.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.71	0.00	2.71
	100%	0%	
Residential	0.55	.00	0.55
	100	0	
Irrigation	.01	.14	.15
	5	95	
Aquaculture	2.00	1.64	3.64
	55	45	
Livestock	.15	.23	.38
	40	60	
Industrial	1.00	18.08	19.08
	5	95	
Mining	.19	.09	.28
	68	32	
TOTALS	6.61	20.18	26.79
	25%	75%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Demopolis Water & Sewer Board	1.98	0.00	1.98
Faunsdale	0.05	.00	0.05
Linden Utilities Board	.24	.00	.24
Myrtlewood Water System	.25	.00	.25
Sweet Water Water System	.04	.00	.04
Thomaston Water & Gas Board	.16	.00	.16



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	15.10	15.10
28 Chemicals and Allied Products	1.00	2.98	3.98

Marion

Population: 30,154

Population served by public supply: 20,465

Per capita use (gallons per person per day): 88

Acres irrigated: 140

Land area: 741.4 square miles

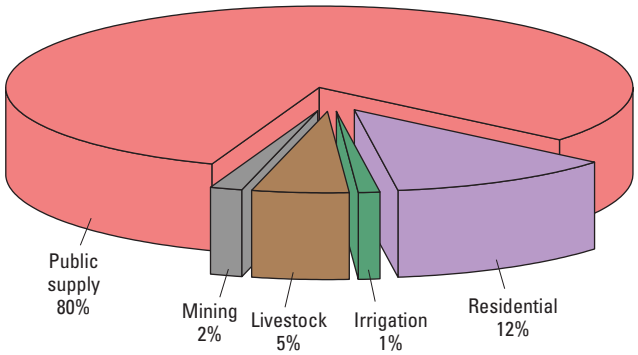
Water area: 2.2 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.64	5.66	6.30
	10%	90%	
Residential	.92	0.00	0.92
	100	0	
Irrigation	.02	.06	.08
	21	79	
Livestock	.17	.24	.41
	41	59	
Mining	.04	.09	.13
	28	72	
TOTALS	1.79	6.05	7.84
	23%	77%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Brilliant	0.10	0.00	0.10
Guin Water Works and Sewer Board	.00	.69	.69
Hamilton Waterworks & Sewer Board	.00	1.32	1.32
Hodges Water Department	.20	.00	.20
Twin Water Authority	.06	.00	.06
Upper Bear Creek Water Treatment Plant	.00	3.17	3.17
Winfield Water Works & Sewer Board	.28	.48	.76



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Marshall

Population: 85,634

Population served by public supply: 80,071

Per capita use (gallons per person per day): 67

Acres irrigated: 1,280

Land area: 567.1 square miles

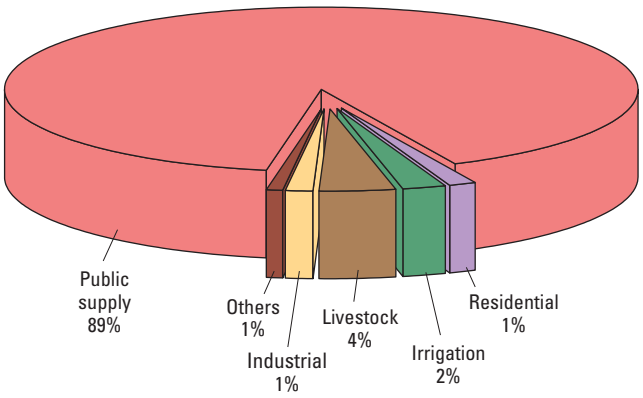
Water area: 56.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.98	21.17	24.15
	12%	88%	
Residential	0.38	0.00	0.38
	100	0	
Irrigation	.00	.68	.68
	0	100	
Aquaculture	.00	.01	.01
	0	100	
Livestock	.60	.60	1.20
	50	50	
Industrial	.36	.00	.36
	100	0	
Mining	.19	.09	.28
	68	32	
TOTALS	4.51	22.55	27.06
	17%	83%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Albertville Municipal Utilities Board	0.00	11.64	11.64
Arab Water Works Board	.00	4.30	4.30
Douglas Water and Fire Protection	2.33	0.00	2.33
Guntersville Water Works and Sewer Board	.65	2.66	3.31
North Marshall Utilities	.00	1.20	1.20
Northeast Alabama Water, Sewer & F.P.A.	.00	1.36	1.36



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.36	0.00	0.36

Mobile

Population: 401,427

Population served by public supply: 364,178

Per capita use (gallons per person per day): 70

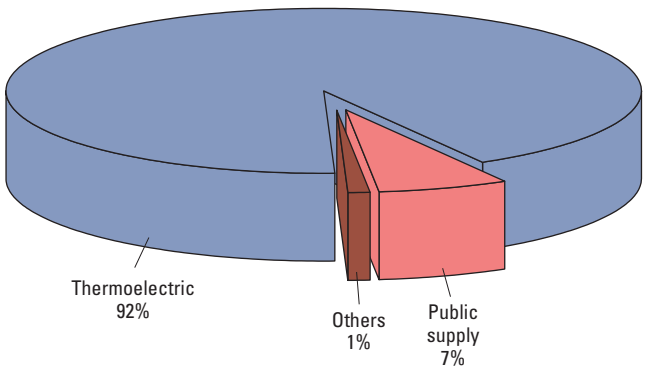
Acres irrigated: 4,170

Land area: 1,233.1 square miles

Water area: 410.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	11.37	65.45	76.82
	15%	85%	
Residential	3.01	0.00	3.01
	100	0	
Irrigation	0.14	.96	1.10
	13	87	
Aquaculture	.00	.00	0.00
	100	0	
Livestock	.12	.15	.27
	46	54	
Industrial	5.67	.00	5.67
	100	0	
Mining	.46	.00	.46
	100	0	
Thermoelectric	.00	1,043.61	1,043.61
	0	100	
TOTALS	20.77	1,110.17	1,130.94
	2%	98%	



Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Bayou La Batre Utilities Board	0.62	0.00	0.62
Grand Bay Water Works Board	.94	.00	.94
Kushla Water System	.45	.00	.45
Le Moyne Water System, Inc.	.40	.00	.40
MCB Water Authority, Inc.	.14	.00	.14
Mobile Board of Water and Sewer Commissioners	.00	65.45	65.45
Mobile County W S & F Protection Authority	3.71	.00	3.71
Mt. Vernon	.26	.00	.26
Saraland Water System	1.47	.00	1.47
Satsuma	.56	.00	.56
South Alabama Utilities	1.62	.00	1.62
St. Elmo - Irvington Water Authority	.89	.00	.89
Turnerville Water & Fire Protection District	.32	.00	.32

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
13 Oil and Gas Extraction	0.12	0.00	0.12
20 Food and Kindred Products	.00	.00	.00
28 Chemicals and Allied Products	5.17	.00	5.17
29 Petroleum Refining and Related Industries	.23	.00	.23
32 Stone, Clay, Glass, and Concrete Products	.15	.00	.15
49 Electric, Gas, and Sanitary Services	.00	1,043.61	1,043.61

Monroe

Population: 23,733

Population served by public supply: 17,666

Per capita use (gallons per person per day): 61

Acres irrigated: 690

Land area: 1,025.9 square miles

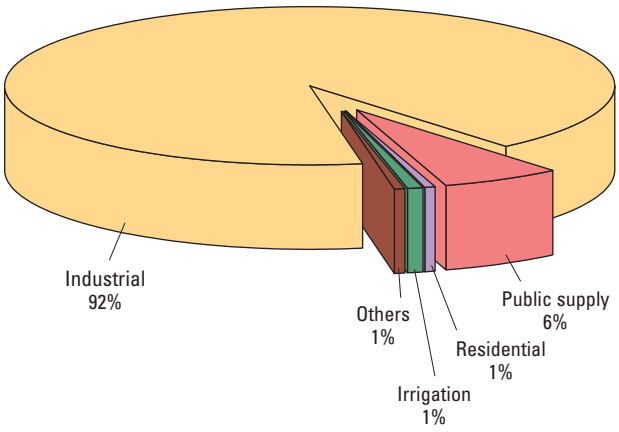
Water area: 8.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	3.85	0.00	3.85
	100%	0%	
Residential	0.31	.00	0.31
	100	0	
Irrigation	.40	.06	.46
	86	14	
Aquaculture	.03	.04	.07
	49	51	
Livestock	.08	.12	.20
	40	60	
Industrial	.40	54.61	55.01
	1	99	
Mining	.11	.00	.11
	100	0	
TOTALS	5.18	54.83	60.01
	9%	91%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Beatrice Water System	0.08	0.00	0.08
Excel	.30	.00	.30
Frisco City Water Works Board	.23	.00	.23
Monroeville Water Works Board	2.58	.00	2.58
Southwest Alabama Water Authority	.40	.00	.40
Uriah Water System	.27	.00	.27



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.40	0.00	0.40
26 Paper and Allied Products	.00	54.61	54.61

Montgomery

Population: 221,619

Population served by public supply: 217,044

Per capita use (gallons per person per day): 80

Acres irrigated: 1,600

Land area: 789.8 square miles

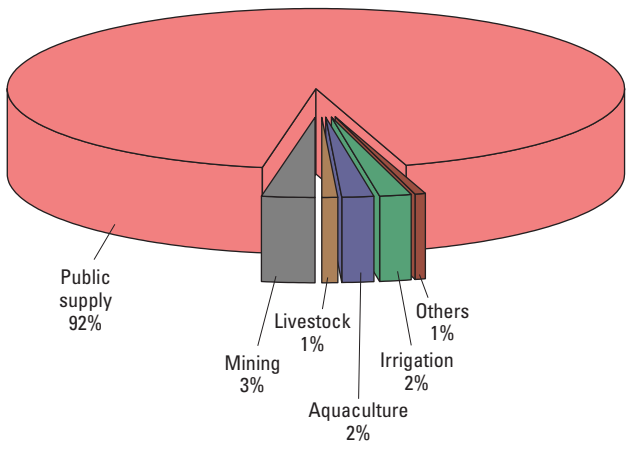
Water area: 10.0 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	28.90	35.57	64.47
	45%	55%	
Residential	0.36	0.00	0.36
	100	0	
Irrigation	.35	.82	1.17
	30	70	
Aquaculture	.55	.59	1.14
	48	52	
Livestock	.27	.39	.66
	41	59	
Industrial	.01	.00	.01
	100	0	
Mining	1.31	.61	1.92
	68	32	
TOTALS	31.75	37.98	69.73
	46%	54%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
East Montgomery Water, Sewer, & Fire Protection Authority	1.59	0.00	1.59
Montgomery Water Works and Sewer Board	26.58	35.57	62.15
Oak Hills Water Company	0.04	.00	0.04
Pilgrim Providence Water and F. P. A.	.04	.00	.04
Pine Level Water Authority	.22	.00	.22
Pintlala Water System, Inc.	.27	.00	.27
Ramer Water Co., Inc.	.14	.00	.14
Sellers Station Water System, Inc.	.01	.00	.01



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
91 Executive, Legislative, and General Government, Except Finance	0.01	0.00	0.01

Morgan

Population: 113,740

Population served by public supply: 109,912

Per capita use (gallons per person per day): 83

Acres irrigated: 1,390

Land area: 582.2 square miles

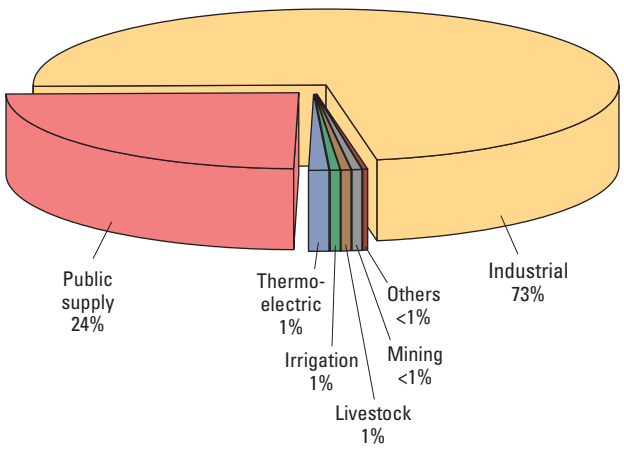
Water area: 16.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	30.42	30.42
	0%	100%	
Residential	.30	0.00	0.30
	100	0	
Irrigation	.12	.74	.86
	14	86	
Aquaculture	.05	.05	.10
	50	50	
Livestock	.33	.40	.73
	45	55	
Industrial	1.29	89.36	90.65
	1	99	
Mining	.37	.17	.54
	68	32	
Thermoelectric	.00	1.20	1.20
	0	100	
TOTALS	2.46	122.34	124.80
	2%	98%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Decatur Utilities	0.00	30.42	30.42



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	1.14	0.00	1.14
28 Chemicals and Allied Products	0.16	84.08	84.24
30 Rubber and Miscellaneous Plastics Products	.00	5.28	5.28
49 Electric, Gas, and Sanitary Services	.00	1.20	1.20

Perry

Population: 11,371

Population served by public supply: 6,840

Per capita use (gallons per person per day): 65

Acres irrigated: 130

Land area: 719.5 square miles

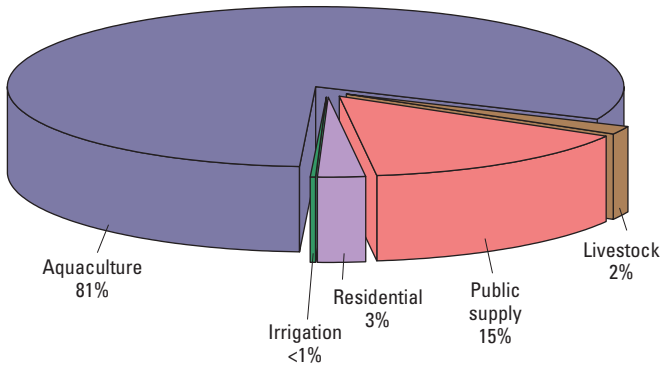
Water area: 4.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.82	0.00	1.82
	100%	0%	
Residential	0.32	.00	0.32
	100	0	
Irrigation	.03	.02	.05
	66	34	
Aquaculture	5.32	4.67	9.99
	53	47	
Livestock	.09	.12	.21
	42	58	
TOTALS	7.58	4.81	12.39
	61%	39%	

Withdrawals by public supplier, in Mgal/d

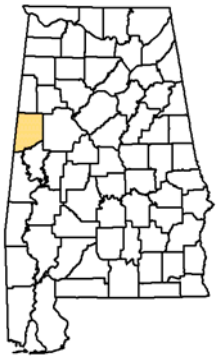
Public Supplier	GW	SW	Totals
Marion (City of) Water Department	0.82	0.00	0.82
Perry County Water Authority	.16	.00	.16
Uniontown Utilities Board	.84	.00	.84



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Pickens



Population: 20,178

Population served by public supply: 15,797

Per capita use (gallons per person per day): 99

Acres irrigated: 860

Land area: 881.4 square miles

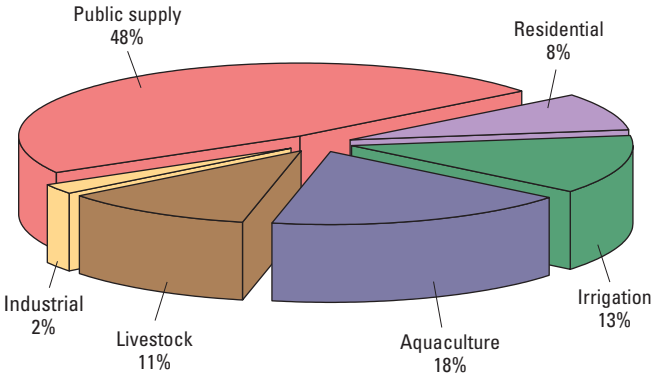
Water area: 8.6 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	2.71	0.00	2.71
	100%	0%	
Residential	0.48	.00	0.48
	100	0	
Irrigation	.32	.41	.73
	44	56	
Aquaculture	.50	.50	1.00
	50	50	
Livestock	.31	.32	.63
	49	51	
Industrial	.12	.00	.12
	100	0	
TOTALS	4.44	1.23	5.67
	78%	22%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Aliceville Water and Sewer Board	0.77	0.00	0.77
Gordo	.44	.00	.44
Pickens County Water Authority	1.12	.00	1.12
Reform	.37	.00	.37



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.12	0.00	0.12

Pike

Population: 29,639

Population served by public supply: 26,053

Per capita use (gallons per person per day): 107

Acres irrigated: 2,420

Land area: 671.0 square miles

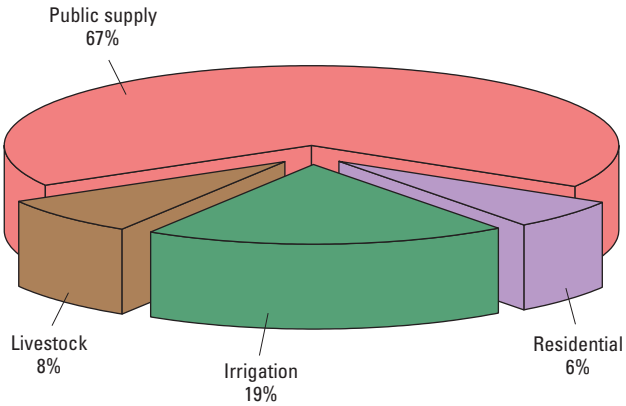
Water area: 1.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	4.68	0.00	4.68
	100%	0%	
Residential	0.42	.00	0.42
	100	0	
Irrigation	.46	.88	1.34
	34	66	
Aquaculture	.00	.00	.00
	50	50	
Livestock	.23	.32	.55
	41	59	
TOTALS	5.79	1.20	6.99
	83%	17%	

Withdrawals by public supplier, in Mgal/d

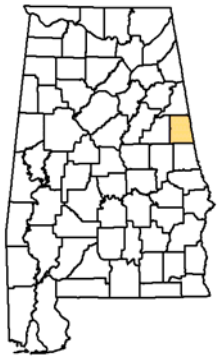
Public Supplier	GW	SW	Totals
Brundidge	0.42	0.00	0.42
Goshen	.05	.00	.05
Pike County Water Authority	1.16	.00	1.16
Troy Utility Department	3.06	.00	3.06



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Randolph



Population: 22,717

Population served by public supply: 12,026

Per capita use (gallons per person per day): 68

Acres irrigated: 180

Land area: 581.1 square miles

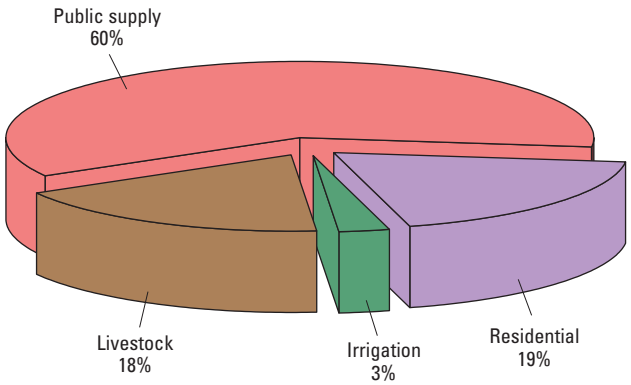
Water area: 3.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	1.68	1.68
	0%	100%	
Residential	.53	0.00	0.53
	100	0	
Irrigation	.02	.06	.08
	27	73	
Livestock	.23	.26	.49
	46	54	
Mining	.00	.00	.00
	75	25	
TOTALS	0.78	2.00	2.78
	28%	72%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Roanoke Utilities Board	0.00	1.29	1.29
Wedowee Gas, Water & Sewer	.00	0.39	0.39



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Russell

Population: 49,326

Population served by public supply: 45,389

Per capita use (gallons per person per day): 65

Acres irrigated: 2,680

Land area: 641.3 square miles

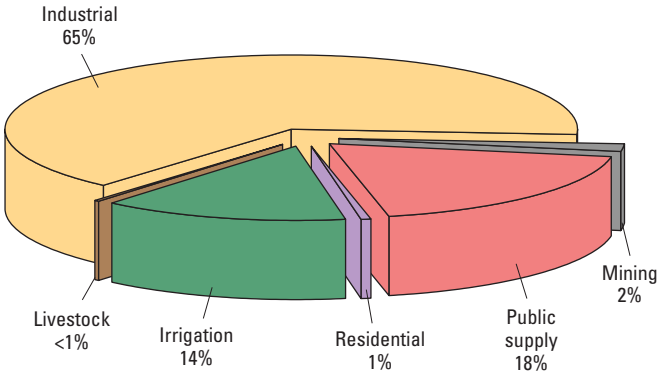
Water area: 6.1 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.07	7.04	8.11
	13%	87%	
Residential	0.26	0.00	0.26
	100	0	
Irrigation	.00	6.05	6.05
	0	100	
Livestock	.04	.06	.10
	41	59	
Industrial	.92	27.60	28.52
	3	97	
Mining	.46	.22	.68
	68	32	
TOTALS	2.75	40.97	43.72
	6%	94%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Ft. Mitchell Water System, Inc.	0.54	0.00	0.54
Hurtsboro Water and Sewer Board	.08	.00	.08
Phenix City Utilities	.00	7.04	7.04
Russell County Water Authority	.44	.00	.44



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.92	27.60	28.52
32 Stone, Clay, Glass, and Concrete Products	.00	0.00	0.00

St. Clair

Population: 72,330

Population served by public supply: 165,447

Per capita use (gallons per person per day): 74

Acres irrigated: 2,770

Land area: 633.8 square miles

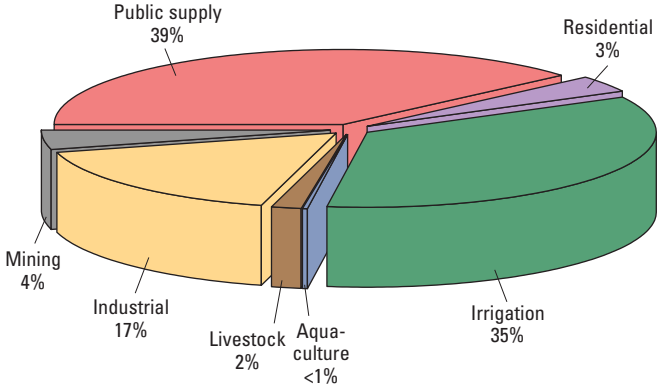
Water area: 19.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	8.13	0.00	8.13
	100%	0%	
Residential	0.72	.00	0.72
	100	0	
Irrigation	.00	7.37	7.37
	0	100	
Aquaculture	.00	.03	.03
	0	100	
Livestock	.16	.23	.39
	41	59	
Industrial	.00	3.50	3.50
	0	100	
Mining	.59	.28	.87
	68	32	
TOTALS	9.60	11.41	21.01
	46%	54%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Leeds	0.99	0.00	0.99
New London Water Authority	.52	.00	.52
Odenville Utilities Board	2.79	.00	2.79
Pell City	2.30	.00	2.30
Ragland Water Works Board	.50	.00	.50
Springville	.45	.00	.45
Wattsville Water Authority	.58	.00	.58



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.00	3.50	3.50

Shelby

Population: 171,465

Population served by public supply: 64,529

Per capita use (gallons per person per day): 82

Acres irrigated: 1,360

Land area: 794.7 square miles

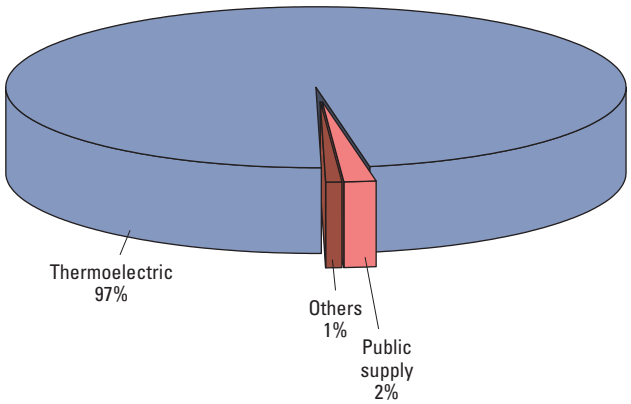
Water area: 14.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	14.12	0.00	14.12
	100%	0%	
Residential	0.52	.00	0.52
	100	0	
Irrigation	1.94	.25	2.19
	89	11	
Aquaculture	.00	.05	.05
	0	100	
Livestock	.06	.09	.15
	41	59	
Mining	3.90	.00	3.90
	100	0	
Thermoelectric	.00	812.32	812.32
	0	100	
TOTALS	20.54	812.71	833.25
	2%	98%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Alabaster Water Board	3.71	0.00	3.71
Calera	1.77	.00	1.77
Columbiana Water Works Board	1.37	.00	1.37
Harpersville Water Board	0.23	.00	0.23
Helena Utility Board	1.46	.00	1.46
Indian Springs School	.08	.00	.08
Montevallo Water Works & Sewer Board	1.30	.00	1.30
Pelham Water Works	3.10	.00	3.10
Vincent Water Board	.24	.00	.24
Wilsonville Waterworks - Town of Wilsonville	.31	.00	.31
Wilton	.54	.00	.54



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.00	812.32	812.32

Sumter

Population: 13,819

Population served by public supply: 12,629

Per capita use (gallons per person per day): 80

Acres irrigated: 210

Land area: 904.9 square miles

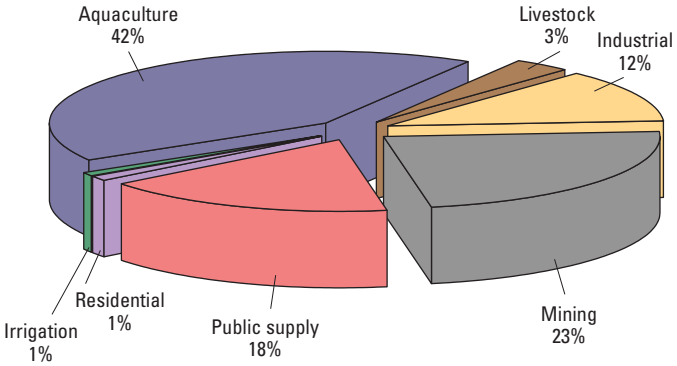
Water area: 8.4 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.82	0.00	1.82
	100%	0%	
Residential	0.10	.00	0.10
	100	0	
Irrigation	.02	.08	.10
	20	80	
Aquaculture	2.10	2.19	4.29
	49	51	
Livestock	.14	.21	.35
	40	60	
Industrial	.00	1.22	1.22
	0	100	
Mining	1.63	.76	2.39
	68	32	
TOTALS	5.81	4.46	10.27
	57%	43%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Livingston Utility Board	0.76	0.00	0.76
Sumter County Water Authority	1.06	.00	1.06



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.00	1.22	1.22

Talladega

Population: 80,457

Population served by public supply: 60,505

Per capita use (gallons per person per day): 60

Acres irrigated: 2,420

Land area: 739.5 square miles

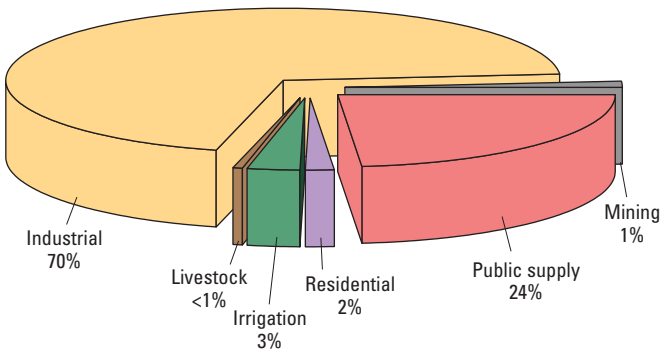
Water area: 20.7 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	6.36	12.12	18.48
	34%	66%	
Residential	1.26	0.00	1.26
	100	0	
Irrigation	0.17	2.36	2.53
	7	93	
Livestock	.13	.16	0.29
	45	55	
Industrial	1.26	53.36	54.62
	2	98	
Mining	.75	.35	1.10
	68	32	
TOTALS	9.93	68.35	78.28
	13%	87%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Central Talladega County Water District	0.26	0.00	0.26
Childersburg Water, Sewer & Gas Board	1.16	.00	1.16
Fayetteville Water Authority	.26	.00	.26
Lincoln	1.26	.00	1.26
Munford Water Authority, Inc.	.18	.00	.18
Sycamore Water and Sewer Authority	.13	.00	.13
Sylacauga Utilities Board	.28	3.25	3.53
Talladega County Water Dept.	.00	.81	.81
Talladega Water Works & Sewer Board	2.80	1.62	4.42
Talladega/Shelby Water Treatment Plant	.00	6.44	6.44
Water Works, Inc.	.03	.00	.03



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	1.26	0.89	2.15
26 Paper and Allied Products	0.00	52.46	52.46

Tallapoosa

Population: 40,717

Population served by public supply: 34,765

Per capita use (gallons per person per day): 77

Acres irrigated: 620

Land area: 717.9 square miles

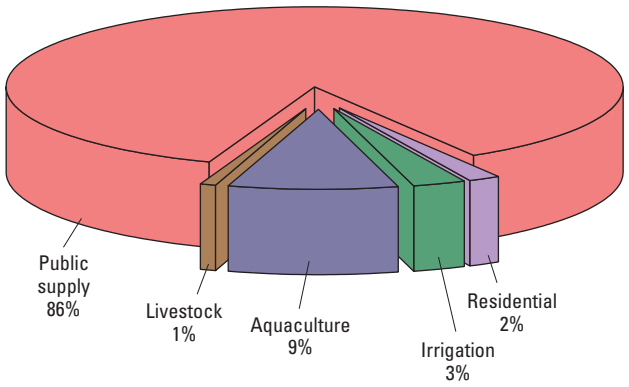
Water area: 48.3 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	12.55	12.55
	0%	100%	
Residential	.28	0.00	0.28
	100	0	
Irrigation	.00	.39	.39
	0	100	
Aquaculture	.03	1.27	1.30
	2	98	
Livestock	.05	.07	.12
	44	56	
TOTALS	0.36	14.28	14.64
	2%	98%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Alexander City Water Department	0.00	10.57	10.57
Tallassee	.00	1.98	1.98



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Tuscaloosa

Population: 168,908

Population served by public supply: 158,950

Per capita use (gallons per person per day): 127

Acres irrigated: 2,890

Land area: 1,324.4 square miles

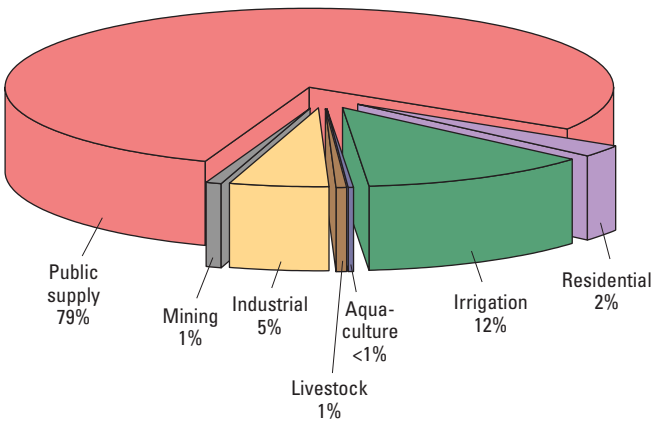
Water area: 26.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.80	27.49	28.29
	3%	97%	
Residential	.84	0.00	0.84
	100	0	
Irrigation	.38	4.06	4.44
	9	91	
Aquaculture	.07	.00	.07
	100	0	
Livestock	.09	.12	.21
	43	57	
Industrial	.78	1.14	1.92
	41	59	
Mining	.00	.25	.25
	0	100	
TOTALS	2.96	33.06	36.02
	8%	92%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Buhl, Elrod and Holman Water Authority	0.27	0.00	0.27
Coker Water Authority	.32	.00	.32
Green Pond Water System	.20	.00	.20
Northport	.00	3.39	3.39
Tuscaloosa Water and Sewer Department	.00	24.10	24.10



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
29 Petroleum Refining and Related Industries	0.78	0.98	1.76
30 Rubber and Miscellaneous Plastics Products	.00	.16	0.16

Walker

Population: 70,117

Population served by public supply: 62,174

Per capita use (gallons per person per day): 70

Acres irrigated: 760

Land area: 794.4 square miles

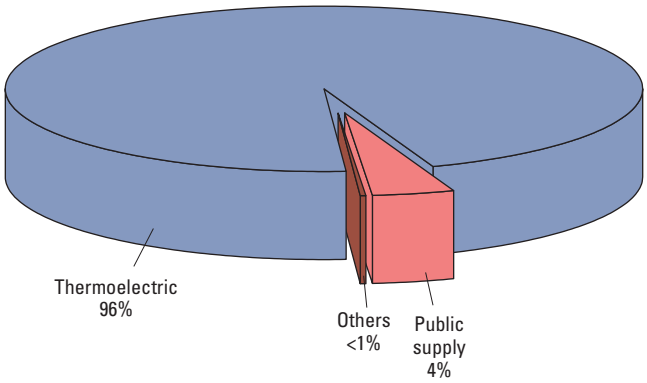
Water area: 10.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.12	40.22	40.34
	0%	100%	
Residential	.54	0.00	0.54
	100	0	
Irrigation	.23	.26	.49
	46	54	
Aquaculture	.02	.07	.09
	25	75	
Livestock	.13	.18	.31
	42	58	
Mining	.10	.31	.41
	25	75	
Thermoelectric	.00	927.28	927.28
	0	100	
TOTALS	1.14	968.32	969.46
	0%	100%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Birmingham WW&SB	0.00	28.71	28.71
Eldridge Water Department	.12	0.00	0.12
Jasper Waterworks and Sewer Board	.00	11.51	11.51



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.00	927.28	927.28

Washington

Population: 17,773

Population served by public supply: 10,045

Per capita use (gallons per person per day): 66

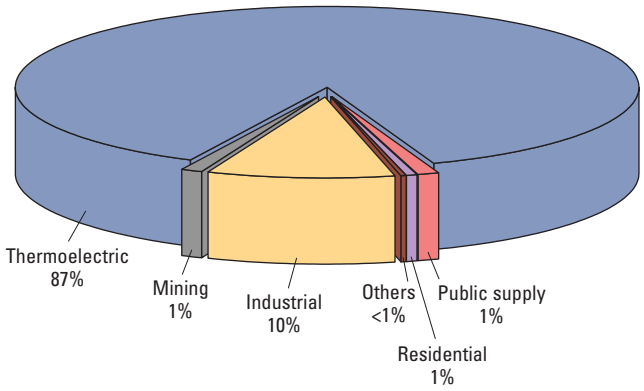
Acres irrigated: 100

Land area: 1,080.7 square miles

Water area: 7.9 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.19	0.00	1.19
	100%	0%	
Residential	0.51	.00	0.51
	100	0	
Irrigation	.03	.08	.11
	26	74	
Aquaculture	.08	.00	.08
	100	0	
Livestock	.09	.10	.19
	48	52	
Industrial	5.33	4.31	9.64
	55	45	
Mining	.91	.00	.91
	100	0	
Thermoelectric	.00	86.54	86.54
	0	100	
TOTALS	8.14	91.03	99.17
	8%	92%	



Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Chatom Utilities Board	0.24	0.00	0.24
Deer Park - Vinegar Bend Water & Fire Protection	.11	.00	.11
Frankville Water & Fire Protection Authority	.09	.00	.09
Leroy Water Authority	.16	.00	.16
McIntosh Water & Fire Protection Authority	.35	.00	.35
Millry Water Works	.14	.00	.14
St. Stephens Water System	.05	.00	.05
Wagarville Water System, Inc.	.04	.00	.04

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
28 Chemicals and Allied Products	5.33	4.31	9.64
49 Electric, Gas, and Sanitary Services	0.00	86.54	86.54

Wilcox

Population: 12,937

Population served by public supply: 7,985

Per capita use (gallons per person per day): 79

Acres irrigated: 160

Land area: 888.7 square miles

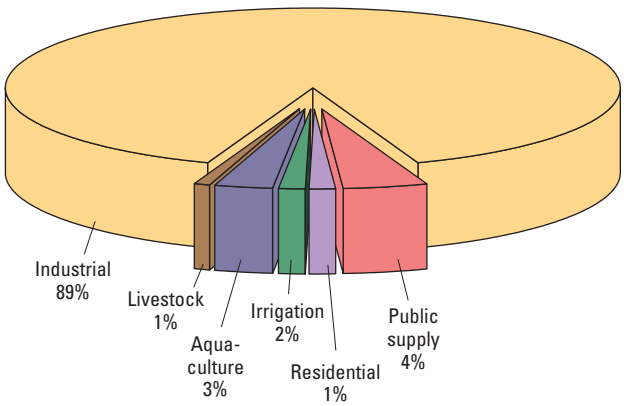
Water area: 18.8 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	1.02	0.00	1.02
	100%	0%	
Residential	0.34	.00	0.34
	100	0	
Irrigation	.34	.02	.36
	96	4	
Aquaculture	.34	.34	.68
	50	50	
Livestock	.08	.13	.21
	40	60	
Industrial	.00	21.04	21.04
	0	100	
TOTALS	2.12	21.53	23.65
	9%	91%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Camden	0.43	0.00	0.43
Millers Ferry Water Authority	.08	.00	.08
Pine Apple Waterworks	.02	.00	.02
Wilcox County Water System	.50	.00	.50



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.00	21.04	21.04

Winston

Population: 24,498

Population served by public supply: 15,869

Per capita use (gallons per person per day): 53

Acres irrigated: 100

Land area: 614.4 square miles

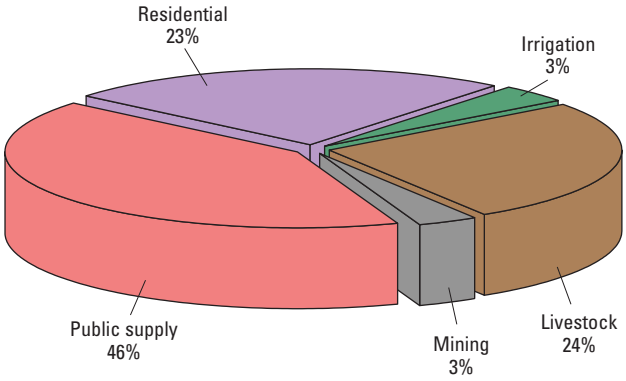
Water area: 17.4 square miles

Withdrawals, in million gallons per day (Mgal/d) and percent (%) [Percents are rounded to nearest whole number]

Category	GW	SW	Totals
Public Supply	0.00	0.89	0.89
	0%	100%	
Residential	.44	.00	.44
	100	0	
Irrigation	.00	.06	.06
	0	100	
Livestock	.22	.25	.47
	46	54	
Mining	.06	.00	.06
	100	0	
TOTALS	0.72	1.21	1.92
	37%	63%	

Withdrawals by public supplier, in Mgal/d

Public Supplier	GW	SW	Totals
Arley Water Works	0.00	0.89	0.89



Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Appendix B. Alabama Water Use by Subbasin

The following one-page summaries of water-use information by hydrologic subbasin present withdrawals by public suppliers, major Standard Industrial Classification (SIC) groups, and water-use categories. See the first example on the following Middle Chattahoochee–Lake Harding page. Population and land area totals also are listed along with a map that shows the location of the subbasin within the State.

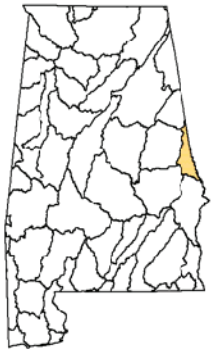
In each of the summaries, a table lists average daily withdrawals for the water-use categories in the subbasin. If there are no withdrawals for a particular category, that category is not listed. The withdrawals are totaled by source of water used (ground water [GW] or surface water [SW]) and by category, and the percentage of source used is indicated.

Each public supplier is listed by the subbasin in which the withdrawal occurs. Therefore, a public supplier may be listed in more than one subbasin depending on the location of its water sources. For example, Birmingham WW&SB withdraws water from the Upper Coosa (03150105), Mulberry (03160109), Sipsey Fork (03160110), and Locust (03160111) subbasins and is, therefore, listed on each of the corresponding subbasin pages.

In the tables, public suppliers, categories, and major SIC groups were listed as withdrawing 0.00 million gallons per day (Mgal/d) if the withdrawal was less than 0.01 Mgal/d. As a result, some totaled withdrawals from these tables may be less than the totals for public supply or industry in the water-use-category table. Numbers were summed using three-decimal places and then rounded to two decimal places for the final number. Numbers may not sum to total withdrawals because of rounding. No site-specific water withdrawals were reported for the Upper Chickasawhay (0317002, land area 65.1 square miles), Lower Chickasawhay (0317003, land area 0.7 square mile), or Upper Elk (0603003, land area 0.4 square mile) subbasins, and no water-withdrawal estimates were determined for the aquaculture, livestock, mining, or self-supplied residential categories because of the relatively small land areas of these subbasins.

Major SIC groups include the water-use categories of commercial (SIC codes 79 and 91), industrial (SIC codes 20 through 40), mining (SIC code 13), and thermoelectric power (SIC code 49).

Middle Chattahoochee–Lake Harding



03130002

Population: 52,842

Land Area: 559.6 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Chattahoochee Valley Water Supply District	0.00	4.72	4.72
Opelika Water Works Board	.00	4.87	4.87
Smiths Station Water System	.00	2.29	2.29

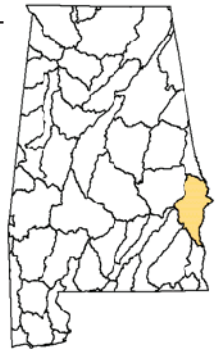
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
23 Apparel and Other Finished Products Made From Fabrics and Similar Materials	0.00	2.16	2.16

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	0.00	11.88	11.88
	0%	100%	
Irrigation	.19	0.39	0.58
	33	67	
Livestock	.08	.11	.19
	42	58	
Industrial	.00	2.16	2.16
	0	100	
TOTALS	0.27	14.54	14.81
	2%	98%	

Middle Chattahoochee–Walter F. George Reservoir



03130003

Population: 95,496

Land Area: 1,427.1 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Baker Hill Water Authority	0.22	0.00	0.22
Cowikee Water Authority	.10	.00	.10
Eufaula Water Works and Sewer Board	2.06	.00	2.06
Ft. Mitchell Water System, Inc.	.54	.00	.54
Hurtsboro Water and Sewer Board	.08	.00	.08
Phenix City Utilities	.00	7.04	7.04
Russell County Water Authority	.44	.00	.44

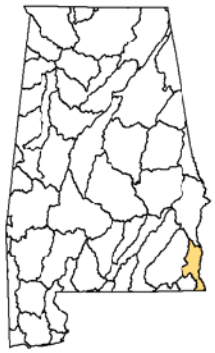
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	1.18	0.00	1.18
24 Lumber and Wood Products, Except Furniture	0.92	27.60	28.52
32 Stone, Clay, Glass, and Concrete Products	.00	.00	0.00

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	3.45	7.04	10.49
	33%	67%	
Irrigation	1.03	8.08	9.11
	11	89	
Livestock	0.14	0.21	0.35
	41	59	
Industrial	2.10	27.60	29.70
	7	93	
TOTALS	6.72	42.93	49.65
	14%	86%	

Lower Chattahoochee



03130004

Population: 37,036

Land Area: 583.8 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Abbeville Waterworks and Sewer Board	0.61	0.00	0.61
Ashford Water Works	.14	.00	.14
Columbia Water Works & Sewer Board	.07	.00	.07
Cowarts	.24	.00	.24
Dothan Water System	5.94	.00	5.94
Gordon Water Works	.05	.00	.05
Headland Water Works Board	.21	.00	.21
Henry County Water Authority	.67	.00	.67
Kinsey	.16	.00	.16
Newville	.13	.00	.13
Webb Water System	.17	.00	.17

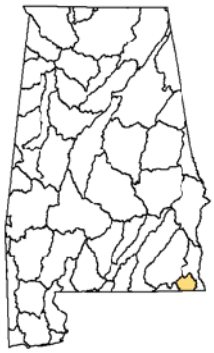
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.25	0.00	0.25
49 Electric, Gas, and Sanitary Services	.17	105.36	105.53

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	8.39	0.00	8.39
	100%	0%	
Irrigation	3.40	1.87	5.27
	65	35	
Livestock	0.12	.17	0.29
	41	59	
Industrial	.24	.00	.24
	100	0	
Thermoelectric	.17	105.36	105.53
	0	100	
TOTALS	12.32	107.40	119.72
	10%	90%	

Chipola



03130012

Population: 24,348

Land Area: 259.1 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Ashford Water Works	0.19	0.00	0.19
Cottonwood	.22	.00	.22
Cowarts	.08	.00	.08
Dothan Water System	.70	.00	.70
Houston County Water Authority	.25	.00	.25
Taylor (Town of)	.20	.00	.20

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification			
None	GW	SW	Totals

Withdrawals, in Mgal/d and percent (%)

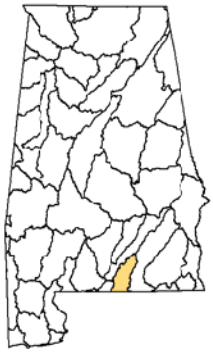
Category	GW	SW	Totals
Public Supply	1.64	0.00	1.64
	100%	0%	
Irrigation	2.76	.99	3.75
	74	26	
Livestock	0.06	.09	0.15
	41	59	
TOTALS	4.46	1.08	5.54
	81%	19%	

Yellow

03140103

Population: 19,015

Land Area: 513.7 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Andalusia Water Works Board	0.14	0.00	0.14
Covington County Water Department	.16	.00	.16
Lockhart	.07	.00	.07
Opp Utilities Board	.69	.00	.69

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.43	0.00	0.43
49 Electric, Gas, and Sanitary Services	.00	.00	.00

Withdrawals, in Mgal/d and percent (%)

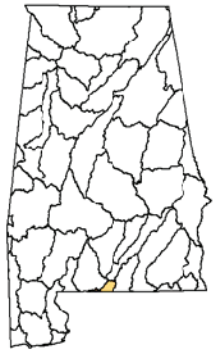
Category	GW	SW	Totals
Public Supply	1.06	0.00	1.06
	100%	0%	
Irrigation	0.99	.26	1.25
	79	21	
Livestock	.14	.19	0.33
	42	58	
Industrial	.43	.00	.43
	100	0	
TOTALS	2.62	0.45	3.07
	85%	15%	

Blackwater

03140104

Population: 584

Land Area: 145.4 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Covington County Water Department	0.06	0.00	0.06

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

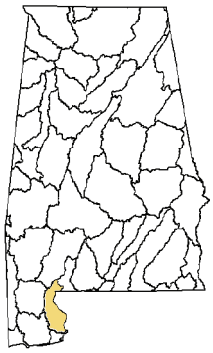
Category	GW	SW	Totals
Public Supply	0.06	0.00	0.06
	100%	0%	
Irrigation	.18	.09	.27
	67	33	
Livestock	.02	.03	.05
	40	60	
TOTALS	0.26	0.12	0.38
	68%	32%	

Perdido

03140106

Population: 34,750

Land Area: 680.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Atmore Utility Board	1.87	0.00	1.87
Loxley	0.14	.00	0.14
North Baldwin Utilities	1.70	.00	1.70
Robertsdale	.26	.00	.26
Summerdale Water Department	.10	.00	.10

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

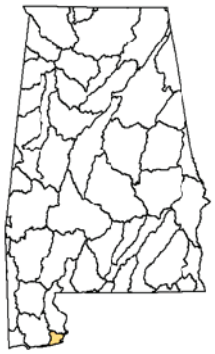
Category	GW	SW	Totals
Public Supply	4.06	0.00	4.06
	100%	0%	
Irrigation	11.90	2.33	14.23
	84	16	
Livestock	0.07	.08	0.15
	45	55	
TOTALS	16.03	2.41	18.44
	87%	13%	

Perdido Bay

03140107

Population: 25,801

Land Area: 162.3 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Elberta	0.08	0.00	0.08
Foley Utilities Board	1.29	.00	1.29
Gulf Shores Utilities	1.00	.00	1.00
Orange Beach Water, Sewer & Fire Protection	2.64	.00	2.64
Perdido Bay Water, Sewer & Fire Protection District	.47	.00	.47

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

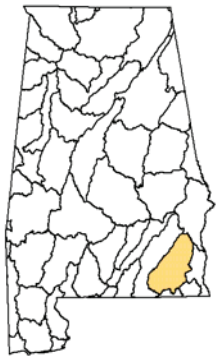
Category	GW	SW	Totals
Public Supply	5.49	0.00	5.49
	100%	0%	
Irrigation	3.10	.59	3.69
	84	16	
Livestock	0.02	.02	0.04
	46	54	
TOTALS	8.61	0.61	9.22
	93%	7%	

Upper Choctawhatchee

03140201

Population: 146,125

Land Area: 1,543.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Abbeville Waterworks and Sewer Board	0.04	0.00	0.04
Ariton Water Department	.08	.00	.08
Baker Hill Water Authority	.43	.00	.43
Bellwood Water & F.P.A.	.02	.00	.02
Clayton Water Works and Sewer Board	.08	.00	.08
Clio	.49	.00	.49
Coffee Springs (Town of)	.03	.00	.03
Dale County Water Authority	.45	.00	.45
Daleville	.86	.00	.86
Dothan Water System	8.21	.00	8.21
Enterprise Water Works Board	4.58	.00	4.58
Geneva Water Works	.18	.00	.18
Hartford	.10	.00	.10
Headland Water Works Board	.23	.00	.23
Level Plains (Town of)	.27	.00	.27
Louisville Water Works	.14	.00	.14
Malvern	.12	.00	.12

Public Supplier—Continued	GW	SW	Totals
Midland City	.31	.00	.31
New Brockton Water & Sewer Board	.46	.00	.46
Newton Water and Sewer Board	.18	.00	.18
North Geneva County Water Authority	.02	.00	.02
Ozark Utilities Board	2.35	.00	2.35
Pinckard	.10	.00	.10
Slocomb Water Works	.04	.00	.04
Taylor (Town of)	.27	.00	.27
U.S. Army Fort Rucker	3.39	.00	3.39

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.22	0.00	0.22

Withdrawals, in Mgal/d and percent (%)

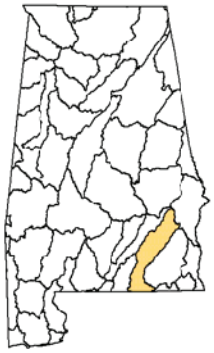
Category	GW	SW	Totals
Public Supply	23.42	0.00	23.42
	100%	0%	
Irrigation	3.08	5.47	8.55
	36	64	
Livestock	0.51	.70	1.21
	42	58	
Industrial	.22	.00	0.22
	100	0	
TOTALS	27.23	6.17	33.40
	82%	18%	

Pea

03140202

Population: 50,881

Land Area: 1,444.6 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Ariton Water Department	0.02	0.00	0.02
Brundidge	.42	.00	.42
Clayton Water Works and Sewer Board	.29	.00	.29
Coffee County Water Authority	.17	.00	.17
Elba Water and Electric Board	.61	.00	.61
Eufaula Water Works and Sewer Board	.27	.00	.27
Florala Water Works & Sewer Board	.39	.00	.39
Geneva Water Works	.33	.00	.33
Jack Water System, Inc.	.08	.00	.08
Kinston	.02	.00	.02
New Brockton Water & Sewer Board	.14	.00	.14
New Hope Water System, Inc.	.07	.00	.07
Opp Utilities Board	.52	.00	.52
Pike County Water Authority	.64	.00	.64
Samson	.28	.00	.28
Troy Utility Department	1.98	.00	1.98
West Barbour County Water Authority	.07	.00	.07

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.86	0.00	0.86

Withdrawals, in Mgal/d and percent (%)

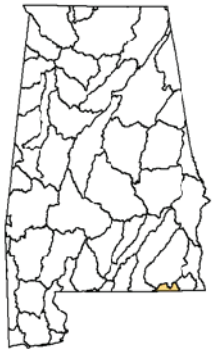
Category	GW	SW	Totals
Public Supply	6.30	0.00	6.30
	100%	0%	
Irrigation	2.01	4.04	6.05
	33	67	
Livestock	0.55	.74	1.29
	42	58	
Industrial	.86	.00	0.86
	100	0	
TOTALS	9.72	4.78	14.50
	67%	33%	

Lower Choctawhatchee

03140203

Population: 6,195

Land Area: 134.3 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Black Water Works	0.02	0.00	0.02
Geneva Water Works	.02	.00	.02
Hartford	.28	.00	.28
Slocomb Water Works	.20	.00	.20

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

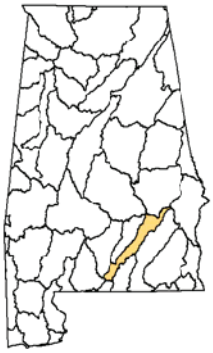
Category	GW	SW	Totals
Public Supply	0.52	0.00	0.52
	100%	0%	
Irrigation	.41	.50	.91
	45	55	
Livestock	.08	.11	.19
	44	56	
TOTALS	1.01	0.61	1.62
	62%	38%	

Upper Conecuh

03140301

Population: 27,731

Land Area: 836.1 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Andalusia Water Works Board	2.28	0.00	2.28
Brantley	0.22	.00	0.22
Covington County Water Department	.32	.00	.32
Dozier Water Works	.04	.00	.04
Glenwood	.01	.00	.01
Goshen	.05	.00	.05
Pike County Water Authority	.52	.00	.52
River Falls	.10	.00	.10
South Bullock County Water Authority	.46	.00	.46
South Crenshaw County Water Authority	.67	.00	.67
Troy Utility Department	1.08	.00	1.08
Union Springs Utilities Board	1.06	.00	1.06

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
49 Electric, Gas, and Sanitary Services	0.00	4.30	4.30

Withdrawals, in Mgal/d and percent (%)

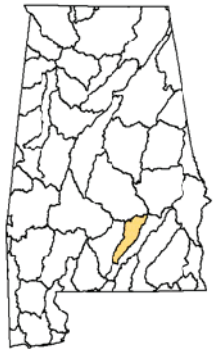
Category	GW	SW	Totals
Public Supply	6.80	0.00	6.80
	100%	0%	
Irrigation	0.98	.91	1.89
	52	48	
Livestock	.24	.34	0.58
	41	59	
Thermoelectric	.00	4.30	4.30
	0	100	
TOTALS	8.02	5.55	13.57
	59%	41%	

Patsaliga

03140302

Population: 13,291

Land Area: 599.6 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Covington County Water Department	0.10	0.00	0.10
Luverne Water Works and Sewer Board	.42	.00	.42
Pine Level Water Authority	.22	.00	.22
Quint-Mar Water Authority	.59	.00	.59
Ramer Water Co., Inc.	.14	.00	.14
Red Level	.06	.00	.06
Rutledge	.06	.00	.06

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

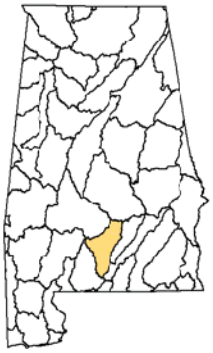
Category	GW	SW	Totals
Public Supply	1.60	0.00	1.60
	100%	0%	
Irrigation	0.21	.43	0.64
	33	67	
Livestock	.21	.30	.51
	41	59	
TOTALS	2.02	0.73	2.75
	73%	27%	

Sepulga

03140303

Population: 23,353

Land Area: 1,048.4 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Butler County Water Authority	1.16	0.00	1.16
Fort Deposit (The Water Works and Sewer Board of the Town of)	0.19	.00	0.19
Georgiana Water Works and Sewer Board	.31	.00	.31
Greenville Water Works and Sewer Board	1.21	.00	1.21
McKenzie - Town Hall (Town of)	.13	.00	.13
Owassa/Brownville Water and F.P.A. Inc.	.21	.00	.21

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.31	0.00	0.31

Withdrawals, in Mgal/d and percent (%)

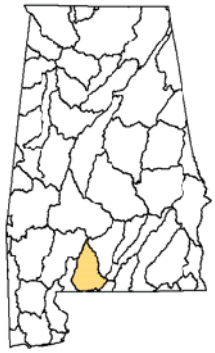
Category	GW	SW	Totals
Public Supply	3.21	0.00	3.21
	100%	0%	
Irrigation	0.20	.56	0.76
	26	74	
Livestock	.17	.25	.42
	41	59	
Industrial	.31	.00	.31
	100	0	
TOTALS	3.89	0.81	4.70
	83%	17%	

Lower Conecuh

03140304

Population: 26,655

Land Area: 998.9 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Brewton Water Works Board	1.48	0.00	1.48
East Brewton Water and Sewer Board	0.30	.00	0.30
Evergreen (City of)	1.18	.00	1.18
Fairview Water System	.06	.00	.06
Hamden Ridge P/A, Inc.	.11	.00	.11
McCall Water System	.50	.00	.50
Pollard	.02	.00	.02
Ridge Road Water Authority	.12	.00	.12
Riverview Water System	.05	.00	.05

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	1.17	0.00	1.17
26 Paper and Allied Products	0.27	32.07	32.34
28 Chemicals and Allied Products	.19	.00	0.19

Withdrawals, in Mgal/d and percent (%)

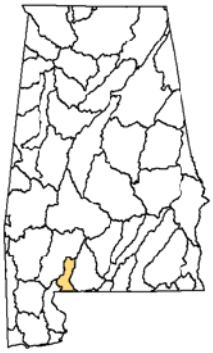
Category	GW	SW	Totals
Public Supply	3.81	0.00	3.81
	100%	0%	
Irrigation	0.31	.50	0.81
	38	62	
Livestock	.07	.11	.18
	40	60	
Industrial	1.62	32.07	33.69
	5	95	
TOTALS	5.81	32.68	38.49
	15%	85%	

Escambia

03140305

Population: 16,443

Land Area: 362.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Atmore Utility Board	1.07	0.00	1.07
Canoe Water and Fire Protection Authority	0.08	.00	0.08
Excel	.30	.00	.30
Flomaton	.22	.00	.22
Freemanville Water System, Inc.	.43	.00	.43
McCall Water System	.11	.00	.11
Repton	.04	.00	.04

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
29 Petroleum Refining and Related Industries	0.09	0.00	0.09

Withdrawals, in Mgal/d and percent (%)

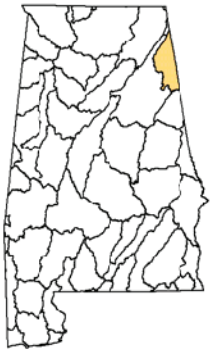
Category	GW	SW	Totals
Public Supply	2.24	0.00	2.24
	100%	0%	
Irrigation	0.16	.21	0.37
	43	57	
Livestock	.02	.04	.06
	40	60	
Industrial	.09	.00	.09
	100	0	
TOTALS	2.51	0.25	2.76
	91%	9%	

Upper Coosa

03150105

Population: 41,579

Land Area: 850.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Centre Water Works & Sewer Board	0.00	1.19	1.19
Cherokee County Water Authority	.97	0.00	0.97
Northeast Alabama Water, Sewer & F.P.A.	1.06	.00	1.06
Piedmont Water Works and Sewer Board	.00	.93	.93

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

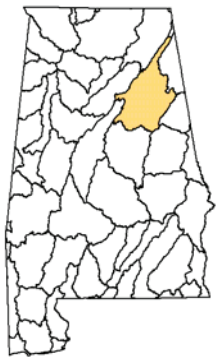
Category	GW	SW	Totals
Public Supply	2.02	2.12	4.14
	49%	51%	
Irrigation	0.15	3.10	3.25
	5	95	
Livestock	.32	0.40	0.72
	44	56	
TOTALS	2.49	5.62	8.11
	31%	69%	

Middle Coosa

03150106

Population: 335,013

Land Area: 2,583.3 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Anniston Water Works and Sewer Board	11.91	0.08	11.99
Ashville Water and Sewer	0.00	.00	0.00
Attalla Water Works Board	1.16	.00	1.16
Calhoun County Water Authority	3.08	.00	3.08
Childersburg Water, Sewer & Gas Board	.25	.00	.25
Fort Payne Water Works Board	.00	8.10	8.10
Gadsden Water Works & Sewer Board	.00	14.86	14.86
Glencoe Water and Sewer Works	.72	.00	.72
Hokes Bluff Water Board	.88	.00	.88
Jacksonville Water Works & Sewer Board	.00	1.34	1.34
Lincoln	1.26	.00	1.26
Munford Water Authority, Inc.	.18	.00	.18
New London Water Authority	.52	.00	.52
Northeast Alabama Water, Sewer & F.P.A.	.65	.00	.65

Public Supplier—Continued	GW	SW	Totals
Odenville Utilities Board	1.85	.00	1.85
Oxford Water Works and Sewer Board	4.04	.00	4.04
Pell City	2.30	.00	2.30
Ragland Water Works Board	.50	.00	.50
Southside Water Works & Sewer Board	.78	.00	.78
Springville	.45	.00	.45
Talladega County Water Dept.	.00	.81	.81
Talladega Water Works & Sewer Board	2.80	1.62	4.42
Talladega/Shelby Water Treatment Plant	.00	6.44	6.44
Vincent Water Board	.24	.00	.24
Water Works, Inc.	.03	.00	.03
Wattsville Water Authority	.58	.00	.58
Weaver	.72	.00	.72
West Etowah County Water & Fire Protection Authority	.31	.00	.31

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	1.08	0.00	1.08
22 Textile Mill Products	0.40	.00	0.40
26 Paper and Allied Products	.53	52.47	53.00
30 Rubber and Miscellaneous Plastics Products	.00	9.87	9.87
32 Stone, Clay, Glass, and Concrete Products	.00	3.49	3.49
33 Primary Metal Industries	.14	.00	.14
49 Electric, Gas, and Sanitary Services	.00	142.68	142.68

Withdrawals, in Mgal/d and percent (%)

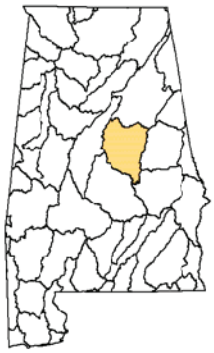
Category	GW	SW	Totals
Public Supply	35.20	33.24	68.44
	51%	49%	
Irrigation	2.14	7.91	10.05
	21	79	
Livestock	0.69	0.87	1.56
	44	56	
Industrial	2.14	65.83	67.97
	3	97	
Thermoelectric	.00	142.68	142.68
	0	100	
TOTALS	40.17	250.53	290.70
	14%	86%	

Lower Coosa

03150107

Population: 123,826

Land Area: 1,961.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Central Talladega County Water District	0.26	0.00	0.26
Childersburg Water, Sewer & Gas Board	.91	.00	.91
Clanton Waterworks & Sewer Board	.00	1.79	1.79
Columbiana Water Works Board	1.37	.00	1.37
Five Star Water Supply	.00	5.46	5.46
Goodwater Water Works and Sewer Board	.00	.46	.46
Harpersville Water Board	.23	.00	.23
Sycamore Water and Sewer Authority	.13	.00	.13
Sylacauga Utilities Board	.28	3.25	3.53
Thorsby	.71	.00	.71
Wilsonville Waterworks - Town of Wilsonville	.31	.00	.31

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.86	0.89	1.75
49 Electric, Gas, and Sanitary Services	.00	812.32	812.32

Withdrawals, in Mgal/d and percent (%)

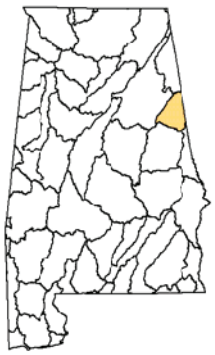
Category	GW	SW	Totals
Public Supply	4.21	10.96	15.17
	28%	72%	
Irrigation	0.50	5.10	5.60
	9	91	
Livestock	.25	0.35	0.60
	42	58	
Industrial	.86	.89	1.75
	49	51	
Thermoelectric	.00	812.32	812.32
	0	100	
TOTALS	5.82	829.62	835.44
	1%	99%	

Upper Tallapoosa

03150108

Population: 23,143

Land Area: 743.3 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Heflin Water Works	0.00	0.51	0.51
Wedowee Gas, Water & Sewer	.00	.39	.39

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.71	0.00	0.71

Withdrawals, in Mgal/d and percent (%)

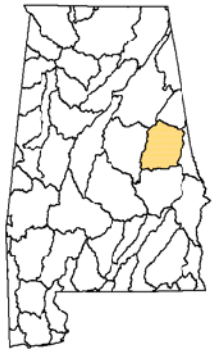
Category	GW	SW	Totals
Public Supply	0.00	0.90	0.90
	0%	100%	
Irrigation	.37	.15	.52
	71	29	
Livestock	.32	.40	.72
	44	56	
Industrial	.71	.00	.71
	100	0	
TOTALS	1.40	1.45	2.85
	49%	51%	

Middle Tallapoosa

03150109

Population: 68,184

Land Area: 1,589.4 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Alexander City Water Department	0.00	10.57	10.57
Central Elmore Water & Sewer Authority	.00	4.83	4.83
Clay County Water Authority	.00	1.87	1.87
Lafayette	.00	0.53	0.53
Roanoke Utilities Board	.00	1.29	1.29

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

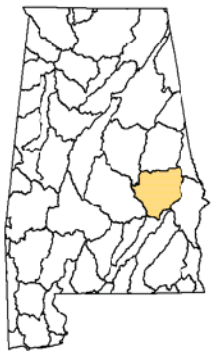
Category	GW	SW	Totals
Public Supply	0.00	19.09	19.09
	0%	100%	
Irrigation	.12	0.52	0.64
	19	81	
Livestock	.24	.32	.56
	44	56	
TOTALS	0.36	19.93	20.29
	2%	98%	

Lower Tallapoosa

03150110

Population: 160,180

Land Area: 1,690.3 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Auburn Water Works Board	0.07	5.75	5.82
Beauregard Water Authority	.75	0.00	0.75
East Montgomery Water, Sewer, & Fire Protection Authority	1.03	.00	1.03
Loachapoka Water Authority	.65	.00	.65
Macon County Water Authority	.52	.00	.52
Montgomery Water Works and Sewer Board	.00	25.17	25.17
Opelika Water Works Board	.00	2.61	2.61
South Bullock County Water Authority	.03	.00	.03
Star Mindingall Water Authority	.20	.00	.20
Tallassee	.00	1.98	1.98
Tuskegee Utilities	.00	2.71	2.71
Union Springs Utilities Board	.50	.00	.50

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
22 Textile Mill Products	0.00	2.23	2.23
79 Amusement and Recreation Services	.05	0.00	0.05

Withdrawals, in Mgal/d and percent (%)

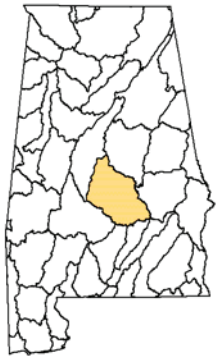
Category	GW	SW	Totals
Public Supply	3.74	38.22	41.96
	9%	91%	
Irrigation	3.85	4.22	8.07
	48	52	
Livestock	0.19	0.28	0.47
	41	59	
Industrial	.05	2.23	2.28
	2	98	
TOTALS	7.83	44.95	52.78
	15%	85%	

Upper Alabama

03150201

Population: 322,442

Land Area: 2,387.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Autauga County Water Authority	0.48	0.00	0.48
Autaugaville Water System	.18	.00	.18
Billingsley Water System	.12	.00	.12
Chilton Water Authority	1.84	.00	1.84
Dallas County Water & Sewer Authority	.79	.00	.79
East Montgomery Water, Sewer, & Fire Protection Authority	.56	.00	.56
Elmore Water Authority	.74	.00	.74
Hayneville	.33	.00	.33
Holtville Water System, Inc.	.12	.00	.12
Lowndes County Water Authority	.27	.00	.27
Lowndesboro	.06	.00	.06
Marbury Water System	.58	.00	.58
Millbrook Utility System	.21	.00	.21
Montgomery Water Works and Sewer Board	26.58	10.40	36.98
Mosses Water Authority	.16	.00	.16
North Dallas Water Authority	.97	.00	.97
Oak Hills Water Company	.04	.00	.04
Pilgrim Providence Water and F.P.A.	.04	.00	.04
Pintlala Water System, Inc.	.27	.00	.27
Plantersville Water Board	.09	.00	.09
Prattville Water Works Board	2.29	.00	2.29
Sellers Station Water System, Inc.	.16	.00	.16
Selma Water Works & Sewer Board	4.06	.00	4.06
South Dallas Water Authority	.45	.00	.45
Tri-Community Water System	.35	.00	.35
West Autauga Water Authority	.29	.00	.29
White Hall	.15	.00	.15

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	1.66	30.63	32.29
49 Electric, Gas, and Sanitary Services	0.00	4.14	4.14
91 Executive, Legislative, and General Government, Except Finance	.01	0.00	0.01

Withdrawals, in Mgal/d and percent (%)

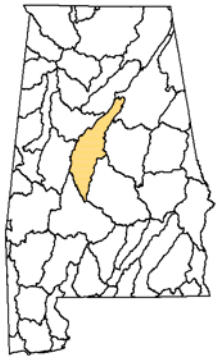
Category	GW	SW	Totals
Public Supply	42.16	10.40	52.56
	80%	20%	
Irrigation	3.52	3.84	7.36
	48	52	
Livestock	0.57	0.84	1.41
	40	60	
Industrial	1.67	30.63	32.30
	5	95	
Thermoelectric	.00	4.14	4.14
	0	100	
TOTALS	47.92	49.85	97.77
	49%	51%	

Cahaba

03150202

Population: 376,792

Land Area: 1,822.7 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Alabaster Water Board	3.71	0.00	3.71
Birmingham WW&SB	0.00	52.90	52.90
Brent Utilities Board	1.00	.00	1.00
Calera	1.77	.00	1.77
Centreville Water & Sewer Board	.80	.00	0.80
Citizens' Water Service, Inc.	.96	.00	.96
Green Pond Water System	.74	.00	.74
Helena Utility Board	1.46	.00	1.46
Indian Springs School	.08	.00	.08
Irondale Water System	1.36	.00	1.36
Leeds	2.20	.00	2.20
Montevallo Water Works & Sewer Board	1.30	.00	1.30
Odenville Utilities Board	.94	.00	.94
Pelham Water Works	3.10	.00	3.10
Perry County Water Authority	.16	.00	.16
Trussville Utilities Board	4.82	.00	4.82
Warrior River Water Authority	.94	.00	.94

Public Supplier—Continued	GW	SW	Totals
West Blocton Water Works	.42	.00	.42
Wilton	.54	.00	.54

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.40	0.00	0.40

Withdrawals, in Mgal/d and percent (%)

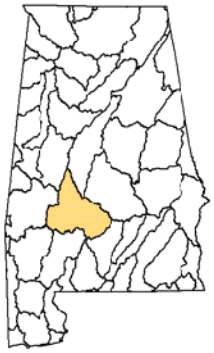
Category	GW	SW	Totals
Public Supply	26.31	52.90	79.21
	33%	67%	
Irrigation	0.42	3.49	3.91
	11	89	
Livestock	.17	0.25	0.42
	41	59	
Industrial	.40	.00	.40
	100	0	
TOTALS	27.30	56.64	83.94
	33%	67%	

Middle Alabama

03150203

Population: 30,670

Land Area: 2,227.9 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Camden	0.43	0.00	0.43
Marion (City of) Water Department	.82	.00	.82
Millers Ferry Water Authority	.08	.00	.08
Pine Apple Waterworks	.02	.00	.02
Uniontown Utilities Board	.84	.00	.84
West Dallas Water Authority	.23	.00	.23
Wilcox County Water System	.50	.00	.50

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.00	21.04	21.04

Withdrawals, in Mgal/d and percent (%)

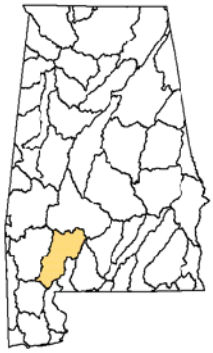
Category	GW	SW	Totals
Public Supply	2.92	0.00	2.92
	100%	0%	
Irrigation	1.00	1.73	2.73
	37	63	
Livestock	0.32	.48	0.80
	40	60	
Industrial	.00	21.04	21.04
	0	100	
TOTALS	4.24	23.25	27.49
	15%	85%	

Lower Alabama

03150204

Population: 24,347

Land Area: 1,397.5 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Beatrice Water System	0.08	0.00	0.08
Frisco City Water Works Board	.23	.00	.23
Huxford Water & Fire Protection Authority	.06	.00	.06
Monroeville Water Works Board	2.58	.00	2.58
Southwest Alabama Water Authority	.40	.00	.40
Uriah Water System	.27	.00	.27

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.40	0.00	0.40
26 Paper and Allied Products	.00	54.61	54.61

Withdrawals, in Mgal/d and percent (%)

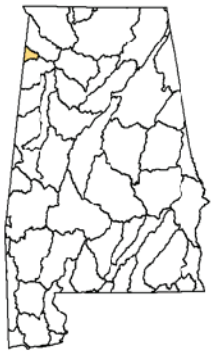
Category	GW	SW	Totals
Public Supply	3.62	0.00	3.62
	100%	0%	
Irrigation	3.13	.64	3.77
	83	17	
Livestock	0.02	.02	0.04
	44	56	
Industrial	.40	54.61	55.01
	1	99	
TOTALS	7.17	55.27	62.44
	11%	89%	

Upper Tombigbee

03160101

Population: 3,832

Land Area: 125.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Red Bay Water & Gas Board	0.13	0.00	0.13
Vina Waterworks Board	.10	.00	.10

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

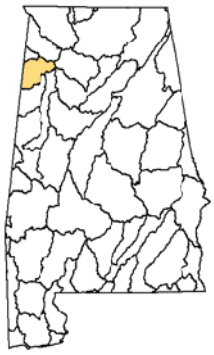
Category	GW	SW	Totals
Public Supply	0.23	0.00	0.23
	100%	0%	
Irrigation	.03	.03	.06
	50	50	
Livestock	.05	.06	.11
	43	57	
TOTALS	0.31	0.09	0.40
	78%	22%	

Buttahatchee

03160103

Population: 23,300

Land Area: 666.7 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Detroit Water Department	0.03	0.00	0.03
Guin Water Works and Sewer Board	.00	.69	.69
Hamilton Waterworks & Sewer Board	.00	1.32	1.32
Hodges Water Department	.20	.00	.20
Sulligent	.32	.00	.32

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

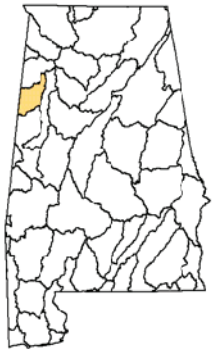
Category	GW	SW	Totals
Public Supply	0.55	2.01	2.56
	21%	79%	
Irrigation	.01	0.13	0.14
	7	93	
Livestock	.12	.17	.29
	42	58	
TOTALS	0.68	2.31	2.99
	23%	77%	

Luxapallila

03160105

Population: 19,232

Land Area: 661.8 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Fayette Water Board	0.00	1.98	1.98
Kennedy	.16	0.00	0.16
Millport	.21	.00	.21
Twin Water Authority	.06	.00	.06
Vernon Water & Sewer	.75	.00	.75
Winfield Water Works & Sewer Board	.28	.48	.76

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.07	0.00	0.07

Withdrawals, in Mgal/d and percent (%)

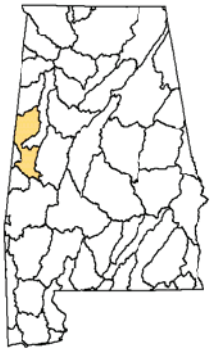
Category	GW	SW	Totals
Public Supply	1.46	2.46	3.92
	37%	63%	
Irrigation	0.02	0.23	0.25
	8	92	
Livestock	.09	.11	.20
	45	55	
Industrial	.07	.00	.07
	100	0	
TOTALS	1.64	2.80	4.44
	37%	63%	

Middle Tombigbee–Lubbub

03160106

Population: 28,333

Land Area: 1,272.7 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Aliceville Water and Sewer Board	0.77	0.00	0.77
Eutaw Water Department	.38	.00	.38
Forkland Water System	.10	.00	.10
Gordo	.44	.00	.44
Livingston Utility Board	.76	.00	.76
Pickens County Water Authority	1.12	.00	1.12
Reform	.37	.00	.37

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.12	0.00	0.12

Withdrawals, in Mgal/d and percent (%)

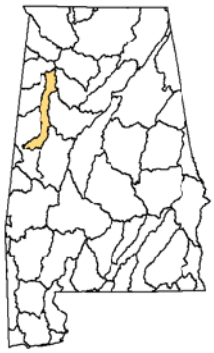
Category	GW	SW	Totals
Public Supply	3.94	0.00	3.94
	100%	0%	
Irrigation	0.28	.41	0.69
	41	59	
Livestock	.33	.38	.71
	46	54	
Industrial	.12	.00	.12
	100	0	
TOTALS	4.67	0.79	5.46
	86%	14%	

Sipsey

03160107

Population: 16,506

Land Area: 786.6 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Brilliant	0.10	0.00	0.10
Buhl, Elrod and Holman Water Authority	.27	.00	.27
Eldridge Water Department	.12	.00	.12
Glen Allen	.05	.00	.05

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

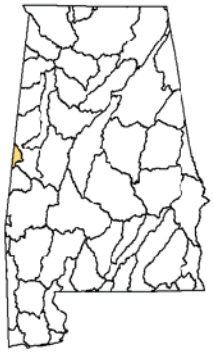
Category	GW	SW	Totals
Public Supply	0.55	0.00	0.55
	100%	0%	
Irrigation	.11	.68	.79
	14	86	
Livestock	.13	.17	.30
	45	55	
TOTALS	0.79	0.85	1.64
	48%	52%	

Noxubee

03160108

Population: 949

Land Area: 139.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Sumter County Water Authority	0.22	0.00	0.22

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

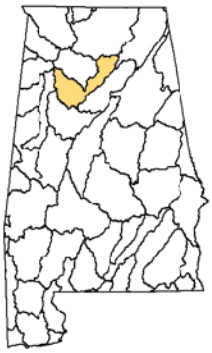
Category	GW	SW	Totals
Public Supply	0.22	0.00	0.22
	100%	0%	
Irrigation	.01	.02	.03
	33	67	
Livestock	.02	.03	.05
	42	58	
TOTALS	0.25	0.05	0.30
	83%	17%	

Mulberry

03160109

Population: 132,396

Land Area: 1,370.9 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Birmingham WW&SB	0.00	28.71	28.71
Blount County Water Authority	.00	1.21	1.21
Blountsville Utility Board	.02	0.00	0.02
Cullman	.00	12.53	12.53
Hanceville Water and Sewer Board	.50	.00	.50
Jasper Waterworks and Sewer Board	.00	11.51	11.51

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.00	1.79	1.79
49 Electric, Gas, and Sanitary Services	.00	927.28	927.28

Withdrawals, in Mgal/d and percent (%)

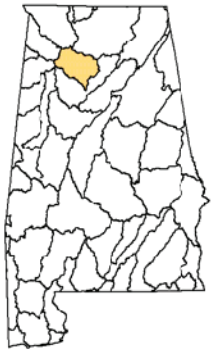
Category	GW	SW	Totals
Public Supply	0.52	53.96	54.48
	1%	99%	
Irrigation	.84	0.46	1.30
	65	35	
Livestock	.84	.88	1.72
	49	51	
Industrial	.00	1.79	1.79
	0	100	
Thermoelectric	.00	927.28	927.28
	0	100	
TOTALS	2.20	984.37	986.57
	0%	100%	

Sipsey Fork

03160110

Population: 51,869

Land Area: 996.2 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Arley Water Works	0.00	0.89	0.89
Birmingham WW&SB	.00	13.98	13.98

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

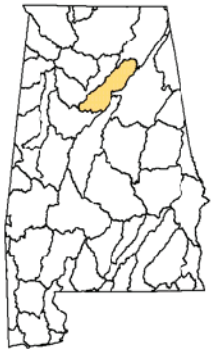
Category	GW	SW	Totals
Public Supply	0.00	14.87	14.87
	0%	100%	
Irrigation	.55	0.38	0.93
	59	41	
Livestock	.72	.76	1.48
	49	51	
TOTALS	1.27	16.01	17.28
	7%	93%	

Locust

03160111

Population: 329,844

Land Area: 1,208.7 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Allgood Water Works	0.00	0.06	0.06
Altoona Water & Sewer	.12	.00	.12
Birmingham WW&SB	.00	11.38	11.38
Blountsville Utility Board	.44	.00	.44
Cleveland Water Works	.33	.00	.33
Nectar Water Department	.19	.00	.19
Oneonta Utilities Board	1.44	.80	2.24
Snead	.18	.00	.18
Walnut Grove	.09	.00	.09
West Etowah County Water & Fire Protection Authority	.52	.00	.52

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.32	0.00	0.32

Withdrawals, in Mgal/d and percent (%)

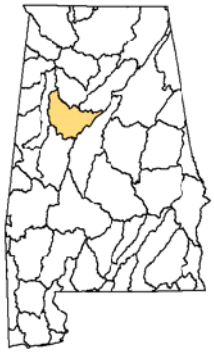
Category	GW	SW	Totals
Public Supply	3.32	12.24	15.56
	21%	79%	
Irrigation	0.29	1.91	2.20
	13	87	
Livestock	.48	0.52	1.00
	48	52	
Industrial	.32	.00	0.32
	100	0	
TOTALS	4.41	14.67	19.08
	23%	77%	

Upper Black Warrior

03160112

Population: 280,509

Land Area: 1,245.4 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Berry	0.00	0.38	0.38
Bessemer (G.U.S.C.)	.00	9.56	9.56
Northport	.00	3.39	3.39
Tuscaloosa Water and Sewer Department	.00	24.10	24.10
Warrior River Water Authority	.44	2.56	3.00

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
29 Petroleum Refining and Related Industries	0.20	0.00	0.20

Withdrawals, in Mgal/d and percent (%)

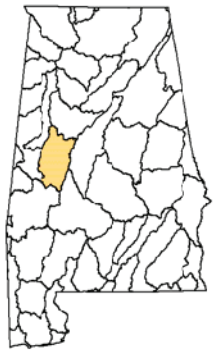
Category	GW	SW	Totals
Public Supply	0.44	39.99	40.43
	1%	99%	
Irrigation	.24	2.97	3.21
	7	93	
Livestock	.09	0.12	0.21
	44	56	
Industrial	.20	.00	.20
	100	0	
TOTALS	0.97	43.08	44.05
	2%	98%	

Lower Black Warrior

03160113

Population: 101,984

Land Area: 1,452.8 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Coker Water Authority	0.32	0.00	0.32
Demopolis Water & Sewer Board	1.27	.00	1.27
Eutaw Water Department	.66	.00	.66
Faunsdale	.05	.00	.05
Fayetteville Water Authority	.26	.00	.26
Greene County Housing Authority	.05	.00	.05
Greensboro Utilities Board	.90	.00	.90
Hale County Water Authority	.63	.00	.63
Moundville	1.35	.00	1.35

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
24 Lumber and Wood Products, Except Furniture	0.02	0.00	0.02
29 Petroleum Refining and Related Industries	.58	.98	1.56
30 Rubber and Miscellaneous Plastics Products	.00	.15	.15
49 Electric, Gas, and Sanitary Services	.05	386.09	386.14

Withdrawals, in Mgal/d and percent (%)

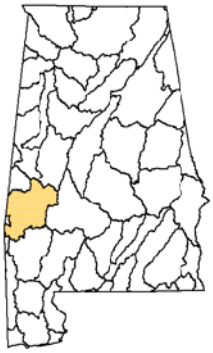
Category	GW	SW	Totals
Public Supply	5.49	0.00	5.49
	100%	0%	
Irrigation	0.15	1.31	1.46
	10	90	
Livestock	.23	.29	0.52
	44	56	
Industrial	.60	1.14	1.74
	35	65	
Thermoelectric	.05	386.09	386.14
	0	100	
TOTALS	6.52	388.83	395.35
	2%	98%	

Middle Tombigbee–Chickasaw

03160201

Population: 36,189

Land Area: 2,039.9 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Butler Utilities Board	0.42	0.00	0.42
Demopolis Water & Sewer Board	.70	.00	.70
Gilbertown Utilities Board	.44	.00	.44
Linden Utilities Board	.24	.00	.24
Myrtlewood Water System	.25	.00	.25
North Choctaw Water Authority	.28	.00	.28
Pennington Utilities Board	.16	.00	.16
Sumter County Water Authority	.84	.00	.84
Sweet Water Water System	.04	.00	.04
Thomaston Water & Gas Board	.16	.00	.16

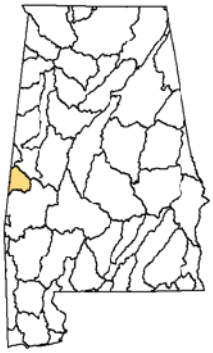
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	62.51	62.51
28 Chemicals and Allied Products	1.00	2.98	3.98

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	3.53	0.00	3.53
	100%	0%	
Irrigation	0.02	.20	0.22
	9	91	
Livestock	.20	.30	.50
	40	60	
Industrial	1.00	65.49	66.49
	2	98	
TOTALS	4.75	65.99	70.74
	7%	93%	

Sucarnoochee



03160202

Population: 7,296

Land Area: 383.8 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
None			

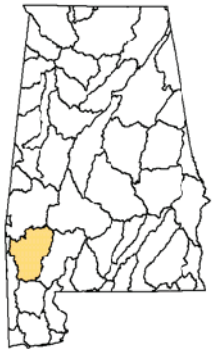
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
32 Stone, Clay, Glass, and Concrete Products	0.00	1.22	1.22

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Irrigation	0.00	0.03	0.03
	0%	100%	
Livestock	.06	.09	.15
	40	60	
Industrial	.00	1.22	1.22
	0	100	
TOTALS	0.06	1.34	1.40
	4%	96%	

Lower Tombigbee



03160203

Population: 37,199

Land Area: 1,617.7 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Chatom Utilities Board	0.24	0.00	0.24
Coffeeville Water Works	.18	.00	.18
Frankville Water & Fire Protection Authority	.09	.00	.09
Fulton (Utilities Board of the Town of)	.12	.00	.12
Grove Hill Water Works Board	.68	.00	.68
Jackson Water and Sewer Board	1.16	1.87	3.03
Leroy Water Authority	.16	.00	.16
McIntosh Water & Fire Protection Authority	.35	.00	.35
Millry Water Works	.14	.00	.14
St. Stephens Water System	.05	.00	.05
Wagarville Water System, Inc.	.04	.00	.04

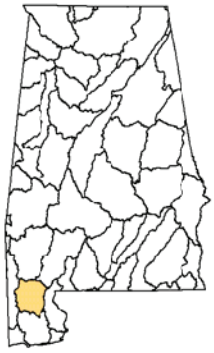
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
28 Chemicals and Allied Products	5.33	4.31	9.64
49 Electric, Gas and Sanitary Services	0.00	86.54	86.54

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	3.21	1.87	5.08
	63%	37%	
Irrigation	0.16	0.13	0.29
	55	45	
Livestock	.09	.10	.19
	46	54	
Industrial	5.33	4.31	9.64
	55	45	
Thermoelectric	.00	86.54	86.54
	0	100	
TOTALS	8.79	92.95	101.74
	9%	91%	

Mobile–Tensaw



03160204

Population: 195,350

Land Area: 966.8 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Daphne Utilities Board	2.94	0.00	2.94
Kushla Water System	0.45	.00	0.45
Le Moyne Water System, Inc.	.40	.00	.40
MCB Water Authority, Inc.	.14	.00	.14
Mobile Board of Water and Sewer Comm.	.00	.48	.48
Mt. Vernon	.26	.00	.26
North Baldwin Utilities	.81	.00	.81
Saraland Water System	1.47	.00	1.47
Satsuma	.56	.00	.56
Spanish Fort Water System	.41	.00	.41
St. Elmo - Irvington Water Authority	.51	.00	.51
Turnerville Water & Fire Protection District	.32	.00	.32

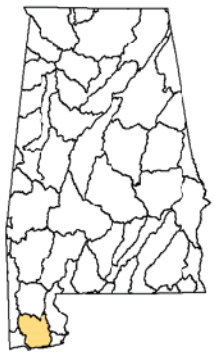
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
28 Chemicals and Allied Products	5.17	0.00	5.17
29 Petroleum Refining and Related Industries	0.23	.00	0.23
49 Electric, Gas, and Sanitary Services	.00	1,043.61	1,043.61

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	8.24	0.48	8.72
	94%	6%	
Irrigation	8.35	1.92	10.27
	81	19	
Livestock	0.09	.10	0.19
	46	54	
Industrial	5.40	.00	5.40
	100	0	
Thermoelectric	.00	1,043.61	1,043.61
	0	100	
TOTALS	22.08	1,046.11	1,068.19
	2%	98%	

Mobile Bay



03160205

Population: 234,104

Land Area: 873.5 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Belforest Water System	0.36	0.00	0.36
Daphne Utilities Board	.49	.00	.49
Fairhope	3.94	.00	3.94
Foley Utilities Board	1.40	.00	1.40
Gulf Shores Utilities	2.23	.00	2.23
Loxley	.62	.00	.62
Mobile County W S & F Protection Authority	3.71	.00	3.71
Orange Beach Water, Sewer & Fire Protection	.12	.00	.12
Robertsdale	.48	.00	.48
Silverhill	.12	.00	.12
St. Elmo - Irvington Water Authority	.38	.00	.38

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
13 Oil and Gas Extraction	0.12	0.00	0.12
32 Stone, Clay, Glass, and Concrete Products	.15	.00	.15

Withdrawals, in Mgal/d and percent (%)

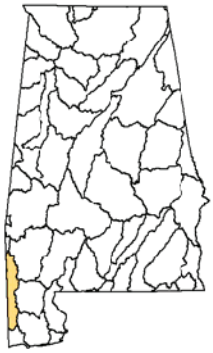
Category	GW	SW	Totals
Public Supply	13.85	0.00	13.85
	100%	0%	
Irrigation	10.32	2.18	12.50
	83	17	
Livestock	0.08	.10	0.18
	46	54	
Industrial	.27	.00	.27
	100	0	
TOTALS	24.52	2.28	26.80
	91%	9%	

Escatawpa

03170008

Population: 64,253

Land Area: 702.2 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Deer Park - Vinegar Bend Water & Fire Protection	0.11	0.00	0.11
Grand Bay Water Works Board	.94	.00	.94
Mobile Board of Water and Sewer Commissioners	.00	64.97	64.97
South Alabama Utilities	1.62	.00	1.62
St. Elmo - Irvington Water Authority	.00	.00	.00

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

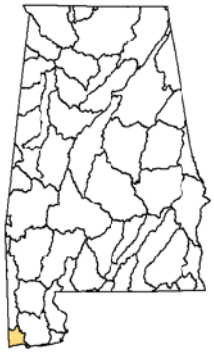
Category	GW	SW	Totals
Public Supply	2.68	64.97	67.65
	4%	96%	
Irrigation	0.05	0.29	0.34
	15	85	
Livestock	.06	.06	.12
	47	53	
TOTALS	2.79	65.32	68.11
	4%	96%	

Mississippi Coastal

03170009

Population: 14,406

Land Area: 241.5 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Bayou La Batre Utilities Board	0.62	0.00	0.62

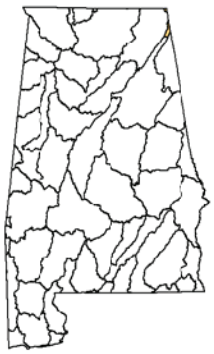
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.00	0.00	0.00

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	0.62	0.00	0.62
	100%	0%	
Irrigation	.00	.15	.15
	0	100	
Livestock	.02	.02	.04
	45	55	
TOTALS	0.64	0.17	0.81
	79%	21%	

Middle Tennessee–Chickamauga



06020001

Population: 2,482

Land Area: 53.8 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Valley Head Water Works Board	0.66	0.00	0.66

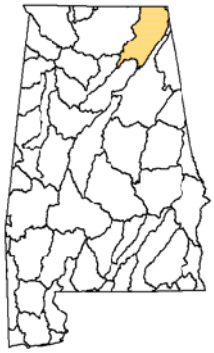
Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	0.66	0.00	0.66
	100%	0%	
Irrigation	.05	.09	.14
	36	64	
Livestock	.06	.07	.13
	47	53	
TOTALS	0.77	0.16	0.93
	83%	17%	

Guntersville Lake



06030001

Population: 139,796

Land Area: 1,646.7 square miles

Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Albertville Municipal Utilities Board	0.00	11.64	11.64
Arab Water Works Board	.00	4.30	4.30
Bridgeport Utilities Board	.20	2.36	2.56
Crossville Water Board	.04	0.00	0.04
Douglas Water and Fire Protection	2.33	.00	2.33
Fort Payne Water Works Board	.00	.47	.47
Guntersville Water Works and Sewer Board	.65	2.66	3.31
North Marshall Utilities	.00	1.20	1.20
Northeast Alabama Water, Sewer & F.P.A.	.00	1.36	1.36
Pisgah	.09	.00	.09
Scottsboro Water Board	.00	4.66	4.66
Section & Dutton Water Boards	.00	3.06	3.06
Stevenson Utilities Board	.34	.00	.34

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	0.04	0.00	0.04
22 Textile Mill Products	.00	.25	.25
26 Paper and Allied Products	.00	8.53	8.53
49 Electric, Gas, and Sanitary Services	.00	1,476.30	1,476.30

Withdrawals, in Mgal/d and percent (%)

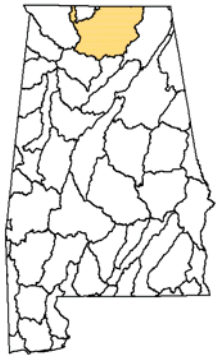
Category	GW	SW	Totals
Public Supply	3.66	31.72	35.38
	10%	90%	
Irrigation	0.50	1.72	2.22
	23	77	
Livestock	1.12	1.25	2.37
	47	53	
Industrial	.04	8.78	8.82
	0	100	
Thermoelectric	.00	1,476.30	1,476.30
	0	100	
TOTALS	5.32	1,519.77	1,525.09
	0%	100%	

Wheeler Lake

06030002

Population: 513,383

Land Area: 2,663.1 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Ardmore Water System	0.20	0.00	0.20
Decatur Utilities	.00	30.42	30.42
Harvest-Monrovia Water Authority	3.99	.00	3.99
Huntsville Utilities Water Department	7.82	31.01	38.83
Limestone County Water Authority	2.44	.00	2.44
Madison County Water Department	7.02	.00	7.02
Madison Water and Wastewater Board	5.92	.00	5.92
Owens Cross Roads Water Authority	.84	.00	.84
Rogersville Water & Sewer Board	.60	.00	.60
Swan Creek Community	.03	.00	.03
U.S. Army Missle Command (Redstone Arsenal)	.00	7.84	7.84
West Morgan East Lawrence Water & Sewer Authority	.00	4.99	4.99

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
20 Food and Kindred Products	1.14	0.00	1.14
26 Paper and Allied Products	0.00	57.18	57.18
28 Chemicals and Allied Products	.15	84.08	84.23
30 Rubber and Miscellaneous Plastics Products	.00	5.28	5.28
32 Stone, Clay, Glass, and Concrete Products	.00	.89	0.89
49 Electric, Gas, and Sanitary Services	.00	1,991.44	1,991.44

Withdrawals, in Mgal/d and percent (%)

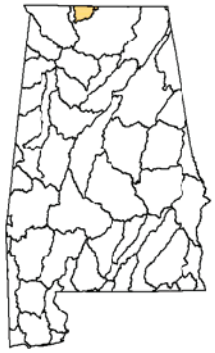
Category	GW	SW	Totals
Public Supply	28.87	74.26	103.13
	28%	72%	
Irrigation	3.45	9.17	12.62
	27	73	
Livestock	1.06	1.28	2.34
	45	55	
Industrial	1.29	147.43	148.72
	1	99	
Thermoelectric	0.00	1,991.44	1,991.44
	0	100	
TOTALS	34.67	2,223.58	2,258.25
	2%	98%	

Lower Elk

06030004

Population: 16,750

Land Area: 250.0 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Athens Utilities	0.00	5.74	5.74
Limestone County Water Authority	.00	3.10	3.10

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

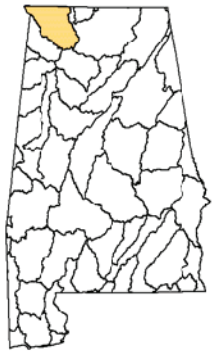
Category	GW	SW	Totals
Public Supply	0.00	8.84	8.84
	0%	100%	
Irrigation	.73	1.99	2.72
	27	73	
Livestock	.08	0.10	0.18
	44	56	
TOTALS	0.81	10.93	11.74
	7%	93%	

Pickwick Lake

06030005

Population: 152,863

Land Area: 1,411.9 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Cherokee Waterworks and Gas Board	0.00	0.36	0.36
Florence Water & Sewer Department	.31	12.79	13.10
Greenhill Water System	.49	.00	.49
Hawk Pride Mountain Water System	1.06	.00	1.06
Leighton Water & Sewer Board	.23	.00	.23
Moulton Water Works Board	.00	1.92	1.92
Muscle Shoals Utilities Board	.00	4.09	4.09
Sheffield Utilities	.00	1.98	1.98
Tuscumbia - Water Department	.00	1.84	1.84

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
26 Paper and Allied Products	0.00	3.30	3.30
28 Chemicals and Allied Products	.00	48.55	48.55
34 Fabricated Metal Products, Except Machinery and Transportation Equipment	.87	3.72	4.59
49 Electric, Gas, and Sanitary Services	.00	1,294.14	1,294.14

Withdrawals, in Mgal/d and percent (%)

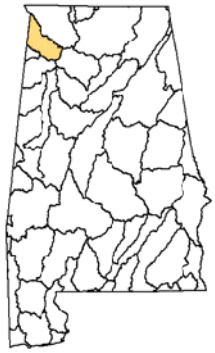
Category	GW	SW	Totals
Public Supply	2.09	22.98	25.07
	8%	92%	
Irrigation	1.44	1.98	3.42
	42	58	
Livestock	0.44	0.60	1.04
	42	58	
Industrial	.87	55.57	56.44
	2	98	
Thermoelectric	.00	1,294.14	1,294.14
	0	100	
TOTALS	4.84	1,375.27	1,380.11
	0%	100%	

Bear

06030006

Population: 33,623

Land Area: 795.5 square miles



Withdrawals by public supplier, in million gallons per day (Mgal/d)

Public Supplier	GW	SW	Totals
Red Bay Water & Gas Board	0.50	0.00	0.50
Russellville Water & Sewer Board	.32	3.88	4.20
Upper Bear Creek Water Treatment Plant	.00	3.17	3.17

Withdrawals by Standard Industrial Classification, in Mgal/d

Standard Industrial Classification	GW	SW	Totals
None			

Withdrawals, in Mgal/d and percent (%)

Category	GW	SW	Totals
Public Supply	0.82	7.05	7.87
	10%	90%	
Irrigation	.53	0.64	1.17
	45	55	
Livestock	.32	.43	0.75
	43	57	
TOTALS	1.67	8.12	9.79
	17%	83%	

Appendix C. Hydrologic Regions, Subregions, and Subbasins in Alabama

The Mobile and Tennessee Rivers are the major river systems in Alabama. Within Alabama, the Mobile River comprises 46 subbasins and five subregions and the Tennessee River comprises 7 subbasins and two subregions. The hydrographic classification scheme used for this report and in the following table (C–1) is from the USDA, Soil Conservation Service publication, *State of Alabama Hydrologic Unit Map with drainage areas by county and sub-watershed*, March 1993; *Federal standards for delineation of hydrologic unit boundaries; version 2.0,* October 1, 2004; and, *http://water.usgs.gov/GIS/huc_name.html#Region03,* accessed November 26, 2008. Table C–1 lists by hydrologic region, each subregion and associated subbasins by eight-digit hydrologic unit code and name.

Table C–1. Eight-digit hydrologic unit codes and corresponding subbasin and subregion names, Alabama.

Subregion and eight-digit hydrologic unit code	Subbasin
South Atlantic–Gulf Region, Mobile River Basin	
Apalachicola	
03130002	Middle Chattahoochee–Lake Harding
03130003	Middle Chattahoochee-W.F. George Reservoir
03130004	Lower Chattahoochee
03130012	Chipola
Choctawhatchee–Escambia	
03140103	Yellow
03140104	Blackwater
03140106	Perdido
03140107	Perdido Bay
03140201	Upper Choctawhatchee
03140202	Pea
03140203	Lower Choctawhatchee
03140301	Upper Conecuh
03140302	Patsaliga
03140303	Sepulga
03140304	Lower Conecuh
03140305	Escambia
Alabama	
03150105	Upper Coosa
03150106	Middle Coosa
03150107	Lower Coosa
03150108	Upper Tallapoosa
03150109	Middle Tallapoosa
03150110	Lower Tallapoosa
03150201	Upper Alabama
03150202	Cahaba
03150203	Middle Alabama
03150204	Lower Alabama
Mobile–Tombigbee	
03160101	Upper Tombigbee
03160103	Buttahatchee
03160105	Luxapallila
03160106	Middle Tombigbee-Lubbub
03160107	Sipsey
03160108	Noxubee
03160109	Mulberry Fork
03160110	Sipsey Fork
03160111	Locust Fork
03160112	Upper Black Warrior
03160113	Lower Black Warrior
03160201	Middle Tombigbee–Chickasaw
03160202	Sucarnoochee
03160203	Lower Tombigbee
03160204	Mobile–Tensaw
03160205	Mobile Bay
Pascagoula	
03170002	Upper Chickasawhay
03170003	Lower Chickasawhay
03170008	Escatawpa
03170009	Mississippi Coastal
Tennessee Region, Tennessee River Basin	
Middle Tennessee–Hiwassee	
06020001	Middle Tennessee–Chickamauga
Middle Tennessee–Elk	
06030001	Guntersville Lake
06030002	Wheeler Lake
06030003	Elk
06030004	Lower Elk
06030005	Pickwick Lake
06030006	Bear

Appendix D. Public-Supplier Survey Form

Each of the 547 public suppliers was surveyed to determine the amount of water delivered to residential, commercial, and industrial customers and public use and losses. The 547 public suppliers surveyed either withdrew their own water from a ground-water or surface-water source, or purchased water, or relied on a combination of sources that could include ground water, surface water, or purchased water. Public suppliers differ as to how water is accounted for within the system, and the questions in the survey (fig. D–1) cover the range of possible combinations of customer billing classes.

Figure D–1. Alabama Office of Water Resources, 2005 Alabama Water System Survey form.

ALABAMA DEPARTMENT OF ECONOMIC & COMMUNITY AFFAIRS (ADECA)
OFFICE OF WATER RESOURCES
401 Adams Avenue, Suite 434
Montgomery, Alabama 36104
(334) 242-5499

Alabama Water System Survey on 2005 Water-Use Data

Water distributed to the residential, commercial, industrial,
and other accounting classes during 2005.
Instructions are on the last page.

PART A. WATER-SUPPLY SYSTEM

1. System Name: _____ OWR COU#: _____
ADEM PWSID#: _____

2. Water Use Reporting Period. **Check one**.
   a. For calendar year January 2005-December 2005 _____
   b. For fiscal year July 1, 2004-June 30, 2005 _____
   c. Month: _____ Year: _____

3. Water Volume Units (For Information Requested Below)
   a. **Check one:** gallons _____ thousand gallons _____
   million gallons _____ percentage _____

   b. Total water distributed including water sold to other water-supply systems _____

   c. Total amount of water sold to other water-supply systems _____
   Number of water-supply systems to which water was sold _____
   Or, percentage of water sold to other water-supply systems _____

   d. Total amount of water sold to residential customers _____
   Number of billed residential accounts for period of record _____
   Or, percentage of water sold to residential customers _____

   e. Total amount of water sold to commercial customers _____
   Number of billed commercial accounts for period of record _____
   Or, percentage of water sold to commercial customers _____

   f. Total amount of water sold to industrial customers _____
   Number of billed industrial accounts for period of record _____
   Or, percentage of water sold to industrial customers _____

(Note: Complete G or H if your billing accounts are not separated into the three customer classes (residential, commercial, industrial).

Figure D–1. Alabama Office of Water Resources, 2005 Alabama Water System Survey form.—Continued

g. If commercial and industrial billing accounts are combined into a single customer class, report the following.

Total amount of water sold to combined commercial and industrial accounts for period of record _____

Number of billed combined commercial, and industrial accounts for period of record _____

Or, percentage of water sold to combined commercial and industrial accounts _____

h. If residential, commercial and industrial billing accounts are combined into a single customer class, report the following.

Total amount of water sold to combined residential, commercial, and industrial accounts for period of record _____

Number of billed combined residential, commercial, and industrial accounts for period of record _____

i. Total amount of water used for purposes such as firefighting, line flushing, maintenance, and other public uses or losses _____

Or, percentage of water for other purposes such as firefighting, etc. _____

PART B. FACILITY/CONTACT INFORMATION

4. Indicate the individual to contact for further information (e.g., system manager, operator, billing manager, etc.):

Name: _____ Title: _____

Phone: _____ Fax: _____

e-mail: _____ Date: _____

Figure D–1. Alabama Office of Water Resources, 2005 Alabama Water System Survey form.—Continued

Instructions:

PART A. WATER-SUPPLY SYSTEM
Question 2. Water Use Reporting Period

2a., 2b., and 2c. Information is requested for 2005. **Calendar year** information is preferred over **fiscal year** information, although **fiscal year** summaries, because they are more common, are acceptable. If calendar or fiscal year summary information is simply not available, select a month of typical usage for 2005, preferably a month that has minimum outdoor usage, and write in the **month and year.**

Question 3. Water Distribution

The term "water distribution" is used generally and refers to water that is distributed, delivered, or sold to residential, commercial, or industrial customers; other water-supply systems; used for firefighting, flushing lines, water processing, or other purposes; or, water lost in the distribution system.

3a. Indicate the type of units (gallons, thousand gallons, or million gallons) of water reported for this survey. *Alternatively*, you may report the **percent of water** used by the customer class. For example, residential customers may account for about 90 percent of the water (3d.). About 2 percent may be used for commercial and industrial purposes (3e.-3g.). The remaining 8 percent may be used for firefighting, flushing lines, or may be lost to the system (3i.).

3b. Total amount of water for distribution refers to water that is sold to residential, commercial, and industrial customers; other water-supply systems; used for firefighting, flushing lines, water processing, or other purposes; and, lost in the distribution system.

3e., 3f., and 3g. If industrial and commercial customers are classified separately for billing purposes, indicate the amount of water sold and number of bills as indicated by 3e. and 3f. If industrial and commercial customers are summarized together, but can be separated from the residential customers, use 3g. to indicate water sold and number of bills to customers.

3h. If residential, commercial, and industrial customers are summarized together for billing purposes indicate the amount of water sold and number of bills as indicated by 3b. and 3c. Estimate percentages for 3c.-3g., and 3i.

Appendix E. Hydroelectric Dams

Table E–1 provides the dam name, county and community location, year completed, generating capacity in kilowatt-hours, reservoir surface area, and length of shoreline for each hydroelectric power plant. Figure E–1 shows locations of the hydroelectric dams and their respective river. Alabama Electric Cooperative, Alabama Power Company, TVA, and USACE manage 21 hydroelectric dams on the Tennessee, Black Warrior, Coosa, Tallapoosa, Alabama, and Conecuh Rivers. Georgia Power Company and the USACE manage six hydroelectric dams on the Chattahoochee River bordering Alabama.

Table E–1. Hydroelectric dams in Alabama, 2005.

[Location indicates the nearest city to the dam, not necessarily the location of the dam or the business offices; kWh, kilowatt-hour; AL, Alabama; TVA, Tennessee Valley Authority; APCO, Alabama Power Company; USACE, U.S. Army Corps of Engineers; GA, Georgia; GPCO, Georgia Power Company; AEC, Alabama Electric Cooperative]

Hydroelectric dam	County	Location	Year completed	Generating capacity (kWh)	Area (surface acres)	Length of shoreline (miles)	Operator
Tennessee River							
Guntersville Dam	Marshall	Guntersville, AL	1939	140,400	67,900	890	TVA
Wheeler Dam	Lauderdale	Decatur, AL	1936	411,800	67,070	1,027	TVA
Wilson Dam	Lauderdale	Florence, AL	1924	675,400	15,500	166	TVA
Black Warrior River							
Smith Dam	Walker, Cullman	Jasper, AL	1961	157,500	21,200	500	APCO
Bankhead Lock and Dam	Tuscaloosa	Northport, AL	1963	52,400	9,200	400	APCO
Holt Lock and Dam	Tuscaloosa	Northport, AL	1968	40,000	3,296	45	APCO
Coosa River							
Weiss Dam	Cherokee	Leesburg, AL	1961	87,750	30,200	447	APCO
Neely Henry Dam	Calhoun, St. Clair	Ohatchee, AL	1966	72,900	11,200	339	APCO
Logan Martin Dam	St. Clair, Talladega	Vincent, AL	1964	128,250	15,263	275	APCO
Lay Dam	Chilton, Coosa	Clanton, AL	1914	177,000	12,000	289	APCO
Mitchell Dam	Chilton, Coosa	Verbena, AL	1923	170,000	5,850	147	APCO
Jordan Dam	Elmore	Wetumpka, AL	1928	100,000	6,800	118	APCO
Walter Bouldin Dam	Elmore	Wetumpka, AL	1967	225,000	6,800	118	APCO
Tallapoosa River							
R.L. Harris Dam	Randolph	Wedowee, AL	1983	135,000	10,660	271	APCO
Martin Dam	Elmore, Tallapoosa	Dadeville, AL	1926	182,500	40,000	700	APCO
Yates Dam	Elmore, Tallapoosa	Tallassee, AL	1928	32,000	2,000	40	APCO
Thurlow Dam	Elmore, Tallapoosa	Tallassee, AL	1930	75,000	574	6	APCO
Alabama River							
Robert F. Henry Dam	Autauga, Lowndes	Benton, AL	1972	82,000	12,800	368	USACE
Millers Ferry Dam	Wilcox	Millers Ferry, AL	1970	75,000	17,280	500	USACE
Chattahoochee River							
West Point Dam	Troup GA / Chambers AL	West Point, GA	1975	82,200	25,900	525	USACE
Goat Rock Dam	Harris GA / Lee AL	Phenix City, AL	1915	26,000	940	25	GPCO
Bartlett's Ferry Dam	Harris GA / Lee AL	Phenix City, AL	1926	173,000	5,850	156	GPCO
Oliver Dam	Muscogee GA / Lee AL	Columbus, GA	1959	60,000	2,150	40	GPCO
North Highlands Dam	Muscogee GA / Lee AL	Columbus, GA	1903	29,600	131	3	GPCO
Walter F. George Dam	Clay GA / Henry AL	Eufaula, AL	1963	160,000	45,180	640	USACE
Conecuh River							
Gantt Dam	Covington	Andalusia, AL	1920	5,200	2,700	21	AEC
Point A Dam	Covington	Andalusia, AL	1920	3,200	600	15	AEC

Figure E–1. Hydroelectric dams in Alabama, 2005.

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