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Water

Groundwater - Water Use and Reporting Program (Capacity Use)

The Groundwater Use and Reporting Program issues Groundwater Use Withdrawal Permits to all groundwater systems located in a designated [Capacity Use Area](#) (Map of Capacity Use Areas). Current Capacity Use Areas are; Low Country (Beaufort, Colleton, Hampton, Jasper counties), Pee Dee (Darlington, Dillon, Florence, Marion, Marboro, Williamsburg counties), Trident (Berkeley, Charleston, and Dorchester) and Waccamaw (Georgetown, Horry counties). Groundwater Withdrawal permits are required to withdraw and use groundwater equal to or greater than three million gallons in any month in the counties in these areas.

Beginning January 1, 2001, the intention to install any well that will withdraw 3 million gallons or more of groundwater in any month or increase the rated capacity of an existing well in the Coastal Plain, but outside of a Capacity Use Area, must have a Notice of Intent provided to the Department at least 30 days prior to drilling or initiating the action. [Coastal Plain counties currently outside of a Capacity Use Area](#) (Map of NOI counties) include all of Aiken, Allendale, Bamberg, Barnwell, Calhoun, Clarendon, Lee, Orangeburg, Sumter and those portions of Chesterfield, Edgefield, Kershaw, Lexington, Richland, and Saluda counties located in the Coastal Plain east or southeast of the fall line (as identified on best available geologic maps or contact the Department at the phone numbers below).

[Groundwater withdrawers who withdraw and use groundwater equal to or greater than three million gallons in any month in the remaining counties of the State shall register their groundwater withdrawal and subsequent use with the Department](#) (Map of Registration counties).

Compliance

Each permit or permit application must comply with the construction, operation, and special conditions as set forth in R.61-113, Groundwater Use and Reporting Regulations.

Guidance Document and Reports

Guidance Document

- [Capacity Use Program Permitting](#) (PDF - 230 KB) A guide for permitting groundwater withdrawal in designated Capacity Use Areas.

Reports

Capacity Use Designations

- [A Preliminary Assessment of the Groundwater Conditions in Charleston, Berkeley, and Dorchester Counties, South Carolina](#) (July 2001)
- [Fact Sheet - Trident Area Capacity Use Designation](#) (May 2002)
- [A Preliminary Assessment of the Groundwater Conditions in Part of the Pee Dee Region, South Carolina](#) (August 2003)
- [Fact Sheet - Pee Dee Region Capacity Use Designation](#) (August 2003)
- [An Assessment Of Groundwater Conditions In Hampton County For Capacity Use Designation](#) (June 2007)
- [Fact Sheet - Hampton County Capacity Use Designation](#) (July 2007)

Water Use Reports

- [South Carolina Savannah River Basin Facilities Water Use Report 2004](#) (PDF)
- [South Carolina Catawba/Wateree River Facilities Water Use Report 2004](#) (PDF)
- [Evaluation of the Downward Migration of Saltwater to the Upper Floridan Aquifer in the Savannah, Georgia, and Hilton Head Island, South Carolina, areas](#)
- [South Carolina Water Use Report 1999 and 2000 Summary Data Compilation \(June 2002\)](#) (PDF)
- [South Carolina Water Use Report 2001 Summary](#) (PDF)
- [South Carolina Water Use Report 2002 Summary](#) (PDF)
- [South Carolina Water Use Report 2003 Summary](#) (PDF)

- [South Carolina Water Use Report 2004 Summary](#) (PDF)
- [South Carolina Water Use Report 2005 Summary](#) (PDF)
- [South Carolina Water Use Report 2006 Summary](#) (PDF)

Law(s)

Groundwater

- [The Groundwater Use And Reporting Act](#) (Chapter 5 of Title 49, Section 49-5-10 et. seq. of the 1976 Code as amended)

Surface Water

- [South Carolina Surface Water Withdrawal and Reporting Act](#) (Chapter 4 of Title 49, Section 49-4-10 et. seq. of the 1976 Code as amended)

Regulations

- [Regulations for Groundwater Use](#)
For copies of regulations contact [Paul Bristol](#) at (803) 898-3559.

Permitting

- [Groundwater Withdrawal Permit Application and Directions](#) (PDF-191 KB)
- [Groundwater Withdrawal Renewal Permit Application and Directions](#) (PDF-193 KB)
- [Notice Of Intent \(NOI\) and Directions](#) (PDF-125 KB)
- [Water Use Registration](#) (PDF-86 KB)

Maps

- [Capacity Use Areas](#)
- [Notice of Intent Counties](#)
- [Registration Counties](#)

Contact

- [Paul Bristol](#), at (803) 898-3559, [Alex Butler](#) at (803) 898-3575.

Bureau of Water . Phone: (803) 898-4300 . Fax: (803) 898-4215 . [Contact Us](#)

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South Carolina Department of Health and Environmental Control 2600 Bull Street, Columbia, SC 29201 (803) 898-DHEC (3432)

D H E C



PROMOTE PROTECT PROSPER

**South Carolina Water Use Report
1999 and 2000 Summary Data
Compilation**

June 2002

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

**Bureau of Water
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Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to responsible management of the State's water resources to ensure continued conservation, wise use and sustainable supply for current and future demands. The South Carolina Surface Water Withdrawal and Reporting Act, 49-4-10 et. seq., and the South Carolina Groundwater Use and Reporting Act, 49-5-10 et. seq., requires water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to DHEC.

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Introduction

Historically, most South Carolinians have considered the available fresh water supply as cheap, clean, abundant, attainable and, for all practical purposes, inexhaustible. At the time of this report, South Carolina has experienced a fourth consecutive year with documented rainfall deficit, which has placed extreme pressure on shallow groundwater systems and some surface water supplies. With limited recharge, groundwater systems and surface water bodies under continuous natural discharge and human use (pumpage) have shown steady water level declines with numerous shallow pond systems going dry. Some homeowners relying on shallow water wells have been forced to drill deeper wells or seek alternate sources of water supply. In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact (radiological, saltwater intrusion) demonstrate the vulnerability of the resource and the need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared, among other things, that the groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable and to provide and maintain conditions which are conducive to the development and use of (all) water resources.

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar years 1999 and 2000. Water use data were collected by quarterly reporting of water use by permitted and registered users. Use is reported in million gallons per month. The Department maintains the water use databases utilized in this report.

Terminology

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth's surface such as a stream, lake, or reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent withdrawal over time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy).

Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from the natural hydrological system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation.

South Carolina Climate

The climate of South Carolina is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. The subtropical climate arises from the state's location in the northern mid-latitudes, proximity of the warm Gulf Stream current in the Atlantic Ocean and the Appalachian Mountains, which screen out cold air masses from the interior of the continent. Average temperature varies from the mid-50's in the mountains to low-60's along the coast. All months are humid with greater precipitation occurring in late winter and again in summer. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. Precipitation totals were 54.96 inches in 1997, 54.85 inches in 1998, 44.25 inches in 1999 and 42.37 inches in 2000. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990 and 1993 or approximately every eight (8) years. The most severe drought occurred in 1986. Figure 1 presents precipitation data for the years 1997 through 2000.

(Climate data interpreted from the South Carolina Department of Natural Resources, State Climatologist)

South Carolina Precipitation Data 1997 – 2000

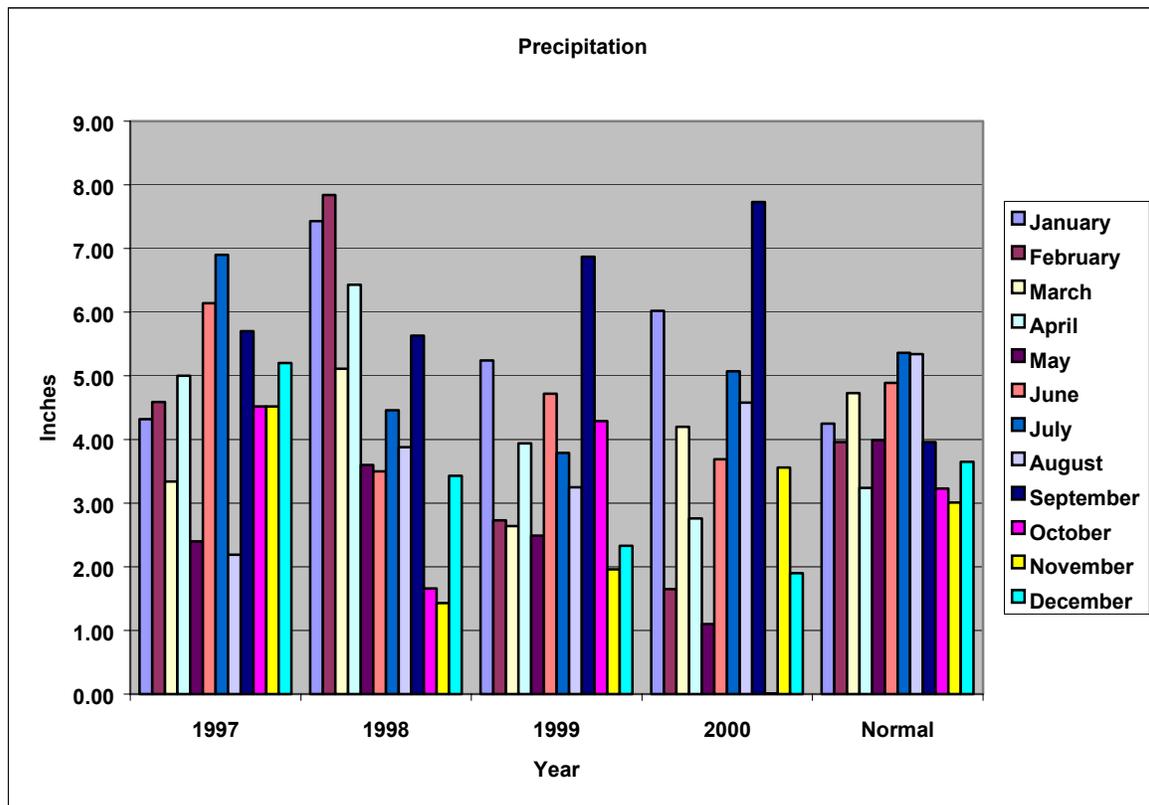


Figure 1 (adapted from National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Geography and Hydrogeology

South Carolina has a varied and diverse geography over a land area of 31,189 square miles covering three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (Figure 2). Total land area is approximately 30,111 square miles and approximately 1,078 square miles are inland or coastal waterways. Elevation ranges from 3,584 feet above sea level at Sassafras Mountain to sea level along the coast.

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties (Figure 2). The Blue Ridge is the eastern split of the Appalachian mountain chain and extends from northeast Georgia up through central Virginia. Geology of the Blue Ridge is typically described as metasedimentary and metavolcanic rocks overthrusting crystalline basement rock and having undergone multiple periods of deformation. Hydrogeology of the Blue Ridge is characterized by a unit (mantle) of clayey to sandy saprolite, ranging in depth from several feet to tens of feet, overlying crystalline rock. The saprolite, developed from in-situ weathering of the underlying crystalline basement rock, typically demonstrates high porosity and low permeability resultant from relatively high clay content. The saprolite generally grades downward through a highly permeable transition zone to unaltered parent bedrock. Isolated zones of higher permeability within the saprolite are associated with remnant structures such as fractures, dikes, or foliations. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Differences in lithology of parent material and degrees of metamorphism and tectonic histories directly affect the hydraulic properties and characteristics of both units.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line (Figure 2). Geology of the Piedmont is typically described as parallel bands (belts or terranes) of metasedimentary and metavolcanic rocks that have undergone various metamorphic episodes. The differing belts or terranes are generally characterized by the extent and degree of metamorphism (low to high grade). Hydrogeology of the Piedmont is developed similarly to that of the Blue Ridge, but the diminished relief allows for greater saprolite development. The dominant geology of a given belt or terrane will directly influence the hydraulic characteristic of a given locality; granular metamorphic rock would weather to a more porous and permeable saprolite, while phyllitic and schistostic metamorphic rock would weather to a more clay rich less permeable saprolite.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the *Fall Line* east of and to the Atlantic Ocean (Figure 2). Geology of the Coastal Plain is typically described as a wedge of unconsolidated to consolidated sediments, deposited from fluvial to marine environments, increasing in thickness from contact with the piedmont at the *Fall Line* to the present day shoreline. Accumulated sediment thickness range from approximately 1000 feet at the shore near the North Carolina boundary to greater than 3000 feet at the shore near the Georgia boundary. Hydrogeology of the Coastal Plain is characterized by aquifers developed in layers of sands and silts or high-permeability limestone confined by units of clay and silts or low-permeability limestone. A generalized cross-section for the Coastal Plain aquifers is presented as Figure 3. The hydraulic characteristics of the Coastal Plain aquifers are determined by composition, thickness, areal extent and relative distance from the outcrop location.

South Carolina Physiographic Provinces

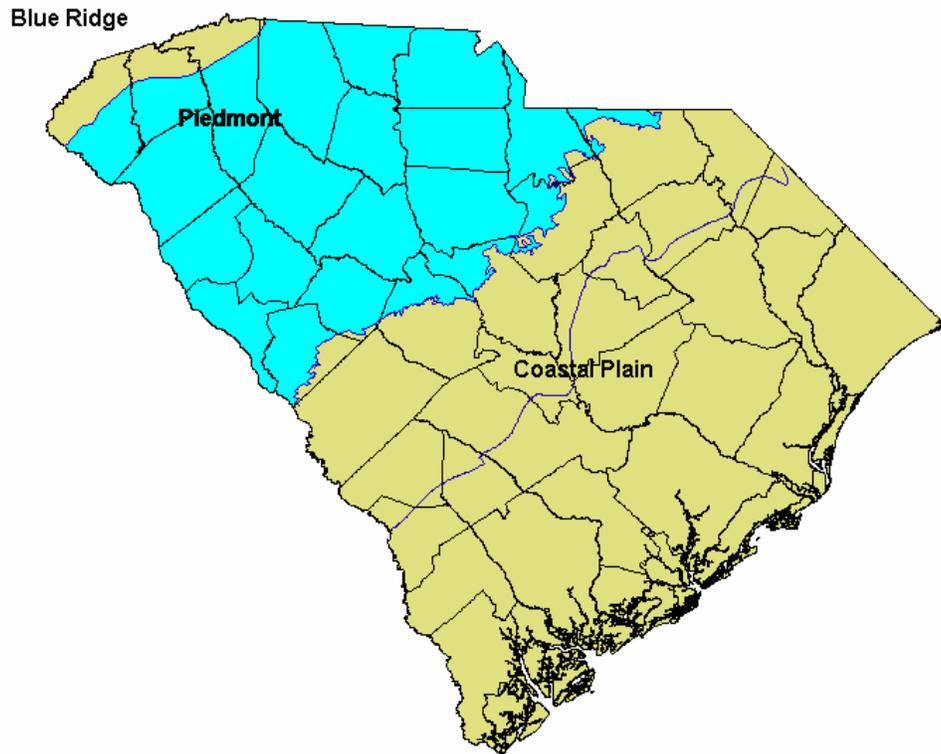


Figure 2

Generalized Cross-Section

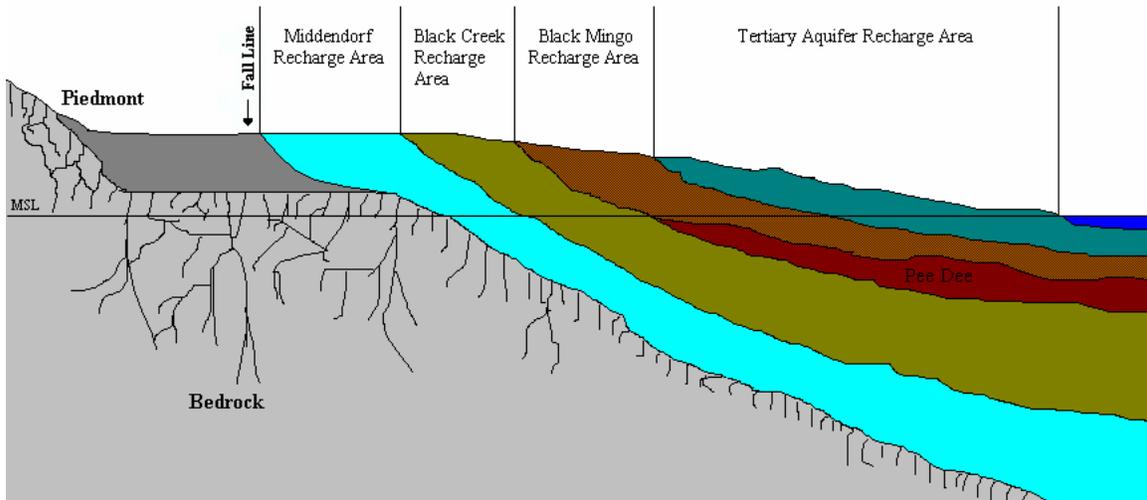


Figure 3

Demographics

According to the 2000 Census, South Carolina's estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities. South Carolina has approximately 25,000 farms, occupying 4,588,000 acres (7,170 square miles). Of this, approximately 2,500,000 acres (3,905 square miles) are cropland with 87,500 acres (137 square miles) irrigated ⁽¹⁾. South Carolina has approximately 94,985 employing businesses of which 1,296 are manufacturing industries. Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area ⁽²⁾. South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 50 power plants (207 generators) with a total rating capacity of 18,723.8 megawatts. Power production in the State (1999) totaled 87,345 million kilowatt hours ⁽³⁾.

(Source: (1) 1997 Census of Agriculture, Volume 1 Geographic Area Series, "Table 1. County Summary Highlights: 1997."

(2) S.C. Department of Commerce, 2000/2001 "South Carolina Industrial Directory."

(3) S.C. Energy Office "1999 South Carolina Energy Use Profile."

Reported Water Use 1999 and 2000

Total water use reported for 1999 was more than 14.9 trillion gallons (14,900,241,030,000) from 717 reporting facilities. Surface water withdrawal from 335 facilities accounted for approximately 14.8 trillion gallons (14,796,782,530,000) or approximately 99.30%. Groundwater withdrawal from 382 facilities accounted for more than 103 billion gallons (103,458,500,000) or approximately 0.70%. Total water use reported for 2000 was more than 12.8 trillion gallons (12,841,201,260,000) from 577 reporting facilities. Surface water withdrawal from 266 facilities accounted for more than 12.5 trillion gallons (12,522,190,270,000) or approximately 99.60%. Groundwater withdrawal from 311 facilities accounted for more than 53 billion gallons (53,173,670,000) or approximately 0.40%.

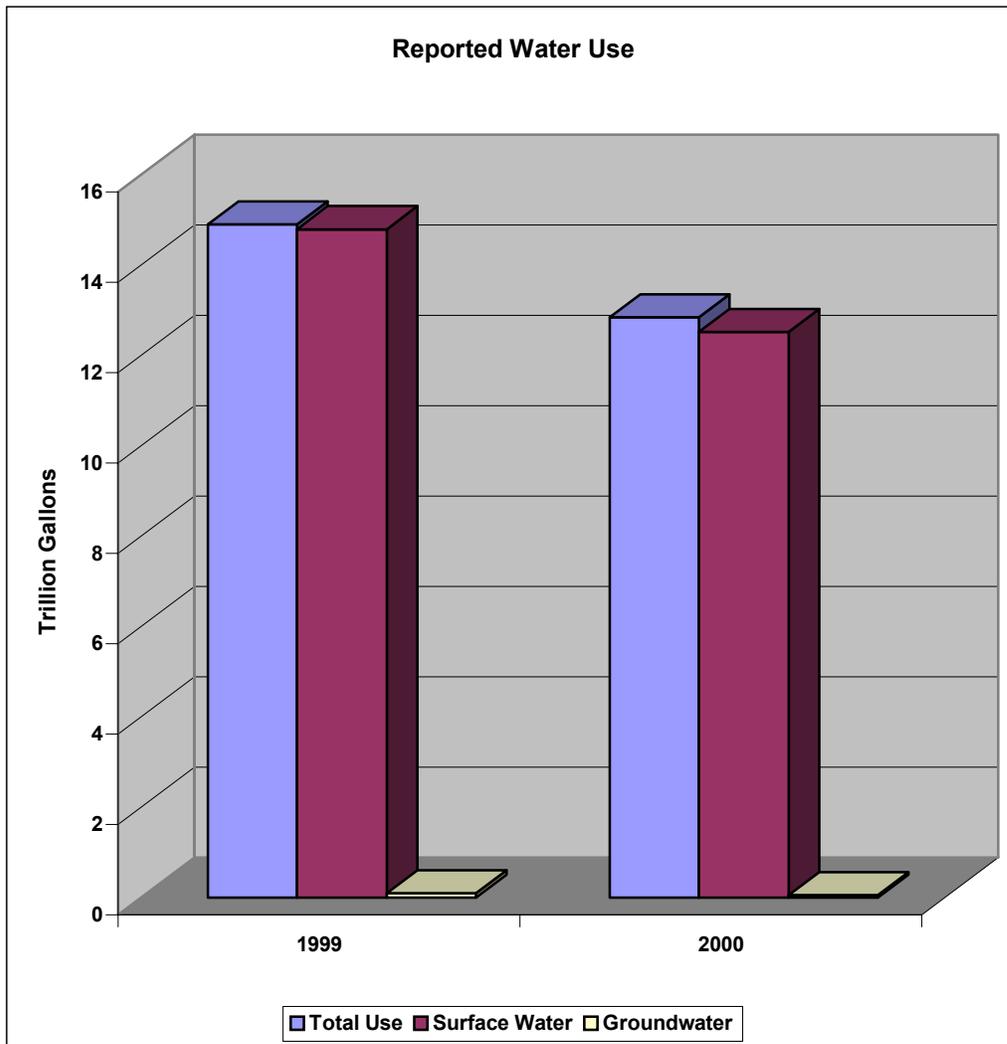


Chart 1

Total Water Use for Power Production

During 1999, reported water use for power production at 36 facilities accounted for more than 14.4 trillion gallons (14,487,270,390,000) or approximately 97.23% of the total use. Of the water use for power production, 14,485,319,870,000 gallons, or approximately 99.99%, was from surface sources and 1,950,520,000 gallons was from groundwater. During 2000, reported water use for power production at 35 facilities accounted for more than 12.5 trillion gallons (12,522,190,270,000) or approximately 97.52% of the total use. Of the water use for power production, 12,520,063,480,000 gallons, or approximately 99.98% was from surface sources and 2,126,800,000 gallons was from groundwater.

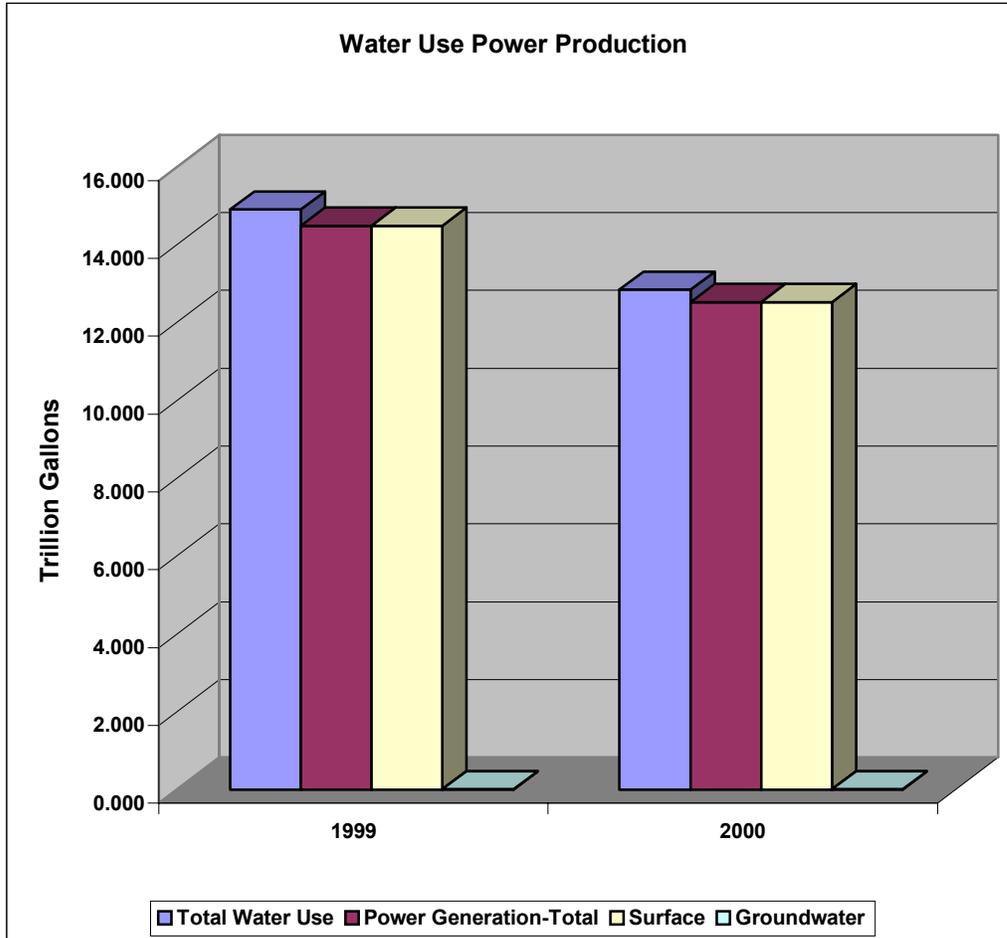


Chart 2

Power Production Water Use Comparison

During 1999, water use at hydroelectric facilities accounted for more than 12.1 trillion gallons (12,160,642,630,000) or approximately 81.61% of all reported water use for the year. Nuclear facilities accounted for more than 1.7 trillion gallons (1,729,691,620,000) or approximately 11.61% of all reported use and thermoelectric facilities accounted for more than 596 billion gallons (596,936,150,000) or approximately 4.01% of all use. During 2000, hydroelectric facilities reported water use of more than 10.2 trillion gallons (10,281,681,910,000) or approximately 80.07% of all use. Nuclear facilities accounted for more than 1.5 trillion gallons (1,514,373,370,000) or approximately 11.79% of all use and thermoelectric facilities accounted for more than 726 billion gallons (726,134,990,000) or approximately 5.65 % of all use.

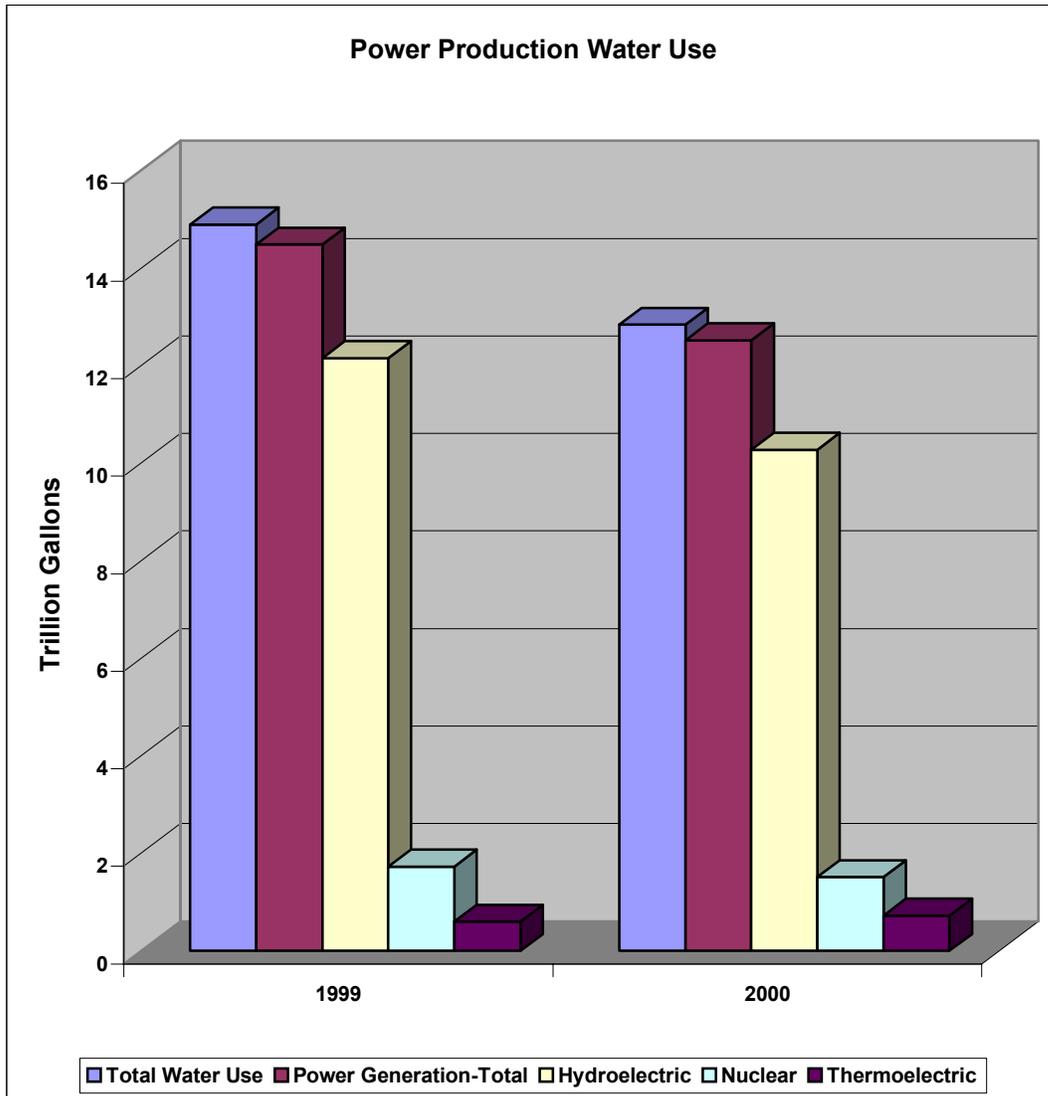


Chart 3

Total Water Use/Non-power

Total Water Use (Non-Power)

During 1999, non-power production water use totaled more than 412 billion gallons (412,970,640,000), with surface water withdrawal accounting for 311,462,650,000 gallons or approximately 75.42% and groundwater withdrawal accounting for 101,507,990,000 gallons or approximately 24.58%. During 2000, non-power production water use totaled more than 319 billion gallons (319,010,990,000), with surface water withdrawal accounting for 267,964,120,000 gallons or approximately 84.00% and groundwater withdrawal accounting for 51,046,870,000 gallons or approximately 16.00%.

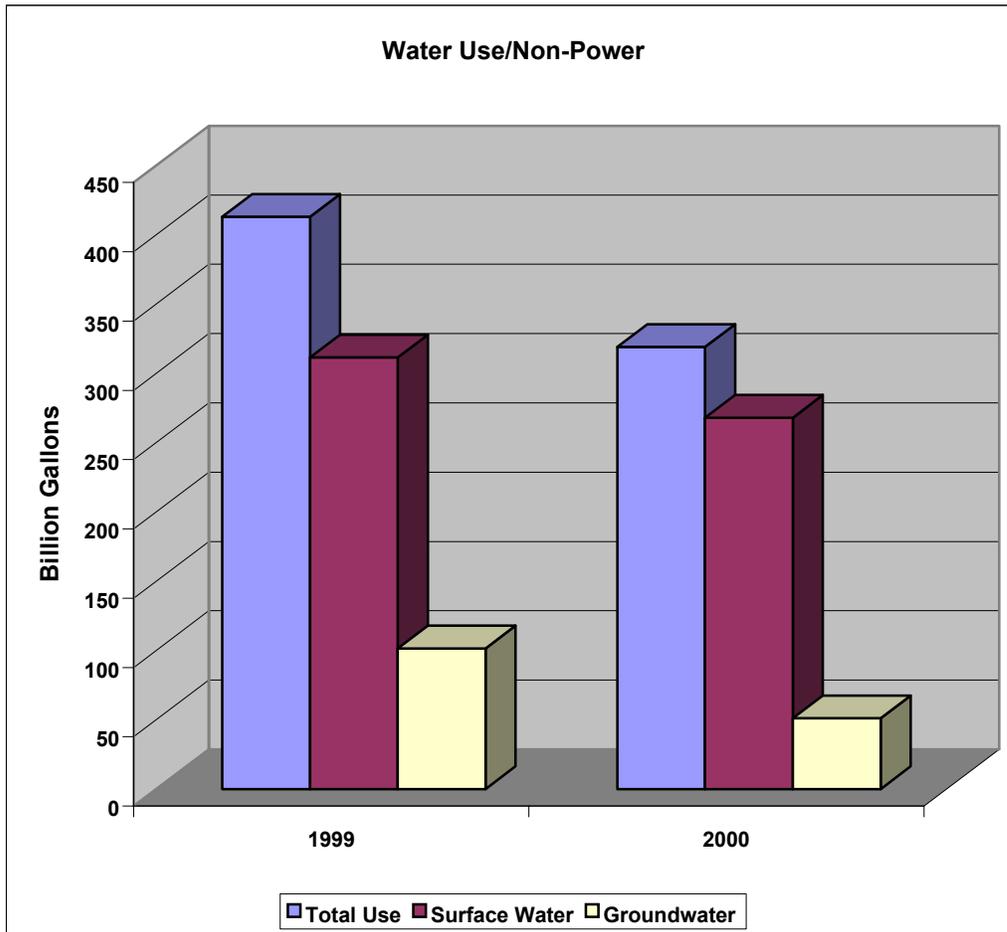


Chart 4

Water Supply

In 1999, water withdrawal for water supply totaled more than 221 billion gallons (221,911,790,000) with surface water sources accounting for 141,136,450,000 gallons and groundwater sources accounting for 80,775,340,000 gallons. In 2000, withdrawal for water supply totaled more than 181 billion gallons (181,189,600,000) with surface water sources accounting for 148,265,220,000 gallons and groundwater sources accounting for 32,924,380,000 gallons.

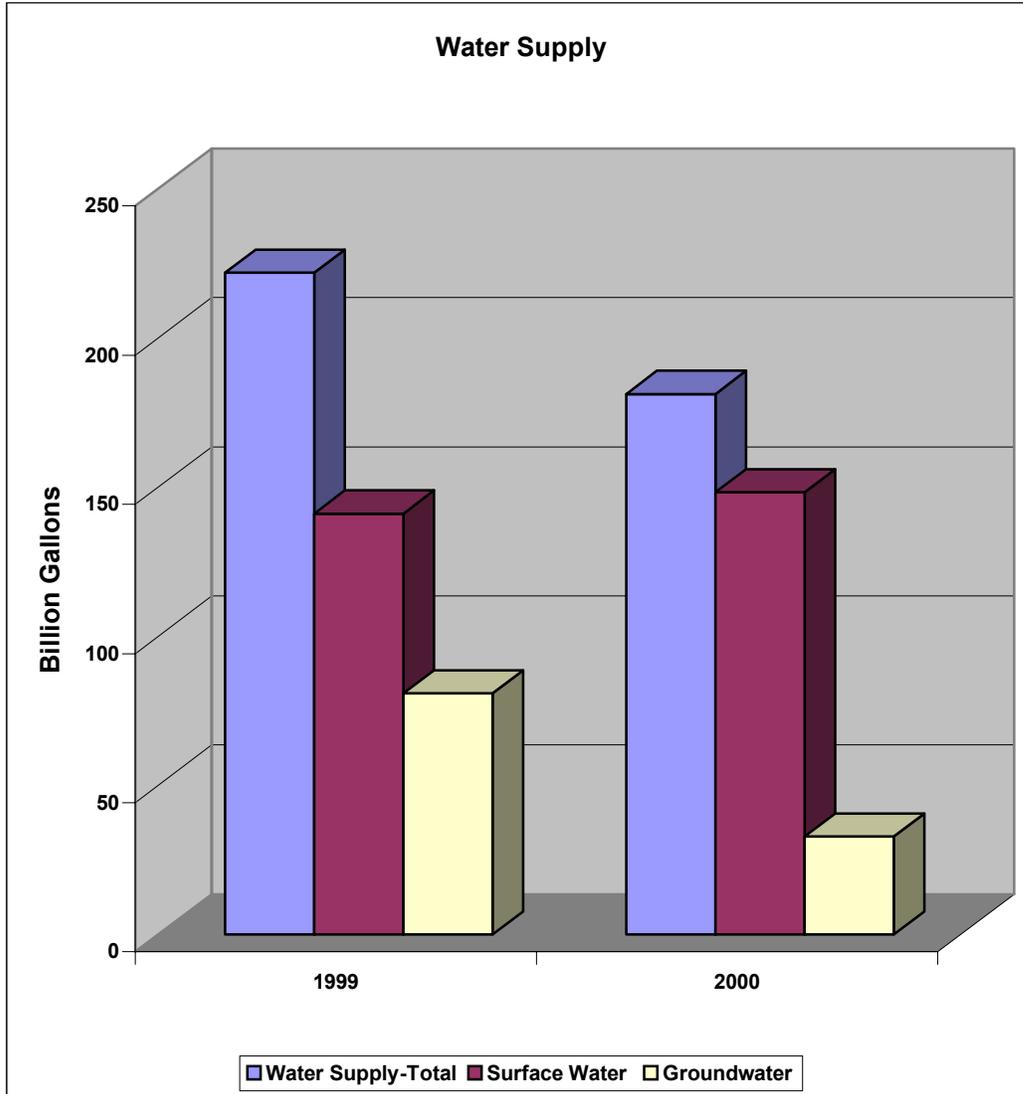


Chart 5

Industrial Use

In 1999, water withdrawal for industrial use totaled more than 172 billion gallons (172,314,140,000) with surface water sources accounting for 160,984,130,000 gallons and groundwater sources accounting for 11,330,010,000 gallons. In 2000, withdrawal for industrial use totaled more than 157 billion gallons (157,463,330,000) with surface water sources accounting for 145,761,530,000 gallons and groundwater sources accounting for 11,701,800,000 gallons.

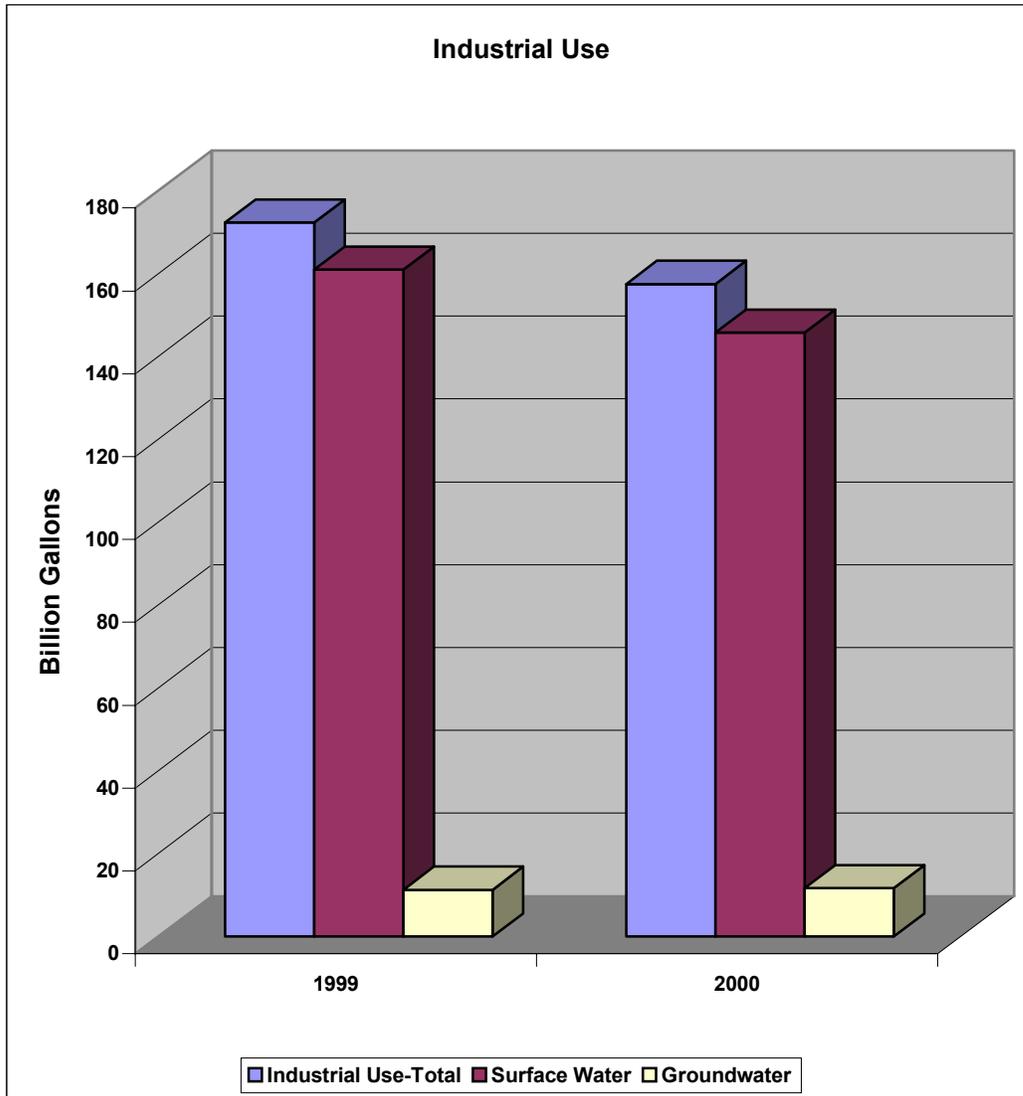


Chart 6

Irrigation Use

In 1999, water withdrawal for irrigation use totaled more than 9 billion gallons (9,470,980,000) with surface water sources accounting for 3,496,700,000 gallons and groundwater sources accounting for 5,974,270,000 gallons. In 2000, withdrawal for irrigation use totaled more than 3 billion gallons (3,182,730,000) with surface water sources accounting for 1,797,650,000 gallons and groundwater sources accounting for 1,385,080,000 gallons.

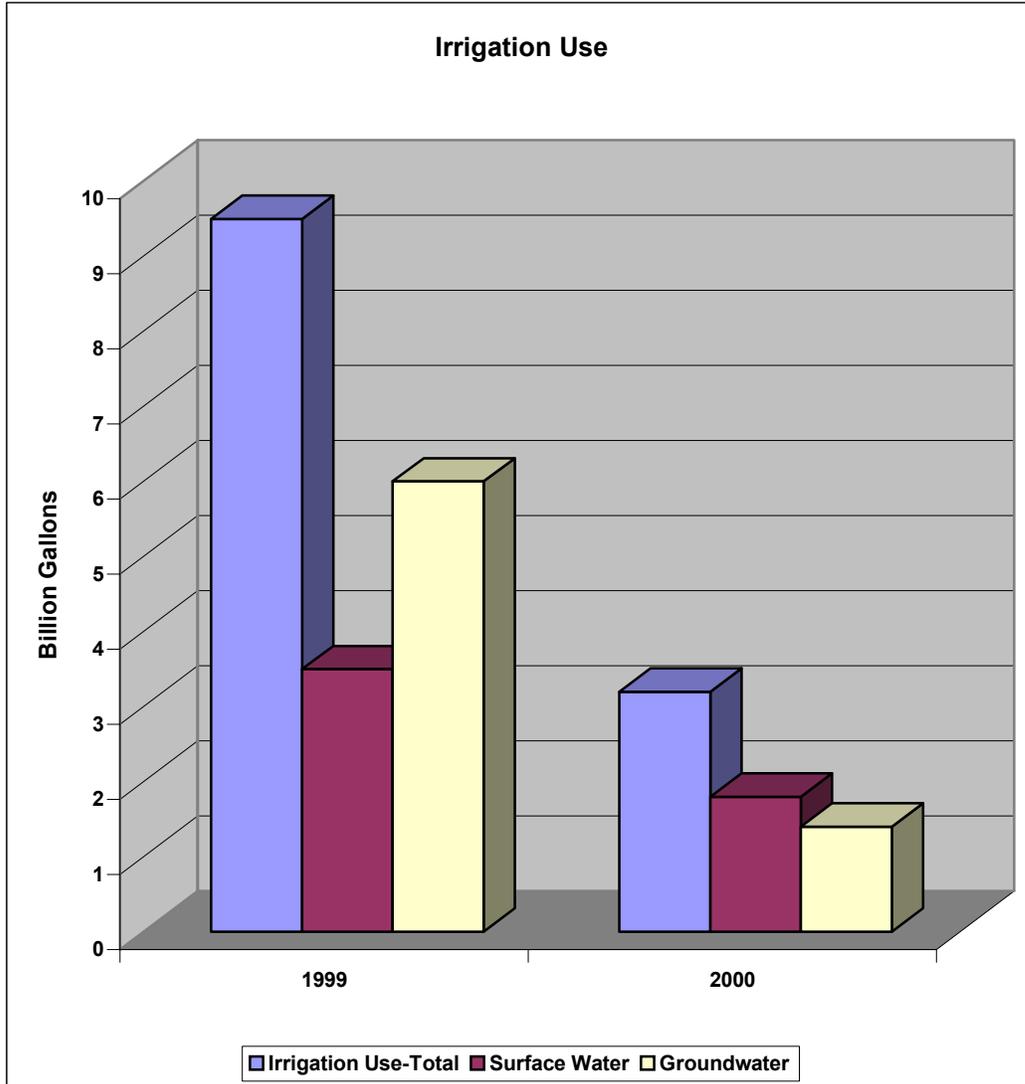


Chart 7

Golf Course Use

In 1999, water withdrawal for golf course irrigation totaled more than 6.3 billion gallons (6,323,770,000) with surface water sources accounting for 4,293,870,000 gallons and groundwater sources accounting for 2,029,900,000 gallons. In 2000, withdrawal for golf course irrigation totaled more than 6.8 billion gallons (6,806,350,000) with surface water sources accounting for 4,625,470,000 gallons and groundwater sources accounting for 2,180,880,000 gallons.

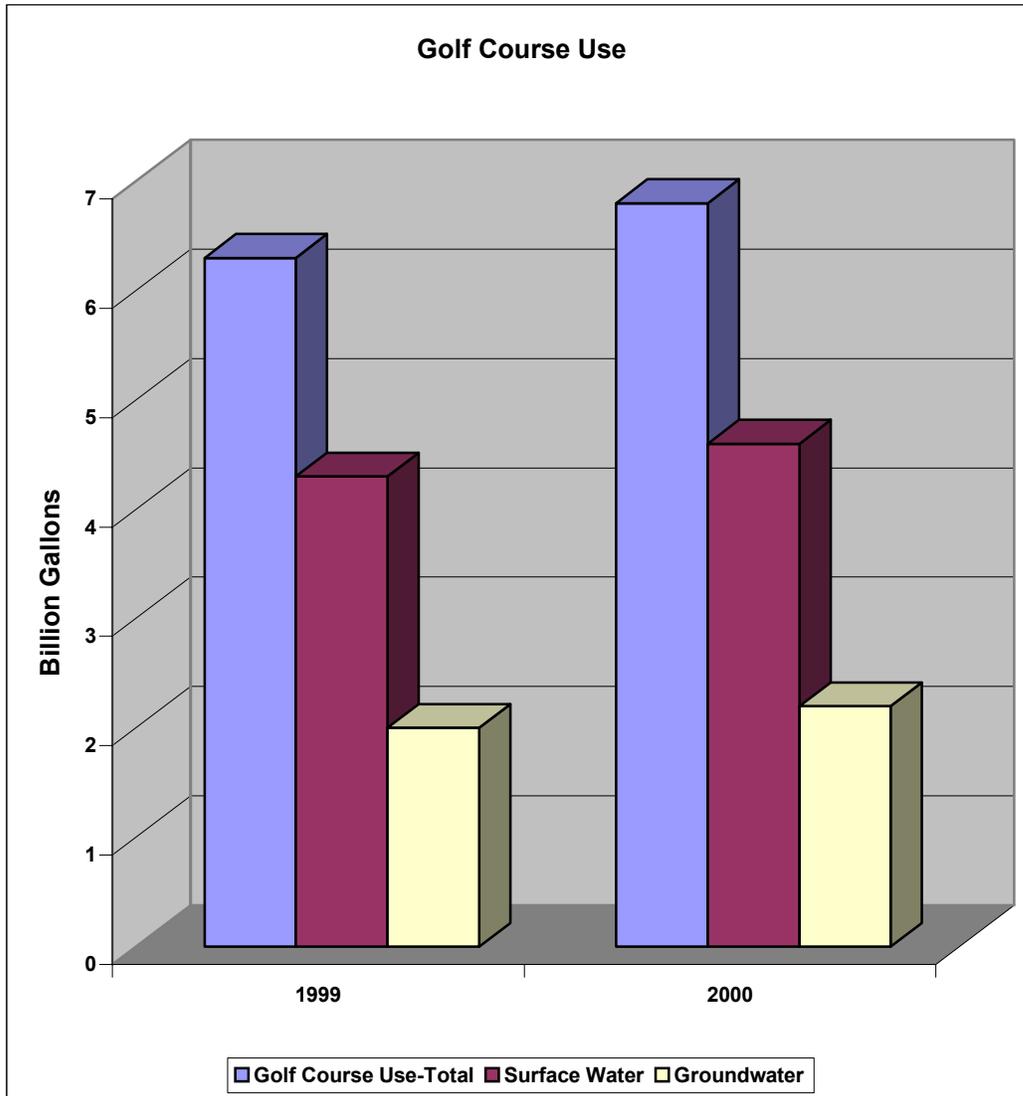


Chart 8

Mining Use

In 1999, water withdrawal associated with mining activities totaled more than 2 billion gallons (2,546,920,000) with reported surface water withdrawal accounting for 1,549,140,000 gallons and groundwater withdrawal accounting for 997,780,000 gallons. In 2000, withdrawal for mining activities totaled more than 3 billion gallons (3,056,080,000) with reported surface water withdrawal accounting for 438,630,000 gallons and groundwater withdrawal accounting for 2,617,450,000 gallons.

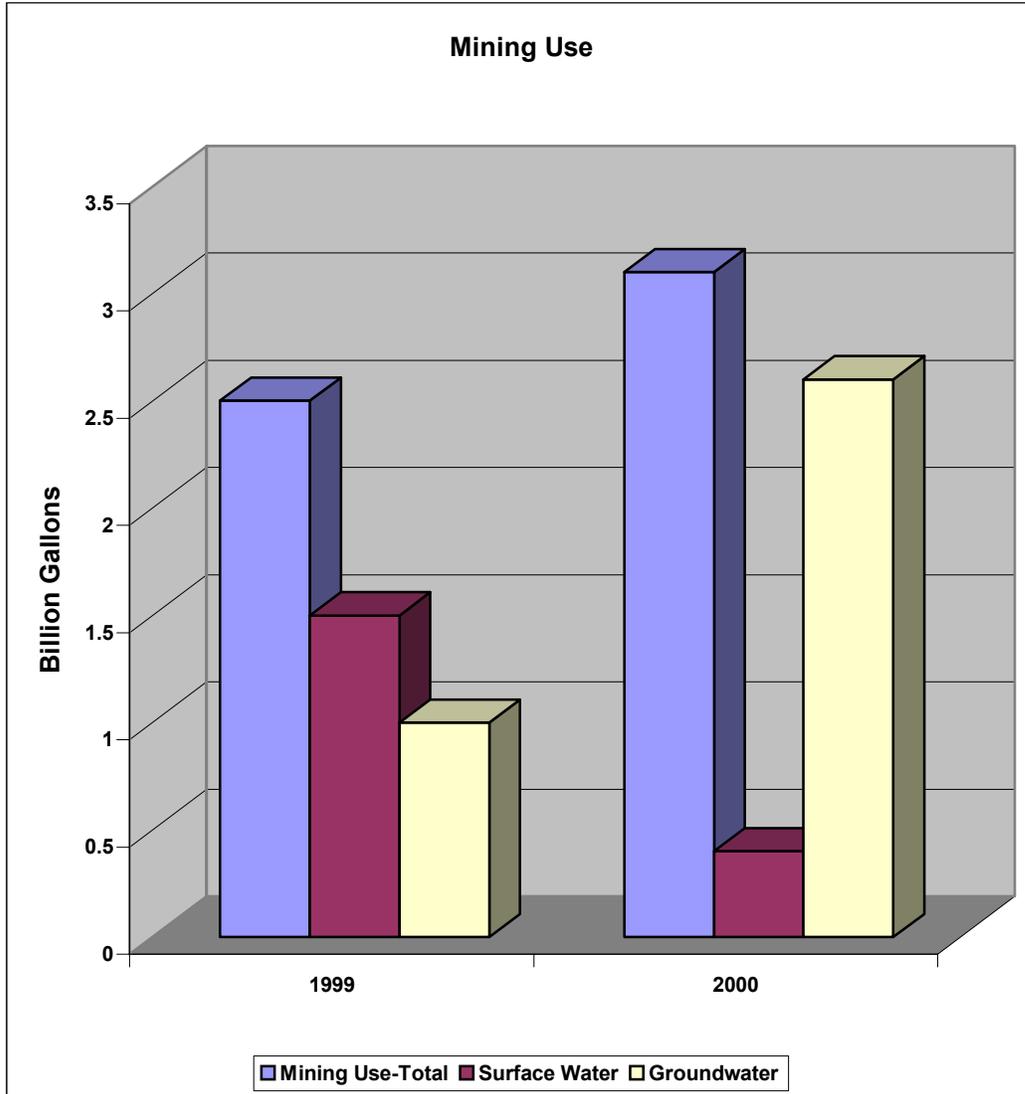


Chart 9

Aquaculture Use

In 1999, water withdrawal for aquaculture farming totaled more than 35 million gallons (35,970,000) with all reported withdrawal from groundwater sources. In 2000, withdrawal for aquaculture activities totaled more than 13 million gallons (13,670,000) with all reported withdrawal from groundwater sources.

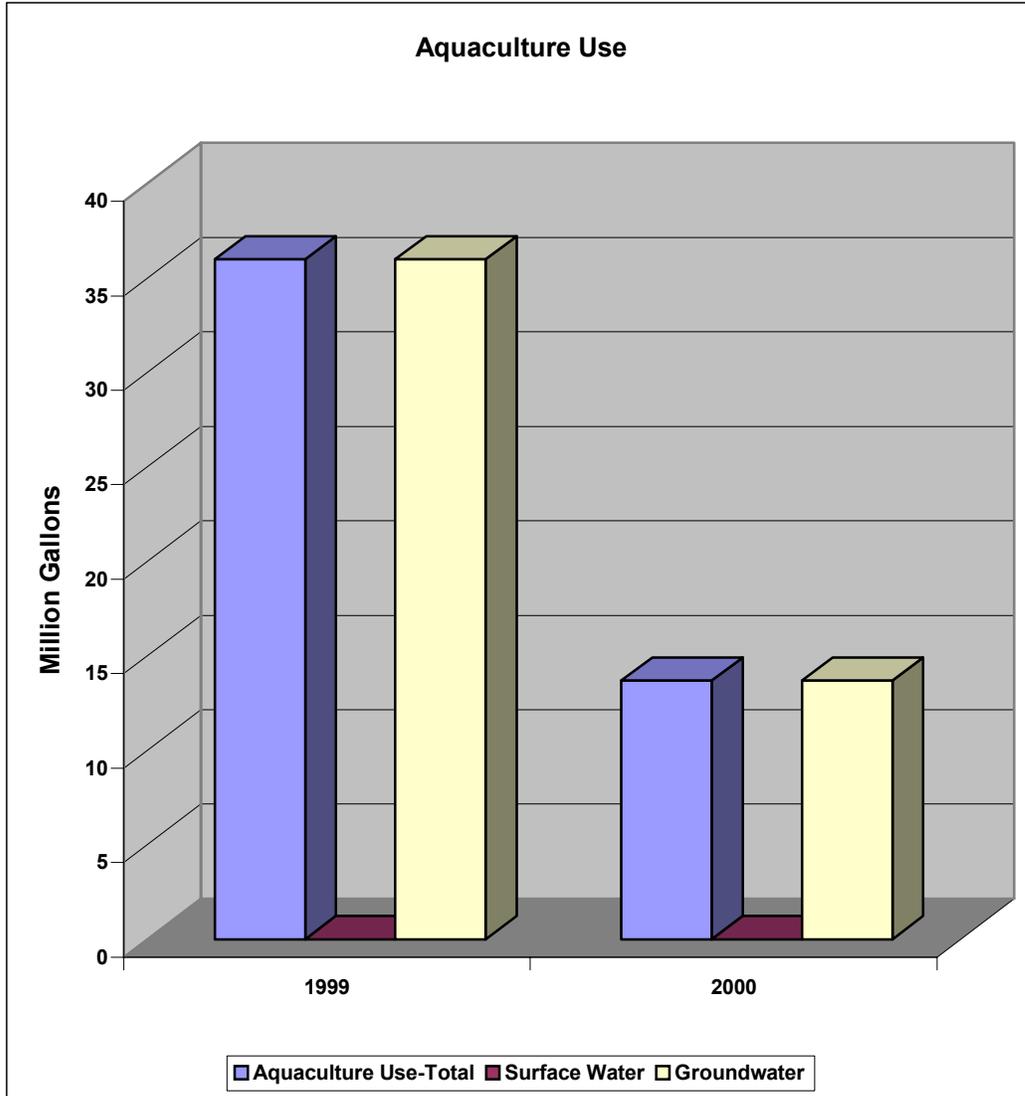


Chart 10

Other Use

In 1999, water withdrawal for other, non-specific uses totaled more than 367 million gallons (367,060,000) with surface water sources accounting for 2,350,000 gallons and groundwater sources accounting for 364,710,000 gallons. In 2000, water withdrawal for other uses totaled more than 223 million gallons (223,610,000) with all reported withdrawal from groundwater sources.

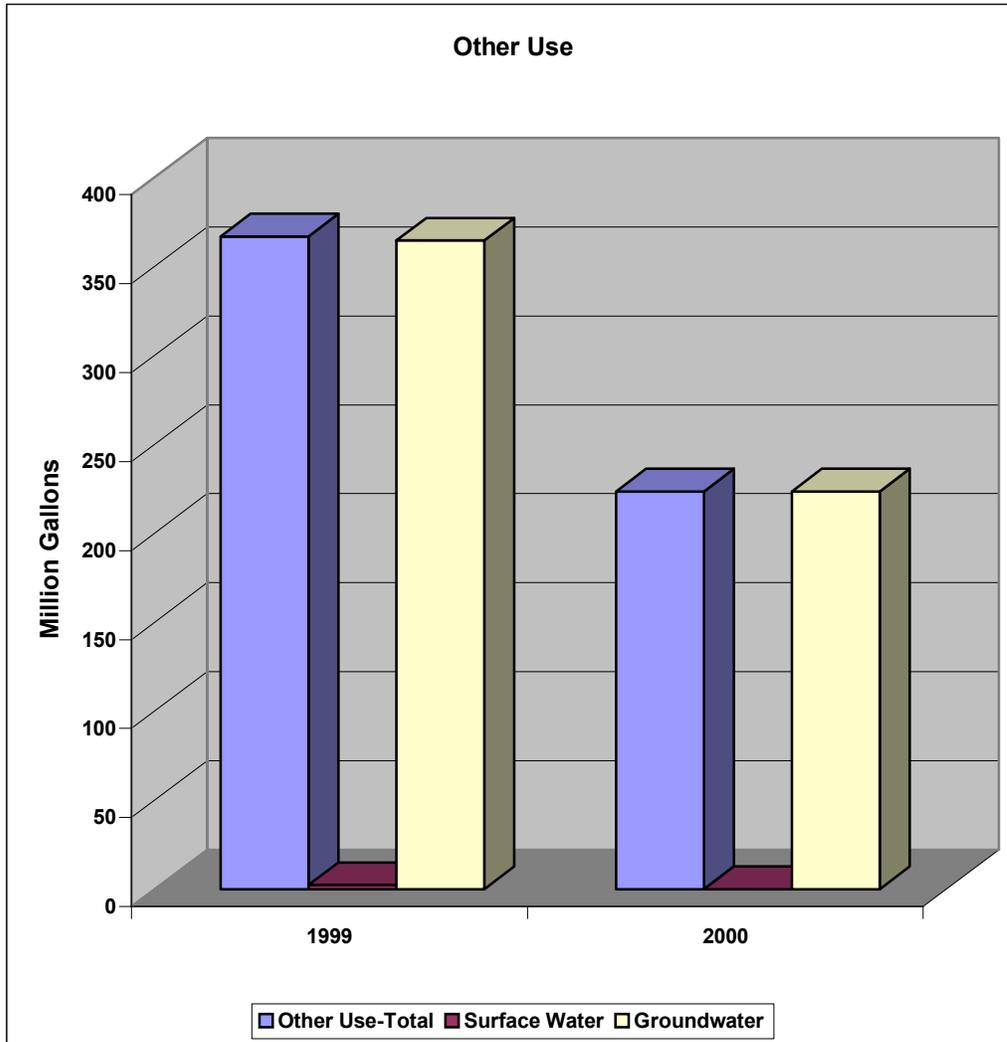


Chart 11

*1999 Surface Water Use by County
(in million gallons)*

County	Hydro-electric	Nuclear	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	400,196.73	0.00	0.00	1,228.30	137.98	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	0.00	55,975.82	2,305.37	27,901.43	38.60	13.25	0.00	0.00	0.00
Allendale	0.00	0.00	0.00	0.00	0.00	218.68	0.00	0.00	0.00	0.00
Anderson	534,371.09	0.00	0.00	7,874.59	54.77	29.16	0.00	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	0.00	0.00	247.90	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	0.00	0.00	0.00	36.40	0.00	0.00	0.00
Beaufort	0.00	0.00	0.00	117.41	0.00	22.46	1,295.34	0.00	0.00	0.00
Berkeley	1,101,592.98	0.00	219,979.96	2.84	4,355.37	4.32	26.00	0.00	0.00	0.00
Calhoun	0.00	0.00	0.00	0.00	31,261.73	155.66	0.00	0.00	0.00	0.00
Charleston	0.00	0.00	0.00	20,381.90	9,250.83	0.06	45.69	0.00	0.00	0.00
Cherokee	340,693.00	0.00	0.00	4,903.42	773.00	16.68	0.00	0.00	0.00	0.00
Chester	1,644,995.00	0.00	0.00	1,342.99	200.06	0.00	0.00	0.00	0.00	0.00
Chesterfield	0.00	0.00	0.00	1,820.60	24.75	0.00	32.50	0.00	0.00	0.00
Clarendon	0.00	0.00	0.00	0.00	0.00	96.20	0.00	0.00	0.00	0.00
Colleton	0.00	0.00	1,155.29	0.00	0.00	0.00	125.62	282.80	0.00	0.00
Darlington	0.00	3,201.15	0.00	0.00	4,073.46	10.69	0.00	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dorchester	0.00	0.00	0.00	0.00	170.64	0.00	0.00	0.00	0.00	0.00
Edgefield	970,869.40	0.00	0.00	1,349.96	0.00	108.42	0.00	0.00	0.00	0.00
Fairfield	2,174,707.50	298,190.74	0.00	469.22	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	0.00	0.00	12,318.40	0.00	0.00	0.00	0.00	0.00
Georgetown	0.00	0.00	3,675.52	0.00	12,235.39	0.15	250.16	0.00	0.00	2.35
Greenville	0.00	0.00	0.00	23,140.59	0.00	12.00	182.41	0.00	0.00	0.00
Greenwood	213,120.00	0.00	63,364.00	3,980.42	73.35	0.00	0.00	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Horry	0.00	0.00	38,422.62	8,670.86	69.29	62.66	1,844.35	177.60	0.00	0.00
Jasper	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Kershaw	705,475.00	0.00	0.00	1,448.15	1,142.61	0.00	24.00	0.00	0.00	0.00
Lancaster	408,974.00	0.00	0.00	3,928.72	1,258.45	0.00	0.00	0.00	0.00	0.00
Laurens	53,988.00	0.00	0.00	1,207.74	83.63	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lexington	105,494.20	0.00	53,189.66	3,408.12	10,636.91	0.00	0.00	0.00	0.00	0.00
Marion	687,144.16	0.00	0.00	450.26	0.00	0.00	5.00	0.00	0.00	0.00
Marlboro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	0.00	462.73	1,941.00	100.33	0.00	0.00	0.00	0.00
Newberry	0.00	0.00	0.00	2,141.52	0.00	0.00	0.00	0.00	0.00	0.00
Oconee	11,816.00	1,427,868.00	0.00	3,354.27	632.70	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	0.00	0.07	2,809.33	142.08	1,551.49	2.13	0.00	0.00	0.00
Pickens	1,603,137.00	0.00	0.00	6,153.43	536.76	0.00	46.00	0.00	0.00	0.00

Richland	445,867.10	0.00	159,654.92	21,598.56	10,062.81	0.00	86.61	0.00	0.00	0.00
Saluda	0.00	0.00	0.00	0.00	0.00	6.50	0.00	0.00	0.00	0.00
Spartanburg	17,744.02	0.00	0.00	10,935.47	2,077.50	192.17	0.00	0.00	0.00	0.00
Sumter	0.00	0.00	0.00	0.00	0.00	0.00	12.50	0.00	0.00	0.00
Union	240,546.93	0.00	0.00	1,608.30	998.71	0.00	16.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
York	499,910.00	0.00	0.00	4,044.22	28,570.54	0.00	39.18	0.00	0.00	0.00
Total	12,160,642.11	1,729,259.89	595,417.87	141,136.45	160,984.13	3,496.70	4,293.87	1,549.14	0.00	2.35

Table 1

*1999 Groundwater Use by County
(in million gallons)*

County	Hydro-electric	Nuclear	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	0.00	0.00	4,118.39	2,167.24	309.80	0.00	0.00	0.00	0.00
Allendale	0.00	0.00	0.00	104.98	674.47	2,351.29	0.00	0.00	0.00	0.00
Anderson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	405.47	0.00	211.91	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	940.15	0.00	0.00	0.00	0.00	0.00	0.00
Beaufort	0.00	0.00	0.00	4,871.32	146.03	323.84	1,147.14	0.00	15.13	197.69
Berkeley	0.51	0.00	3.28	2.84	1,013.93	4.32	11.00	597.55	0.00	0.00
Calhoun	0.00	0.00	0.00	42.10	155.44	40.25	0.00	0.00	0.00	0.00
Charleston	0.00	0.00	0.00	2,205.54	110.43	19.15	51.09	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chester	0.00	0.00	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00
Chesterfield	0.00	0.00	0.00	77.19	0.00	0.00	0.00	0.00	0.00	0.00
Clarendon	0.00	0.00	0.00	494.84	0.00	0.00	0.00	0.00	0.00	0.00
Colleton	0.00	0.00	0.00	44,232.92	0.00	12.70	6.57	0.00	0.00	0.00
Darlington	0.00	431.73	0.00	2,383.26	1,444.87	7.40	0.78	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	1,730.69	0.00	28.10	0.00	0.00	15.84	0.00
Dorchester	0.00	0.00	0.00	153.95	775.41	0.00	4.34	0.00	0.00	0.00
Edgefield	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00
Fairfield	0.00	0.00	0.00	17.10	0.00	0.00	0.00	13.84	0.00	0.00
Florence	0.00	0.00	0.00	5,291.97	661.27	0.00	0.00	0.00	0.00	0.00
Georgetown	0.00	0.00	0.00	1,920.64	59.71	0.00	8.76	0.00	0.00	0.00
Greenville	0.00	0.00	0.00	0.00	7.61	0.00	7.36	0.00	0.00	0.00
Greenwood	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	421.35	316.40	77.40	0.00	0.00	0.00	0.00
Horry	0.00	0.00	0.00	1,054.89	84.03	434.38	770.86	0.00	0.00	167.02
Jasper	0.00	0.00	0.00	427.31	0.00	424.93	0.00	0.00	5.00	0.00
Kershaw	0.00	0.00	0.00	551.86	385.64	0.00	22.00	0.00	0.00	0.00
Lancaster	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laurens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	531.81	0.00	0.00	0.00	0.00	0.00	0.00
Lexington	0.00	0.00	0.00	272.14	144.65	236.06	0.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Marlboro	0.00	0.00	0.00	1,759.24	7.36	0.00	0.00	0.00	0.00	0.00

McCormick	0.00	0.00	0.00	503.67	261.17	225.46	0.00	0.00	0.00	0.00
Newberry	0.00	0.00	0.00	29.55	0.00	9.30	0.00	0.00	0.00	0.00
Oconee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	0.00	1,504.22	334.96	952.13	784.54	0.00	385.13	0.00	0.00
Pickens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Richland	0.00	0.00	10.78	4.69	658.20	0.00	0.00	0.00	0.00	0.00
Saluda	0.00	0.00	0.00	0.00	79.52	0.48	0.00	0.00	0.00	0.00
Spartanburg	0.00	0.00	0.00	0.00	5.24	0.00	0.00	0.00	0.00	0.00
Sumter	0.00	0.00	0.00	5,306.23	345.29	456.37	0.00	0.00	0.00	0.00
Union	0.00	0.00	0.00	0.00	9.84	0.00	0.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	526.59	862.50	15.80	0.00	0.00	0.00	0.00
York	0.00	0.00	0.00	57.71	0.00	0.00	0.00	1.26	0.00	0.00
Total	0.51	431.73	1,518.28	80,775.34	11,330.01	5,974.27	2,029.90	997.78	35.97	364.71

Table 2

*2000 Surface Water Use by County
(in million gallons)*

County	Hydro- electric	Nuclear	Thermo- electric	Water Supply	Industria l	Irrigati on	Golf Cours e	Minin g	Aqua - cultur e	Oth er
Abbeville	12.38	0.00	0.00	832.20	29.60	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	0.00	55,739.49	1,473.53	24,920.56	0.00	21.35	0.00	0.00	0.00
Allendale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anderson	94,442.00	0.00	0.00	4,582.08	70.98	0.00	13.99	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	0.00	0.00	0.00	12.10	0.00	0.00	0.00
Beaufort	0.00	0.00	0.00	132.63	0.00	20.36	1,227.14	0.00	0.00	0.00
Berkeley	1,183,784.53	0.00	207,121.52	0.00	2,935.35	0.00	11.00	0.00	0.00	0.00
Calhoun	0.00	0.00	0.00	0.00	32,232.08	0.00	0.00	0.00	0.00	0.00
Charleston	0.00	0.00	0.00	16,991.97	8,768.61	0.00	52.94	0.00	0.00	0.00
Cherokee	284,648.00	0.00	0.00	1,323.99	764.70	0.00	0.00	0.00	0.00	0.00
Chester	1,239,044.00	0.00	0.00	959.40	182.05	0.00	0.00	0.00	0.00	0.00
Chesterfield	0.00	0.00	0.00	1,187.67	21.60	0.00	2.14	0.00	0.00	0.00
Clarendon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Colleton	0.00	0.00	1,301.66	0.00	0.00	0.00	70.36	77.10	0.00	0.00
Darlington	0.00	2,718.39	0.00	0.00	5,143.74	80.00	38.50	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dorchester	0.00	0.00	0.00	0.00	175.07	0.00	0.00	0.00	0.00	0.00
Edgefield	736,287.60	0.00	0.00	1,366.66	0.00	0.00	400.00	0.00	0.00	0.00
Fairfield	2,312,559.00	244,945.34	0.00	516.06	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	0.00	0.00	9,833.70	0.00	20.00	0.00	0.00	0.00
Georgetown	0.00	0.00	3,205.19	0.00	11,970.22	0.58	145.98	0.00	0.00	0.00
Greenville	0.00	0.00	0.00	24,455.77	0.00	0.00	461.49	0.00	0.00	0.00

Greenwood	171,405.00	0.00	52,221.00	5,336.35	10.33	12.70	0.00	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Horry	0.00	0.00	37,778.17	6,075.10	13.45	79.54	1,600.27	133.20	0.00	0.00
Jasper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kershaw	699,352.00	0.00	0.00	1,645.72	1,142.37	12.00	0.00	0.00	0.00	0.00
Lancaster	527,330.00	0.00	0.00	3,162.37	1,708.85	0.00	0.00	0.00	0.00	0.00
Laurens	71,370.00	0.00	0.00	1,514.76	17.31	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lexington	336,582.80	0.00	58,239.79	1,357.92	10,723.65	871.47	34.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	202.52	0.00	0.00	0.00	0.00	0.00	0.00
Marlboro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	0.00	442.07	1,492.00	0.00	0.00	228.33	0.00	0.00
Newberry	0.00	0.00	0.00	1,662.99	0.00	0.00	0.00	0.00	0.00	0.00
Oconee	8,182.00	1,266,275.65	0.00	2,262.34	724.23	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	0.00	0.00	2,252.61	157.35	733.00	57.50	0.00	0.00	0.00
Pickens	1,661,996.80	0.00	0.00	3,715.71	459.89	0.00	288.50	0.00	0.00	0.00
Richland	364,168.90	0.00	308,835.97	18,076.92	10,215.91	0.00	16.85	0.00	0.00	0.00
Saluda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Spartanburg	29.66	0.00	0.00	7,207.84	1,667.58	0.00	0.00	0.00	0.00	0.00
Sumter	0.00	0.00	0.00	0.00	0.00	0.00	108.57	0.00	0.00	0.00
Union	107,241.66	0.00	0.00	1,345.53	546.56	0.00	2.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
York	483,245.00	0.00	0.00	5,258.14	19,833.80	0.00	28.81	0.00	0.00	0.00
Total	10,281,681.33	1,513,939.38	724,442.77	115,340.83	145,761.53	1,797.65	4,625.47	438.63	0.00	0.00

Table 3

*2000 Groundwater Use by County
(in million gallons)*

County	Hydro-electric	Nuclear	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	0.00	0.00	3,206.94	2,265.80	309.80	35.80	41.65	0.00	0.00
Allendale	0.00	0.00	0.00	144.72	586.84	0.00	0.00	0.00	0.00	0.00
Anderson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	384.41	0.00	0.00	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	489.87	0.00	0.00	0.00	0.00	0.00	0.00
Beaufort	0.00	0.00	0.00	5,517.48	141.64	461.44	1,310.97	0.00	12.77	72.06
Berkeley	0.58	0.00	4.38	2.80	298.42	4.32	0.50	0.00	0.00	0.00
Calhoun	0.00	0.00	0.00	125.90	189.52	0.00	0.00	0.00	0.00	0.00
Charleston	0.00	0.00	0.00	2,289.42	115.58	32.71	87.43	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chester	0.00	0.00	0.00	0.00	1.57	0.00	0.00	0.00	0.00	0.00

Chesterfield	0.00	0.00	0.00	15.99	0.00	0.00	0.00	26.71	0.00	0.00
Clarendon	0.00	0.00	0.00	506.68	0.00	0.00	0.00	0.00	0.00	0.00
Colleton	0.00	0.00	0.00	624.81	0.00	31.39	0.00	0.00	0.00	0.00
Darlington	0.00	433.99	0.00	1,276.27	1,475.33	0.00	2.51	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	1,596.25	0.00	0.00	0.00	0.00	0.90	0.00
Dorchester	0.00	0.00	0.00	184.08	768.39	0.00	0.00	0.00	0.00	0.00
Edgefield	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fairfield	0.00	0.00	0.00	21.58	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	0.00	5,005.41	680.82	0.00	0.00	0.00	0.00	0.00
Georgetown	0.00	0.00	0.00	846.44	68.27	0.00	7.87	0.00	0.00	0.00
Greenville	0.00	0.00	0.00	0.00	8.27	0.00	2.25	0.00	0.00	0.00
Greenwood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	418.93	446.80	46.80	0.00	0.00	0.00	0.00
Horry	0.00	0.00	0.00	942.26	89.11	116.03	719.45	0.00	0.00	150.55
Jasper	0.00	0.00	0.00	380.67	0.00	398.71	0.00	0.00	0.00	1.00
Kershaw	0.00	0.00	0.00	384.98	785.15	0.00	10.00	0.00	0.00	0.00
Lancaster	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laurens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	0.00	516.30	0.00	0.00	0.00	0.00	0.00	0.00
Lexington	0.00	0.00	0.00	66.06	1,177.90	197.15	0.00	574.18	0.00	0.00
Marion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Marlboro	0.00	0.00	0.00	1,184.82	13.94	0.00	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	0.00	333.17	215.90	73.20	0.00	0.00	0.00	0.00
Newberry	0.00	0.00	0.00	15.21	0.00	0.00	0.00	0.00	0.00	0.00
Oconee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	0.00	1,550.22	346.33	537.88	27.65	0.00	1,744.49	0.00	0.00
Pickens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Richland	0.00	0.00	137.62	0.83	684.86	0.00	0.00	228.35	0.00	0.00
Saluda	0.00	0.00	0.00	0.00	77.47	0.00	0.00	0.00	0.00	0.00
Spartanburg	0.00	0.00	0.00	0.00	7.86	0.00	0.00	0.00	0.00	0.00
Sumter	0.00	0.00	0.00	5,579.44	322.14	0.00	0.00	0.00	0.00	0.00
Union	0.00	0.00	0.00	0.00	8.61	0.00	0.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	516.35	733.76	0.00	0.00	0.00	0.00	0.00
York	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.07	0.00	0.00
Total	0.58	433.99	1,692.23	32,924.38	11,701.80	1,385.08	2,180.88	2,617.45	13.67	223.61

Table 4

Bureau of Water

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report

2001 Summary



September 2003



www.scdhec.gov/water



South Carolina Water Use Report 2001 Summary

September 2003

**South Carolina Department of Health and
Environmental Control
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Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina Surface Water Withdrawal and Reporting Act, 49-4-10 et. seq., and the South Carolina Groundwater Use and Reporting Act, 49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to DHEC.

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Introduction

For generations, South Carolinians have considered the available fresh water supply as clean, abundant, easily attainable and, for all practical purposes, inexhaustible. Today, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and other uses in South Carolina. Continued development in the state has placed increasing demand on water supplies. During 2001, South Carolina was experiencing a fourth consecutive year of deficient rainfall, which placed extreme pressure on groundwater systems and surface water bodies across the State. With limited and sporadic rainfall events, groundwater systems and surface water bodies under continuous natural discharge and human use (pumpage) showed steady and, at times, drastic water level declines with numerous waterways reaching record low flow conditions. Due to the low flow conditions, excursions of saltwater inland along coastal waterways threatened some surface water intakes. Some homeowners relying on shallow water wells were forced to drill deeper wells or seek alternate sources of water supply.

In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that the groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable and to provide and maintain conditions which are conducive to the development and use of (all) water resources.

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2001. Water use data were collected by annual reporting of water use by permitted and registered users. Water use is reported in **million gallons** per month. The Department maintains the water use databases utilized in this report.

Terminology

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth’s surface such as a stream, lake, or reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent withdrawal over time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy).

Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from the natural hydrological system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation.

South Carolina Climate

The climate of South Carolina is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. Average temperature varies from the mid-50's in the mountains to low-60's along the coast. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990 and 1993 or approximately every eight (8) years. Until the present drought condition, the most severe drought occurred in 1986. Figure 1 presents precipitation data for the years 1997 through 2000.

(Climate data interpreted from the South Carolina Department of Natural Resources, State Climatologist)

South Carolina Precipitation Data 1997 – 2000

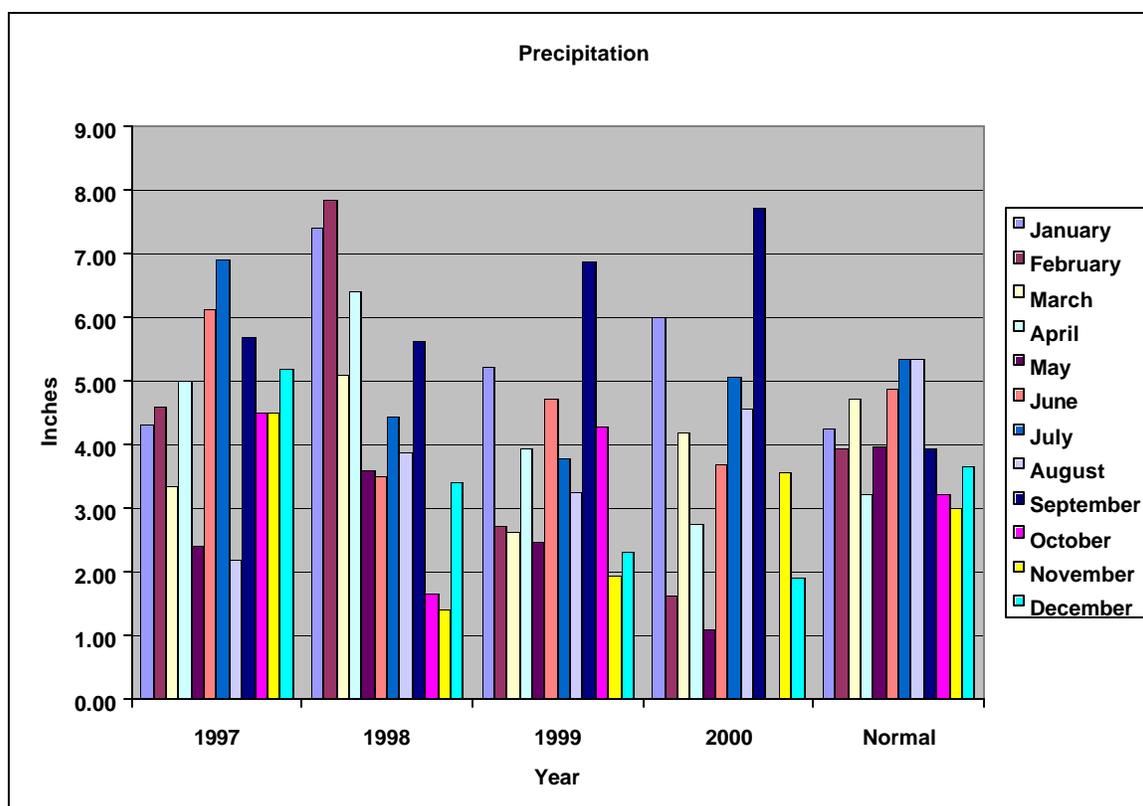


Figure 1 (adapted from National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Geography and Hydrogeology

South Carolina has a varied and diverse ecological and natural beauty covering a total of 31,189 square miles, with approximately 30,111 square miles land area and approximately 1,078 square miles inland or coastal waterways. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (Figure 2). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina. The geology of South Carolina is generally characterized as crystalline rocks of the Blue Ridge and Piedmont physiographic regions and unconsolidated sediments of the Coastal Plain (Figure 3).

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties (Figure 2). Hydrogeology of the Blue Ridge is characterized by clayey to sandy saprolite, ranging in depth from several feet to tens of feet, overlying crystalline rock. The saprolite typically exhibits high porosity and low permeability resultant from relatively high clay content. The saprolite generally grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Differences in lithology of parent material and degrees of metamorphism and tectonic histories directly affect the hydraulic properties and characteristics of both units.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line (Figure 2). Hydrogeology of the Piedmont is developed similarly to that of the Blue Ridge, but the diminished relief allows for greater saprolite development.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the *Fall Line* east of and to the Atlantic Ocean (Figure 2). Hydrogeology of the Coastal Plain is characterized by aquifers developed in layers of sands and silts or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The hydraulic characteristics of the Coastal Plain aquifers are determined by composition, thickness, areal extent and relative distance from the outcrop location. A generalized cross-section for the Coastal Plain aquifers is presented as Figure 4.

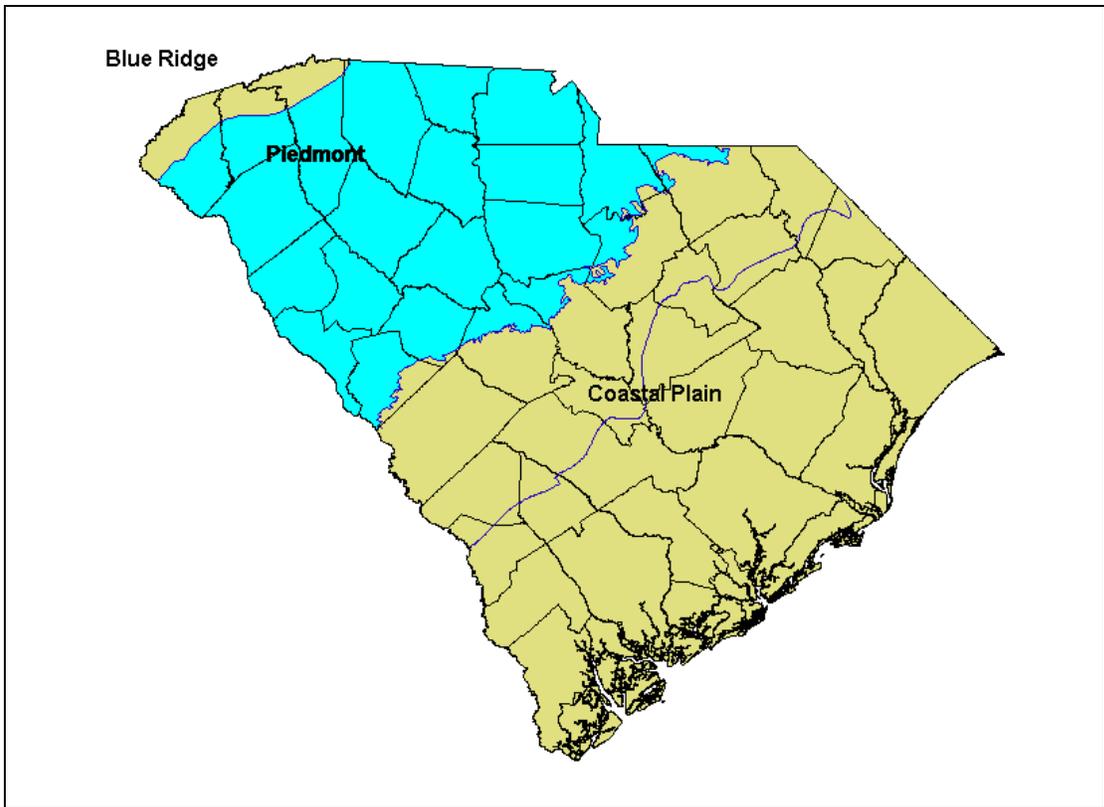


Figure 2 South Carolina Physiographic Provinces

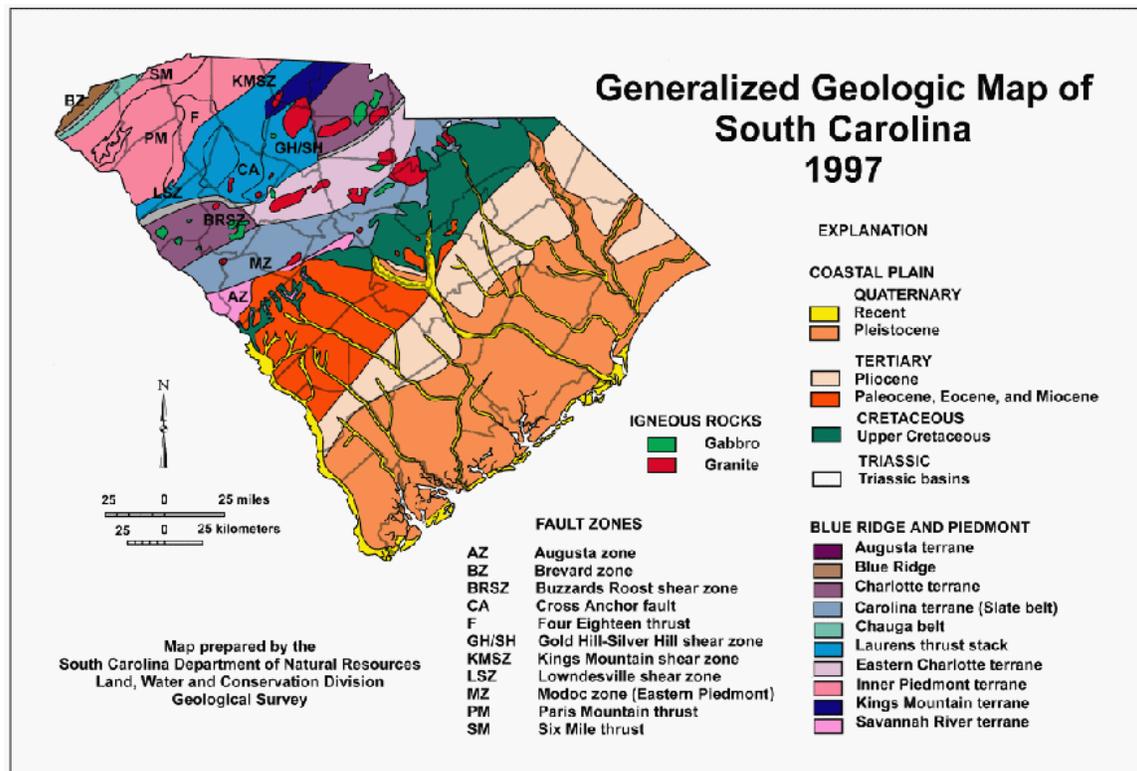


Figure 3 South Carolina Geology

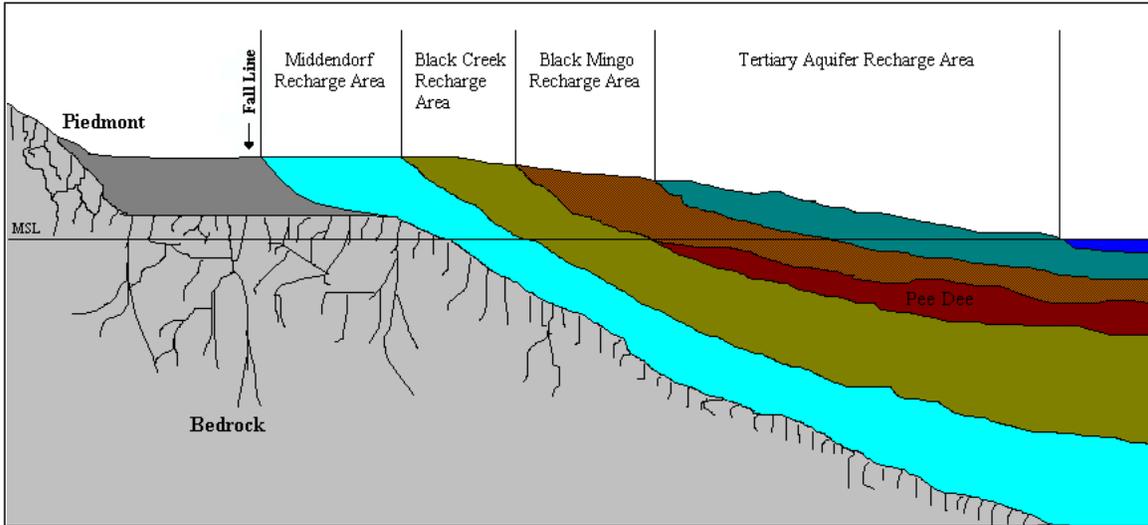


Figure 4 Generalized Cross-Section

Demographics

According to the 2000 Census, South Carolina’s estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities. South Carolina has approximately 25,000 farms, occupying 4,588,000 acres (7,170 square miles). Of this, approximately 2,500,000 acres (3,905 square miles) are cropland ⁽¹⁾. Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area ⁽²⁾. South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2000) totaled 90,079 million kilowatt hours ⁽³⁾.

(Source: (1) 1997 Census of Agriculture, Volume 1 Geographic Area Series, “Table 1. County Summary Highlights: 1997.”

(2) S.C. Department of Commerce, 2000/2001 “South Carolina Industrial Directory.”

(3) S.C. Energy Office “2001 South Carolina Energy Use Profile.”)

Total Reported Water Use

Total water use reported for 2001 was more than 11.8 trillion gallons (11,839,543.42 million gallons) from 931 reporting facilities. Surface water withdrawal from 468 facilities accounted for approximately 11.7 trillion gallons (11,763,474.75 million gallons), approximately 99.36%. Groundwater withdrawal from 483 reporting facilities accounted for approximately 76 billion gallons (76,068.63 million gallons) or approximately 0.64%.

**Total Reported Water Use
By Source (in million gallons)**

Surface Water	Groundwater	Total
11,763,474.75	76,068.67	11,839,543.42

**Total Reported Water Use
By Category (in million gallons)**

Water Use	Surface Water	Groundwater	Total
Hydroelectric	9,796,267.27	0.64	9,796,267.91
Thermoelectric	1,622,975.63	2,009.25	1,624,984.88
Water Supply	154,975.30	38,549.99	193,525.29
Industrial	168,698.78	11,881.12	180,579.90
Irrigation	10,707.64	16,413.50	27,121.14
Golf Course	9,039.34	4,263.20	13,302.54
Mining	109.50	2,582.25	2,691.75
Aquaculture	701.29	163.88	865.17
Other	0.00	204.84	204.84
Total	11,763,474.75	76,068.67	11,839,543.42

Water Use in Power Production

According to the 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

Hydroelectric Water Use

Hydroelectric facilities employ energy from flowing water to generate electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river) or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 33 hydroelectric sources accounted for approximately 9.8 trillion gallons (9,796,267.91 million gallons), approximately 85.77% of reported water use for power production and 82.74% of total reported water use for the year.

Hydroelectric (in million gallons)

<i>County</i>	Surface Water	Groundwater	Total Use
Abbeville	21,269.00	0.00	21,269.00
Anderson	94.8	0.00	94.8
Berkeley	1,183,325.20	0.64	1,183,325.84
Cherokee	233,120.00	0.00	233,120.00
Chester	861,004.00	0.00	861,004.00
Edgefield	842,951.00	0.00	842,951.00
Fairfield	2,100,346.50	0.00	2,100,346.50
Greenwood	161,102.00	0.00	161,102.00
Kershaw	467,607.00	0.00	467,607.00
Lancaster	389,952.00	0.00	389,952.00
Laurens	54.20	0.00	54.20
Lexington	113,001.20	0.00	113,001.20
Oconee	653,785.40	0.00	653,785.40
Pickens	1,861,522.67	0.00	1,861,522.67
Richland	318,991.90	0.00	318,991.90
Spartanburg	3,849.30	0.00	3,849.30
Union	214,535.10	0.00	214,535.10
York	369,756.00	0.00	369,756.00
Total	9,796,267.27	0.64	9,796,267.91

Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 18 thermoelectric sources accounted for more than 1.62 trillion gallons (1,624,984.88 million gallons), approximately 14.23% of reported water use for power production and 13.73% of total reported water use for the year.

Thermoelectric (in million gallons)

County	Surface Water	Groundwater	Total Use
Aiken	47,977.00	0.00	47,977.00
Anderson	20,092.00	0.00	20,092.00
Berkeley	191,699.31	4.92	191,704.23
Colleton	1,285.15	0.00	1,285.15
Darlington	3,079.40	432.84	3,512.24
Fairfield	190,091.18	0.00	190,091.18
Georgetown	4,933.56	0.00	4,933.56
Greenwood	47.10	0.00	47.10
Horry	39,164.28	0.00	39,164.28
Lexington	46,735.55	0.00	46,735.55
Oconee	883,016.00	0.00	883,016.00
Orangeburg	0.00	1,354.81	1,354.81
Richland	157,302.10	216.68	157,518.78
York	37,553.00	0.00	37,553.00
Total	1,622,975.63	2,009.25	1,624,984.88

**Total Reported Water Use
(excluding power production)**

During 2001, reported water use (excluding power production) totaled more than 418 billion gallons (418,290,630,000), with surface water withdrawal accounting for 344,231,850,000 gallons or approximately 82.29% and groundwater withdrawal accounting for 74,058,780,000 gallons or approximately 17.71%.

**Total Reported Water Use
By Category
(excluding Power Generation)
(in million gallons)**

Water Use	Surface Water	Groundwater	Total
Water Supply	154,975.30	38,549.99	193,525.29
Irrigation	10,707.64	16,413.50	27,121.14
Industrial	168,698.78	11,881.12	180,579.90
Golf Course	9,039.34	4,263.20	13,302.54
Mining	109.50	2,582.25	2,691.75
Aquaculture	701.29	163.88	865.17
Other	0.00	204.84	204.84
Total	344,231.85	74,058.78	418,290.63

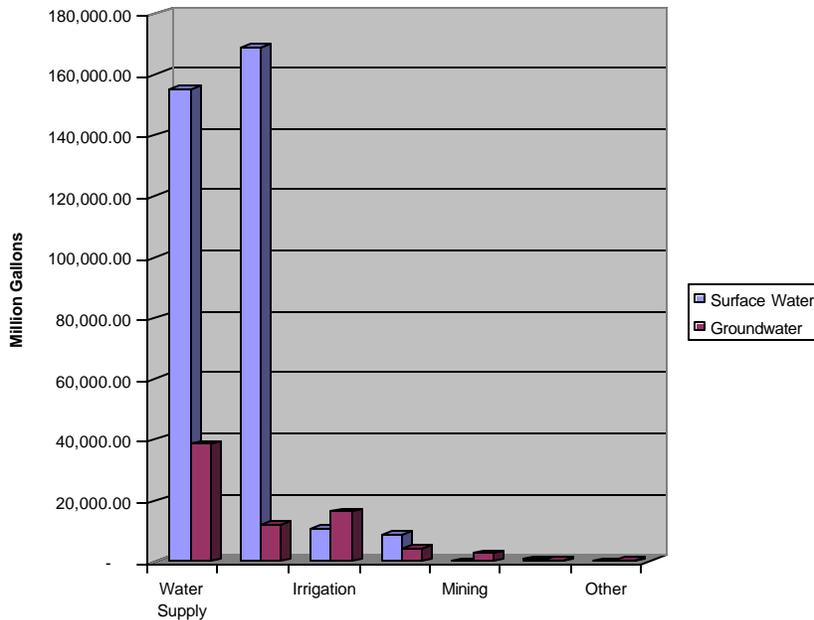


Chart 1

Water Supply

South Carolina has 1,551 defined public water systems, of which 685 are community water systems. The public water systems provide water to 3,450,928 citizens. Water withdrawal for public water supply from 158 reporting suppliers totaled 193,525,290,000 gallons, with 51 surface water systems accounting for 154,975,300,000 gallons and 114 groundwater systems accounting for 38,549,990,000 gallons.

Water Supply By County (in million gallons)

County	Surface Water	Groundwater	Total	Population Served
Abbeville	972.82	0.00	972.82	15,507
Aiken	2,142.50	5,037.95	7,180.45	128,257
Allendale	0.00	306.59	306.59	11,746
Anderson	7,729.36	0.00	7,729.36	175,341
Bamberg	0.00	503.13	503.13	10,617
Barnwell	0.00	979.05	979.05	14,172
Beaufort	8,226.20	4,170.76	12,396.96	131,863
Berkeley	0.00	16.79	16.79	61,597
Calhoun	0.00	157.01	157.01	6,510
Charleston	18,613.93	2,728.41	21,342.34	423,953
Cherokee	2,083.00	0.00	2,083.00	45,640
Chester	1,259.92	0.00	1,259.92	15,877
Chesterfield	1,482.26	0.00	1,482.26	30,693
Clarendon	0.00	559.76	559.76	16,459
Colleton	0.00	870.72	870.72	22,902
Darlington	0.00	2,662.10	2,662.10	54,935
Dillon	0.00	1,668.59	1,668.59	25,255
Dorchester	0.00	138.98	138.98	69,337
Edgefield	1,343.44	0.00	1,343.44	21,670
Fairfield	711.37	29.09	740.46	20,011
Florence	0.00	5,142.98	5,142.98	82,518
Georgetown	1,541.27	1,129.20	2,670.47	57,432
Greenville	25,716.55	0.00	25,716.55	368,165
Greenwood	5,050.95	0.00	5,050.95	50,077
Hampton	0.00	304.83	304.83	11,802
Horry	13,046.94	873.58	13,920.52	206,976
Jasper	0.00	538.22	538.22	12,072
Kershaw	1,537.45	974.77	2,512.22	56,821
Lancaster	4,710.98	0.00	4,710.98	67,235
Laurens	1,570.89	0.00	1,570.89	50,545
Lee	0.00	467.25	467.25	4,963
Lexington	1,677.51	303.94	1,981.45	111,445
Marion	0.00	1,511.44	1,511.44	27,222
Marlboro	811.48	543.20	1,354.68	21,574
McCormick	408.88	0.00	408.88	10,876
Newberry	2,220.22	13.77	2,233.99	24,709
Oconee	3,639.68	0.00	3,639.68	72,182
Orangeburg	2,971.63	483.30	3,454.93	63,475
Pickens	4,536.43	0.00	4,536.43	111,066
Richland	21,568.19	21.79	21,589.98	269,933
Saluda	0	0	0	7,379
Spartanburg	12,511.43	32.40	12,543.83	218,786
Sumter	0.00	5,725.65	5,725.65	84,193
Union	1,455.02	0.00	1,455.02	29,257
Williamsburg	0.00	550.24	550.24	15,711
York	5,435.00	104.50	5,539.50	112,172
Total	154,975.30	38,549.99	193,525.29	3,450,928

Water Supply Source Comparison

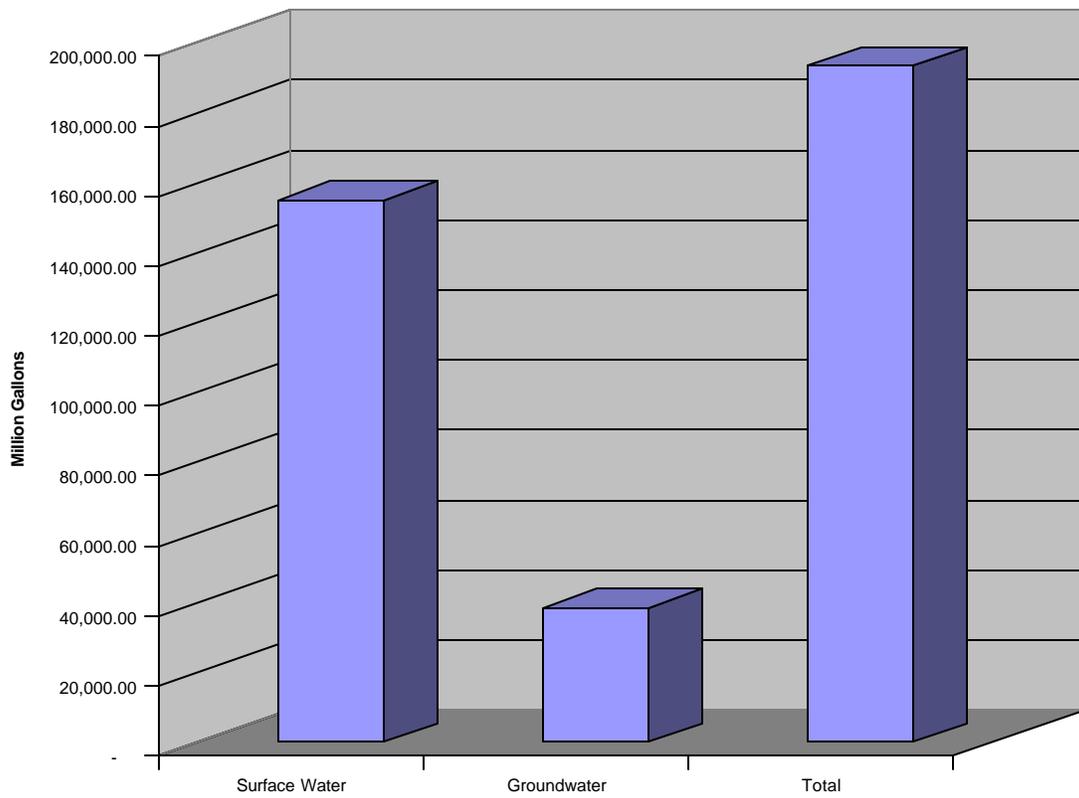


Chart 2

Industrial Use

Water withdrawal for industrial use from 99 reporting industries totaled 180,579,870,000 gallons, with 51 surface water systems accounting for 168,698,760,000 gallons and 64 groundwater systems accounting for 11,881,110,000 gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

Industrial Use By County (in million gallons)

County	Surface Water	Groundwater	Total
Abbeville	110.66	0.00	110.66
Aiken	40,884.09	2,112.72	42,996.81
Allendale	0.00	718.31	718.31
Anderson	59.57	0.00	59.57
Beaufort	0.00	135.95	135.95
Berkeley	3,298.10	791.93	4,090.03
Calhoun	31,654.63	173.8	31,828.43
Charleston	8,778.90	79.81	8,858.71
Cherokee	593.60	0.00	593.60
Chester	188.76	0.82	189.58
Darlington	4,174.44	1,294.45	5,468.89
Dorchester	178.70	787.56	966.26
Florence	10,451.80	721.03	11,172.83
Georgetown	11,537.23	54.36	11,591.59
Greenville	132.50	64.03	196.53
Greenwood	125.40	15.04	140.44
Hampton	0.00	418.82	418.82
Horry	0.00	104.5	104.50
Kershaw	33.21	401.59	434.80
Lancaster	2,469.00	0.00	2,469.00
Lexington	8,197.78	1,015.51	9,213.29
Marion	0.00	36.33	36.33
Marlboro	6,890.50	307.5	7,198.00
Oconee	720.69	0.00	720.69
Orangeburg	111.23	690.32	801.55
Pickens	2,968.12	0.00	2,968.12
Richland	10,935.18	632.05	11,567.23
Saluda	0.00	63.99	63.99
Spartanburg	0.00	2.52	2.52
Sumter	0.00	283.13	283.13
Union	956.49	9.55	966.04
Williamsburg	0.00	965.5	965.50
York	23,248.20	0.00	23,248.20
Total	168,698.78	11,881.12	180,579.90

Industrial Use Source Comparison

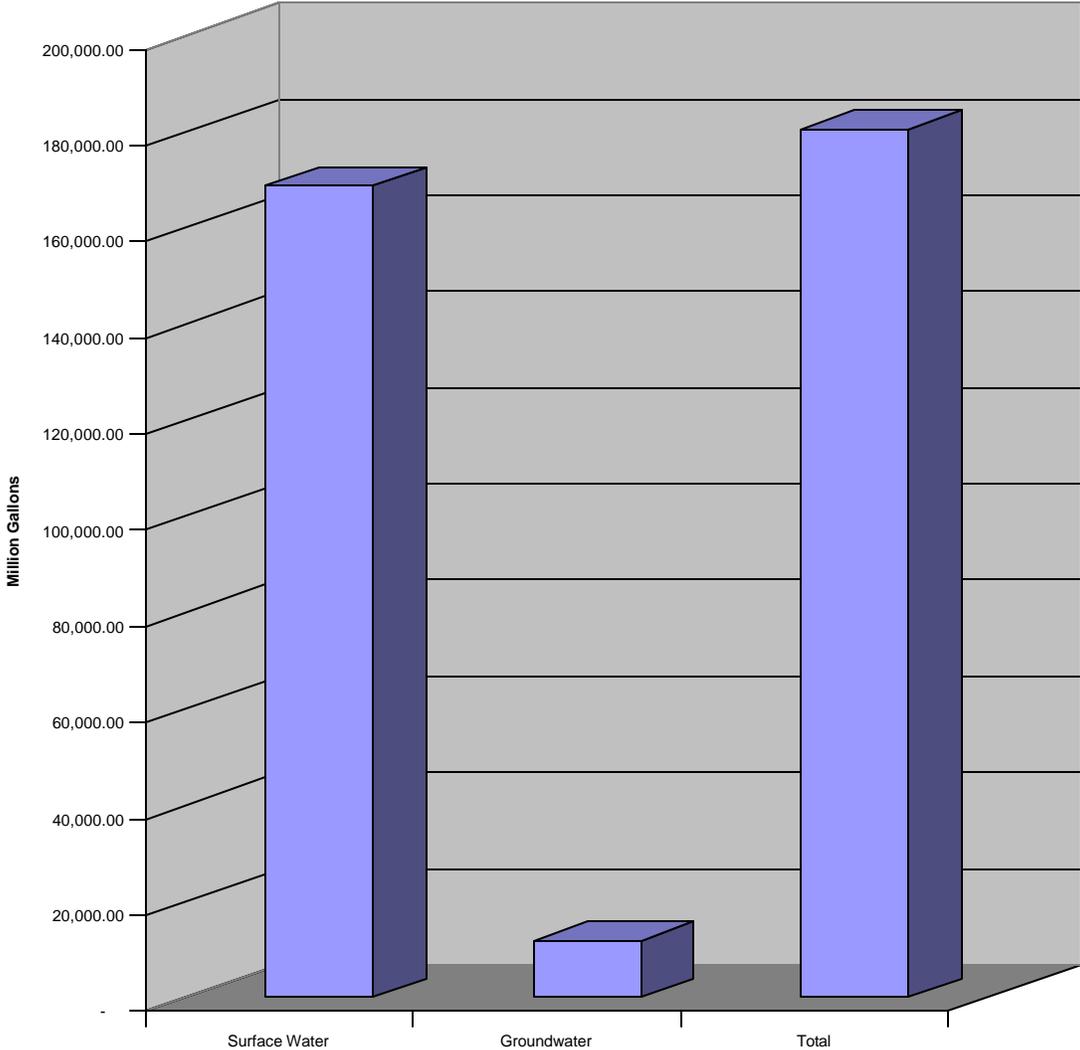


Chart 3

Irrigation Use

Water withdrawal for irrigation use from 203 reporting entities totaled 27,121,140,00 gallons, with 116 surface water systems accounting for 10,707,640,000 gallons and 128 groundwater systems accounting for 16,413,500,000 gallons.

Irrigation Use By County (in million gallons)

County	Surface Water	Groundwater	Total	Irrigated Acreage ⁽¹⁾
Aiken	0.00	207.00	207.00	1340
Allendale	720.00	3,708.32	4,428.32	9350
Bamberg	543.70	526.85	1,070.55	11,585
Barnwell	87.20	53.87	141.07	5075
Beaufort	33.78	734.06	767.84	1950
Berkeley	1,300.00	21.86	1,321.86	
Calhoun	838.45	1,559.23	2,397.68	12,175
Charleston	57.30	0.00	57.30	950
Chester	1.85	0.00	1.85	335
Chesterfield	0.00	225.50	225.50	900
Clarendon	154.00	465.72	619.72	7,525
Colleton	841.50	1,930.89	2,772.39	759
Darlington	236.02	29.00	265.02	2,525
Dillon	0.00	34.90	34.90	304
Edgefield	423.95	43.30	467.25	6,735
Florence	20.74	78.56	99.30	5,100
Georgetown	648.74	0.01	648.75	985
Greenville	88.26	0.00	88.26	102
Greenwood	0.00	1.20	1.20	27
Hampton	89.66	1,408.97	1,498.63	4,715
Horry	54.99	75.52	130.51	5,040
Jasper	0.00	373.20	373.20	1,795
Lee	9.00	36.00	45.00	3,515
Lexington	212.76	692.72	905.48	11,835
Marion	0.00	24.94	24.94	10,599
Marlboro	210.84	256.59	467.43	1,510
Newberry	134.80	37.92	172.72	489
Oconee	317.70	0.00	317.70	2
Orangeburg	1,496.73	2,708.47	4,205.20	29,490
Pickens	10.80	0.00	10.80	250
Richland	23.50	0.00	23.50	1,010
Saluda	944.86	0.00	944.86	4,450
Spartanburg	318.77	0.00	318.77	3,030
Sumter	868.74	1,163.40	2,032.14	10,135
Williamsburg	3.00	0.00	3.00	200
York	16.00	15.50	31.50	285
Total	10,707.64	16,413.50	27,121.14	161,069

(1) Clemson University, Cooperative Extension Service, "2000 South Carolina Irrigation Survey"

Irrigation Use Source Comparison

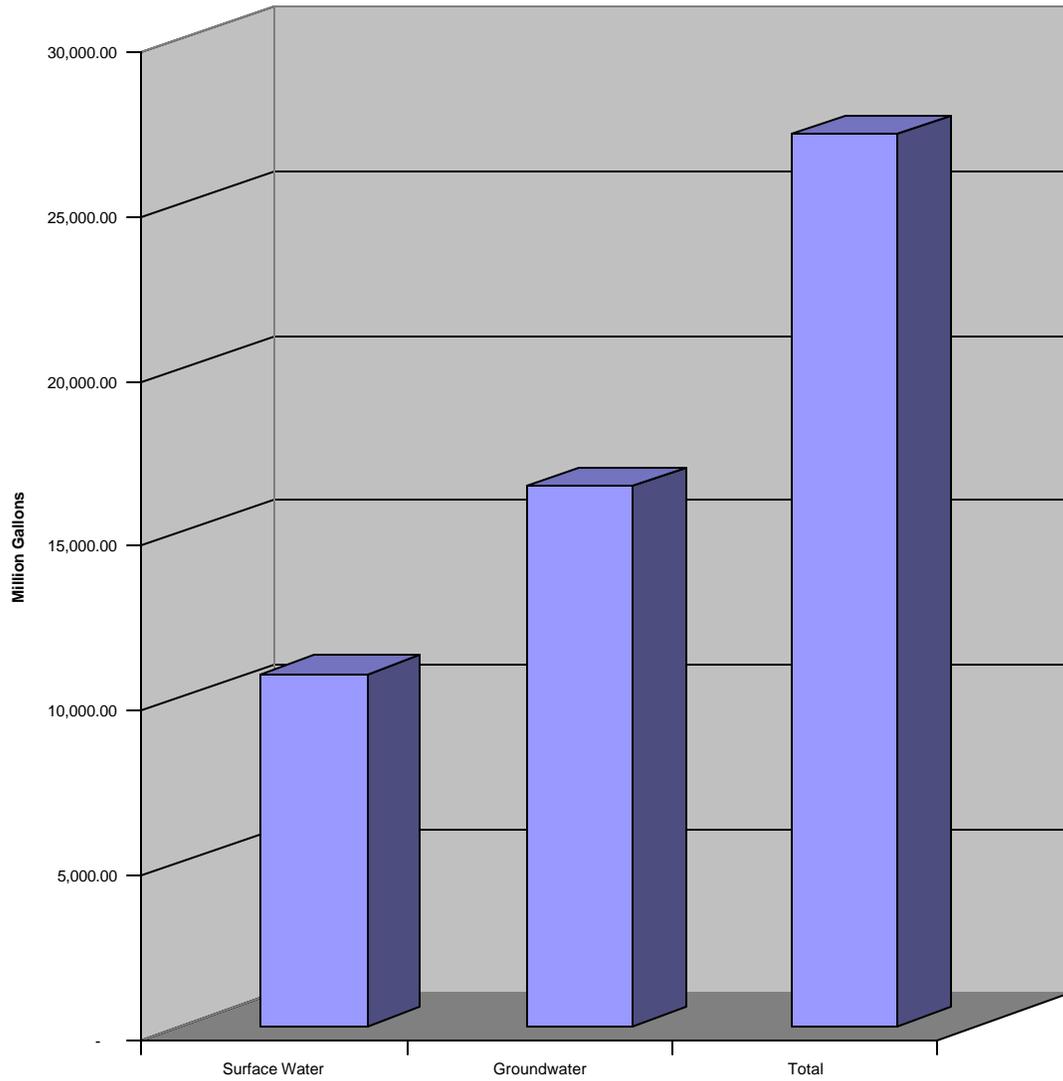


Chart 4

Golf Course Use

South Carolina has 337 public, private and semi-private golf courses. An average of 38,855 paid rounds of golf (per 18 hole course) were played during 2001, generating approximately 11.0 million dollars in admission taxes¹. Water withdrawal from 249 reporting courses for golf course irrigation totaled 13,302,510,000 gallons, with surface water systems accounting for 9,039,340,000 gallons and groundwater systems accounting for 4,263,170,000 gallons.

Golf Course Irrigation (in million gallons)

County	Surface Water	Groundwater	Total
Abbeville	0.00	0.28	0.28
Aiken	326.16	100.17	426.33
Allendale	17.40	0.00	17.40
Anderson	164.82	0.00	164.82
Barnwell	24.50	0.00	24.50
Beaufort	1,016.86	1,772.74	2,789.60
Berkeley	30.00	15.00	45.00
Calhoun	59.80	52.40	112.20
Charleston	263.68	511.61	775.29
Chester	3.80	39.20	43.00
Chesterfield	202.27	0.00	202.27
Clarendon	68.50	13.50	82.00
Colleton	0.00	1.00	1.00
Darlington	93.90	25.00	118.90
Dorchester	0.00	57.50	57.50
Edgefield	7.00	131.00	138.00
Florence	27.00	92.96	119.96
Georgetown	1,008.73	87.79	1,096.52
Greenville	454.23	28.57	482.80
Greenwood	105.67	12.88	118.55
Hampton	0.00	8.70	8.70
Horry	2,807.41	785.34	3,592.75
Kershaw	28.33	23.71	52.04
Lancaster	5.60	15.40	21.00
Laurens	118.41	0.00	118.41
Lexington	284.94	67.00	351.94
Marion	10.00	6.00	16.00
McCormick	38.09	0.00	38.09
Newberry	13.40	8.00	21.40
Oconee	127.64	0.00	127.64
Orangeburg	158.02	14.73	172.75
Pickens	507.03	0.00	507.03
Richland	408.91	76.76	485.67
Saluda	10.46	0.00	10.46
Spartanburg	271.31	3.42	274.73
Sumter	196.60	270.79	467.39
Union	7.00	0.00	7.00
York	171.87	41.75	213.62
Total	9,039.34	4,263.20	13,302.54

(1) South Carolina Department of Parks, Recreation and Tourism, "2000/2001 Economic Impact of Golf in South Carolina."

Golf Course Source Comparison

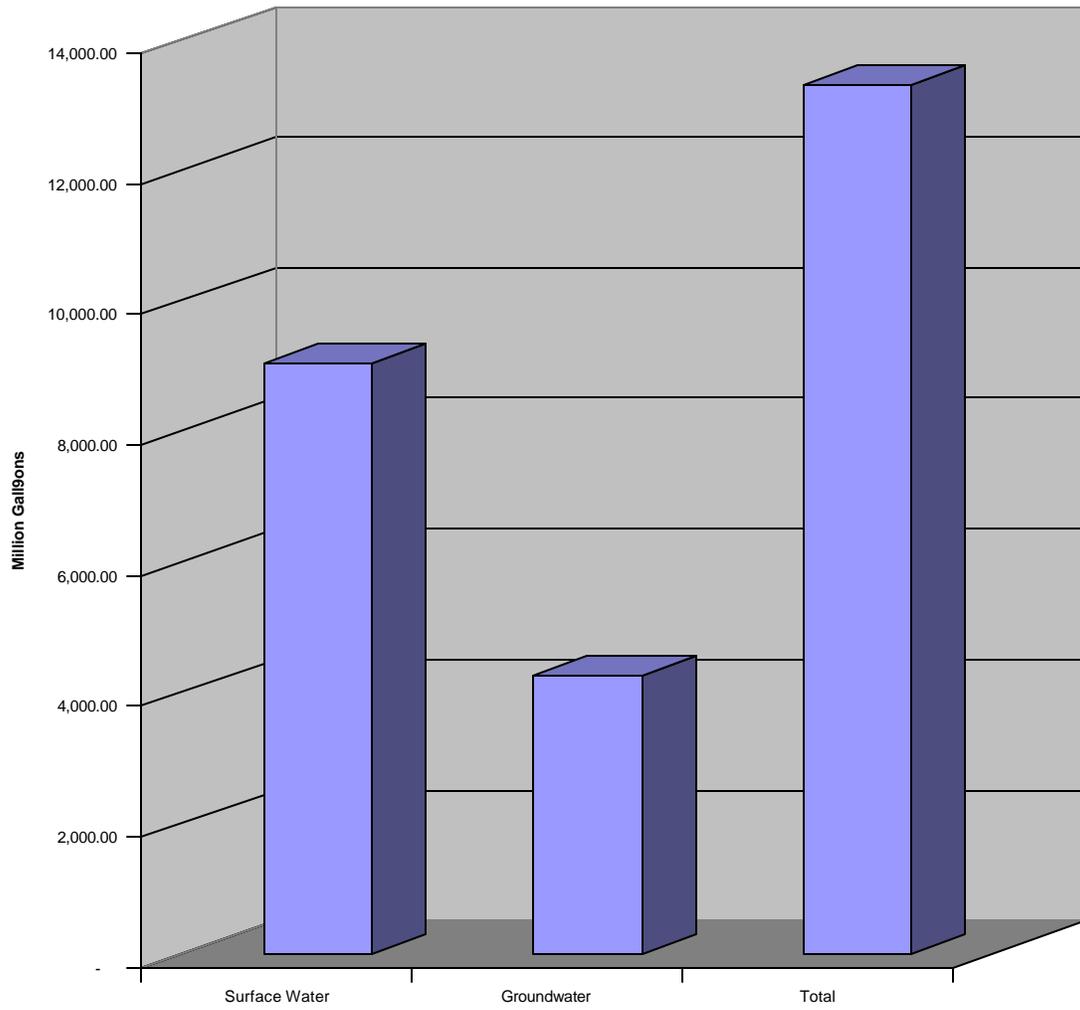


Chart 5

Mining Use

Water withdrawal associated with mining activities at 8 reporting facilities totaled 2,691,750,000 gallons, with 1 surface water system accounting for 109,500,000 gallons and 8 groundwater systems accounting for 2,582,250,000 gallons.

Mining Activity (in million gallons)

County	Surface Water	Groundwater	Total
Aiken	0.00	40.26	40.26
Chesterfield	0.00	44.76	44.76
Lexington	109.50	551.79	661.29
Orangeburg	0.00	1,758.21	1,758.21
Richland	0.00	182.94	182.94
York	0.00	4.29	4.29
Total	109.50	2,582.25	2,691.75

Aquaculture Use

Water withdrawal from 11 reporting aquaculture farming facilities totaled 865,170,000 gallons, with 8 surface water systems accounting for 701,290,000 gallons and 7 groundwater systems accounting for 163,880,000 gallons.

Aquaculture (in million gallons)

County	Surface Water	Groundwater	Total
Beaufort	76.21	11.60	87.81
Berkeley	72.98	16.08	89.06
Charleston	439.20	0.00	439.20
Dillon	0.00	46.9	46.90
Hampton	0.00	72.30	72.30
Jasper	0.00	7.00	7.00
Richland	81.80	10.00	91.80
Spartanburg	31.10	0.00	31.10
Total	701.29	163.88	865.17

Other Use

Water withdrawal for other, non-specific use from 3 reporting facilities totaled 204,840,000 gallons, with groundwater accounting for all reported use.

Other Use (in million gallons)

County	Surface Water	Groundwater	Total
Beaufort	0.00	117.50	117.50
Horry	0.00	71.34	71.34
Jasper	0.00	16.00	16.00
Total	0.00	204.84	204.84

Mining Use Source Comparison

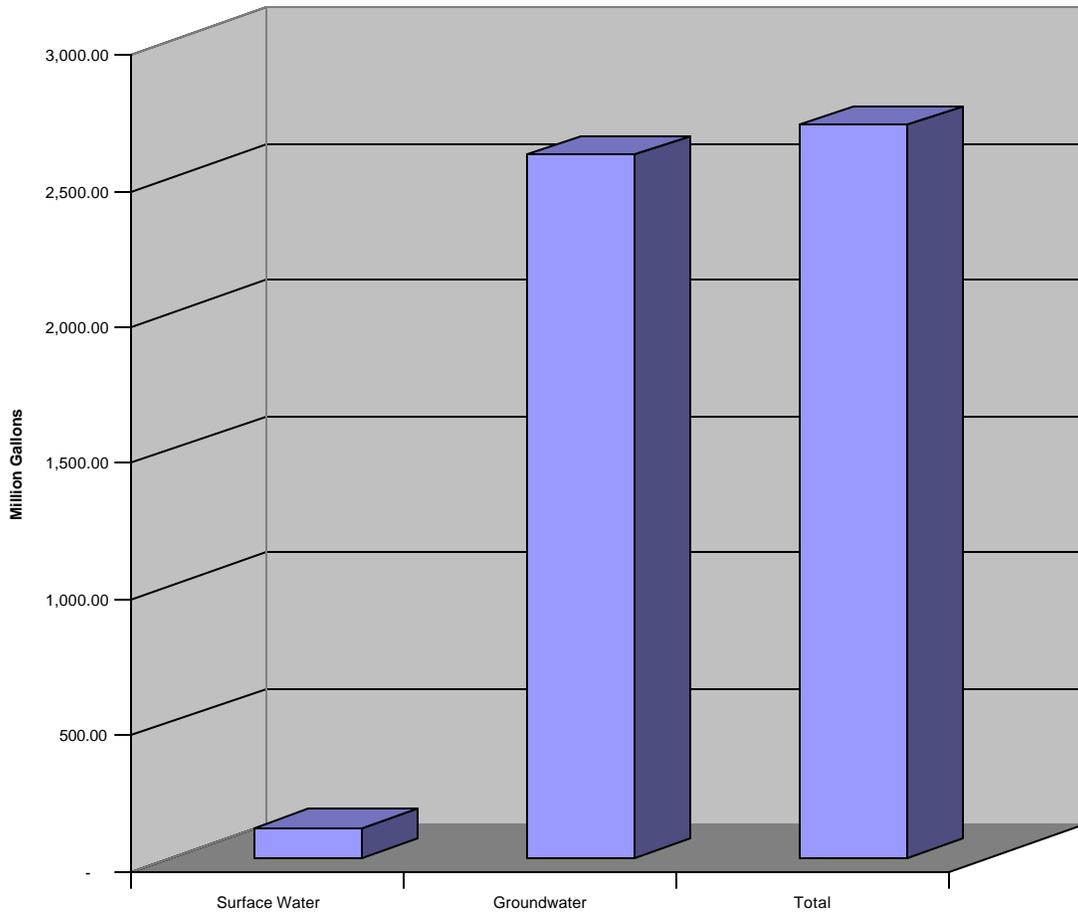


Chart 6

Aquaculture Source Comparison

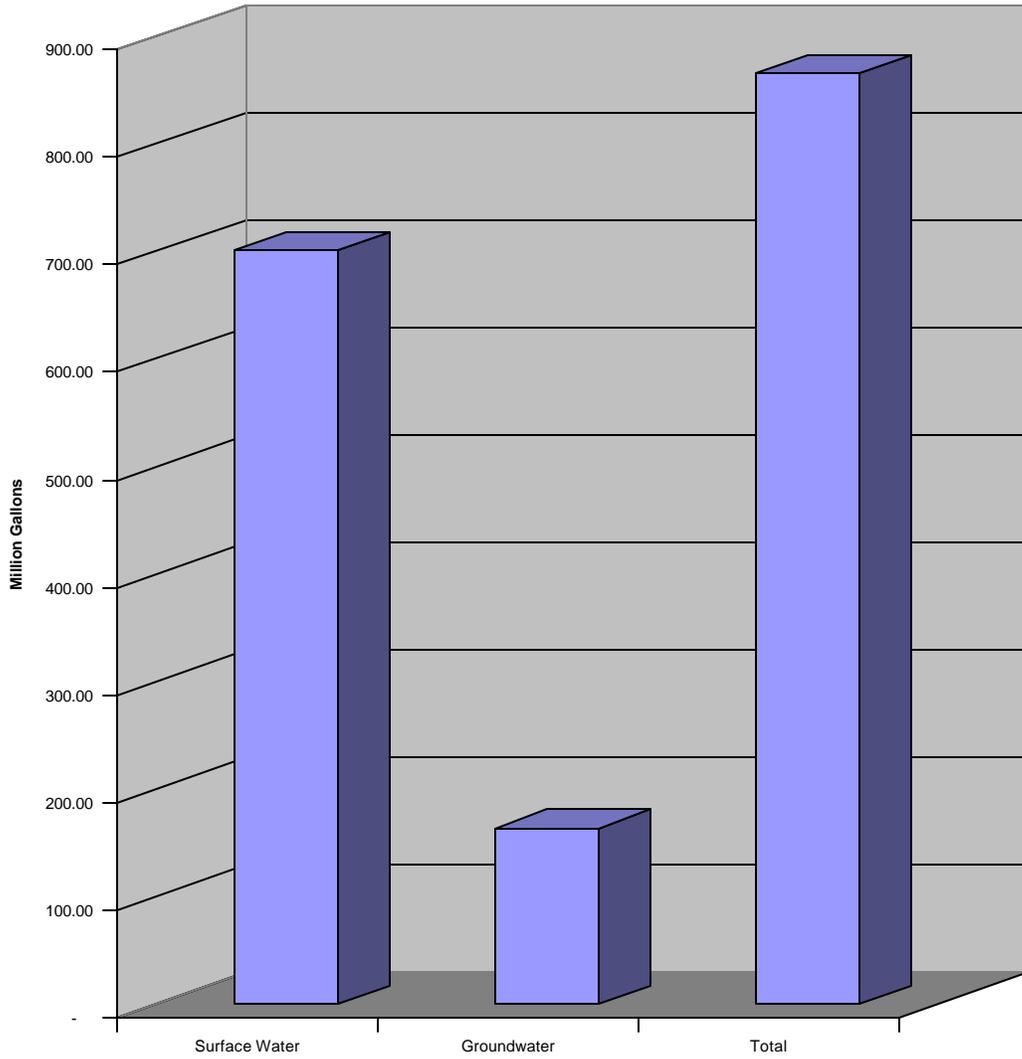


Chart 7

Other Use Source Comparison

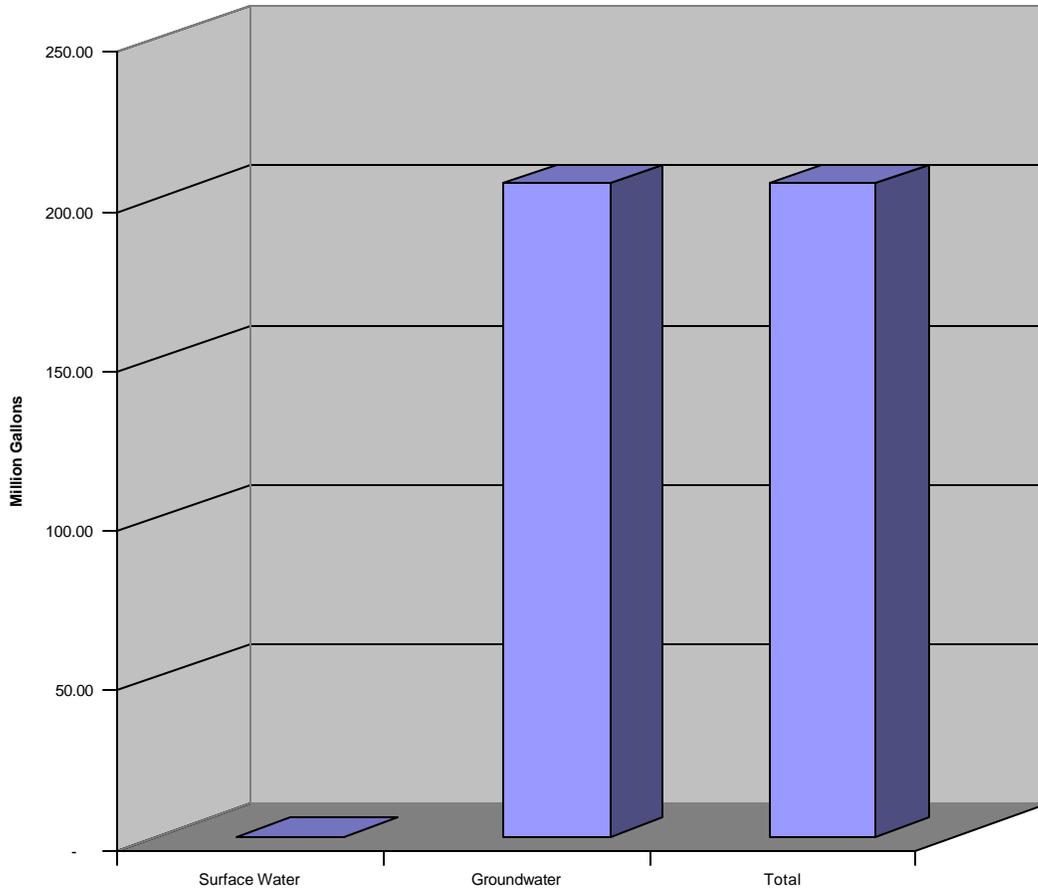


Chart 8

*2001 Surface Water Use by County
(in million gallons)*

County	Hydro-electric	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	21,269.00	0.00	972.82	110.66	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	47,977.00	2,142.50	40,884.09	0.00	326.16	0.00	0.00	0.00
Allendale	0.00	0.00	0.00	0.00	720.00	17.40	0.00	0.00	0.00
Anderson	94.8	20,092.00	7,729.36	59.57	0.00	164.82	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	0.00	543.70	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	0.00	87.20	24.50	0.00	0.00	0.00
Beaufort	0.00	0.00	8,226.20	0.00	33.78	1,016.86	0.00	76.21	0.00
Berkeley	1,183,325.20	191,699.31	0.00	3,298.10	1,300.00	30.00	0.00	72.98	0.00
Calhoun	0.00	0.00	0.00	31,654.63	838.45	59.80	0.00	0.00	0.00
Charleston	0.00	0.00	18,613.93	8,778.90	57.30	263.68	0.00	439.20	0.00
Cherokee	233,120.00	0.00	2,083.00	593.60	0.00	0.00	0.00	0.00	0.00
Chester	861,004.00	0.00	1,259.92	188.76	1.85	3.80	0.00	0.00	0.00
Chesterfield	0.00	0.00	1,482.26	0.00	0.00	202.27	0.00	0.00	0.00
Clarendon	0.00	0.00	0.00	0.00	154.00	68.50	0.00	0.00	0.00
Colleton	0.00	1,285.15	0.00	0.00	841.50	0.00	0.00	0.00	0.00
Darlington	0.00	3,079.40	0.00	4,174.44	236.02	93.90	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dorchester	0.00	0.00	0.00	178.70	0.00	0.00	0.00	0.00	0.00
Edgefield	842,951.00	0.00	1,343.44	0.00	423.95	7.00	0.00	0.00	0.00
Fairfield	2,100,346.50	190,091.18	711.37	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	0.00	10,451.80	20.74	27.00	0.00	0.00	0.00
Georgetown	0.00	4,933.56	1,541.27	11,537.23	648.74	1,008.73	0.00	0.00	0.00
Greenville	0.00	0.00	25,716.55	132.50	88.26	454.23	0.00	0.00	0.00
Greenwood	161,102.00	47.10	5,050.95	125.40	0.00	105.67	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	0.00	89.66	0.00	0.00	0.00	0.00
Horry	0.00	39,164.28	13,046.94	0.00	54.99	2,807.41	0.00	0.00	0.00
Jasper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kershaw	467,607.00	0.00	1,537.45	33.21	0.00	28.33	0.00	0.00	0.00
Lancaster	389,952.00	0.00	4,710.98	2,469.00	0.00	5.60	0.00	0.00	0.00
Laurens	54.20	0.00	1,570.89	0.00	0.00	118.41	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00
Lexington	113,001.20	46,735.55	1,677.51	8,197.78	212.76	284.94	109.50	0.00	0.00
Marion	687,144.16	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
Marlboro	0.00	0.00	811.48	6,890.50	210.84	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	408.88	0.00	0.00	38.09	0.00	0.00	0.00
Newberry	0.00	0.00	2,220.22	0.00	134.80	13.40	0.00	0.00	0.00
Oconee	653,785.40	883,016.00	3,639.68	720.69	317.70	127.64	0.00	0.00	0.00
Orangeburg	0.00	0.00	2,971.63	111.23	1,496.73	158.02	0.00	0.00	0.00
Pickens	1,861,522.67	0.00	4,536.43	2,968.12	10.80	507.03	0.00	0.00	0.00
Richland	318,991.90	157,302.10	21,568.19	10,935.18	23.50	408.91	0.00	81.80	0.00
Saluda	0.00	0.00	0.00	0.00	944.86	10.46	0.00	0.00	0.00
Spartanburg	3,849.30	0.00	12,511.43	0.00	318.77	271.31	0.00	31.10	0.00
Sumter	0.00	0.00	0.00	0.00	868.74	196.60	0.00	0.00	0.00
Union	214,535.10	0.00	1,455.02	956.49	0.00	7.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00
York	369,756.00	37,553.00	5,435.00	23,248.20	16.00	171.87	0.00	0.00	0.00
Total 2001	9,796,267.27	1,622,975.63	154,975.30	168,698.78	10,707.64	9,039.34	109.50	701.29	0.00
Total 2000	10,281,681.33	2,238,382.15	115,340.83	145,761.53	1,797.65	4,625.47	438.63	0.00	0.00

Table 1

*2001 Groundwater Use by County
(in million gallons)*

County	Hydro-electric	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00
Aiken	0.00	0.00	5,037.95	2,112.72	207.00	100.17	40.26	0.00	0.00
Allendale	0.00	0.00	306.59	718.31	3,708.32	0.00	0.00	0.00	0.00
Anderson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bamberg	0.00	0.00	503.13	0.00	526.85	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	979.05	0.00	53.87	0.00	0.00	0.00	0.00
Beaufort	0.00	0.00	4,170.76	135.95	734.06	1,772.74	0.00	11.60	117.50
Berkeley	0.64	4.92	16.79	791.93	21.86	15.00	0.00	16.08	0.00
Calhoun	0.00	0.00	157.01	173.80	1,559.23	52.40	0.00	0.00	0.00
Charleston	0.00	0.00	2,728.41	79.81	0.00	511.61	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chester	0.00	0.00	0.00	0.82	0.00	39.20	0.00	0.00	0.00
Chesterfield	0.00	0.00	77.19	0.00	225.50	0.00	44.76	0.00	0.00
Clarendon	0.00	0.00	559.76	0.00	465.72	13.50	0.00	0.00	0.00
Colleton	0.00	0.00	870.72	0.00	1,930.89	1.00	0.00	0.00	0.00
Darlington	0.00	432.84	2,662.10	1,294.45	29.00	25.00	0.00	0.00	0.00
Dillon	0.00	0.00	1,668.59	0.00	34.90	0.00	0.00	46.90	0.00
Dorchester	0.00	0.00	138.98	787.56	0.00	57.50	0.00	0.00	0.00
Edgefield	0.00	0.00	0.00	0.00	43.30	131.00	0.00	0.00	0.00
Fairfield	0.00	0.00	29.09	0.00	0.00	0.00	13.84	0.00	0.00
Florence	0.00	0.00	5,142.98	721.03	43.30	92.96	0.00	0.00	0.00
Georgetown	0.00	0.00	1,129.20	54.36	0.01	87.79	0.00	0.00	0.00
Greenville	0.00	0.00	0.00	64.03	0.00	28.57	0.00	0.00	0.00
Greenwood	0.00	0.00	0.00	15.04	1.20	12.88	0.00	0.00	0.00
Hampton	0.00	0.00	304.83	418.82	1,408.97	8.70	0.00	72.30	0.00
Horry	0.00	0.00	873.58	104.50	75.52	785.34	0.00	0.00	71.34
Jasper	0.00	0.00	538.22	0.00	373.20	0.00	0.00	7.00	16.00
Kershaw	0.00	0.00	974.77	401.59	0.00	23.71	0.00	0.00	0.00
Lancaster	0.00	0.00	0.00	0.00	0.00	15.40	0.00	0.00	0.00
Laurens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	467.25	0.00	36.00	0.00	0.00	0.00	0.00
Lexington	0.00	0.00	303.94	1,015.51	692.72	67.00	551.79	0.00	0.00
Marion	0.00	0.00	1,511.44	36.33	24.94	6.00	0.00	0.00	0.00
Marlboro	0.00	0.00	543.20	307.50	256.59	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Newberry	0.00	0.00	13.77	0.00	37.92	8.00	0.00	0.00	0.00
Oconee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	1,354.81	483.30	690.32	2,708.47	14.73	1,758.21	0.00	0.00
Pickens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Richland	0.00	216.68	21.79	632.05	0.00	76.76	182.94	10.00	0.00
Saluda	0.00	0.00	0.00	63.99	0.00	0.00	0.00	0.00	0.00
Spartanburg	0.00	0.00	32.40	2.52	0.00	3.42	0.00	0.00	0.00
Sumter	0.00	0.00	5,725.65	283.13	1,163.40	270.79	0.00	0.00	0.00
Union	0.00	0.00	0.00	9.55	0.00	0.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	550.24	965.50	0.00	0.00	0.00	0.00	0.00
York	0.00	0.00	104.50	0.00	15.50	41.75	4.29	0.00	0.00
Total 2001	0.64	2,009.25	38,549.99	11,881.12	16,413.50	4,263.20	2,582.25	163.88	204.84
Total 2000	0.58	2,126.22	32,924.38	11,701.80	1,385.08	2,180.88	2,617.45	13.67	223.61

Table 2

BUREAU OF WATER

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report

2002 Summary



September 2003



www.scdhec.gov/water



South Carolina Water Use Report 2002 Summary

September 2003

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

**Bureau of Water
Rob Devlin, Manager
803-898-3798**

**Alton C. Boozer, Chief
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Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina Surface Water Withdrawal and Reporting Act, 49-4-10 et. seq., and the South Carolina Groundwater Use and Reporting Act, 49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to DHEC.

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Introduction

For generations, South Carolinians have considered the available fresh water supply as clean, abundant, easily attainable and, for all practical purposes, inexhaustible. Today, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and other uses in South Carolina. Continued development in the state has placed increasing demand on water supplies. During 2002, South Carolina was experiencing a fifth consecutive year of deficient rainfall, which placed extreme pressure on groundwater systems and surface water bodies across the State. With limited and sporadic rainfall events, groundwater systems and surface water bodies under continuous natural discharge and human use (pumpage) showed steady and, at times, drastic water level declines with numerous waterways reaching record low flow conditions. Due to the low flow conditions, excursions of saltwater inland along coastal waterways threatened some surface water intakes. Some homeowners relying on shallow water wells were forced to drill deeper wells or seek alternate sources of water supply.

In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that the groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable and to provide and maintain conditions which are conducive to the development and use of (all) water resources.

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2002. Water use data were collected by annual reporting of water use by permitted and registered users. Water use is reported in **million gallons** per month. The Department maintains the water use databases utilized in this report.

Terminology

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth’s surface such as a stream, lake, or reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent withdrawal over time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy).

Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from the natural hydrological system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation.

South Carolina Climate

The climate of South Carolina is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. Average temperature varies from the mid-50's in the mountains to low-60's along the coast. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990 and 1993 or approximately every eight (8) years. Until the present drought condition, the most severe drought occurred in 1986. Figure 1 presents precipitation data for the years 1997 through 2000.

(Climate data interpreted from the South Carolina Department of Natural Resources, State Climatologist)

South Carolina Precipitation Data 1997 – 2000

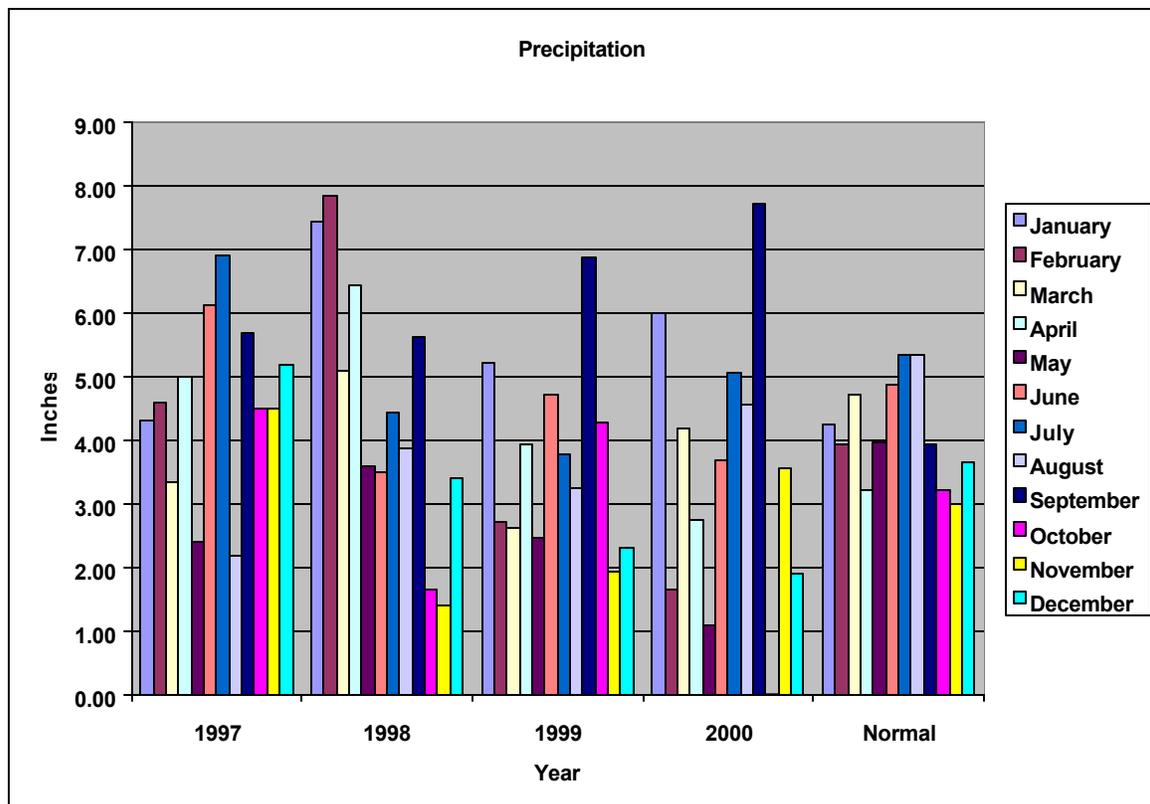


Figure 1 (adapted from National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Geography and Hydrogeology

South Carolina has a varied and diverse ecological and natural beauty covering a total of 31,189 square miles, with approximately 30,111 square miles land area and approximately 1,078 square miles inland or coastal waterways. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (Figure 2). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina. The geology of South Carolina is generally characterized as crystalline rocks of the Blue Ridge and Piedmont physiographic regions and unconsolidated sediments of the Coastal Plain (Figure 3).

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties (Figure 2). Hydrogeology of the Blue Ridge is characterized by clayey to sandy saprolite, ranging in depth from several feet to tens of feet, overlying crystalline rock. The saprolite typically exhibits high porosity and low permeability resultant from relatively high clay content. The saprolite generally grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Differences in lithology of parent material and degrees of metamorphism and tectonic histories directly affect the hydraulic properties and characteristics of both units.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line (Figure 2). Hydrogeology of the Piedmont is developed similarly to that of the Blue Ridge, but the diminished relief allows for greater saprolite development.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the *Fall Line* east of and to the Atlantic Ocean (Figure 2). Hydrogeology of the Coastal Plain is characterized by aquifers developed in layers of sands and silts or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The hydraulic characteristics of the Coastal Plain aquifers are determined by composition, thickness, areal extent and relative distance from the outcrop location. A generalized cross-section for the Coastal Plain aquifers is presented as Figure 4.

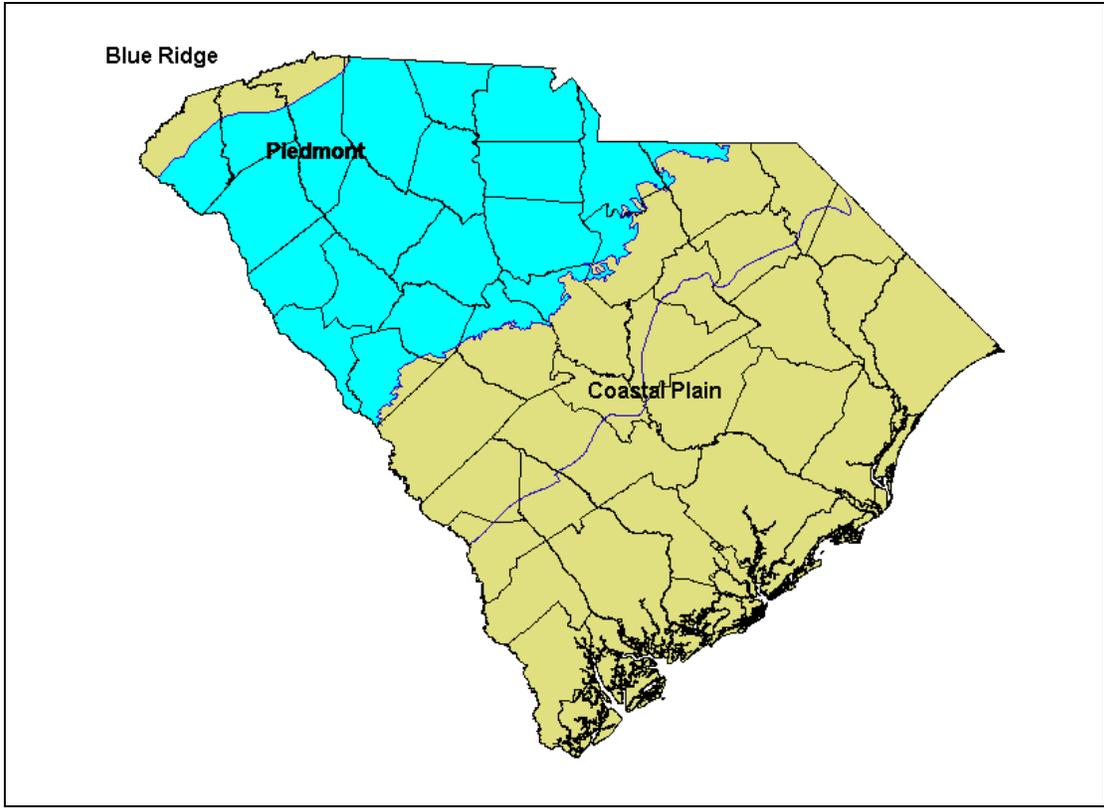


Figure 2 South Carolina Physiographic Provinces

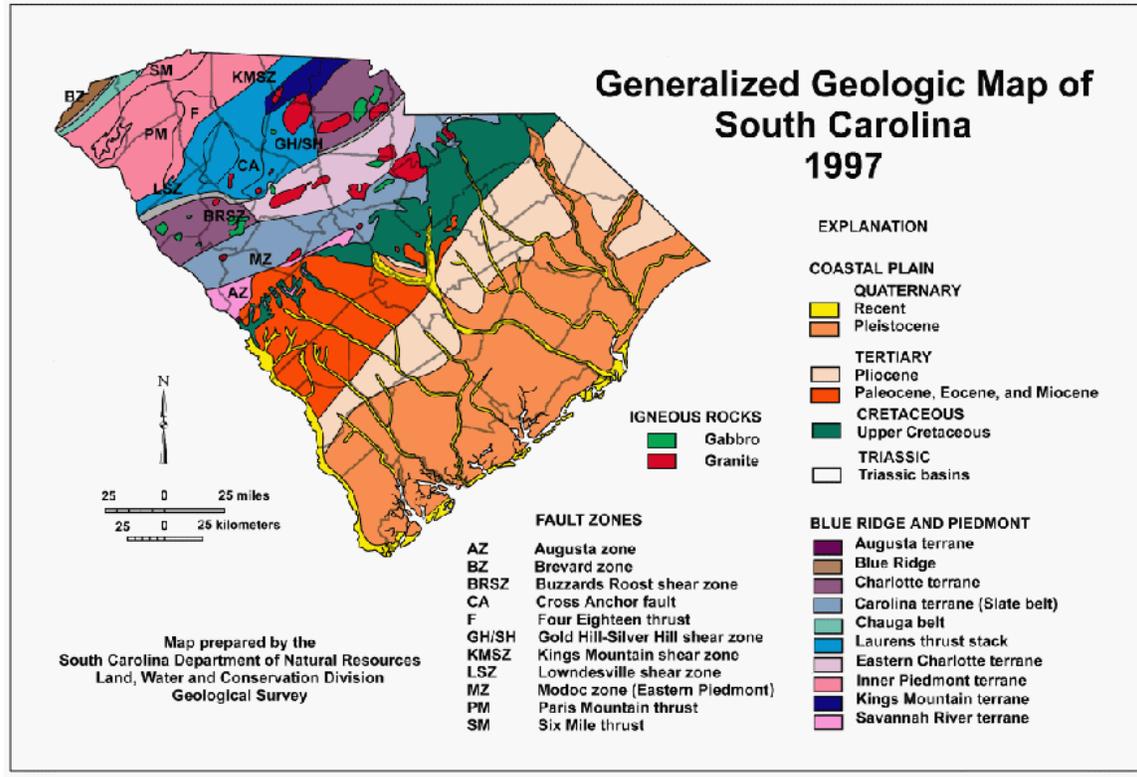


Figure 3 South Carolina Geology

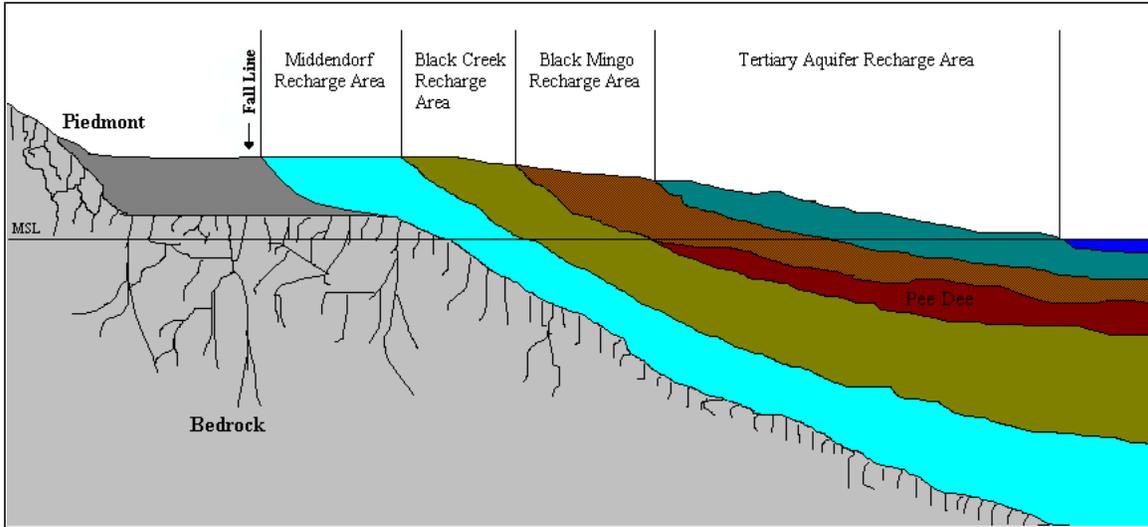


Figure 4 Generalized Cross-Section

Demographics

According to the 2000 Census, South Carolina's estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities. South Carolina has approximately 25,000 farms, occupying 4,588,000 acres (7,170 square miles). Of this, approximately 2,500,000 acres (3,905 square miles) are cropland ⁽¹⁾. Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area ⁽²⁾. South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2000) totaled 90,079 million kilowatt hours ⁽³⁾.

(Source: (1) 1997 Census of Agriculture, Volume 1 Geographic Area Series, "Table 1. County Summary Highlights: 1997."

(2) S.C. Department of Commerce, 2000/2001 "South Carolina Industrial Directory."

(3) S.C. Energy Office "2001 South Carolina Energy Use Profile."

Total Reported Water Use

Total water use reported for 2002 was more than 14.3 trillion gallons (14,310,804,610,000) from 848 reporting facilities. Surface water withdrawal from 481 facilities accounted for approximately 14.2 trillion gallons (14,227,715,360,000), approximately 99.42%. Groundwater withdrawal from 529 reporting facilities accounted for approximately 83 billion gallons (83,089,250,000) or approximately 0.58%.

**Total Reported Water Use
By Source (in million gallons)**

Surface Water	Groundwater	Total
14,227,715.36	83,089.25	14,310,804.61

**Total Reported Water Use
By Category (in million gallons)**

Water Use	Surface Water	Groundwater	Total
Hydroelectric	11,415,080.84	0.60	11,415,081.44
Thermoelectric	2,464,807.02	2,235.30	2,467,042.32
Water Supply	169,098.20	43,304.59	212,402.79
Industrial	155,341.26	11,710.08	167,051.34
Irrigation	10,988.74	18,679.65	29,668.39
Golf Course	9,451.50	4,571.42	14,022.92
Mining	863.24	2,282.00	3,145.24
Aquaculture	2,084.56	199.39	2,283.95
Other	0.00	106.22	106.22
Total	14,227,715.36	83,089.25	14,310,804.61

Water Use in Power Production

According to the 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

Hydroelectric Water Use

Hydroelectric facilities employ energy from flowing water to generate electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river) or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 33 hydroelectric sources accounted for approximately 11.4 trillion gallons (11,415,081,440,000), approximately 74.54% of reported water use for power production and 76.84% of total reported water use for the year.

Hydroelectric (in million gallons)

County	Surface Water	Groundwater	Total Use
Abbeville	23,436.00	0.00	23,436.00
Anderson	131.20	0.00	131.20
Berkeley	1,181,662.79	0.60	1,181,663.39
Cherokee	266,526.00	0.00	266,526.00
Chester	1,079,384.00	0.00	1,079,384.00
Edgefield	754,016.80	0.00	754,016.80
Fairfield	2,300,573.00	0.00	2,300,573.00
Greenville	3,600.00	0.00	3,600.00
Greenwood	220,651.00	0.00	220,651.00
Kershaw	629,127.00	0.00	629,127.00
Lancaster	521,147.00	0.00	521,147.00
Laurens	77.83	0.00	77.83
Lexington	203,390.20	0.00	203,390.20
Oconee	711,874.60	0.00	711,874.60
Pickens	2,537,378.22	0.00	2,537,378.22
Richland	355,204.50	0.00	355,204.50
Spartanburg	2,331.90	0.00	2,331.90
Union	272,805.80	0.00	272,805.80
York	351,763.00	0.00	351,763.00
Total	11,415,080.84	0.60	11,415,081.44

Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 18 thermoelectric sources accounted for more than 2.5 trillion gallons (2,467,041,530,000), approximately 17.77% of reported water use for power production and 17.24% of total reported water use for the year.

Thermoelectric (in million gallons)

County	Surface Water	Groundwater	Total Use
Aiken	50,184.00	0.00	50,184.00
Anderson	19,212.09	0.00	19,212.09
Berkeley	185,662.02	9.84	185,671.86
Colleton	1,149.54	0.00	1,149.54
Darlington	285.33	432.84	718.17
Fairfield	308,412.22	0.00	308,412.22
Georgetown	4,046.44	0.00	4,046.44
Greenwood	67.90	0.00	67.90
Horry	38,501.00	0.00	38,501.00
Lexington	42,215.90	0.00	42,215.90
Oconee	1,616,615.00	0.00	1,616,615.00
Orangeburg	0.00	1,792.62	1,792.62
Richland	157,525.60	0.00	157,525.60
York	40,930.00	0.00	40,930.00
Total	2,464,807.04	2,235.30	2,467,042.34

**Total Reported Water Use
(excluding power production)**

During 2002, reported water use (excluding power production) totaled more than 428 billion gallons (428,177,630,000), with surface water withdrawal accounting for 347,716,830,000 gallons or approximately 81.21% and groundwater withdrawal accounting for 80,460,800,000 gallons or approximately 18.79%.

**Total Reported Water Use
By Category
(excluding Power Generation)
(in million gallons)**

Water Use	Surface Water	Groundwater	Total
Water Supply	169,098.20	43,304.59	212,402.79
Irrigation	10,988.74	18,665.01	29,653.75
Industrial	155,230.60	11,710.08	166,940.68
Golf Course	9,451.49	4,178.87	13,630.36
Mining	2,084.56	2,296.64	4,381.20
Aquaculture	863.24	199.39	1,062.63
Other	0.00	106.22	106.22
Total	347,716.83	80,460.80	428,177.63

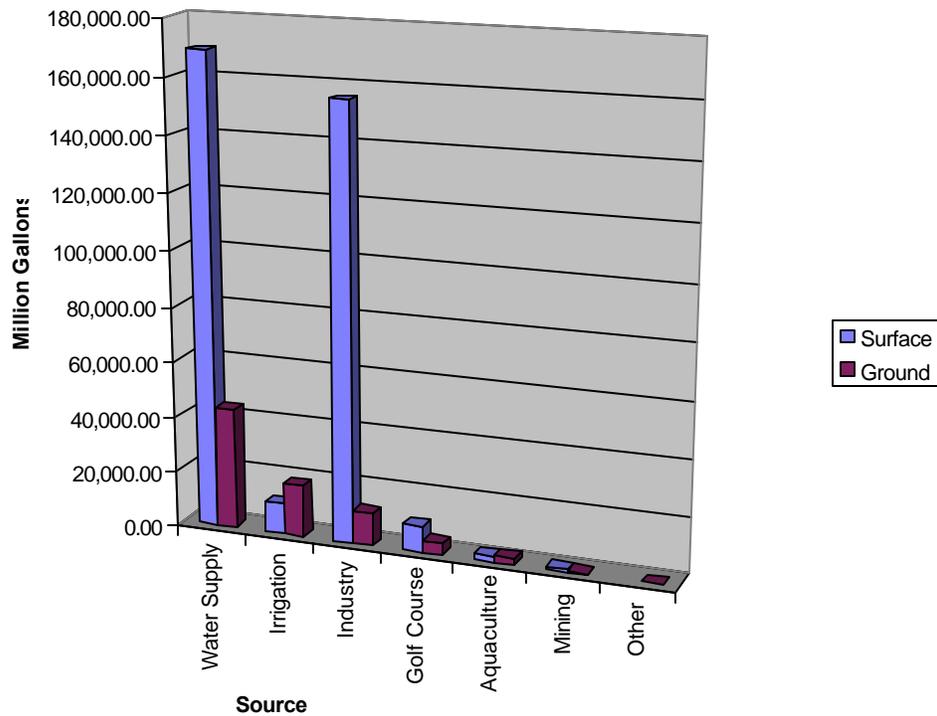


Chart 1

Water Supply

South Carolina has 1,551 defined public water systems, of which 685 are community water systems. The public water systems provide water to 3,450,928 citizens. Water withdrawal for public water supply from 237 reporting suppliers totaled 212,412,860,000 gallons, with 56 surface water systems accounting for 169,108,210,000 gallons and 181 groundwater systems accounting for 43,304,590,000 gallons.

Water Supply By County (in million gallons)

County	Surface Water	Groundwater	Total	Population Served
Abbeville	1,100.85	1.70	1,102.55	15,507.00
Aiken	2,217.40	4,940.86	7,158.26	128,257.00
Allendale	0.00	1,252.50	1,252.50	11,746.00
Anderson	7,862.45	0.00	7,862.45	175,341.00
Bamberg	0.00	505.70	505.70	10,617.00
Barnwell	0.00	846.70	846.70	14,172.00
Beaufort	7,986.24	4,300.70	12,286.94	131,863.00
Berkeley	4,773.00	352.44	5,125.44	61,597.00
Calhoun	0.00	261.87	261.87	6,510.00
Charleston	18,949.00	3,607.18	22,556.18	423,953.00
Cherokee	4,177.33	0.00	4,177.33	45,640.00
Chester	1,271.20	0.00	1,271.20	15,877.00
Chesterfield	1,211.40	462.61	1,674.01	30,693.00
Clarendon	0.00	592.97	592.97	16,459.00
Colleton	0.00	832.74	832.74	22,902.00
Darlington	0.00	2,787.41	2,787.41	54,935.00
Dillon	0.00	1,762.42	1,762.42	25,255.00
Dorchester	0.00	633.97	633.97	69,337.00
Edgefield	1,428.16	0.00	1,428.16	21,670.00
Fairfield	742.45	81.12	823.57	20,011.00
Florence	0.00	5,291.61	5,291.61	82,518.00
Georgetown	1,783.10	1,119.86	2,902.96	57,432.00
Greenville	25,512.00	43.29	25,555.29	368,165.00
Greenwood	4,850.47	1.39	4,851.86	50,077.00
Hampton	0.00	537.64	537.64	11,802.00
Horry	13,379.24	807.41	14,186.65	206,976.00
Jasper	0.00	538.13	538.13	12,072.00
Kershaw	2,520.87	930.01	3,450.88	56,821.00
Lancaster	7,259.88	0.00	7,259.88	67,235.00
Laurens	1,677.10	0.00	1,677.10	50,545.00
Lee	0.00	545.80	545.80	4,963.00
Lexington	5,293.53	357.82	5,651.35	111,445.00
Marion	0.00	1,379.58	1,379.58	27,222.00
Marlboro	595.98	674.18	1,270.16	21,574.00
McCormick	781.13	0.00	781.13	10,876.00
Newberry	2,106.28	39.28	2,145.56	24,709.00
Oconee	2,992.73	0.00	2,992.73	72,182.00
Orangeburg	2,930.00	659.20	3,589.20	63,475.00
Pickens	3,868.68	0.00	3,868.68	111,066.00
Richland	21,095.30	324.62	21,419.92	269,933.00
Saluda	0.00	102.00	102.00	7,379.00
Spartanburg	14,710.13	37.60	14,747.73	218,786.00
Sumter	0.00	5,978.50	5,978.50	84,193.00
Union	1,403.31	0.00	1,403.31	29,257.00
Williamsburg	0.00	613.04	613.04	15,711.00
York	4,629.00	100.80	4,729.80	112,172.00
Total	169,108.21	43,304.65	212,412.86	3,450,928.00

Water Supply Source Comparisons

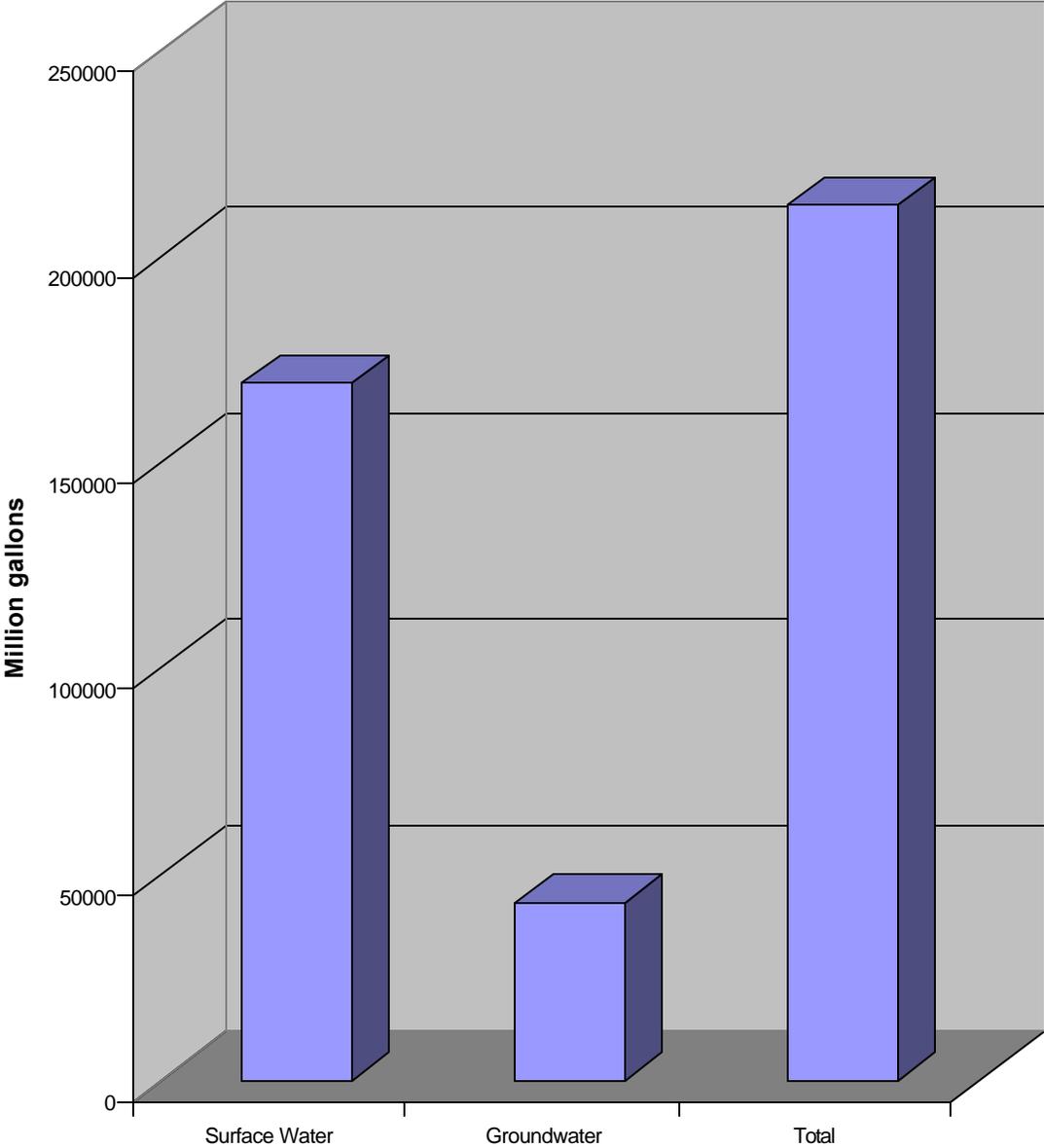


Chart 2

Industrial Use

Water withdrawal for industrial use from 120 reporting industries totaled 166,940,720,000 gallons, with 52 surface water systems accounting for 155,230,620,000 gallons and 68 groundwater systems accounting for 11,710,100,000 gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

**Industrial Use
By County
(in million gallons)**

County	Surface Water	Groundwater	Total
Abbeville	0.00	0.00	0.00
Aiken	19,923.33	1,602.41	21,525.74
Allendale	0.00	792.80	792.80
Anderson	46.28	0.00	46.28
Beaufort	0.00	118.05	118.05
Berkeley	3,221.31	1,167.11	4,388.42
Calhoun	31,879.00	177.50	32,056.50
Charleston	10,244.70	33.87	10,278.57
Cherokee	540.20	0.00	540.20
Chester	135.58	0.66	136.24
Darlington	8,034.80	1,555.56	9,590.36
Dorchester	199.38	826.96	1,026.34
Florence	9,214.30	778.17	9,992.47
Georgetown	12,342.78	17.64	12,360.42
Greenville	135.59	61.01	196.60
Greenwood	51.96	0.12	52.08
Hampton	0.00	802.90	802.90
Horry	5.10	119.28	124.38
Kershaw	995.30	308.24	1,303.54
Lancaster	3,873.00	0.00	3,873.00
Lexington	9,138.02	407.65	9,545.67
Marion	0.00	37.08	37.08
Marlboro	7,201.00	227.70	7,428.70
Oconee	723.22	0.00	723.22
Orangeburg	155.35	754.68	910.03
Pickens	2,997.12	0.00	2,997.12
Richland	10,596.60	641.18	11,237.78
Saluda	0.00	29.95	29.95
Spartanburg	0.00	26.18	26.18
Sumter	0.00	304.36	304.36
Union	712.90	5.07	717.97
Williamsburg	0.00	908.30	908.30
York	22,863.80	5.67	22,869.47
Total	155,230.62	11,710.10	166,940.72

Industrial Use Source Comparison

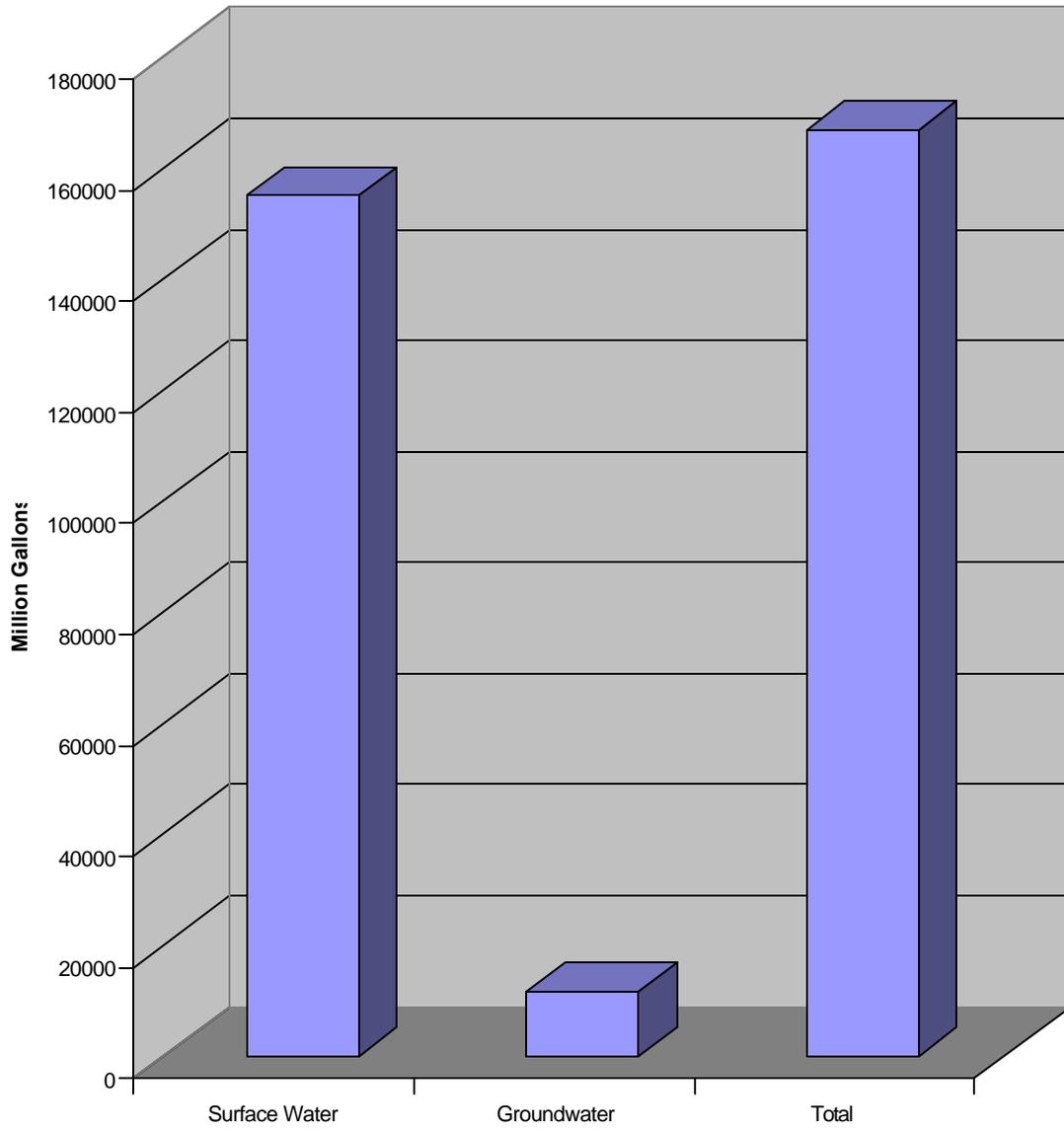


Chart 3

Irrigation Use

Water withdrawal for irrigation use from 241 reporting entities totaled 29,653,760,000 gallons, with 103 surface water systems accounting for 10,988,750,000 gallons and 138 groundwater systems accounting for 18,665,010,000 gallons.

Irrigation Use By County (in million gallons)

County	Surface Water	Groundwater	Total	Irrigated Acreage ⁽¹⁾
Aiken	111.00	421.70	532.70	1340
Allendale	643.90	3,716.18	4,360.08	9350
Bamberg	451.50	756.88	1,208.38	11,585
Barnwell	0.00	116.78	116.78	5075
Beaufort	22.21	643.29	665.50	1950
Berkeley	916.10	4.54	920.64	
Calhoun	489.40	1,691.74	2,181.14	12,175
Charleston	55.11	0.00	55.11	950
Chester	0.00	0.00	0.00	335
Chesterfield	47.50	285.30	332.80	900
Clarendon	74.98	340.78	415.76	7,525
Colleton	626.00	1,516.00	2,142.00	759
Darlington	213.17	31.20	244.37	2,525
Dillon	0.00	32.64	32.64	304
Edgefield	367.88	99.00	466.88	6,735
Florence	60.00	101.05	161.05	5,100
Georgetown	1,769.50	0.00	1,769.50	985
Greenville	558.10	2.75	560.85	102
Greenwood	0.00	1.20	1.20	27
Hampton	63.00	1,022.58	1,085.58	4,715
Horry	20.25	121.47	141.72	5,040
Jasper	0.00	434.60	434.60	1,795
Lee	14.00	101.50	115.50	3,515
Lexington	482.51	2,232.82	2,715.33	11,835
Marion	0.00	324.49	324.49	10,599
Marlboro	272.13	309.92	582.05	1,510
Newberry	130.40	56.26	186.66	489
Oconee	99.50	0.00	99.50	2
Orangeburg	1,754.88	2,840.40	4,595.28	29,490
Pickens	10.11	0.00	10.11	250
Richland	5.25	0.00	5.25	1,010
Saluda	579.50	0.00	579.50	4,450
Spartanburg	330.85	0.00	330.85	3,030
Sumter	810.80	1,459.94	2,270.74	10,135
Williamsburg	7.00	0.00	7.00	200
York	2.22	0.00	2.22	285
Total	10,988.75	18,665.01	29,653.76	161,069

(1) Clemson University, Cooperative Extension Service, "2000 South Carolina Irrigation Survey"

Irrigation Use Source Comparison

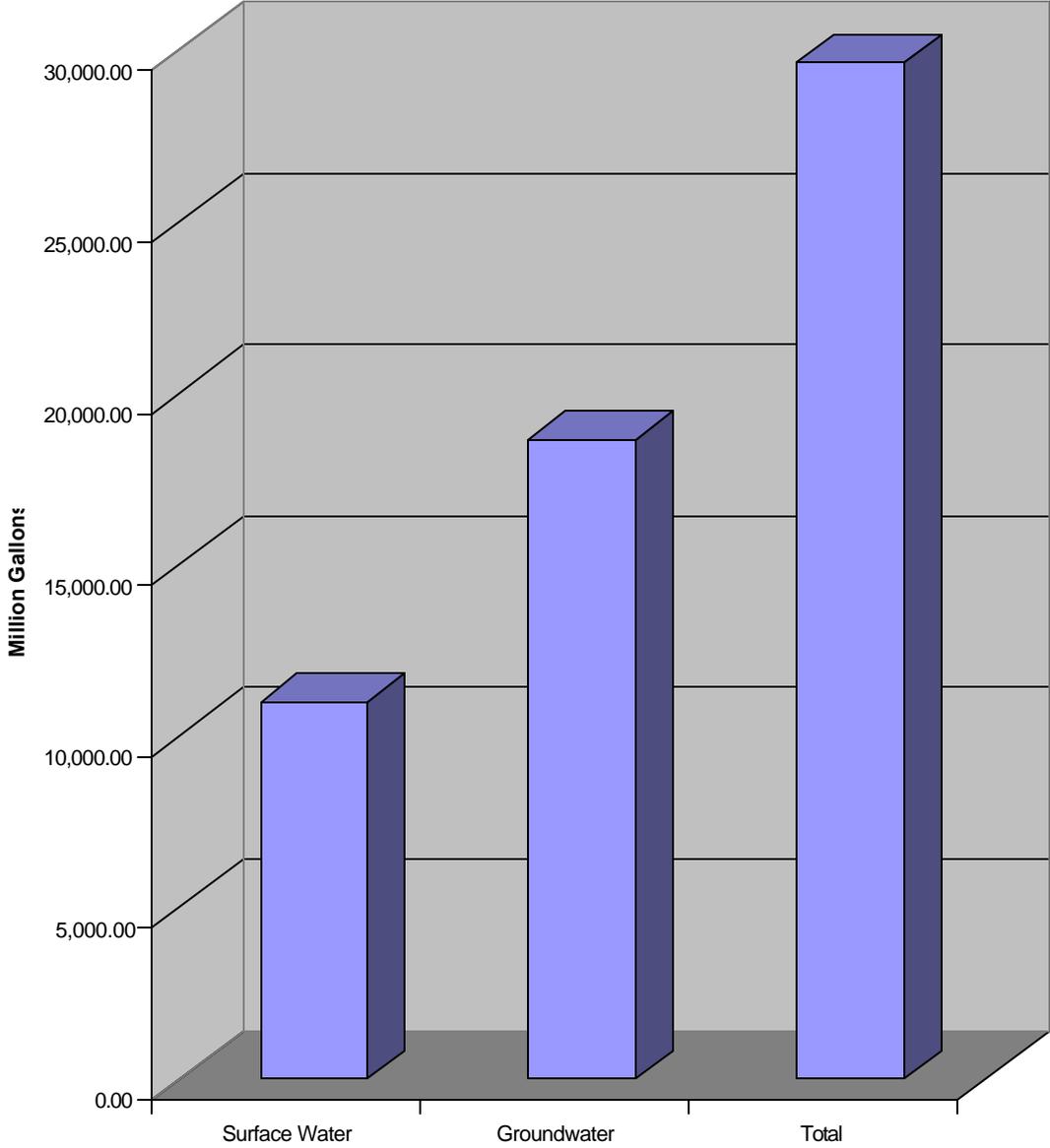


Chart 4

Golf Course Use

South Carolina has 337 public, private and semi-private golf courses. An average of 38,855 paid rounds of golf (per 18 hole course) were played during 2001, generating approximately 11.0 million dollars in admission taxes¹. Water withdrawal from 329 reporting courses for golf course irrigation totaled 13,630,390,000 gallons, with 210 surface water systems accounting for 9,451,520,000 gallons and 119 groundwater systems accounting for 4,178,870,000 gallons.

Golf Course Irrigation (in million gallons)

County	Surface Water	Groundwater	Total
Abbeville	0.00	0.00	0.00
Aiken	404.55	12.00	416.55
Allendale	0.00	0.00	0.00
Anderson	138.17	0.00	138.17
Barnwell	22.30	0.00	22.30
Beaufort	2,101.10	1,504.94	3,606.04
Berkeley	28.10	11.52	39.62
Calhoun	54.70	45.40	100.10
Charleston	144.69	885.35	1,030.04
Chester	28.00	26.60	54.60
Chesterfield	70.41	0.00	70.41
Clarendon	40.95	13.60	54.55
Colleton	0.00	4.00	4.00
Darlington	78.24	0.00	78.24
Dorchester	0.00	32.50	32.50
Edgefield	16.19	107.88	124.07
Florence	37.77	128.20	165.97
Georgetown	753.60	169.78	923.38
Greenville	401.32	69.84	471.16
Greenwood	73.42	30.91	104.33
Hampton	0.00	11.40	11.40
Horry	2,878.03	657.05	3,535.08
Kershaw	26.00	26.00	52.00
Lancaster	21.00	7.90	28.90
Laurens	139.04	0.00	139.04
Lexington	218.33	22.00	240.33
Marion	36.00	13.00	49.00
Marlboro	8.80	0.00	8.80
McCormick	44.78	0.00	44.78
Newberry	13.40	8.00	21.40
Oconee	146.25	0.00	146.25
Orangeburg	139.94	41.56	181.50
Pickens	395.55	0.00	395.55
Richland	261.87	92.83	354.70
Saluda	0.00	0.00	0.00
Spartanburg	225.04	4.87	229.91
Sumter	313.62	198.76	512.38
Union	8.00	0.00	8.00
York	182.36	52.98	235.34
Total	9,451.52	4,178.87	13,630.39

(1) South Carolina Department of Parks, Recreation and Tourism, "2000/2001 Economic Impact of Golf in South Carolina."

Golf Course Source Comparison

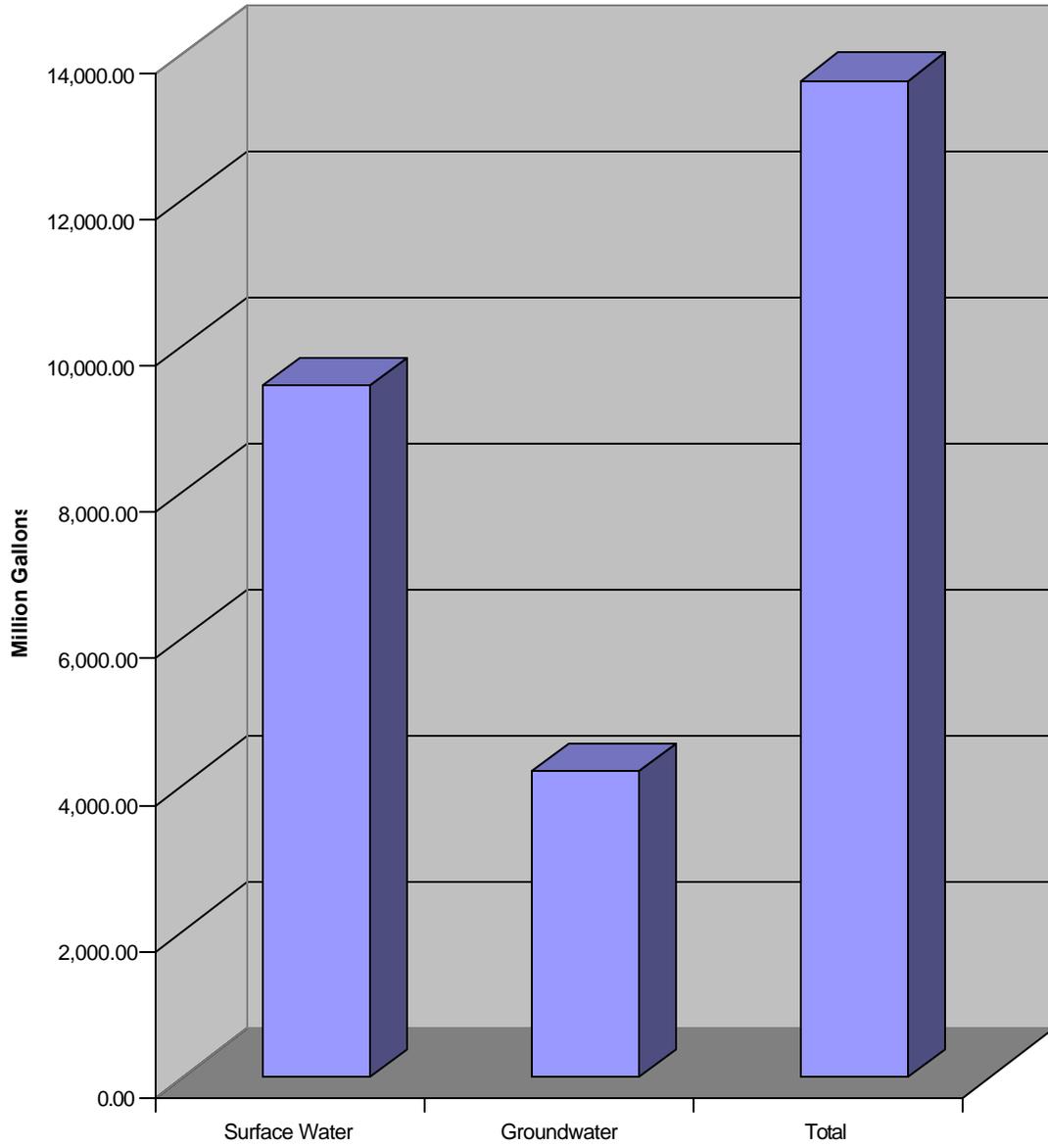


Chart 5

Mining Use

Water withdrawal associated with mining activities at 9 reporting facilities totaled 3,159,880,000 gallons, with 2 surface water systems accounting for 863,240,000 gallons and 8 groundwater systems accounting for 2,296,640,000 gallons.

Mining Activity (in million gallons)

County	Surface Water	Groundwater	Total
Aiken	0.00	41.70	41.70
Berkeley	0.00	27.80	27.80
Colleton	3.24	0.00	3.24
Horry	177.60	0.00	177.60
Lexington	682.40	148.10	830.50
Orangeburg	0.00	1,790.70	1,790.70
Richland	0.00	273.70	273.70
York	0.00	14.64	14.64
Total	863.24	2,296.64	3,159.88

Mining Use Comparison

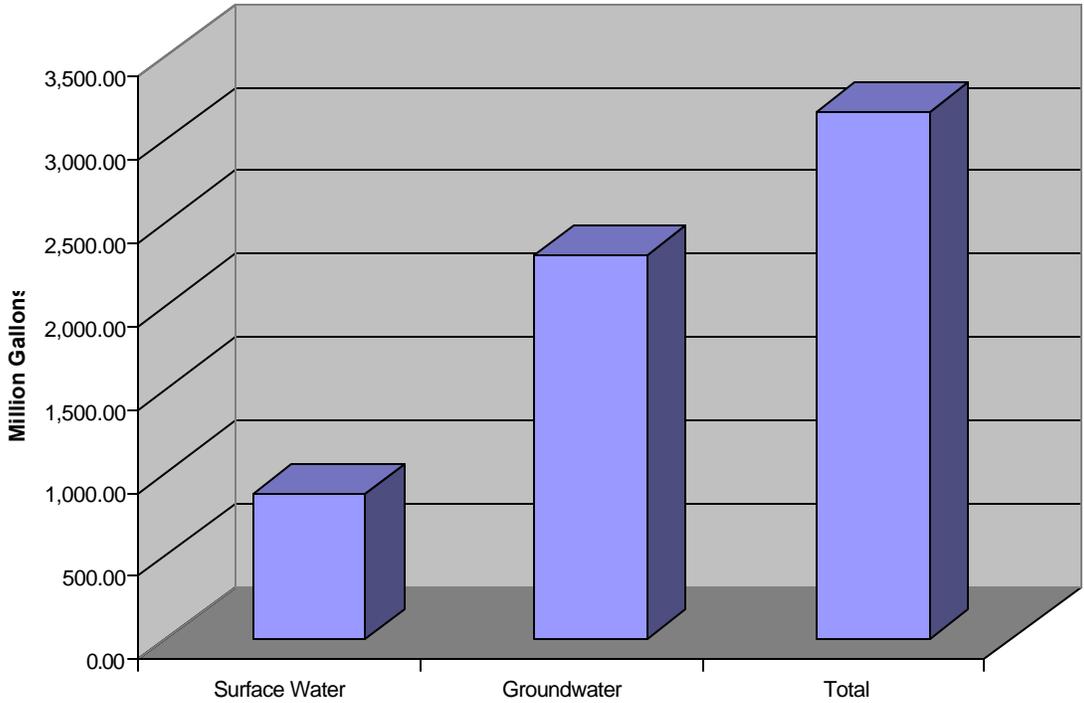


Chart 6

Aquaculture Use

Water withdrawal from 11 reporting aquaculture-farming facilities totaled 2,283,950,000 gallons, with 8 surface water systems accounting for 2,084,560,000 gallons and 7 groundwater systems accounting for 199,390,000 gallons.

Aquaculture (in million gallons)

County	Surface Water	Groundwater	Total
Aiken	3.60	0.00	3.60
Beaufort	48.32	18.93	67.25
Berkeley	16.10	4.76	20.86
Charleston	1,939.54	0.00	1,939.54
Dillon	0.00	40.50	40.50
Hampton	0.00	121.50	121.50
Jasper	0.00	2.00	2.00
Richland	42.90	11.70	54.60
Spartanburg	34.10	0.00	34.10
Total	2,084.56	199.39	2,283.95

Aquaculture Source Comparison

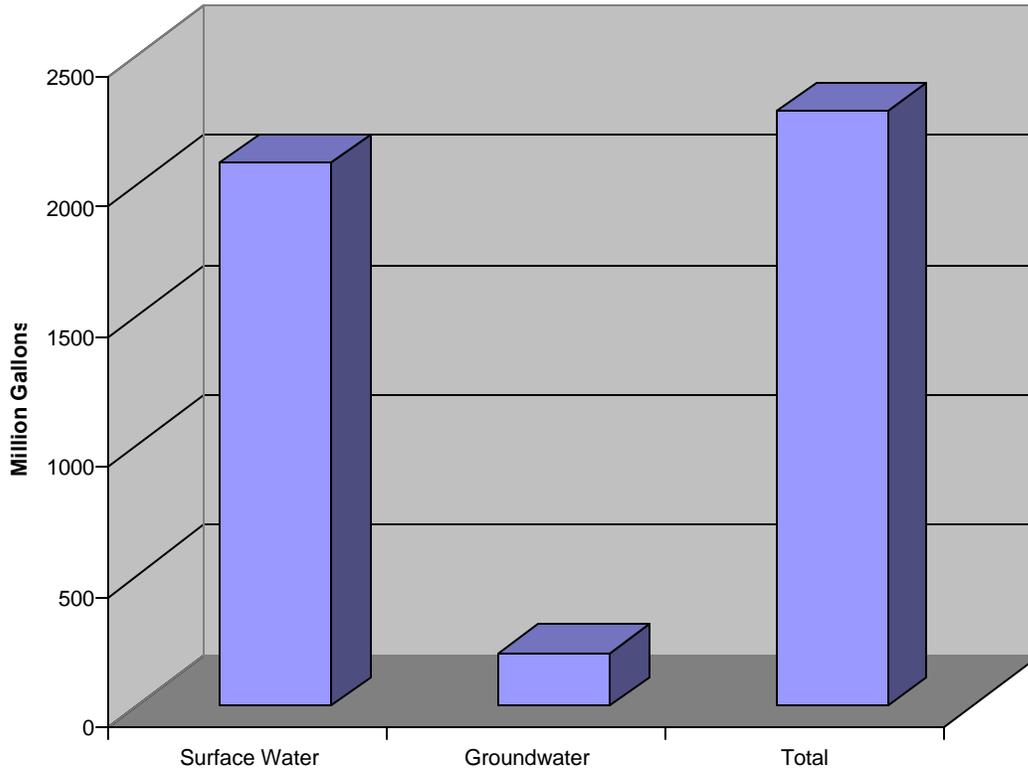


Chart 7

Other Use

Water withdrawal for other, non-specific use from 3 reporting facilities totaled 106,220,000 gallons, with groundwater accounting for all reported use.

Other Use (in million gallons)

County	Surface Water	Groundwater	Total
Beaufort	0.00	35.55	35.55
Horry	0.00	65.67	65.67
Jasper	0.00	5.00	5.00
Total	0.00	106.22	106.22

Other Source Comparison

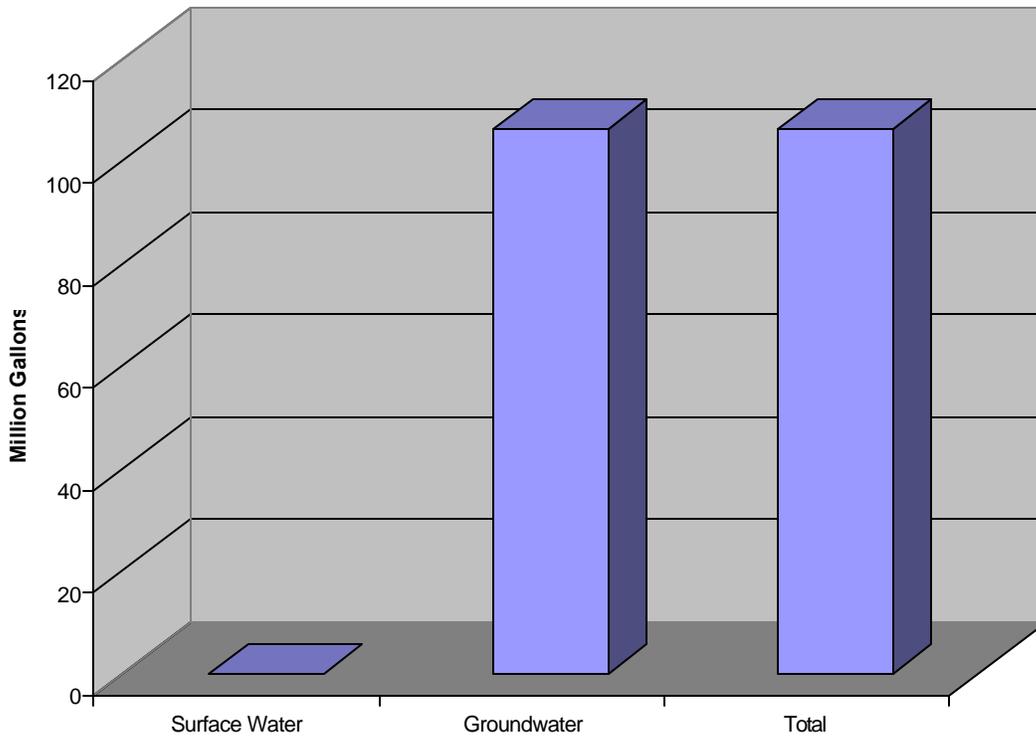


Chart 8

*2002 Surface Water Use by County
(in million gallons)*

County	Hydro-electric	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	23,436.00	0.00	1,100.85	110.66	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	50,184.00	2,217.40	19,923.33	111.00	404.55	0.00	3.60	0.00
Allendale	0.00	0.00	0.00	0.00	643.90	0.00	0.00	0.00	0.00
Anderson	131.20	19,212.09	7,862.45	46.28	0.00	138.17	0.00	0.00	0.00
Bamberg	0.00	0.00	0.00	0.00	451.50	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	0.00	0.00	0.00	22.30	0.00	0.00	0.00
Beaufort	0.00	0.00	7,986.24	0.00	22.21	2,101.10	0.00	48.32	0.00
Berkeley	1,181,662.79	185,662.02	4,773.00	3,221.31	916.10	28.10	0.00	16.10	0.00
Calhoun	0.00	0.00	0.00	31,879.00	489.40	54.70	0.00	0.00	0.00
Charleston	0.00	0.00	18,949.00	10,244.70	55.11	144.69	0.00	1,939.54	0.00
Cherokee	266,526.00	0.00	4,177.33	540.20	0.00	0.00	0.00	0.00	0.00
Chester	1,079,384.00	0.00	1,271.20	135.58	0.00	28.00	0.00	0.00	0.00
Chesterfield	0.00	0.00	1,211.40	0.00	47.50	70.41	0.00	0.00	0.00
Clarendon	0.00	0.00	0.00	0.00	74.98	40.95	0.00	0.00	0.00
Colleton	0.00	1,149.54	0.00	0.00	626.00	0.00	3.24	0.00	0.00
Darlington	0.00	285.33	0.00	8,034.80	213.17	78.24	0.00	0.00	0.00
Dillon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dorchester	0.00	0.00	0.00	199.38	0.00	0.00	0.00	0.00	0.00
Edgefield	754,016.80	0.00	1,428.16	0.00	367.88	16.19	0.00	0.00	0.00
Fairfield	2,300,573.00	308,412.22	742.45	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	0.00	9,214.30	60.00	37.77	0.00	0.00	0.00
Georgetown	0.00	4,046.44	1,783.10	12,342.78	1,769.50	753.60	0.00	0.00	0.00
Greenville	3,600.00	0.00	25,512.00	135.59	558.10	401.32	0.00	0.00	0.00
Greenwood	220,651.00	67.90	4,850.47	51.96	0.00	73.42	0.00	0.00	0.00
Hampton	0.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00	0.00
Horry	0.00	38,501.00	13,379.24	5.10	20.25	2,878.03	177.60	0.00	0.00
Jasper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kershaw	629,127.00	0.00	2,520.87	995.30	0.00	26.00	0.00	0.00	0.00
Lancaster	521,147.00	0.00	7,259.88	3,873.00	0.00	21.00	0.00	0.00	0.00
Laurens	77.83	0.00	1,667.10	0.00	0.00	139.04	0.00	0.00	0.00
Lee	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
Lexington	203,390.20	42,215.90	5,293.53	9,138.02	482.51	218.33	682.40	0.00	0.00
Marion	0.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
Marlboro	0.00	0.00	595.98	7,201.00	272.13	8.80	0.00	0.00	0.00
McCormick	0.00	0.00	781.13	0.00	0.00	44.79	0.00	0.00	0.00
Newberry	0.00	0.00	2,106.28	0.00	130.40	13.40	0.00	0.00	0.00
Oconee	711,874.60	1,616,615.00	2,992.73	723.22	99.50	146.25	0.00	0.00	0.00
Orangeburg	0.00	0.00	2,930.00	155.35	1,754.88	139.94	0.00	0.00	0.00
Pickens	2,537,378.22	0.00	3,868.68	2,997.12	10.11	395.55	0.00	0.00	0.00
Richland	355,204.50	157,525.60	21,095.30	10,596.60	5.25	261.87	0.00	42.90	0.00
Saluda	0.00	0.00	0.00	0.00	579.50	0.00	0.00	0.00	0.00
Spartanburg	2,331.90	0.00	14,710.13	0.00	330.85	225.04	0.00	34.10	0.00
Sumter	0.00	0.00	0.00	0.00	810.80	313.62	0.00	0.00	0.00
Union	272,805.80	0.00	1,403.31	712.90	0.00	8.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00
York	351,763.00	40,930.00	4,629.00	22,863.80	2.22	182.36	0.00	0.00	0.00
Total 2002	11,415,080.84	2,464,807.02	169,098.20	155,341.26	10,988.74	9,451.50	863.24	2,084.56	0.00
Total 2001	9,796,267.27	1,622,975.63	154,975.30	168,698.78	10,707.64	9,039.34	109.50	701.29	0.00
Total 2000	10,281,681.33	2,238,382.15	115,340.83	145,761.53	1,797.65	4,625.47	438.63	0.00	0.00

Table 1

*2002 Groundwater Use by County
(in million gallons)*

County	Hydro-electric	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other
Abbeville	0.00	0.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00
Aiken	0.00	0.00	4,940.86	1,602.41	421.70	404.55	41.70	0.00	0.00
Allendale	0.00	0.00	1,252.50	792.80	3,716.18	0.00	0.00	0.00	0.00
Anderson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bamberg	0.00	0.00	505.69	0.00	756.88	0.00	0.00	0.00	0.00
Barnwell	0.00	0.00	846.70	0.00	116.78	0.00	0.00	0.00	0.00
Beaufort	0.00	0.00	4,300.66	118.05	643.29	1,504.94	0.00	18.93	35.55
Berkeley	0.60	9.84	352.44	1,167.11	4.54	11.52	27.80	4.76	0.00
Calhoun	0.00	0.00	261.87	177.50	1,691.74	45.40	0.00	0.00	0.00
Charleston	0.00	0.00	3,607.18	33.87	0.00	885.35	0.00	0.00	0.00
Cherokee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chester	0.00	0.00	0.00	0.66	0.00	26.60	0.00	0.00	0.00
Chesterfield	0.00	0.00	462.61	0.00	285.30	0.00	0.00	0.00	0.00
Clarendon	0.00	0.00	592.97	0.00	340.78	13.60	0.00	0.00	0.00
Colleton	0.00	0.00	832.74	0.00	1,516.00	4.00	0.00	0.00	0.00
Darlington	0.00	432.84	2,787.41	1,555.56	31.20	0.00	0.00	0.00	0.00
Dillon	0.00	0.00	1,762.42	0.00	32.64	0.00	0.00	40.50	0.00
Dorchester	0.00	0.00	633.97	826.96	0.00	32.50	0.00	0.00	0.00
Edgefield	0.00	0.00	0.00	0.00	99.00	107.88	0.00	0.00	0.00
Fairfield	0.00	0.00	81.12	0.00	0.00	0.00	0.00	0.00	0.00
Florence	0.00	0.00	5,291.61	778.17	101.05	128.20	0.00	0.00	0.00
Georgetown	0.00	0.00	1,119.86	17.64	0.00	169.78	0.00	0.00	0.00
Greenville	0.00	0.00	43.29	61.01	2.75	69.84	0.00	0.00	0.00
Greenwood	0.00	0.00	1.39	0.12	1.20	30.91	0.00	0.00	0.00
Hampton	0.00	0.00	537.64	802.90	1,022.58	11.40	0.00	121.50	0.00
Horry	0.00	0.00	807.41	119.28	121.47	657.05	0.00	0.00	65.67
Jasper	0.00	0.00	538.13	0.00	434.60	0.00	0.00	2.00	5.00
Kershaw	0.00	0.00	930.01	308.24	0.00	26.00	0.00	0.00	0.00
Lancaster	0.00	0.00	0.00	0.00	0.00	7.90	0.00	0.00	0.00
Laurens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lee	0.00	0.00	545.80	0.00	101.50	0.00	0.00	0.00	0.00
Lexington	0.00	0.00	357.82	407.65	2,232.82	22.00	148.10	0.00	0.00
Marion	0.00	0.00	1,379.58	37.08	324.49	13.00	0.00	0.00	0.00
Marlboro	0.00	0.00	674.18	227.70	309.92	0.00	0.00	0.00	0.00
McCormick	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Newberry	0.00	0.00	39.28	0.00	56.26	8.00	0.00	0.00	0.00
Oconee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orangeburg	0.00	1,792.62	659.20	754.68	2,840.40	41.56	1,790.70	0.00	0.00
Pickens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Richland	0.00	0.00	324.62	641.18	0.00	92.83	273.70	11.70	0.00
Saluda	0.00	0.00	102.00	29.95	0.00	0.00	0.00	0.00	0.00
Spartanburg	0.00	0.00	37.60	26.18	0.00	4.87	0.00	0.00	0.00
Sumter	0.00	0.00	5,978.50	304.36	1,459.94	198.76	0.00	0.00	0.00
Union	0.00	0.00	0.00	5.07	0.00	0.00	0.00	0.00	0.00
Williamsburg	0.00	0.00	613.04	908.30	0.00	0.00	0.00	0.00	0.00
York	0.00	0.00	100.80	5.67	14.64	52.98	14.64	0.00	0.00
Total 2002	0.60	2,235.30	43,304.59	11,710.08	18,679.65	4,571.42	2,296.64	199.39	106.22
Total 2001	0.64	2,009.25	38,549.99	11,881.12	16,413.50	4,263.20	2,582.25	163.88	204.84
Total 2000	0.58	2,126.22	32,924.38	11,701.80	1,385.08	2,180.88	2,617.45	13.67	223.61

Table 2

BUREAU OF WATER

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report

2003 Summary



September 2004



www.scdhec.gov/water



South Carolina Water Use Report 2003 Summary

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

**Bureau of Water
Groundwater Management Section**

**Compiled by:
Paul L. Bristol, Geologist
803-898-3559**

September 2004

Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina Surface Water Withdrawal and Reporting Act, 49-4-10 et. seq., and the South Carolina Groundwater Use and Reporting Act, 49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to DHEC.

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Introduction

South Carolinians have always enjoyed a water resource that is clean, abundant and easily attainable. Currently, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and other uses in South Carolina. The U.S. Census Bureau estimates that South Carolina's population will increase by 600,000 people by the year 2025. Land development in response to increasing urbanization of the population converts more than 100,000 acres per year to urban use. This growth and development has placed increasing demand on the environment, natural resources and our water supplies.

Combined with ever changing natural conditions, continuing impacts to surface water bodies and groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that the groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable and to provide and maintain conditions which are conducive to the development and use of (all) water resources.

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone in the state withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now an enforceable requirement of law.

Purpose and Methodology

The purpose of the *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2003. Annual reporting of water use by permitted and registered users provides the base data for this report. Water use is reported in **million gallons** per month. The Department maintains the water use databases utilized in this report.

Terminology

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth's surface such as a stream, lake, or

Terminology

reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent withdrawal over time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy).

Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from the natural hydrological system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation.

South Carolina Climate

The climate of South Carolina has four recognizable and distinct seasons, *winter*, *spring*, *summer* and *fall*. Annual average temperature varies from the mid-50's in the up-state region to low-60's along the coastal region. The Appalachian/Blue Ridge Mountains block many cold air masses circulating from the northwest allowing mild winters. Summers are typically hot and humid, characterized by evening thunderstorms. Precipitation is fairly evenly distributed throughout the year, however, winter and later summer generally have the greater rainfall. The historical average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990, 1993 and 2001. The most severe drought occurred in 2001. Figure 1 through Figure 5 presents precipitation data for the years 1995 through 2003.

(Climate data interpreted from the South Carolina Department of Natural Resources, State Climatologist)

South Carolina Annual Precipitation Data

Annual 1995 - 2003 Average = 48.39 Inches
Annual 1995 - 2003 Trend = -8.29 Inches / Decade

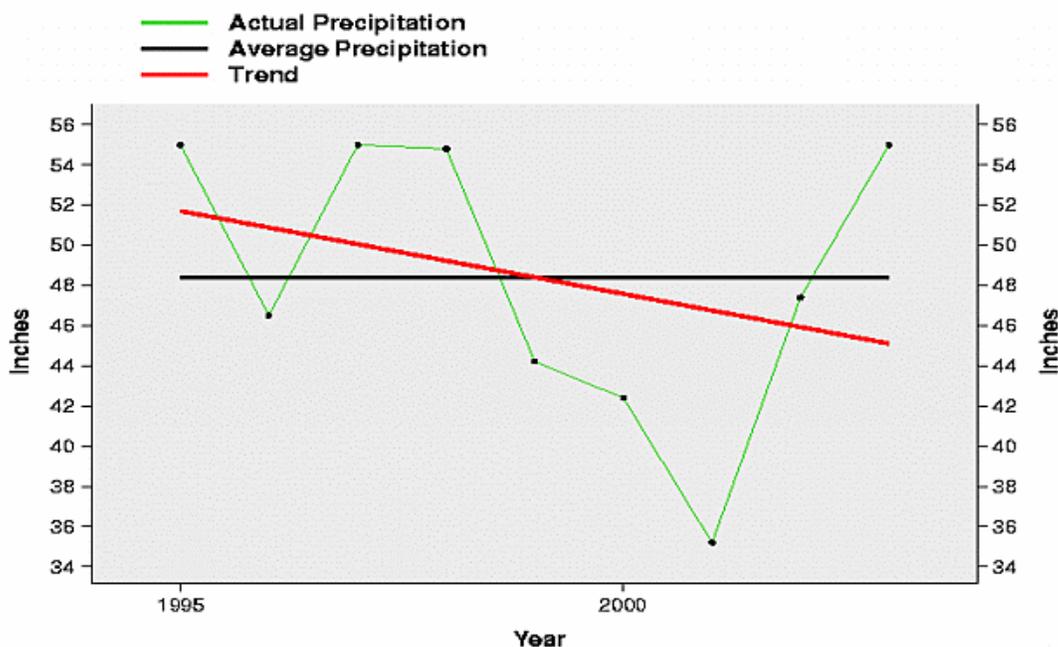


Figure 1 (National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Winter Precipitation Data

Winter (Dec-Feb) 1995 - 2004 Average = 11.32 Inches
Winter (Dec-Feb) 1995 - 2004 Trend = -6.98 Inches / Decade

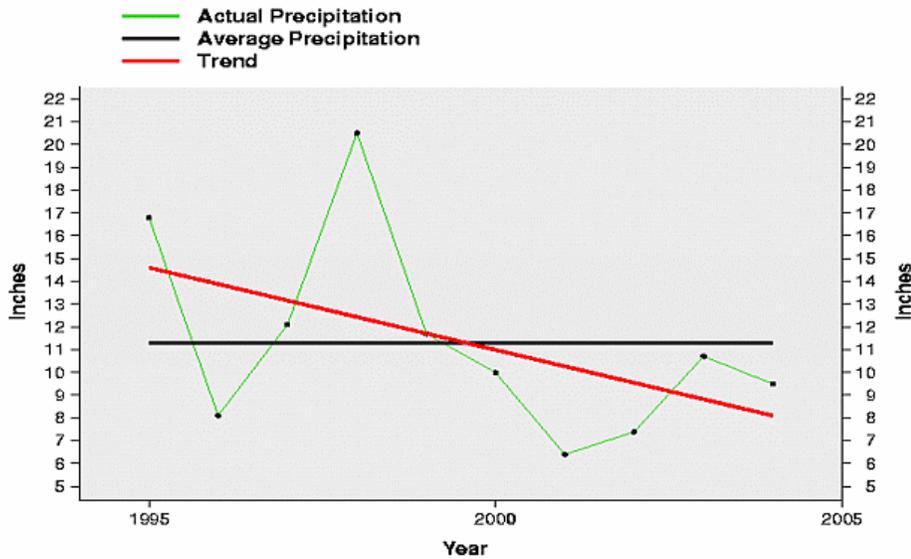


Figure 2 (National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Spring Precipitation Data

Spring (Mar-May) 1995 - 2004 Average = 10.59 Inches
Spring (Mar-May) 1995 - 2004 Trend = 1.49 Inches / Decade

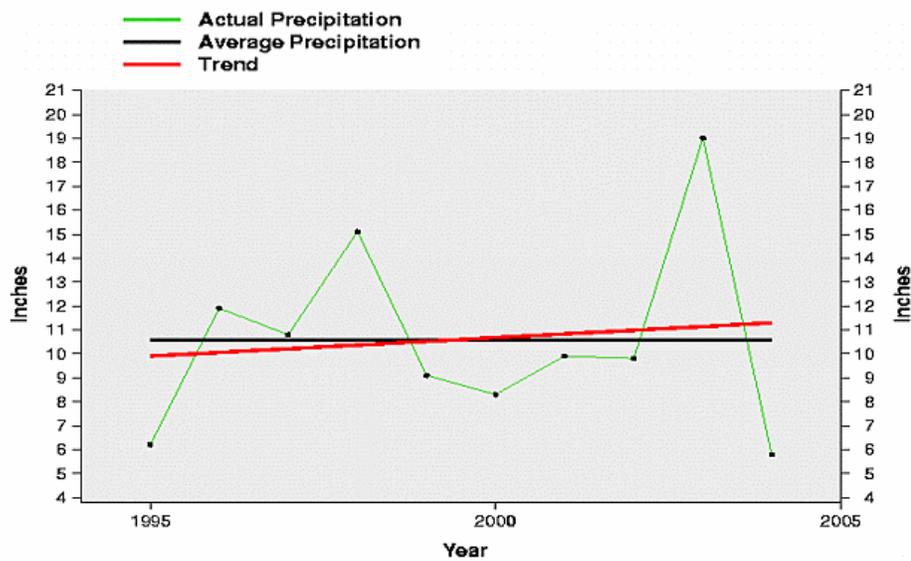


Figure 3 (National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Summer Precipitation Data

Summer (Jun-Aug) 1995 - 2003 Average = 14.79 Inches
Summer (Jun-Aug) 1995 - 2003 Trend = -3.14 Inches / Decade

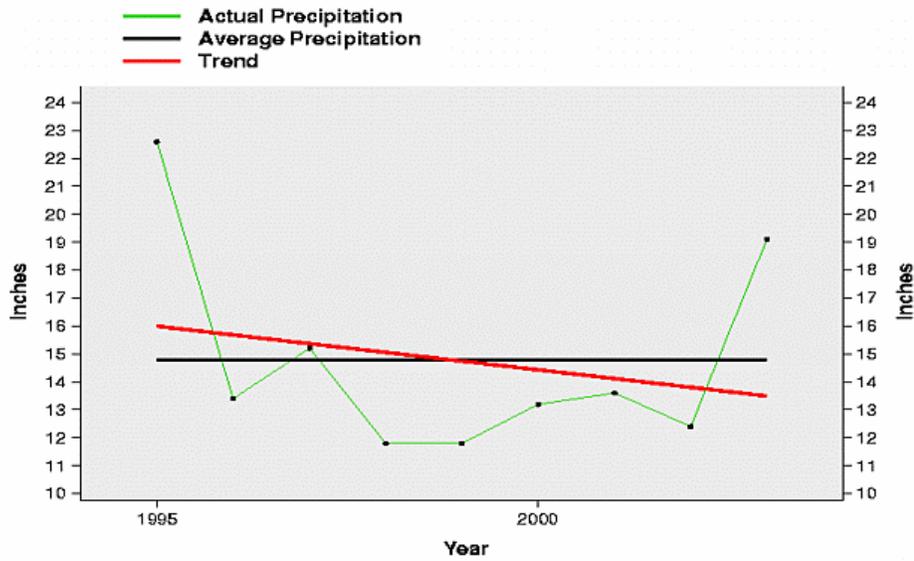


Figure 4 (National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Fall Precipitation Data

Fall (Sep-Nov) 1995 - 2003 Average = 11.31 Inches
Fall (Sep-Nov) 1995 - 2003 Trend = -4.58 Inches / Decade

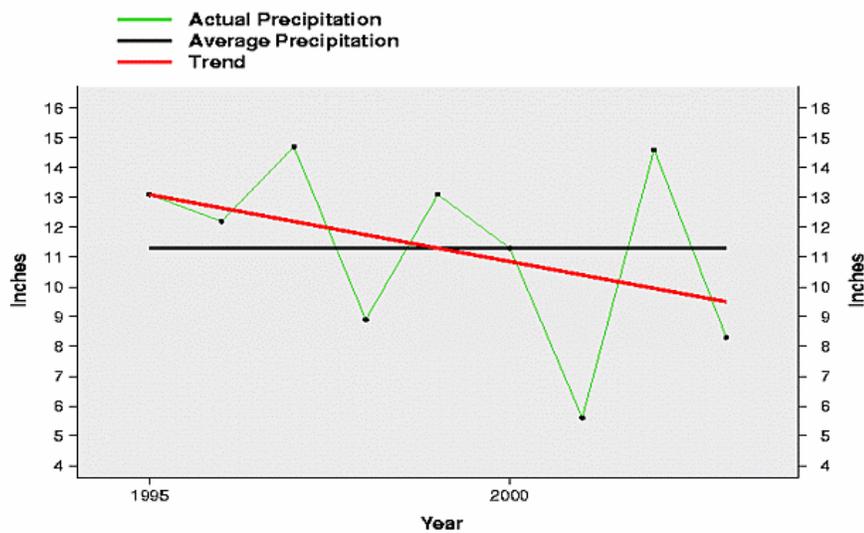


Figure 5 (National Oceanic and Atmospheric Administration, South Carolina Climate Summary)

South Carolina Geography and Hydrogeology

South Carolina has a distinct natural beauty and an ecological diversity covering nearly 31,189 square miles, with approximately 30,111 square miles land area and approximately 1,078 square miles inland or coastal waterways. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (Figure 6). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina. The geology of South Carolina is characterized in general as crystalline rocks of the Blue Ridge and Piedmont physiographic regions and unconsolidated sediments of the Coastal Plain.

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties (Figure 6). Geology of the Blue Ridge is typically characterized by clayey saprolite, ranging in depth from several feet to tens of feet, overlying crystalline rock. The saprolite grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line (Figure 6). Geology of the Piedmont is developed similarly to that of the Blue Ridge, but the diminished relief allows for greater thickness of saprolite development.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the *Fall Line* east of and to the Atlantic Ocean (Figure 6). Geology of the Coastal Plain is characterized by aquifers developed in layers of sands and silts or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The hydraulic characteristics of the Coastal Plain aquifers are determined by composition, thickness, areal extent and relative distance from the outcrop or recharge area. A generalized cross-section for the Coastal Plain aquifers is presented as Figure 7.

Physiographic provinces and streams in South Carolina

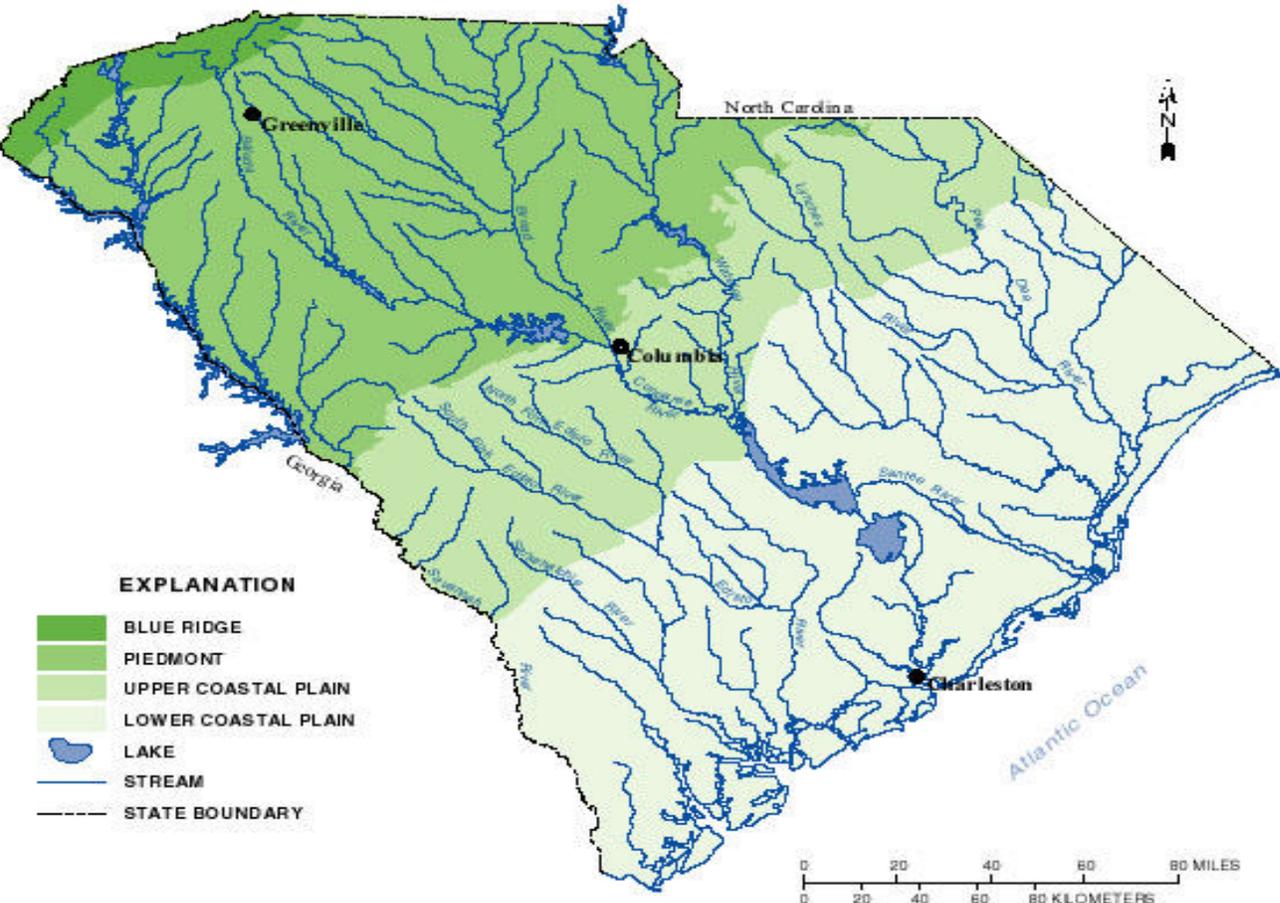


Figure 6

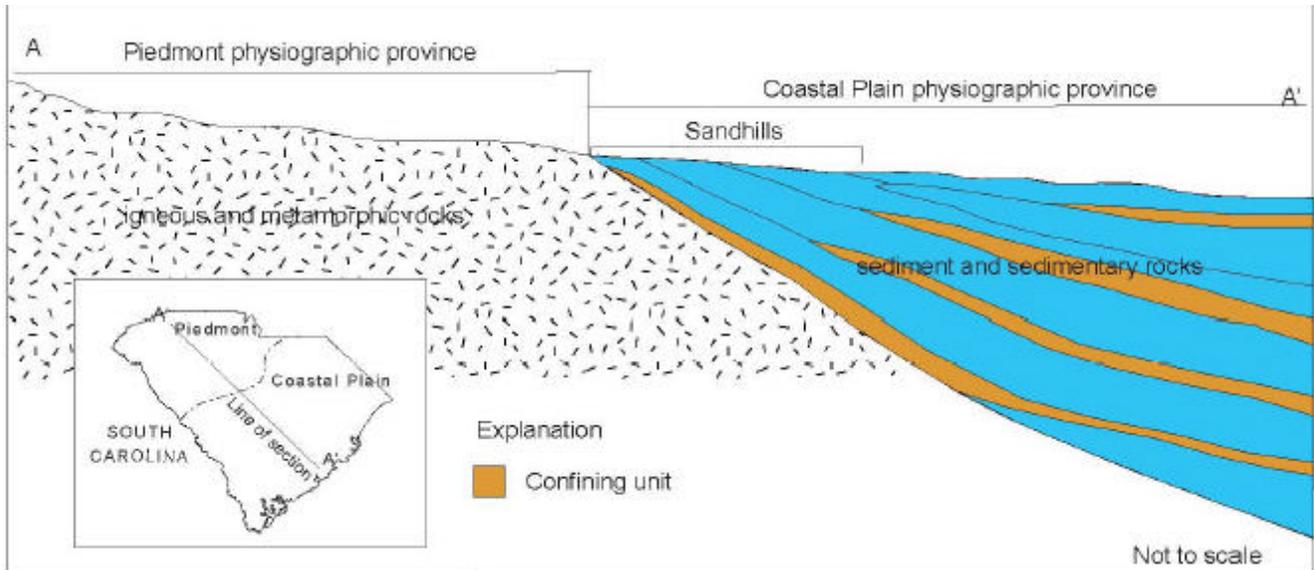


Figure 7 Generalized Cross-Section

Demographics

According to the 2000 Census, South Carolina's counted population is 4,012,012 people. Currently, almost 55% of South Carolinians live in an urban setting and approximately 45% live in rural communities. South Carolina has 24,541 farms (decline of 1,266 from 1997), occupying 4,845,923 acres (decline of 19,115 ac. from 1997). Of this, approximately 2,270,084 acres (decline of 333,831 ac. from 1997) are cropland ⁽¹⁾. Manufacturing interests represent the largest private employer in South Carolina and major manufacturing/industrial complexes are located along the I-26/I-85 and I-20/I-95 corridors, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and the Florence/Pee Dee region. Other manufacturing concentrations are located in the Augusta-Aiken MSA and Charleston MSA ⁽²⁾. At present, South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2000) totaled 90,079 million kilowatt hours ⁽³⁾.

(Source: (1) 2002 Census of Agriculture, Volume 1 Geographic Area Series, "Table 8. Land: 2002 and 1997.")

(2) S.C. Department of Commerce, 2004, "South Carolina Regional Profiles."

(3) S.C. Energy Office "2001 South Carolina Energy Use Profile."

Total Reported Water Use

Reported water use from 833 facilities for 2003 approached 23 trillion gallons (22,911,098,089,000), an approximate increase of 60% over 2002 water use. The largest increase of water use (7.5 trillion gallons) was associated with a nearly 100 % increase in electricity generation by hydroelectric facilities during 2003 in the state ⁽¹⁾. Surface water withdrawal from 470 facilities accounted for approximately 22.8 trillion gallons (22,843,528,939,000), approximately 99.71%. Groundwater withdrawal from 527 reporting facilities accounted for approximately 67.6 billion gallons (67,569,150,000) or approximately 0.29%.

Total Reported Water Use By Source (in million gallons)

Surface Water	Groundwater	Total
22,843,528.939	67,569.150	22,911,098.089

Total Reported Water Use By Category (in million gallons)

Water Use	Surface Water	Groundwater	Total
Hydroelectric	18,958,206.838	0.935	18,958,207.773
Thermoelectric	3,556,371.245	2,103.630	3,558,474.875
Water Supply	157,026.905	40,061.364	197,088.269
Industrial	157,215.506	11,119.253	168,334.759
Irrigation	5,222.858	6,949.998	12,172.856
Golf Course	7,706.305	2,667.168	10,373.473
Mining	467.190	4,467.880	4,935.070
Aquaculture	1,312.092	139.889	1,451.981
Other	0.000	59.033	59.033
Total	22,843,528.939	67,569.150	22,911,098.089

Total Reported Water Use Comparison by Year (in million gallons)

Water Use	1999	2000	2001	2002	2003
Hydroelectric	12,160,642.620	10,281,681.910	9,796,267.910	11,415,081.440	18,958,207.773
Thermoelectric.	2,326,627.770	2,240,508.370	1,624,984.880	2,467,042.320	3,558,474.875
Water Supply	221,911.790	148,265.210	193,525.290	212,402.790	197,088.269
Industrial	172,314.140	157,463.330	180,579.900	167,051.340	168,334.759
Irrigation	9,470.970	3,182.730	27,121.140	29,668.390	12,172.856
Golf Course	6,323.770	6,806.350	13,302.540	14,022.920	10,373.473
Mining	2,546.920	3,056.080	2,691.750	3,159.880	4,935.070
Aquaculture	35.970	13.670	865.170	2,283.950	1,451.981
Other	367.060	223.610	204.840	106.220	59.033
Total	14,900,241.010	12,841,201.260	11,839,543.420	14,310,819.250	22,911,098.089
Facilities	717	577	931	848	833

(1) Energy Information Administration, 2003 Power Plant Report, Electricity Market in South Carolina

Water Use in Power Production

According to the S.C. Energy Office, 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

Hydroelectric Water Use

Hydroelectric facilities convert energy from flowing water to produce electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river) or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 32 hydroelectric sources accounted for approximately 19 trillion gallons (18,958,207,773,000), approximately 84.20% of reported water use for power production and 82.75% of total reported water use for the year.

Hydroelectric (in million gallons)

County	Surface Water	Groundwater	Total
Abbeville	42,804.000	0.000	42,804.000
Anderson	276.600	0.000	276.600
Berkeley	1,207,806.198	0.935	1,207,807.133
Cherokee	502,053.000	0.000	502,053.000
Chester	3,059,476.000	0.000	3,059,476.000
Edgefield	1,198,558.600	0.000	1,198,558.600
Fairfield	3,165,364.830	0.000	3,165,364.830
Greenville	0.012	0.000	0.012
Greenwood	420,151.000	0.000	420,151.000
Kershaw	2,047,284.000	0.000	2,047,284.000
Lancaster	1,381,492.000	0.000	1,381,492.000
Laurens	134.500	0.000	134.500
Lexington	685,270.710	0.000	685,270.710
Oconee	7.150	0.000	7.150
Pickens	2,728,023.580	0.000	2,728,023.580
Richland	509,703.050	0.000	509,703.050
Spartanburg	4,076.918	0.000	4,076.918
Union	597,570.690	0.000	597,570.690
York	1,408,154.000	0.000	1,408,154.000
Total	18,958,206.838	0.935	18,958,207.773

Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 18 thermoelectric sources accounted for more than 3.5 trillion gallons (3,558,474,875,000), approximately 15.80% of reported water use for power production and 15.53% of total reported water use for the year.

Thermoelectric (in million gallons)

County	Surface Water	Groundwater	Total
Aiken	53,110.000	0.000	53,110.000
Anderson	52,766.892	0.000	52,766.892
Berkeley	166,266.381	8.506	166,274.887
Cherokee	0.000	0.000	0.000
Colleton	1,309.050	2.203	1,311.253
Darlington	296,537.000	432.837	296,969.837
Fairfield	246,543.778	0.000	246,543.778
Georgetown	3,863.504	0.000	3,863.504
Greenwood	115.200	0.000	115.200
Horry	39,724.810	0.000	39,724.810
Lexington	48,610.130	0.000	48,610.130
Oconee	2,467,115.000	0.000	2,467,115.000
Orangeburg	0.000	1,660.084	1,660.084
Richland	144,809.500	0.000	144,809.500
York	35,600.000	0.000	35,600.000
Total	3,556,371.245	2,103.630	3,558,474.875

Total Reported Water Use
(excluding power production)

During 2003, reported water use (excluding power production) totaled more than 394 billion gallons (394,415,441,000), with surface water withdrawal accounting for 328,950,865,000 gallons or approximately 83.40% and groundwater withdrawal accounting for 65,464,585,000 gallons or approximately 16.60%.

Total Reported Water Use By Category
(excluding Power Production)
(in million gallons)

Water Use	Surface Water	Groundwater	Total
Water Supply	157,026.905	40,061.364	197,088.269
Industrial	157,215.506	11,119.253	168,334.759
Irrigation	5,222.858	6,949.998	12,172.856
Golf Course	7,706.305	2,667.168	10,373.473
Mining	467.190	4,467.880	4,935.070
Aquaculture	1,312.092	139.889	1,451.981
Other	0.000	59.033	59.033
Total	328,950.856	65,464.585	394,415.441

Total Water Use Reported

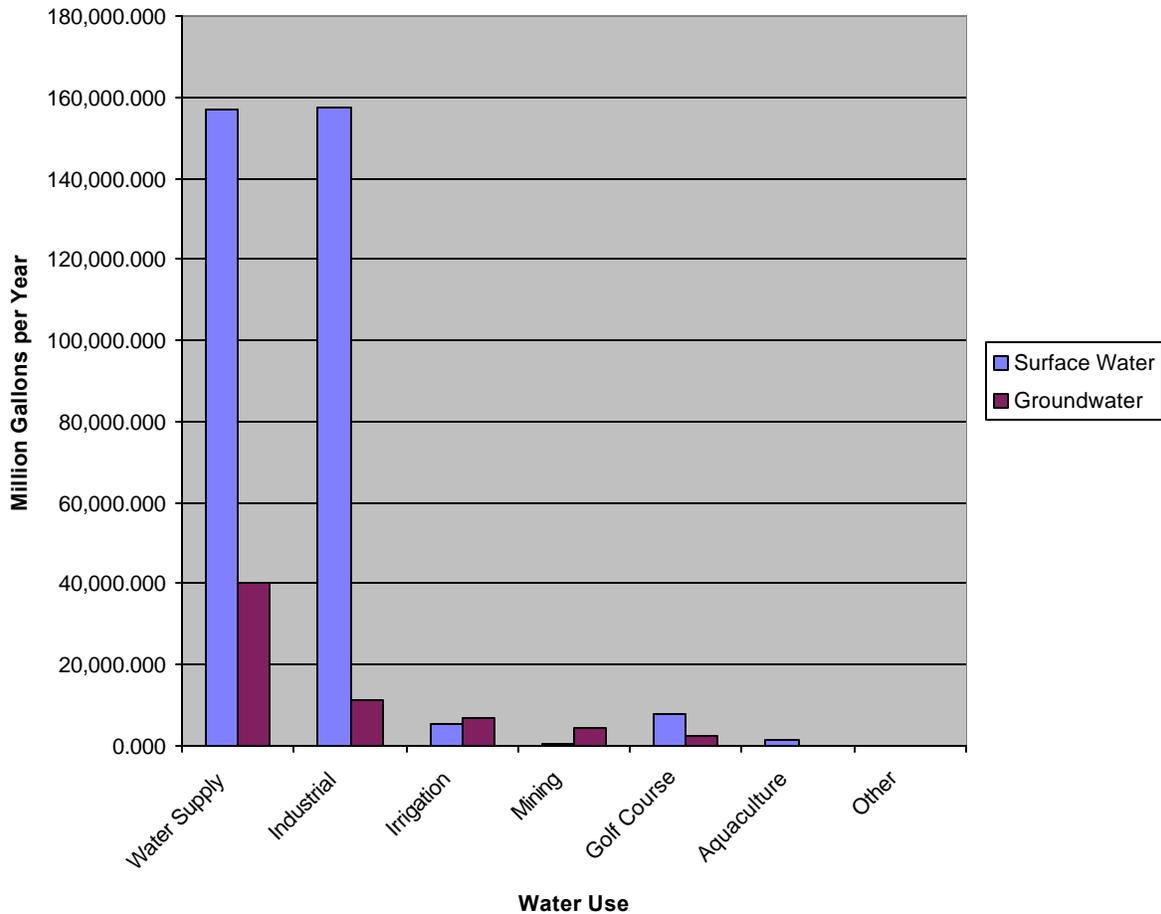


Chart 1

Water Supply

South Carolina has 1,551 defined public water systems, of which 685 are community water systems. The public water systems provide water to 3,450,928 citizens. Water withdrawal for public water supply from 220 reporting suppliers totaled 197,088,269,000 gallons, with 54 surface water systems accounting for 157,026,905,000 gallons and 176 groundwater systems accounting for 40,061,364,000 gallons.

Water Supply By County (in million gallons)

County	Groundwater	Surface Water	Total	Population Served
Abbeville	2.919	939.017	941.936	15,507
Aiken	4,564.925	1,733.388	6,298.313	128,257
Allendale	415.420	0.000	415.420	11,746
Anderson	0.000	7,349.308	7,349.308	175,341
Bamberg	527.601	0.000	527.601	10,617
Barnwell	686.014	0.000	686.014	14,172
Beaufort	4,352.805	5,679.473	10,032.278	131,863
Berkeley	236.862	4,676.897	4,913.759	61,597
Calhoun	236.645	0.000	236.645	6,510
Cherokee	0.000	2,718.400	2,718.400	423,953
Charleston	3,639.136	18,665.440	22,304.576	45,640
Chester	0.000	1,119.400	1,119.400	15,877
Chesterfield	474.466	1,048.792	1,523.258	30,693
Clarendon	627.690	0.000	627.690	16,459
Colleton	768.594	0.000	768.594	22,902
Darlington	2,267.157	0.000	2,267.157	54,935
Dillon	1,647.039	0.000	1,647.039	25,255
Dorchester	585.327	0.000	585.327	69,337
Edgefield	0.000	1,307.667	1,307.667	21,670
Fairfield	58.102	1,023.627	1,081.729	20,011
Florence	4,779.121	423.870	5,202.991	82,518
Georgetown	1,066.668	1,970.171	3,036.839	57,432
Greenville	28.682	23,620.000	23,648.682	368,165
Greenwood	19.230	4,772.800	4,792.030	50,077
Hampton	507.321	0.000	507.321	11,802
Horry	636.003	13,287.449	13,923.452	206,976
Jasper	563.386	0.000	563.386	12,072
Kershaw	772.193	1,680.373	2,452.566	56,821
Lancaster	0.000	6,741.166	6,741.166	67,235
Laurens	0.000	1,579.575	1,579.575	50,545
Lee	577.888	0.000	577.888	4,963
Lexington	373.169	4,843.625	5,216.794	111,445
Marion	1,388.508	0.000	1,388.508	27,222
Marlboro	877.293	373.100	1,250.393	21,574
McCormick	0.000	402.119	402.119	10,876
Newberry	47.365	2,079.127	2,126.492	24,709
Oconee	0.000	1,404.950	1,404.950	72,182
Orangeburg	585.140	2,915.626	3,500.766	63,475
Pickens	0.000	3,984.339	3,984.339	111,066
Richland	396.463	20,918.690	21,315.153	269,933
Saluda	105.535	0.000	105.535	7,379
Spartanburg	26.382	13,293.696	13,320.078	218,786
Sumter	5,858.533	0.000	5,858.533	84,193
Union	0.000	1,350.540	1,350.540	29,257
Williamsburg	356.982	0.000	356.982	15,711
York	4.800	5,124.280	5,129.080	112,172
Total	40,061.364	157,026.905	197,088.269	3,450,928

Water Supply Source Comparison

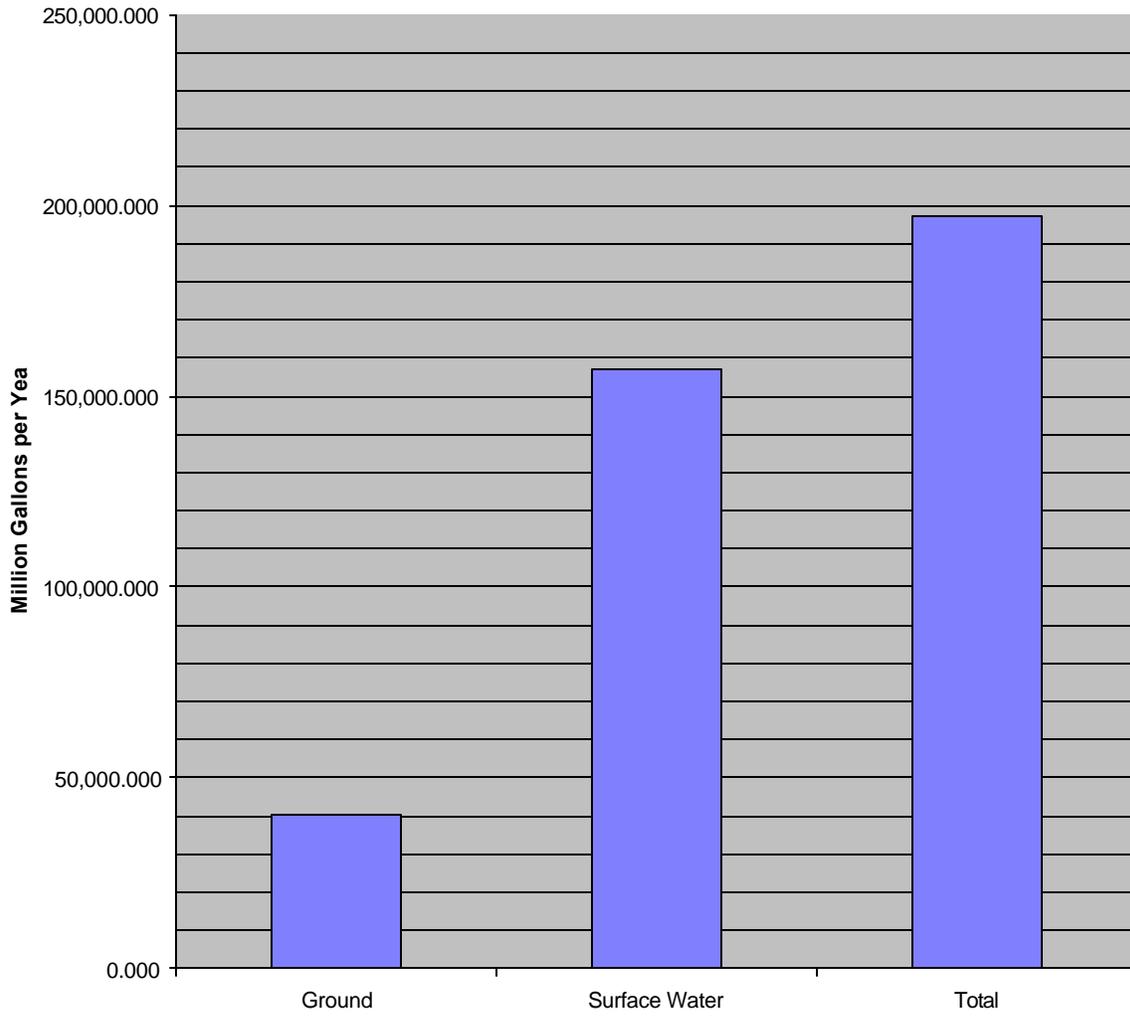


Chart 2

Industrial Use

Water withdrawal for industrial use from 94 reporting industries totaled 168,334,759,000 gallons, with 49 surface water systems accounting for 157,215,506,000 gallons and 61 groundwater systems accounting for 11,119,253,000 gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

Industrial Use By County (in million gallons)

County	Groundwater	Surface Water	Total
Aiken	1,663.958	21,471.315	23,135.273
Allendale	798.210	0.000	798.210
Anderson	0.000	40.930	40.930
Beaufort	145.595	0.000	145.595
Berkeley	1,087.236	3,497.636	4,584.872
Calhoun	167.500	33,100.632	33,268.132
Charleston	78.510	10,877.600	10,956.110
Cherokee	0.000	447.200	447.200
Chester	1.497	163.916	165.413
Darlington	1,314.583	8,042.000	9,356.583
Dorchester	802.100	183.820	985.920
Florence	656.176	7,781.801	8,437.977
Georgetown	25.942	12,095.406	12,121.348
Greenville	68.176	89.860	158.036
Greenwood	0.000	49.850	49.850
Hampton	376.400	0.000	376.400
Horry	87.834	47.800	135.634
Kershaw	345.542	965.660	1,311.202
Lancaster	0.000	1,134.400	1,134.400
Lexington	334.348	9,168.396	9,502.744
Marlboro	231.014	7,287.970	7,518.984
Oconee	0.000	736.723	736.723
Orangeburg	773.536	147.964	921.500
Pickens	0.000	3,251.463	3,251.463
Richland	647.863	10,316.156	10,964.019
Spartanburg	13.270	0.000	13.270
Sumter	418.332	0.000	418.332
Union	2.137	551.144	553.281
Williamsburg	1,075.700	0.000	1,075.700
York	3.794	25,765.864	25,769.658
Total	11,119.253	157,215.506	168,334.759

Industrial Water Source Comparison

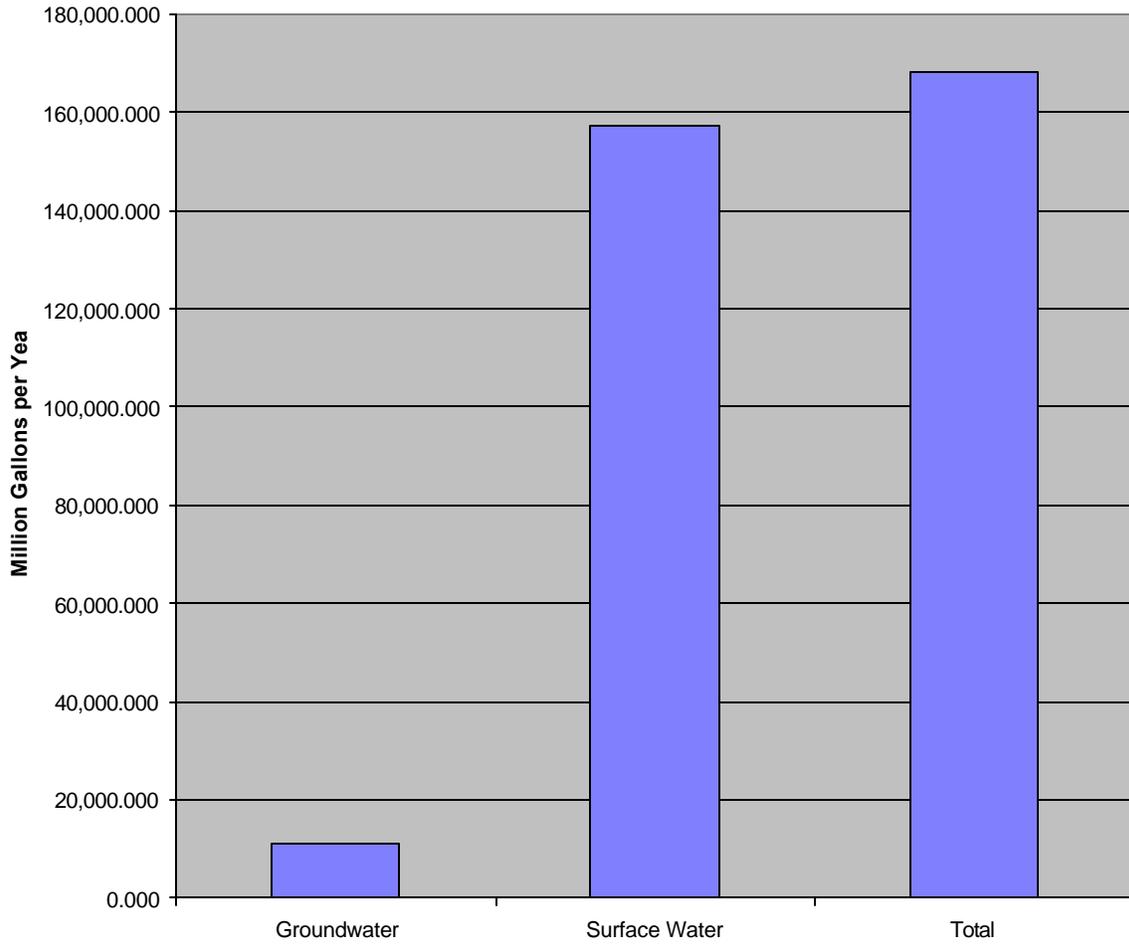


Chart 3

Irrigation Use

Total irrigated acreage in South Carolina increased from 88,898 acres in 1997 to 95,642 acres in 2002. Total irrigated harvested cropland was 91,795 acres in 2002⁽¹⁾. Water withdrawal for irrigation use from 199 reporting entities totaled 12,172,856,000 gallons, with 98 surface water systems accounting for 5,222,858,000 gallons and 144 groundwater systems accounting for 6,949,998,000 gallons.

Irrigation Use By County (in million gallons)

County	Groundwater	Surface Water	Total	Total Irrigated Acreage
Aiken	112.559	5.140	117.699	1,799
Allendale	508.830	106.190	615.020	7,889
Bamberg	341.930	151.372	493.302	4,754
Barnwell	89.090	5.700	94.790	1,313
Beaufort	601.521	19.692	621.213	587
Berkeley	0.240	1,064.281	1,064.521	602
Calhoun	46.490	37.156	83.646	4,617
Charleston	5.466	26.904	32.370	1,666
Chesterfield	57.644	0.000	57.644	1,269
Clarendon	119.837	119.275	239.112	1,704
Colleton	1,264.900	414.000	1,678.900	1,287
Darlington	0.000	49.745	49.745	948
Dillon	3.000	0.000	3.000	1,928
Edgefield	23.000	375.500	398.500	5,304
Florence	53.120	13.825	66.945	2,505
Georgetown	0.000	940.561	940.561	1,325
Greenville	0.000	26.000	26.000	1,760
Greenwood	1.200	0.000	1.200	179
Hampton	856.215	11.000	867.215	2,674
Horry	105.946	216.628	322.574	741
Jasper	207.208	0.000	207.208	2,737
Lee	15.319	4.800	20.119	1,072
Lexington	891.404	289.179	1,180.583	7,262
Marion	4.150	0.000	4.150	575
Marlboro	125.810	40.720	166.530	2,136
Newberry	48.208	136.380	184.588	1,087
Oconee	0.000	37.800	37.800	545
Orangeburg	1,044.582	476.127	1,520.709	16,808
Pickens	0.000	10.100	10.100	847
Richland	0.982	0.200	1.182	516
Saluda	0.000	38.720	38.720	3,504
Spartanburg	0.000	103.600	103.600	1,908
Sumter	421.347	501.739	923.086	5,537
Williamsburg	0.000	0.500	0.500	758
York	0.000	0.024	0.024	757
Total	6,949.998	5,222.858	12,172.856	90,900

(1) U.S. Department of Agriculture, 2002 Census of Agriculture, Volume 1 Geographic Area Series, "Table 10. Irrigation: 2002 and 1997"

Irrigation Source Comparison

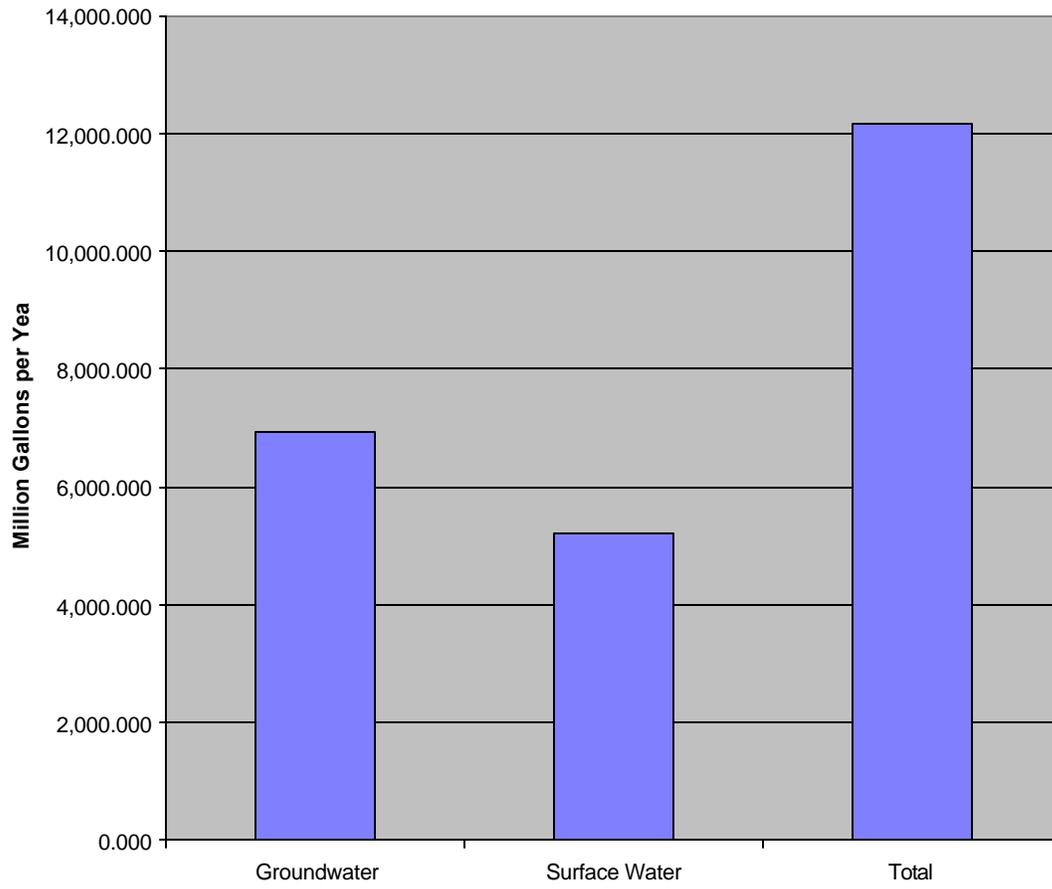


Chart 4

Golf Course Use

Water withdrawal from 247 reporting courses for golf course irrigation totaled 10,373,473,000 gallons, with 211 surface water systems accounting for 7,706,305,000 gallons and 121 groundwater systems accounting for 2,667,168,000 gallons.

Golf Course Irrigation (in million gallons)

County	Groundwater	Surface Water	Total
Aiken	18.555	33.393	51.948
Anderson	0.000	71.809	71.809
Barnwell	0.000	69.600	69.600
Beaufort	825.898	1,816.964	2,642.862
Berkeley	9.000	16.112	25.112
Calhoun	21.800	37.700	59.500
Charleston	709.869	207.566	917.435
Chester	11.010	40.200	51.210
Chesterfield	0.000	81.346	81.346
Clarendon	14.450	41.880	56.330
Colleton	50.910	3.847	54.757
Darlington	0.000	89.013	89.013
Dorchester	65.000	0.000	65.000
Edgefield	22.050	5.750	27.800
Florence	126.300	34.575	160.875
Georgetown	10.100	928.696	938.796
Greenville	6.157	282.207	288.364
Greenwood	0.000	56.899	56.899
Hampton	14.080	0.000	14.080
Horry	432.954	2,349.007	2,781.961
Kershaw	29.624	33.917	63.541
Lancaster	1.218	2.900	4.118
Laurens	0.000	37.853	37.853
Lexington	15.110	190.000	205.110
Marion	36.638	8.300	44.938
McCormick	0.000	22.718	22.718
Newberry	0.000	7.000	7.000
Oconee	0.000	63.401	63.401
Orangeburg	11.339	90.453	101.792
Pickens	0.000	344.158	344.158
Richland	97.262	287.514	384.776
Spartanburg	0.785	97.513	98.298
Sumter	101.849	127.839	229.688
York	35.210	226.175	261.385
Total	2,667.168	7,706.305	10,373.473

Golf Course Source Comparison

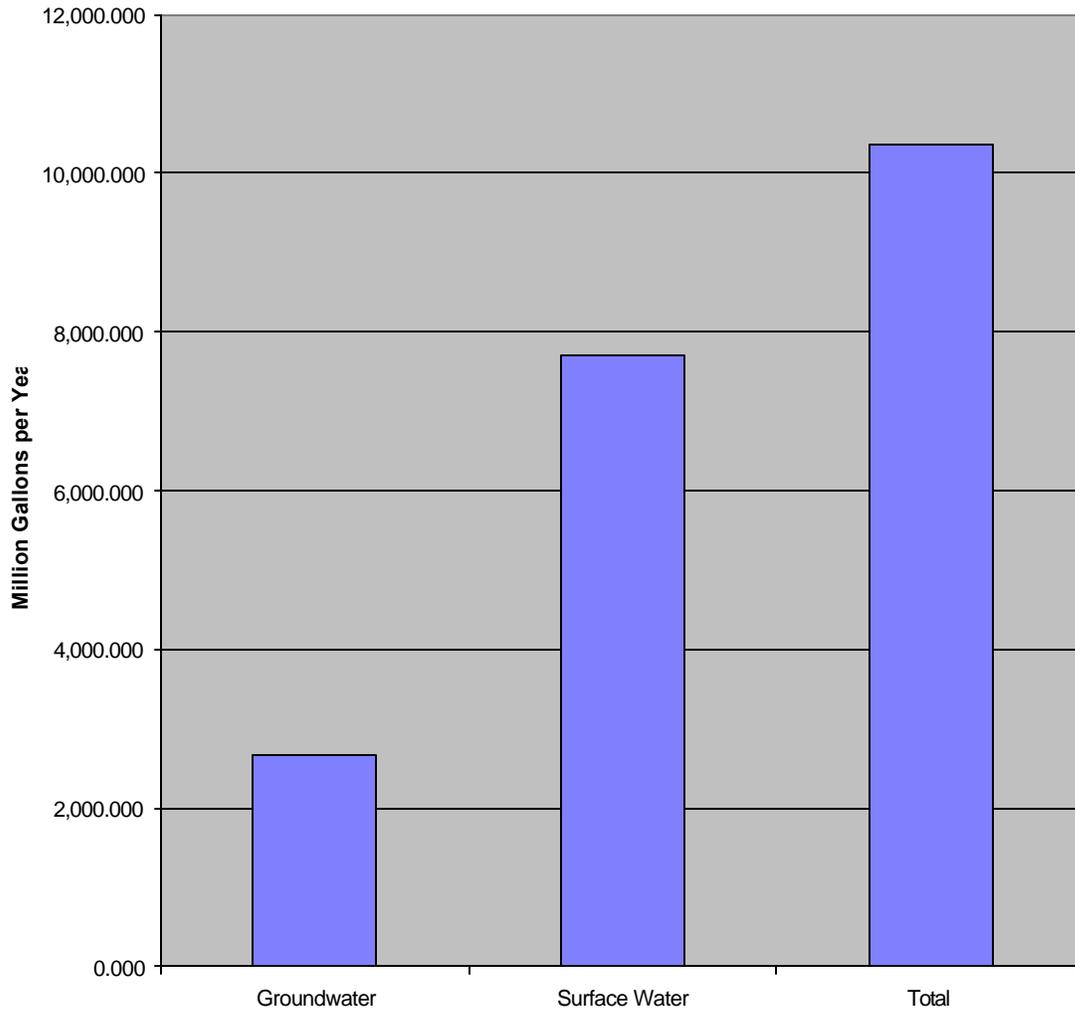


Chart 5

Mining Use

Water withdrawal associated with mining activities at 11 reporting facilities totaled 5,114,600,000 gallons, with 4 surface water systems accounting for 646,720,000 gallons and 9 groundwater systems accounting for 4,467,880,000 gallons.

Mining Activity (in million gallons)

County	Groundwater	Surface Water	Total
Aiken	75.460	1.93	77.390
Berkeley	0.960	177.60	178.560
Colleton	0.000	1.93	1.930
Horry	0.000	177.60	177.600
Lexington	721.000	287.66	1,008.660
Orangeburg	1,761.340	0.000	1,761.340
Richland	1,716.060	0.000	1,716.060
York	193.060	0.000	193.060
Total	4,467.880	646.72	5,114.600

Mining Source Comparison

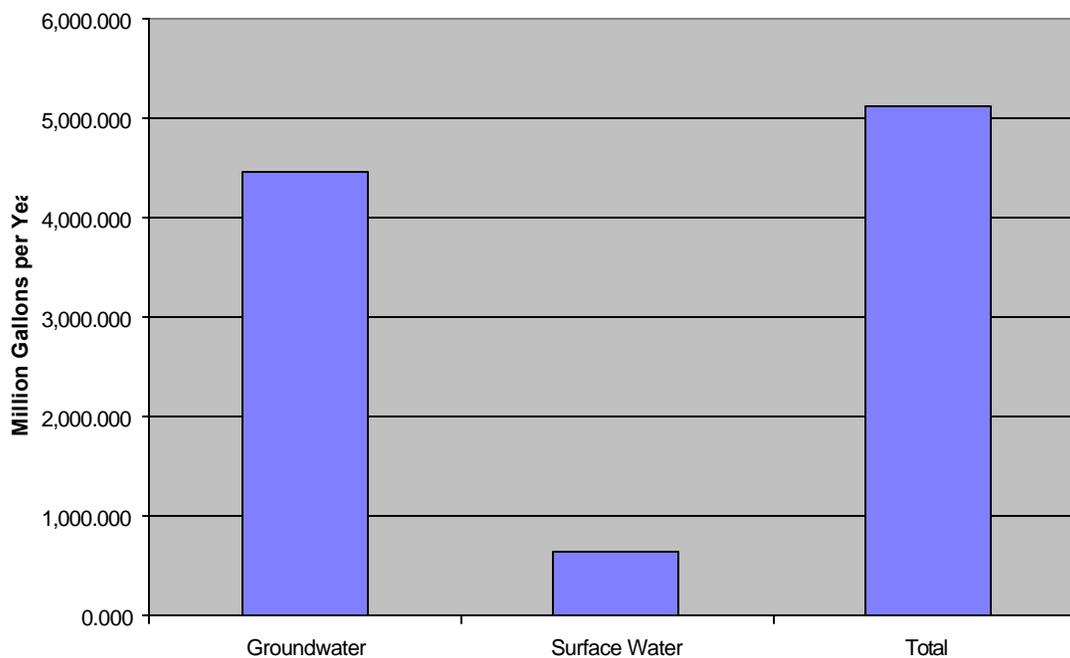


Chart 6

Aquaculture Use

Water withdrawal from 10 reporting aquaculture-farming facilities totaled 1,451,981,000 gallons, with 6 surface water systems accounting for 1,312,092,000 gallons and 7 groundwater systems accounting for 139,889,000 gallons.

**Aquaculture
(in million gallons)**

County	Groundwater	Surface Water	Total
Beaufort	7.472	83.861	91.333
Berkeley	2.817	37.911	40.728
Charleston	0.000	1,123.780	1,123.780
Dillon	26.800	0.000	26.800
Hampton	85.300	0.000	85.300
Jasper	4.000	0.000	4.000
Richland	13.500	31.500	45.000
Spartanburg	0.000	35.040	35.040
Total	139.889	1,312.092	1,451.981

Aquaculture Source Comparison

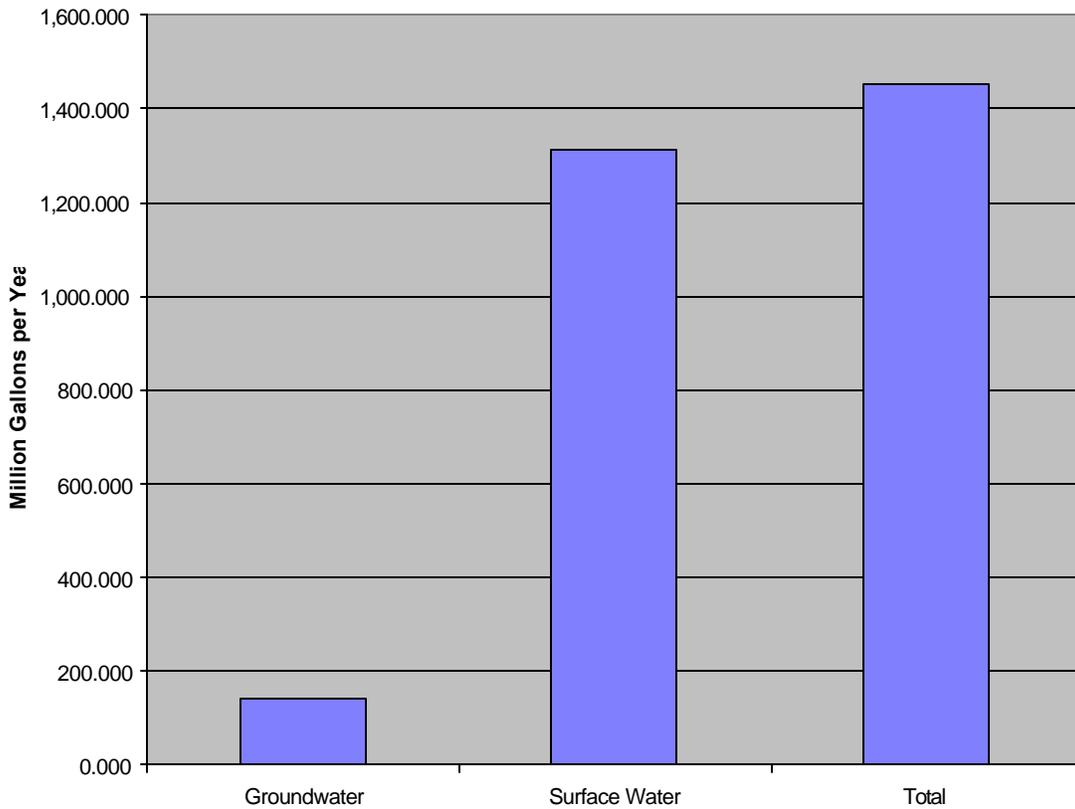


Chart 7

Other Use

Water withdrawal for other, non-specific use from 2 reporting facilities totaled 59,033,000 gallons, with groundwater accounting for all reported use.

Other Use (in million gallons)

County	Groundwater	Surface Water	Total
Beaufort	25.100	0.000	25.100
Horry	33.933	0.000	33.933
Total	59.033	0.000	59.033

Other Source Comparison

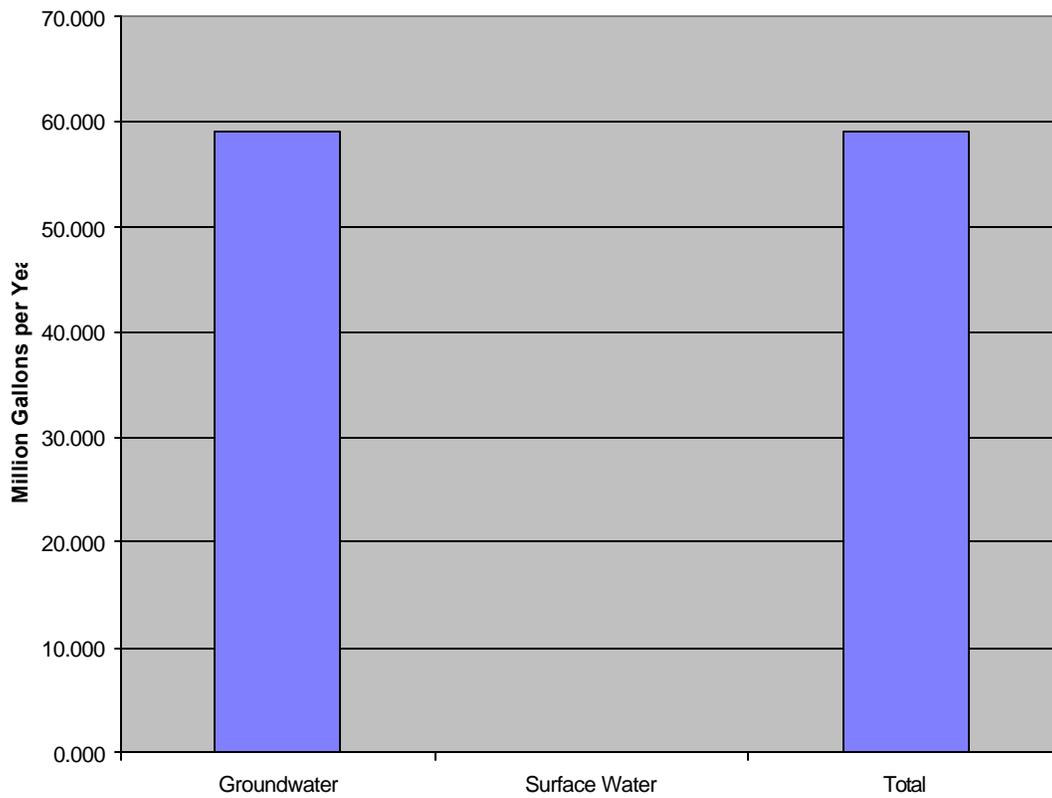


Chart 8

2003 Surface Water Use by County (in million gallons)

County	Hydroelectric	Thermoelectric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aquaculture	Other	Total
Abbeville	42,804.000	0.000	939.017	0.000	0.000	0.000	0.000	0.000	0.000	43,743.017
Aiken	0.000	53,110.000	1,733.388	21,471.315	5.140	33.393	0.000	0.000	0.000	76,353.236
Allendale	0.000	0.000	0.000	0.000	106.190	0.000	0.000	0.000	0.000	106.190
Anderson	276.600	52,766.892	7,349.308	40.930	0.000	71.809	0.000	0.000	0.000	60,505.539
Bamberg	0.000	0.000	0.000	0.000	151.372	0.000	0.000	0.000	0.000	151.372
Barnwell	0.000	0.000	0.000	0.000	5.700	69.600	0.000	0.000	0.000	75.300
Beaufort	0.000	0.000	5,679.473	0.000	19.692	1,816.964	0.000	83.861	0.000	7,599.990
Berkeley	1,207,806.198	166,266.381	4,676.897	3,497.636	1,064.281	16.112	0.000	37.911	0.000	1,383,365.416
Calhoun	0.000	0.000	0.000	33,100.632	37.156	37.700	0.000	0.000	0.000	33,175.488
Charleston	0.000	0.000	18,665.440	10,877.600	26.904	207.566	0.000	1,123.780	0.000	30,901.290
Cherokee	502,053.000	0.000	2,718.400	447.200	0.000	0.000	0.000	0.000	0.000	505,218.600
Chester	3,059,476.000	0.000	1,119.400	163.916	0.000	40.200	0.000	0.000	0.000	3,060,799.516
Chesterfield	0.000	0.000	1,048.792	0.000	0.000	81.346	0.000	0.000	0.000	1,130.138
Clarendon	0.000	0.000	0.000	0.000	119.275	41.880	0.000	0.000	0.000	161.155
Colleton	0.000	1,309.050	0.000	0.000	414.000	3.847	1.930	0.000	0.000	1,728.827
Darlington	0.000	296,537.000	0.000	8,042.000	49.745	89.013	0.000	0.000	0.000	304,717.758
Dillon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dorchester	0.000	0.000	0.000	183.820	0.000	0.000	0.000	0.000	0.000	183.820
Edgefield	1,198,558.600	0.000	1,307.667	0.000	375.500	5.750	0.000	0.000	0.000	1,200,247.517
Fairfield	3,165,364.830	246,543.778	1,023.627	0.000	0.000	0.000	0.000	0.000	0.000	3,412,932.235
Florence	0.000	0.000	423.870	7,781.801	13.825	34.575	0.000	0.000	0.000	8,254.071
Georgetown	0.000	3,863.504	1,970.171	12,095.406	940.561	928.696	0.000	0.000	0.000	19,798.338
Greenville	0.012	0.000	23,620.000	89.860	26.000	282.207	0.000	0.000	0.000	24,018.079
Greenwood	420,151.000	115.200	4,772.800	49.850	0.000	56.899	0.000	0.000	0.000	425,145.749
Hampton	0.000	0.000	0.000	0.000	11.000	0.000	0.000	0.000	0.000	11.000
Horry	0.000	39,724.810	13,287.449	47.800	216.628	2,349.007	177.600	0.000	0.000	55,803.294
Jasper	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Kershaw	2,047,284.000	0.000	1,680.373	965.660	0.000	33.917	0.000	0.000	0.000	2,049,963.950
Lancaster	1,381,492.000	0.000	6,741.166	1,134.400	0.000	2.900	0.000	0.000	0.000	1,389,370.466
Laurens	134.500	0.000	1,579.575	0.000	0.000	37.853	0.000	0.000	0.000	1,751.928
Lee	0.000	0.000	0.000	0.000	4.800	0.000	0.000	0.000	0.000	4.800
Lexington	685,270.710	48,610.130	4,843.625	9,168.396	289.179	190.000	287.660	0.000	0.000	748,659.700
Marion	0.000	0.000	0.000	0.000	0.000	8.300	0.000	0.000	0.000	8.300
Marlboro	0.000	0.000	373.100	7,287.970	40.720	0.000	0.000	0.000	0.000	7,701.790
McCormick	0.000	0.000	402.119	0.000	0.000	22.718	0.000	0.000	0.000	424.837
Newberry	0.000	0.000	2,079.127	0.000	136.380	7.000	0.000	0.000	0.000	2,222.507
Oconee	7.150	2,467,115.000	1,404.950	736.723	37.800	63.401	0.000	0.000	0.000	2,469,365.024
Orangeburg	0.000	0.000	2,915.626	147.964	476.127	90.453	0.000	0.000	0.000	3,630.170
Pickens	2,728,023.580	0.000	3,984.339	3,251.463	10.100	344.158	0.000	0.000	0.000	2,735,613.640
Richland	509,703.050	144,809.500	20,918.690	10,316.156	0.200	287.514	0.000	31.500	0.000	686,066.610
Saluda	0.000	0.000	0.000	0.000	38.720	0.000	0.000	0.000	0.000	38.720
Spartanburg	4,076.918	0.000	13,293.696	0.000	103.600	97.513	0.000	35.040	0.000	17,606.767
Sumter	0.000	0.000	0.000	0.000	501.739	127.839	0.000	0.000	0.000	629.578
Union	597,570.690	0.000	1,350.540	551.144	0.000	0.000	0.000	0.000	0.000	599,472.374
Williamsburg	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.500
York	1,408,154.000	35,600.000	5,124.280	25,765.864	0.024	226.175	0.000	0.000	0.000	1,474,870.343
Total 2003	18,958,206.838	3,556,371.245	157,026.905	157,215.506	5,222.858	7,706.305	467.190	1,312.092	0.000	22,843,528.939
Total 2002	11,415,080.840	2,464,807.020	169,098.200	155,341.260	10,988.740	9,451.500	863.240	2,084.560	0.000	14,227,715.360
Total 2001	9,796,267.270	1,622,975.630	154,975.300	168,698.780	10,707.640	9,039.340	109.500	701.290	0.000	11,763,474.750

Table 1

2003 Groundwater Use by County (in million gallons)

County	Hydro-electric	Thermo-electric	Water Supply	Industrial	Irrigation	Golf Course	Mining	Aqua-culture	Other	Total
Abbeville	0.000	0.000	2.919	0.000	0.000	0.000	0.000	0.000	0.000	2.919
Aiken	0.000	0.000	4,564.925	1,663.958	112.559	18.555	75.460	0.000	0.000	6,435.457
Allendale	0.000	0.000	415.420	798.210	508.830	0.000	0.000	0.000	0.000	1,722.460
Anderson	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bamberg	0.000	0.000	527.601	0.000	341.930	0.000	0.000	0.000	0.000	869.531
Barnwell	0.000	0.000	686.014	0.000	89.090	0.000	0.000	0.000	0.000	775.104
Beaufort	0.000	0.000	4,352.805	145.595	601.521	825.898	0.000	7.472	25.100	5,958.391
Berkeley	0.935	8.506	236.862	1,087.236	0.240	9.000	0.960	2.817	0.000	1,346.556
Calhoun	0.000	0.000	236.645	167.500	46.490	21.800	0.000	0.000	0.000	472.435
Charleston	0.000	0.000	3,639.136	78.510	5.466	709.869	0.000	0.000	0.000	4,432.981
Cherokee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chester	0.000	0.000	0.000	1.497	0.000	11.010	0.000	0.000	0.000	12.507
Chesterfield	0.000	0.000	474.466	0.000	57.644	0.000	0.000	0.000	0.000	532.110
Clarendon	0.000	0.000	627.690	0.000	119.837	14.450	0.000	0.000	0.000	761.977
Colleton	0.000	2.203	768.594	0.000	1,264.900	50.910	0.000	0.000	0.000	2,086.607
Darlington	0.000	432.837	2,267.157	1,314.583	0.000	0.000	0.000	0.000	0.000	4,014.577
Dillon	0.000	0.000	1,647.039	0.000	3.000	0.000	0.000	26.800	0.000	1,676.839
Dorchester	0.000	0.000	585.327	802.100	0.000	65.000	0.000	0.000	0.000	1,452.427
Edgefield	0.000	0.000	0.000	0.000	23.000	22.050	0.000	0.000	0.000	45.050
Fairfield	0.000	0.000	58.102	0.000	0.000	0.000	0.000	0.000	0.000	58.102
Florence	0.000	0.000	4,779.121	656.176	53.120	126.300	0.000	0.000	0.000	5,614.717
Georgetown	0.000	0.000	1,066.668	25.942	0.000	10.100	0.000	0.000	0.000	1,102.710
Greenville	0.000	0.000	28.682	68.176	0.000	6.157	0.000	0.000	0.000	103.015
Greenwood	0.000	0.000	19.230	0.000	1.200	0.000	0.000	0.000	0.000	20.430
Hampton	0.000	0.000	507.321	376.400	856.215	14.080	0.000	85.300	0.000	1,839.316
Horry	0.000	0.000	636.003	87.834	105.946	432.954	0.000	0.000	33.933	1,296.670
Jasper	0.000	0.000	563.386	0.000	207.208	0.000	0.000	4.000	0.000	774.594
Kershaw	0.000	0.000	772.193	345.542	0.000	29.624	0.000	0.000	0.000	1,147.359
Lancaster	0.000	0.000	0.000	0.000	0.000	1.218	0.000	0.000	0.000	1.218
Laurens	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lee	0.000	0.000	577.888	0.000	15.319	0.000	0.000	0.000	0.000	593.207
Lexington	0.000	0.000	373.169	334.348	891.404	15.110	721.000	0.000	0.000	2,335.031
Marion	0.000	0.000	1,388.508	0.000	4.150	36.638	0.000	0.000	0.000	1,429.296
Marlboro	0.000	0.000	877.293	231.014	125.810	0.000	0.000	0.000	0.000	1,234.117
McCormick	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Newberry	0.000	0.000	47.365	0.000	48.208	0.000	0.000	0.000	0.000	95.573
Oconee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Orangeburg	0.000	1,660.084	585.140	773.536	1,044.582	11.339	1,761.340	0.000	0.000	5,836.021
Pickens	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Richland	0.000	0.000	396.463	647.863	0.982	97.262	1,716.060	13.500	0.000	2,872.130
Saluda	0.000	0.000	105.535	0.000	0.000	0.000	0.000	0.000	0.000	105.535
Spartanburg	0.000	0.000	26.382	13.270	0.000	0.785	0.000	0.000	0.000	40.437
Sumter	0.000	0.000	5,858.533	418.332	421.347	101.849	0.000	0.000	0.000	6,800.061
Union	0.000	0.000	0.000	2.137	0.000	0.000	0.000	0.000	0.000	2.137
Williamsburg	0.000	0.000	356.982	1,075.700	0.000	0.000	0.000	0.000	0.000	1,432.682
York	0.000	0.000	4.800	3.794	0.000	35.210	193.060	0.000	0.000	236.864
Total 2003	0.935	2,103.630	40,061.364	11,119.253	6,949.998	2,667.168	4,467.880	139.889	59.033	67,569.150
Total 2002	0.600	2,235.300	43,304.590	11,710.080	18,679.650	4,571.420	2,296.640	199.390	106.220	83,103.890
Total 2001	0.640	2,009.250	38,549.990	11,881.120	16,413.500	4,263.200	2,582.250	163.880	204.840	76,068.670

Table 2

Bureau of Water

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report

2004 Annual Summary





South Carolina Water Use Report 2004 Summary

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

**Compiled by:
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Groundwater Management Section**

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Robert Devlin, Manager**

Technical Document Number: 004-05

**Bureau of Water
July 2005**

Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina *Surface Water Withdrawal and Reporting Act*, §49-4-10 et. seq., and the South Carolina *Groundwater Use and Reporting Act*, §49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to the Water Use Program at DHEC.

Water Use data is used by the State of South Carolina to better define the distribution and demand for our surface and groundwater resources across the state. Data from the Water Use Program at DHEC is shared between other local, state, and federal regulatory and scientific agencies to establish a common understanding of the demands placed upon our water resources. This common database has proven critical in water management decisions and water use conflict resolution.

Statistics utilized in this report represent data obtained from registered users of the Water Use Program. Consumptive use from private domestic wells, small surface water irrigation intakes, facilities that do not meet the reporting threshold, or data from facilities failing to report their annual water use are not included in this annual summary.

If you have questions about this or previous Annual Water Use Reports, or would like to obtain further information about reported water withdrawals in South Carolina, please contact:

**Water Use Program
SCDHEC Bureau of Water
2600 Bull Street
Columbia, SC 29201
www.scdhec.net/water**

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Introduction

South Carolinians have enjoyed an available fresh water supply that is clean, abundant, easily attainable and, for all practical purposes, inexhaustible. In South Carolina today, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and sundry uses. According to the U.S. Census Bureau, South Carolina will increase its population by 600,000 people by 2025 and the U.S. Department of Agriculture reports development converts approximately 100,000 acres per year to urban uses. This growth and development in the state has placed increasing demand on our water supplies. With limited and sporadic rainfall events, groundwater systems and surface water bodies under continuous natural discharge and human use (pumpage) showed steady and, at times, drastic water level declines with numerous waterways reaching record low flow conditions. Due to the low flow conditions, excursions of saltwater inland along coastal waterways threatened some surface water intakes. Some homeowners relying on shallow water wells have been forced to drill deeper wells or seek alternate sources of water supply.

In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that,

“...the groundwater resources of the State be put to beneficial use to the fullest extent to which they [are] capable and to provide and maintain conditions which are conducive to the development and use of all water resources.”

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the annual *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2004. The Department maintains and continually updates the water use and facility databases utilized in this report. Water use data were collected by annual reporting of water use by registered users, as required and mandated by state law, and are reported in **million gallons** unless stated otherwise.

South Carolina Climate

The climate in South Carolina is affected by many factors, notably its location in the mid-latitudes and its proximity to the Atlantic Ocean. During the summer, ocean current-driven air masses such as the Bermuda High routinely push tropical air from the Gulf of Florida upland from the coast. These warm, moist currents collide with cooler, drier air masses to generate rainfall, and at times, severe thunderstorms. In contrast, the Appalachian region in the northwest portion of the state experiences cooler temperatures, owing in part to orographic lifting of air masses and subsequent cooling effect provided by the increase in altitude. Altitude change also causes the additional phenomenon of down slope heating as air masses from the mountains settle and compress over the eastern Blue Ridge and Piedmont region. During the winter months, the highlands of the Blue Ridge escarpment deflect northerly cold air to the southwest, often lessening the impact of major cold fronts and winter storms.

The vast majority of the state is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. Average temperature varies from the mid-50's in the mountains to low-60's along the coast. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. According to the South Carolina State Climatology Office, no month in South Carolina averages less than two inches of precipitation, regardless of location within the state. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990, 1993, and most recently 1998. The latest multiyear drought was one of the most severe in South Carolina's history, with average precipitation, groundwater levels, and stream flows at or near record lows. The drought that officially began in June 1998 abated in the late summer of 2002 with the onset of more seasonal (and in some locations torrential) precipitation for many parts of South Carolina.

South Carolina Geography and Hydrology

Geography and Physiography

South Carolina has a distinct natural beauty and an ecological diversity covering nearly 31,189 square miles, with approximately 30,111 square miles land area, 1,078 square miles inland or coastal waterways and 135 miles of coastline. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (**Figure 1**). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina.

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties, and is distinguished from other parts of South Carolina by greater elevations (1,000 – 3,300 feet) and surface relief. Dissected mountains, rugged hills and thick forest regions characterize the land surface. Surface water in the Blue Ridge takes the form of high gradient creeks and streams and natural or man-made lakes, while groundwater occurs in the fractures of the bedrock and a thin veneer of soil and saprolite. In general, water quality of streams and groundwater is excellent in the Blue Ridge owing to the constant replenishment from abundant local rainfall.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line, exclusive of those counties within the Blue Ridge province. Although similar to the Blue Ridge, the region demonstrates lower topographic relief, and therefore lower gradient streams, while elevations range from between 450 to 1000 feet above sea level. Counties in the Piedmont and Blue Ridge physiographic provinces depend primarily on the abundant regional rainfall that recharges lakes, reservoirs and major river systems. These surface water bodies constitute the primary source of water for public supply, industry, agriculture, and power production in the Piedmont Region.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the Fall Line east to the Atlantic Ocean. Elevations of the exposed Coastal Plain range between 450 feet to sea level. Once below the Fall Line, rivers and streams assume a different character than found in the Piedmont. Where streams once rolled across exposed Piedmont rocks and tumbled down the occasional stretch of whitewater, the Coastal Plain dictates a slower pace and quiet meandering river channels with adjacent wetlands are common. Regional geology of the Coastal Plain is characterized by aquifers developed in layers of sands, silts, or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The vast majority of South Carolina's water resources are contained as groundwater in the Coastal Plain, and in general, reliance on groundwater for irrigation, industrial uses, and public water supply increases dramatically east of the Fall Line (**Figure 7**). A generalized cross-section for the Coastal Plain aquifers is presented as **Figure 2**, and a brief outline of the major aquifers in South Carolina follows.

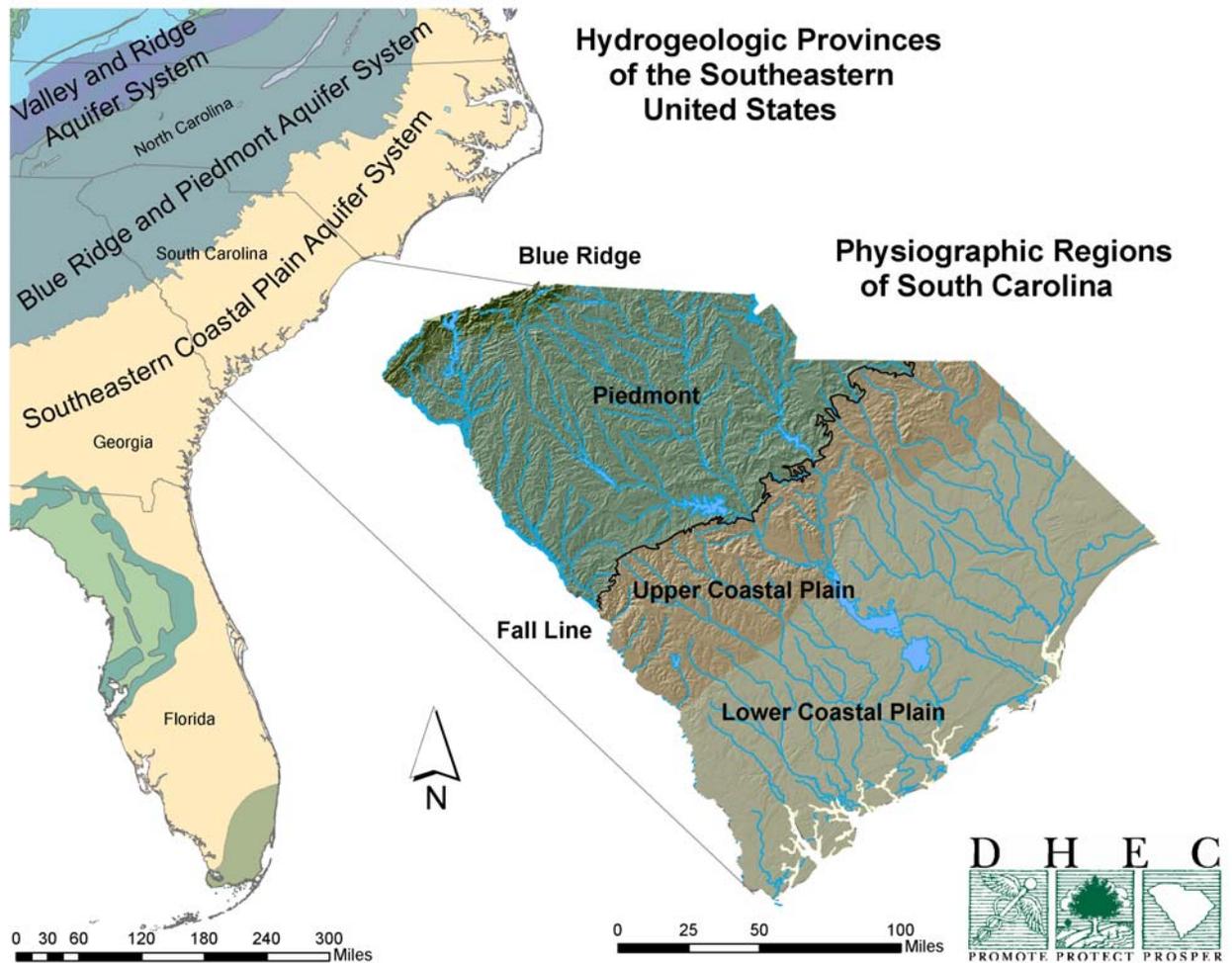


Figure 1: Hydrogeologic and Physiographic Setting for Water Use in South Carolina

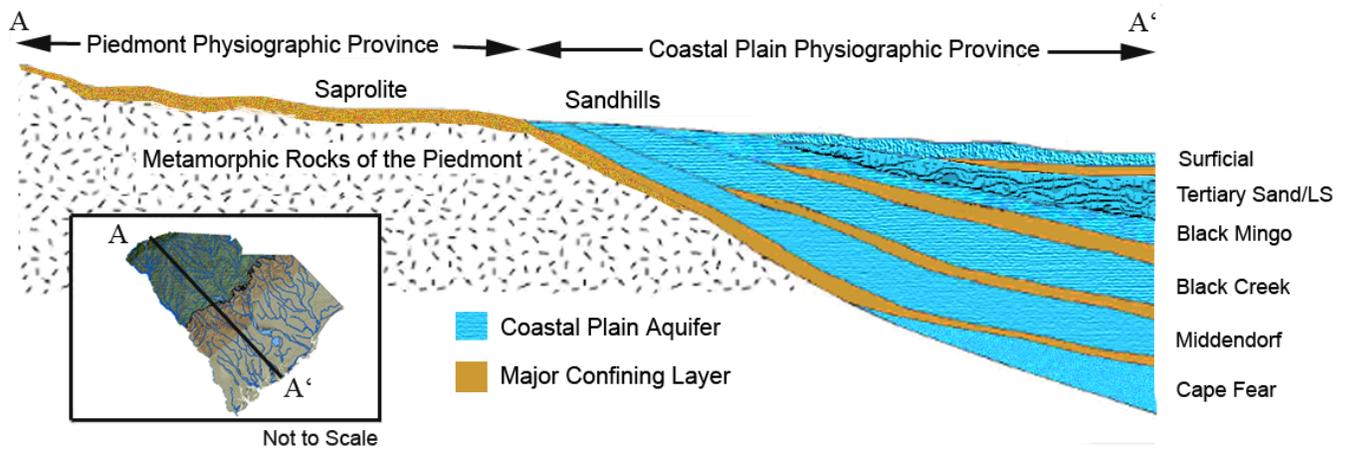


Figure 2: Generalized Hydrogeologic Cross-Section from the Blue Ridge through the Lower Coastal Plain in South Carolina

Groundwater Resources

Groundwater resources are found throughout the subsurface of South Carolina in varying quantities, qualities, and depths that reflect the nature of the geologic materials that host the respective aquifers. The following is a brief description of the State's major groundwater resources.

Crystalline Rock Aquifer System of the Blue Ridge and Piedmont

Geology of the Blue Ridge is typically characterized by clayey saprolite, ranging in depth from several feet to tens of feet, overlying metamorphic crystalline rock. The saprolite grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Geology of the Piedmont is similar to that of the Blue Ridge, but the diminished relief allows for greater thickness of saprolite development. In general, wells in the Blue Ridge and Piedmont regions yield little water when compared to wells drilled in the Coastal Plain owing to the inherently low porosity and permeability of the crystalline rock present in the upstate.

Surficial Aquifer System

Shallow sands that comprise the Surficial aquifer are among the youngest of the Coastal Plain sediments and are found exclusively in the Lower Coastal Plain (**Figure 1**). This system is capable of producing water in modest amounts for irrigation and private drinking water supply, but is especially susceptible to contamination due to its shallow, unconfined nature. The Surficial sands are highly influenced by local precipitation and river stage and are especially prone to dramatic water level declines during times of drought.

Tertiary Limestone/Sand Aquifer System (Floridan Aquifer System)

In the southern half of the Coastal Plain, Tertiary aquifers consisting of sand grade southeastward into an ever thickening wedge of limestone. Development of the aquifer system is common in the Charleston, Dorchester, and Berkeley County area. Southwest of the Combahee and Salkehatchie Rivers, upper sections of the limestone become increasingly permeable owing to abundant voids created from dissolved marine fossils, and are capable of storing and supplying tremendous amounts of water. The majority of utilization of the aquifer occurs near the upper, highly permeable zone that supplies the majority of residential wells in Beaufort and Jasper Counties, and is the primary source of water for public supply, irrigation, and industry in the Low Country. This southern section of the Tertiary Limestone correlates regionally with the Upper Floridan Aquifer that extends from southern South Carolina to the southern keys of Florida.

Black Mingo Aquifer

Development of the Black Mingo is common in the vicinity of Charleston, Dorchester, and Berkeley counties, but has been largely overlooked south of Dorchester County owing to the increasingly prolific nature of the more shallow Tertiary Limestone (Floridan Aquifer System). Like the majority of Coastal Plain sediments, the nature of the aquifer differs dramatically from one area to the next. In the Charleston area, the aquifer is composed of permeable sand and limestone, while within the Upper Coastal Plain the Black Mingo is often a poorly producing aquifer composed of fine silt and clay, and therefore is unused in favor of the Middendorf or Tertiary Sand Aquifer.

Pee Dee Aquifer

The Pee Dee aquifer, where present, generally produces quality water at moderate rates. The aquifer matrix is composed of sand and silt separated by discontinuous intervals of clay. Development of the Pee Dee aquifer usually takes place in conjunction with the more prolific Black Creek aquifer and has become an excellent alternative to the often-overburdened Black

Creek for many uses, especially irrigation. The Pee Dee aquifer is most utilized in the northeast portion of the State, with the most demand centered between Florence and Horry Counties.

Black Creek Aquifer

Though present throughout much of the Coastal Plain, development of the Black Creek aquifer has been conducted primarily in the mid-to-northern portions of the Coastal Plain. The aquifer is composed of silt and fine sand with, with coarse sand in the Upper Coastal Plain. The Black Creek aquifer is an important source of water for public supply, irrigation, and industry from Marion County southeast to Georgetown County.

Middendorf Aquifer

The Middendorf Aquifer is a prolific source of water throughout the majority of the coastal plain and consists of coarse-grained fluvial sands near the Fall Line that grade to fine-grained marine sands and clay in the northern and eastern Lower Coastal Plain. The majority of the Pee Dee region, including Chesterfield, Darlington, Florence, and Marlboro Counties, as well as Orangeburg and Sumter Counties rely heavily on the Middendorf for irrigation, public supply, and industrial use. In the past decade, use of the Middendorf has increased along the southern coast in areas such as Charleston County.

Cape Fear Aquifer

Little information exists from this deep sand aquifer owing to the few wells that have penetrated the formation. In general, water quality from the Cape Fear aquifer is poor over much of its extent owing to ancient unflushed (connate) seawater and extensive mineralization. In South Carolina, the Cape Fear aquifer is largely unused.

Surface Water Resources

South Carolina's land surface is drained by eight (8) major river basins, all of which are critical to public water supply, irrigation, industry, and/or power generation. These major watersheds are shown as **Figure 3**, and a brief description of each major watershed follows.

Broad River Basin

The Broad River Watershed encompasses portions of North and South Carolina and drains the majority of Cherokee, Union, Spartanburg, and Greenville Counties. Portions of Chester, Fairfield, Richland and York counties are also included in the basin, and are drained by the Enoree, Pacolet, and Tyger Rivers, major tributary streams to the Broad River.

Catawba River Basin

Similar to the Broad River Basin, the watershed of the Catawba River drains counties in North and South Carolina east of a hydrologic divide in York, Chester, and Fairfield Counties. All or portions of the following counties lie within the basin: Chester, Fairfield, Kershaw, Lancaster, Richland, Sumter and York. The Catawba basin hosts Lake Wylie, Fishing Creek Reservoir, Lake Wateree, the Catawba and Wateree Rivers and associated tributary streams.

Edisto River Basin

The Edisto River Basin encompasses nearly all of Orangeburg County and portions of Aiken, Berkeley, Calhoun, Dorchester, and Lexington counties. The basin drains the central Coastal Plain and contains the North and South Forks of the Edisto River and tributaries, as well as numerous ecologically important wetland areas.

Pee Dee River Basin

The Pee Dee River Basin is the largest of South Carolina's watersheds and drains all or portions of Chesterfield, Darlington, Dillon, Georgetown, Horry, Kershaw, Lancaster, Lee, Marion, Marlboro, Williamsburg counties, and portions of southeastern North Carolina. The

Greater Pee Dee Watershed encompasses 5.1 million acres and includes the Pee Dee, Lynches, Waccamaw, and Sampit watersheds, as well as the Intracoastal Waterway and Winyah Bay.

Salkehatchie River Basin

The Salkehatchie basin is located entirely in the Coastal Plain and drains portions of Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper counties. The Coosawhatchie, Salkehatchie and Little Salkehatchie Rivers, along with their associated tributaries and local wetlands drain the basin and form tide-dominated distributary channels near the coast.

Saluda River Basin

The Saluda River Basin drains the central portion of South Carolina's Piedmont Region and encompasses major portions of Greenville and Pickens counties, as well as portions of Abbeville, Greenwood, Laurens, Lexington, Richland, and Saluda Counties. The basin includes all tributary streams to the Saluda River and Lakes Greenwood and Murray, the latter being a critical source for public water supply and hydroelectric power in central South Carolina.

Santee River Basin

The Santee River basin originates near the confluence of the Catawba and Broad River Basins and includes two of the State's largest reservoirs, Lake Marion and Lake Moultrie. These two major surface water resources are important power generating assets for the South Carolina. The basin drains Berkeley, Calhoun, Charleston, Clarendon, Dorchester, and small portions of Georgetown and Sumter Counties via tributaries of the Cooper, Santee and Ashley Rivers.

Savannah River Basin

The Savannah River Basin stretches from the Blue Ridge to the Atlantic Ocean and encompasses the border counties of South Carolina. The watershed drains major portions of Abbeville, Aiken, Allendale, Anderson, Edgefield, Greenwood, Hapton, McCormick, Oconee, and Pickens County, as well as adjacent counties in Georgia. The watershed includes the Savannah, Chatooga, Seneca, Little River, Stevens Creek, Rocky, and Tugaloo Rivers, and discharges approximately 8.0 billion gallons per day.

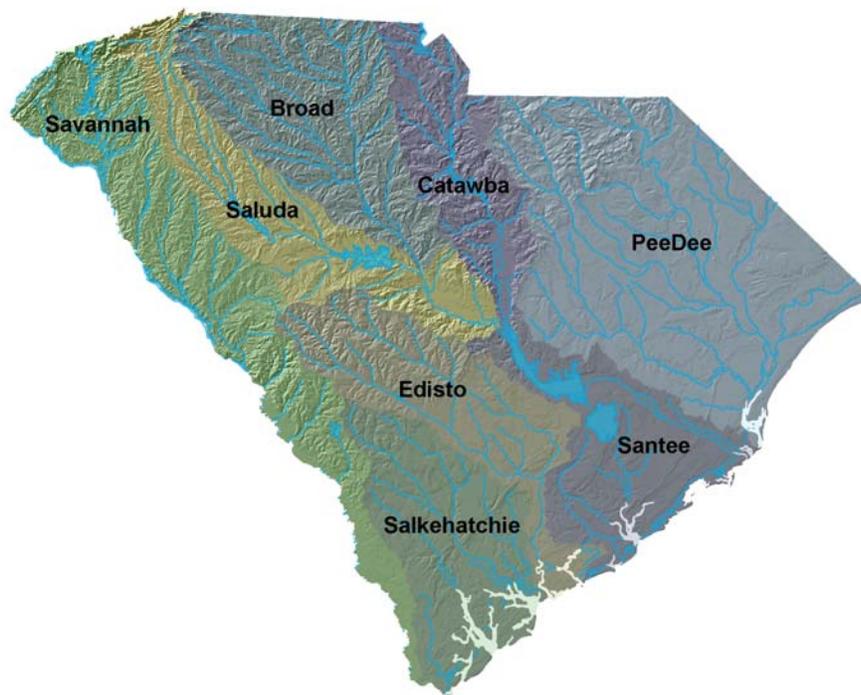


Figure 3: Major River Basins of South Carolina

Demographics

According to the 2000 Census, South Carolina's estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities (**Figure 4**). South Carolina has approximately 25,000 farms, occupying 4,588,000 acres (7,170 square miles). Of this, approximately 2,500,000 acres (3,905 square miles) are cropland¹. Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and the Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area². South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2004) totaled 94,363 million kilowatt hours³.

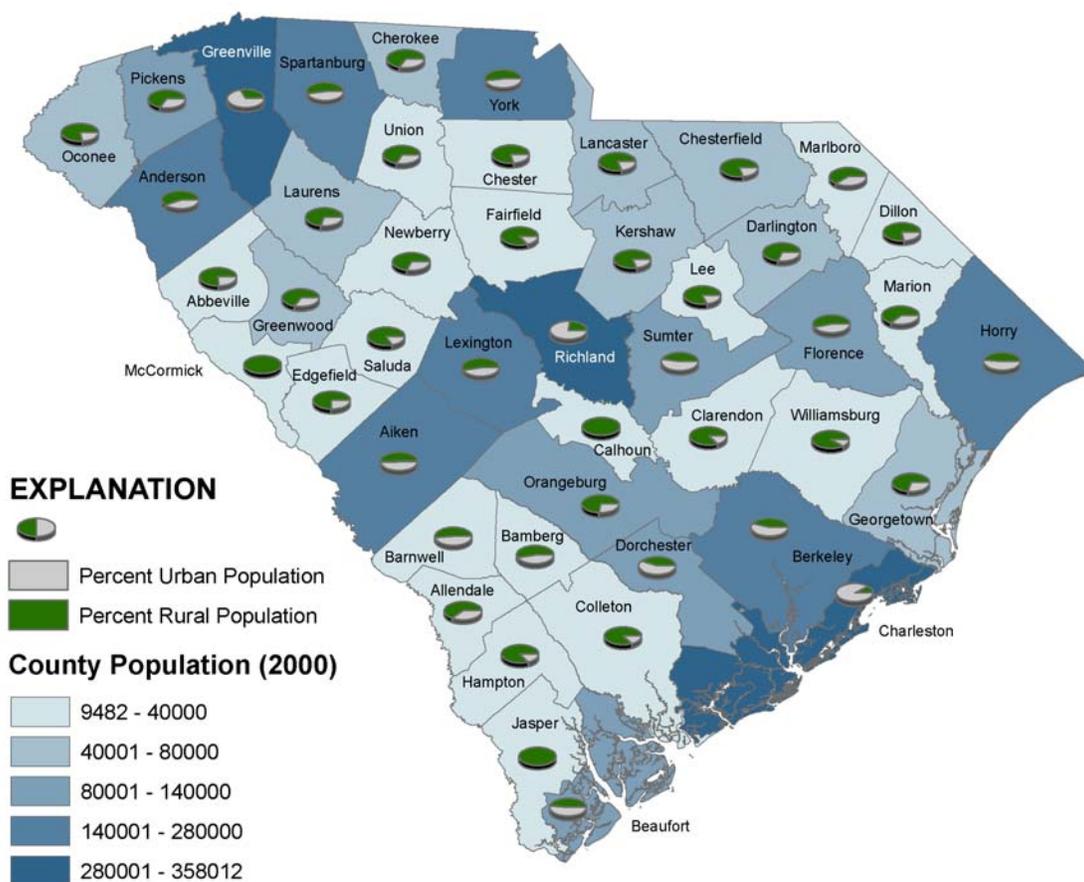


Figure 4: Population by County in South Carolina, 2000

¹ 1997 Census of Agriculture, Volume 1 Geographic Area Series, "Table 1. County Summary Highlights: 1997."

² S.C. Department of Commerce, 2000/2001 "South Carolina Industrial Directory."

³ S.C. Budget and Control Board Statistical Abstract 2004

2004 Water Use Profile

Surface and Groundwater Use Summary by Category and County in South Carolina, 2004

The following section outlines all reported water use for the State of South Carolina for the calendar year 2004. Water use is summarized by category, and further tabulated on a county-by-county basis. Where appropriate, the spatial distribution of the magnitude of water use is demonstrated on an accompanying map with a breakdown chart of groundwater and surface water use as a percentage of total use for the category.

Reporting Water Withdrawers

For the reporting year 2004, South Carolina had registered 848 water withdrawers with 2425 sources, 481 surface water facilities with 712 sources and 536 groundwater facilities with 1,713 sources. It should be noted 169 facilities utilized both groundwater and surface water sources.

Water Use Category	Facilities	GW Source	SW Source
Golf Course	257	291	284
Water Supply	223	745	82
Irrigation	201	413	226
Industrial	94	209	55
Hydroelectric	30	1	31
Thermoelectric	19	13	22
Mining	12	13	4
Aquaculture	10	12	8
Other	2	16	NR
Total	848	1713	712

NR = None Reported

Total Reported Water Use

Total water use reported for 2004 was more than 18.8 trillion gallons from 848 reporting facilities. Surface water withdrawal from 481 facilities accounted for approximately 18.7 trillion gallons, approximately 99% of total water use. Groundwater withdrawal from 536 reporting facilities accounted for approximately 67.6 billion gallons or approximately 1%.

Water Use Category	Groundwater	Surface Water	Total	Percentage
Aquaculture	238.249	1,117.382	1,355.631	0.01%
Golf Courses	3,699.103	9,531.359	13,230.462	0.07%
Industrial	11,794.443	145,514.581	157,309.024	0.83%
Irrigation	13,992.558	10,127.311	24,119.869	0.13%
Mining	2,456.623	785.000	3,241.623	0.02%
Other	85.505	NR	85.505	0.0005%
Hydroelectric	1.181	15,202,999.340	15,203,000.521	80.68%
Thermoelectric	2,040.139	3,230,063.932	3,232,104.071	17.15%
Water Supply	39,764.832	169,699.471	209,464.303	1.11%

NR = None Reported

Water Use	1999	2000	2001	2002	2003	2004
Hydroelectric	12,160,642.62	10,281,681.91	9,796,267.91	11,415,081.44	18,958,207.77	15,203,000.521
Thermoelectric	2,326,627.77	2,240,508.37	1,624,984.88	2,467,042.32	3,558,474.88	3,232,104.071
Water Supply	221,911.79	148,265.21	193,525.29	212,402.79	197,088.27	209,464.303
Industrial	172,314.14	157,463.33	180,579.90	167,051.34	168,334.76	157,309.024
Irrigation	9,470.97	3,182.73	27,121.14	29,668.39	12,172.86	24,119.869
Golf Course	6,323.77	6,806.35	13,302.54	14,022.92	10,373.47	13,230.462
Mining	2,546.92	3,056.08	2,691.75	3,159.88	4,935.07	3,241.623
Aquaculture	35.97	13.67	865.17	2,283.95	1,451.98	1,355.631
Other	367.06	223.61	204.84	106.22	59.033	85.505
Total	14,900,241.01	12,841,201.26	11,839,543.42	14,310,819.25	22,911,098.09	18,843,911.009
Facilities	717	577	931	848	833	848

Water Use in Power Production

According to the 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

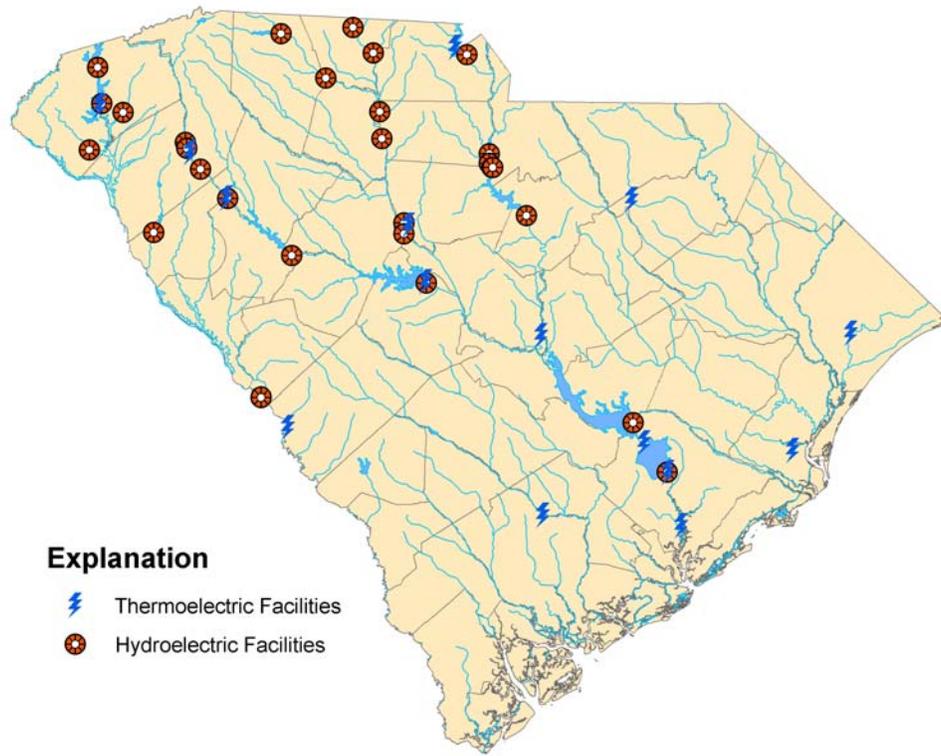


Figure 5: Distribution of Hydroelectric and Thermoelectric Facilities in South Carolina

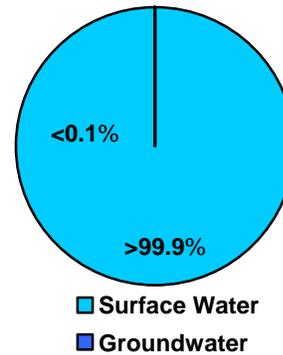
Hydroelectric Water Use

Hydroelectric facilities employ energy from flowing water to generate electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river), or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 31 hydroelectric sources accounted for approximately 15.203 trillion gallons, approximately 82.44% of reported water use for power production and 80.68% of total reported water use for the year.

County	Surface Water	Groundwater	County Total
Abbeville	28,619.000	NR	28,619.000
Anderson	274.193	NR	274.193
Berkeley	1,213,836.312	1.181	1,213,837.493
Cherokee	455,113.000	NR	455,113.000
Chester	2,171,229.000	NR	2,171,229.000
Edgefield	999,809.310	NR	999,809.310
Fairfield	3,025,896.060	NR	3,025,896.060
Greenville	140,851.000	NR	140,851.000
Greenwood	317,017.000	NR	317,017.000
Kershaw	1,207,267.000	NR	1,207,267.000
Lancaster	1,093,794.000	NR	1,093,794.000
Laurens	149.400	NR	149.400
Lexington	201,784.930	NR	201,784.930
Oconee	12.200	NR	12.200
Pickens	2,611,758.000	NR	2,611,758.000
Richland	473,338.480	NR	473,338.480
Spartanburg	13,852.416	NR	13,852.416
Union	316,309.036	NR	316,309.036
York	932,089.000	NR	932,089.000

NR = None Reported

Hydroelectric Source Comparison



Average daily flow-through hydroelectric use for any of the 31 reporting facilities averaged 1.34 billion gallons of surface water per day in 2004

	Surface Water	Groundwater
Source Total:	15,202,999.337	1.181

Total Hydro Power Use (million gallons):	15,203,000.518
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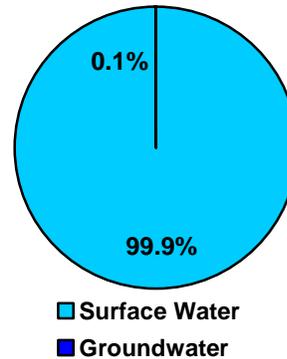
Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 19 thermoelectric sources accounted for more than 3.232 trillion gallons, approximately 17.56% of reported water use for power production and 17.15% of total reported water use for the year.

County	Surface Water	Groundwater	County Total
Aiken	46,744.000	NR	46,744.000
Anderson	37,417.276	NR	37,417.276
Berkeley	167,653.708	12.035	167,665.743
Cherokee	NR	1.326	1.326
Colleton	1,616.455	1.828	1,618.283
Darlington	285,140.000	363.509	285,503.509
Fairfield	246,543.778	NR	246,543.778
Georgetown	4,687.310	NR	4,687.310
Greenwood	116.137	NR	116.137
Horry	38,448.870	NR	38,448.870
Lexington	46,310.870	NR	46,310.870
Oconee	2,147,899.000	NR	2,147,899.000
Orangeburg	0.328	1,661.441	1,661.769
Richland	169,724.200	NR	169,724.200
York	37,762.000	NR	37,762.000

NR = None Reported

Thermoelectric Source Comparison



Average daily use for any thermoelectric facility (19 total) equaled 4.66 billion gallons of surface water per day

	Surface Water	Groundwater
Source Total:	3,230,063.932	2,036.985
Total Thermoelectric Use (million gallons):	3,232,104.071	

Total Reported Water Use

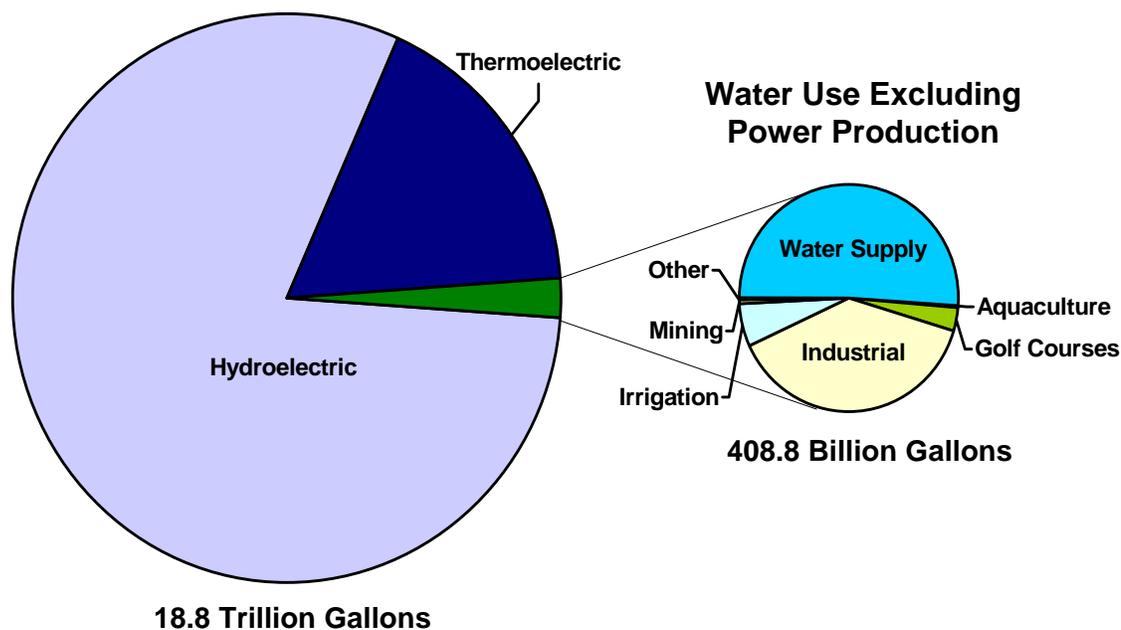


Figure 6: Reported Water Use by Category in South Carolina, 2004

Reported Water Use Excluding Power Production

During 2004, reported water use (excluding power production) totaled more than 408.8 billion gallons with surface water withdrawal accounting for 336.7 billion gallons or approximately 82.3%, and groundwater withdrawal accounting for 72.0 billion gallons or approximately 17.7%. Non-power production-oriented water use accounted for 2.2% of all reported water use in 2004.

	Groundwater	Surface Water	Total	Percentage of Total Non-Power Use
Aquaculture	238.249	1,117.38	1,355.63	0.33%
Golf Courses	3,699.10	9,531.36	13,230.46	3.24%
Industrial	11,794.44	145,514.58	157,309.02	38.48%
Irrigation	13,992.56	10,127.31	24,119.87	5.90%
Mining	2,456.62	785.00	3,241.62	0.79%
Other	85.505	NR	85.505	0.02%
Water Supply	39,764.83	169,699.47	209,464.30	51.24%

Total Non-Power Water Use **408,806.42** million gallons

NR = None Reported

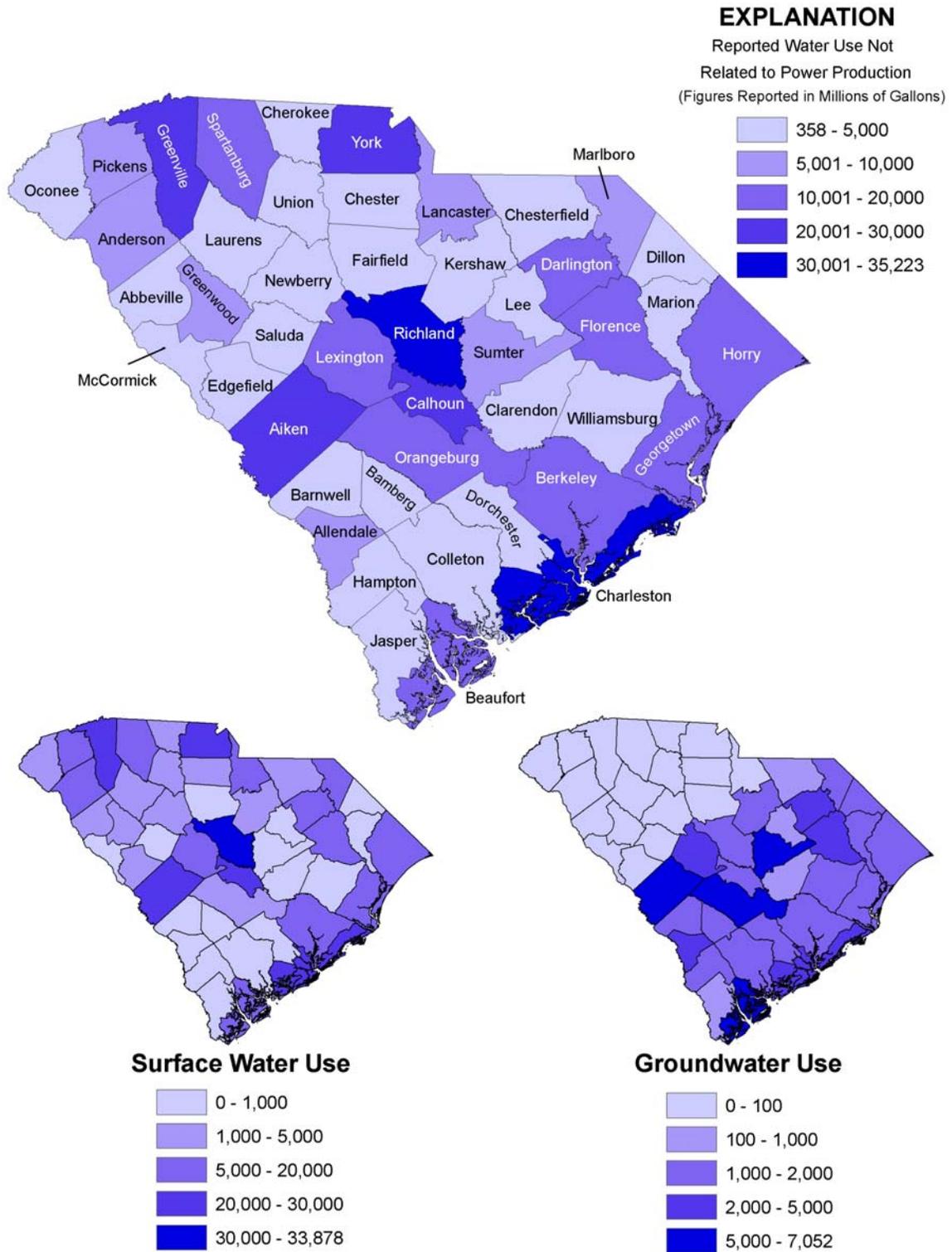


Figure 7: Distribution of Reported Water Usage Unrelated to Power Production, 2004. Figures in millions of gallons per year.

Water Supply

South Carolina has federally 1,551 defined public water systems, of which 685 are community water systems. The public water systems provide water to 3,450,928 citizens. Water withdrawal for public water supply from 223 reporting suppliers totaled 209.464 billion gallons, with 82 surface water sources accounting for 169.699 billion gallons and 745 groundwater sources accounting for 39.764 billion gallons.

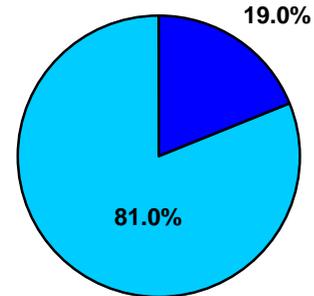
County	Groundwater	Surface Water	County Total
Abbeville	2.798	1,017.236	1,020.034
Aiken	4,878.595	2,081.947	6,960.542
Allendale	408.135	NR	408.135
Anderson	NR	7,579.473	7,579.473
Bamberg	502.982	NR	502.982
Barnwell	1,085.024	NR	1,085.024
Beaufort	4,132.591	7,206.600	11,339.191
Berkeley	174.644	5,107.400	5,282.044
Calhoun	234.662	NR	234.662
Charleston	2,993.134	18,748.790	21,741.924
Cherokee	NR	3,536.200	3,536.200
Chester	NR	1,097.200	1,097.200
Chesterfield	618.460	1,028.890	1,647.350
Clarendon	729.432	NR	729.432
Colleton	809.169	NR	809.169
Darlington	2,505.969	NR	2,505.969
Dillon	1,706.404	NR	1,706.404
Dorchester	607.082	NR	607.082
Edgefield	NR	1,545.994	1,545.994
Fairfield	64.334	795.788	860.122
Florence	3,873.342	1,589.940	5,463.282
Georgetown	908.137	2,220.469	3,128.606
Greenville	38.137	23,801.700	23,839.837
Greenwood	27.127	4,900.928	4,928.055
Hampton	519.409	NR	519.409
Horry	951.496	14,045.400	14,996.896
Jasper	435.596	NR	435.596
Kershaw	674.355	1,818.655	2,493.010
Lancaster	NR	7,752.035	7,752.035
Laurens	NR	1,609.625	1,609.625
Lee	595.968	NR	595.968
Lexington	441.282	5,287.679	5,728.961
Marion	1,356.885	NR	1,356.885
Marlboro	983.436	NR	983.436
McCormick	NR	421.956	421.956
Newberry	30.956	2,270.162	2,301.118
Oconee	58.070	3,580.243	3,638.313
Orangeburg	675.943	3,007.440	3,683.383
Pickens	NR	3,982.405	3,982.405
Richland	334.976	23,259.800	23,594.776
Saluda	2.397	NR	2.397
Spartanburg	25.844	13,626.928	13,652.772
Sumter	5,675.104	NR	5,675.104
Union	NR	1,248.260	1,248.260
Williamsburg	689.090	NR	689.090
York	13.867	5,530.328	5,544.195

NR = None Reported

	Groundwater	Surface Water
Source Total:	39,764.832	169,699.471

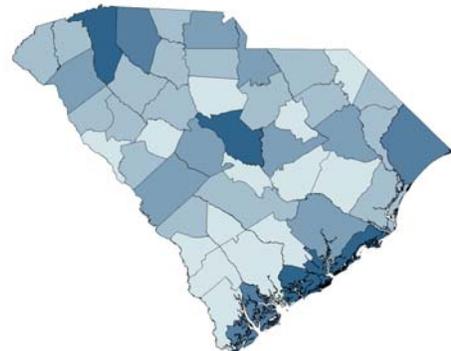
Total Water Supply Use (millions of gallons):	209,464.303
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Water Supply Use Source Comparison



■ Groundwater
■ Surface Water

Average daily use for any reporting water supply facility (223 total) in 2004 equaled 488,541 gallons of groundwater and 2,084,888 gallons of surface water per day.



Distribution of reported water supply water use in South Carolina, 2004. Darker shades indicate the highest use areas.

Industrial Use

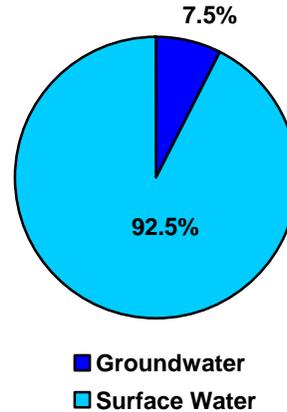
Water withdrawal for industrial use from 94 reporting industries totaled 157.309 billion gallons, with 55 surface water sources accounting for 145.514 billion gallons and 209 groundwater sources accounting for 11.794 billion gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

County	Groundwater	Surface Water	County Total
Aiken	1,450.483	19,383.065	20,833.548
Allendale	890.420	NR	890.420
Anderson	NR	57.300	57.300
Beaufort	143.902	NR	143.902
Berkeley	1,100.794	3,774.825	4,875.619
Calhoun	138.448	28,274.894	28,413.342
Charleston	33.722	9,624.900	9,658.622
Cherokee	NR	483.126	483.126
Chester	1.432	91.173	92.605
Darlington	1,896.045	7,768.653	9,664.698
Dorchester	916.381	174.455	1,090.836
Florence	798.964	7,202.600	8,001.564
Georgetown	110.301	11,288.732	11,399.033
Greenville	47.702	NR	47.702
Greenwood	NR	49.850	49.850
Hampton	393.200	NR	393.200
Horry	165.340	2.749	168.089
Kershaw	417.738	923.742	1,341.480
Lancaster	NR	1,010.530	1,010.530
Lexington	414.221	10,197.980	10,612.201
Marlboro	230.453	7,743.082	7,973.535
Oconee	NR	674.440	674.440
Orangeburg	701.127	154.767	855.894
Pickens	NR	3,044.110	3,044.110
Richland	677.192	10,263.504	10,940.696
Spartanburg	15.113	NR	15.113
Sumter	315.873	NR	315.873
Union	2.530	516.200	518.730
Williamsburg	929.368	NR	929.368
York	3.694	22,809.904	22,813.598

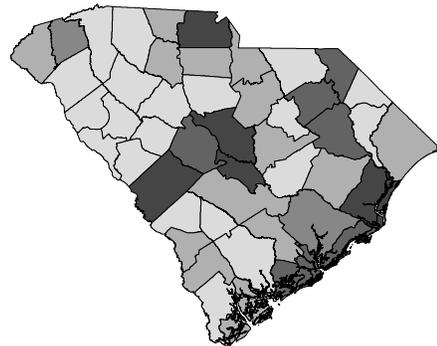
NR = None Reported

	Groundwater	Surface Water
Source Total:	11,794.443	145,514.581
Total Industrial Use (millions of gallons):	157,309.024	

Industrial Use Source Comparison



Average use for any reporting industrial facility (94 total) in 2004 equaled 343,761 gallons of groundwater and 4,241,171 gallons of surface water per day.



Distribution of reported industrial water use in South Carolina, 2004. Darker shades indicate the highest use areas.

Irrigation Use

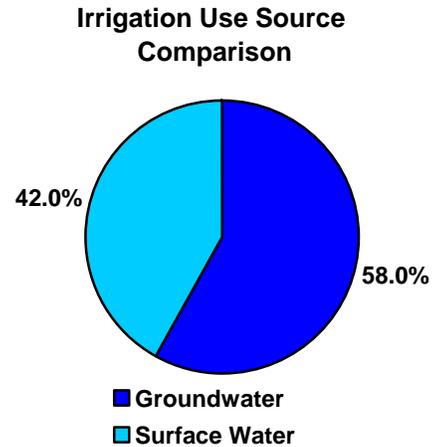
Water withdrawal for irrigation use from 210 reporting entities totaled 24.119 billion gallons, with 226 surface water sources accounting for 10.127 billion gallons and 413 groundwater sources accounting for 13.992 billion gallons.

County	Groundwater	Surface Water	County Total
Aiken	484.652	1,020.000	1,504.652
Allendale	3,325.401	432.680	3,758.081
Bamberg	512.490	645.928	1,158.418
Barnwell	134.763	77.915	212.678
Beaufort	720.401	20.700	741.101
Berkeley	0.240	1093.194	1,093.434
Calhoun	853.542	141.543	995.085
Charleston	12.852	35.491	48.343
Chesterfield	238.797	NR	238.797
Clarendon	182.026	152.086	334.112
Colleton	929.700	265.000	1,194.700
Darlington	0.995	158.163	159.158
Dillon	34.900	NR	34.900
Edgefield	21.000	506.840	527.840
Florence	105.208	12.000	117.208
Georgetown	19.743	1,670.289	1,690.032
Greenville	NR	24.750	24.750
Greenwood	1.200	NR	1.200
Hampton	876.001	16.000	892.001
Horry	179.111	283.847	462.958
Jasper	270.970	NR	270.970
Lee	98.439	8.000	106.439
Lexington	1622.548	496.570	2,119.118
Marion	28.400	22.000	50.400
Marlboro	191.894	88.190	280.084
McCormick	NR	NR	NR
Newberry	60.700	125.700	186.400
Oconee	NR	282.850	282.850
Orangeburg	2,282.848	1,497.681	3,780.529
Pickens	NR	NR	NR
Richland	7.088	0.300	7.388
Saluda	NR	355.870	355.870
Spartanburg	NR	100.124	100.124
Sumter	796.649	586.850	1,383.499
Williamsburg	NR	4.300	4.300
York	NR	2.450	2.450

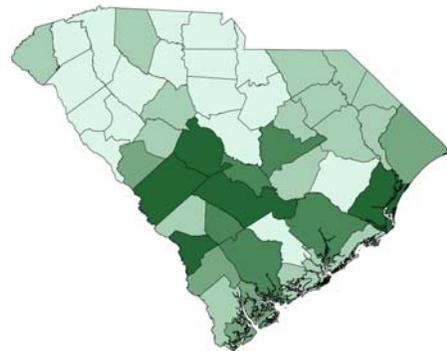
NR = None Reported

	Groundwater	Surface Water
Source Total:	13,992.558	10,127.311

Total Irrigation Use (millions of gallons):	24,119.869
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Average use for any reporting irrigator (210 total) in 2004 equaled 190,717 gallons of groundwater and 138,035 gallons of surface water per day.



Distribution of reported irrigation water use in South Carolina, 2004. Darker shades indicate the highest use areas.

Golf Course Use

Water withdrawal from 254 reporting courses for golf course irrigation totaled 13.230 billion gallons, with 284 surface water sources accounting for 9.531 billion gallons and 291 groundwater sources accounting for 3.699 billion gallons.

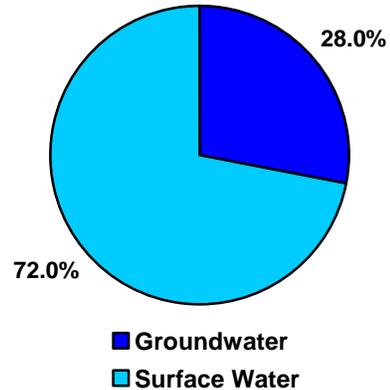
County	Groundwater	Surface Water	County Total
Aiken	29.900	179.523	209.423
Anderson	NR	107.177	107.177
Barnwell	NR	59.178	59.178
Beaufort	1571.158	2150.114	3721.272
Berkeley	11.648	12.555	24.203
Calhoun	38.200	48.800	87.000
Charleston	766.056	226.615	992.671
Chester	18.000	14.000	32.000
Chesterfield	NR	222.230	222.230
Clarendon	24.950	30.820	55.770
Colleton	54.803	1.085	55.888
Darlington	10.600	95.849	106.449
Dorchester	29.000	NR	29.000
Edgefield	75.850	43.500	119.350
Florence	137.536	32.721	170.257
Georgetown	0.900	915.344	916.244
Greenville	3.674	255.429	259.103
Greenwood	6.980	47.645	54.625
Hampton	30.067	NR	30.067
Horry	607.426	3296.873	3904.299
Kershaw	47.561	57.470	105.031
Lancaster	1.224	2.700	3.924
Laurens	NR	54.612	54.612
Lexington	36.780	204.818	241.598
Marion	7.277	26.158	33.435
McCormick	NR	39.568	39.568
Newberry	NR	10.000	10.000
Oconee	NR	103.235	103.235
Orangeburg	20.105	93.528	113.633
Pickens	NR	406.088	406.088
Richland	22.239	341.138	363.377
Spartanburg	5.686	120.252	125.938
Sumter	82.703	200.493	283.196
Union	NR	8.750	8.750
York	58.780	123.091	181.871

NR = None Reported

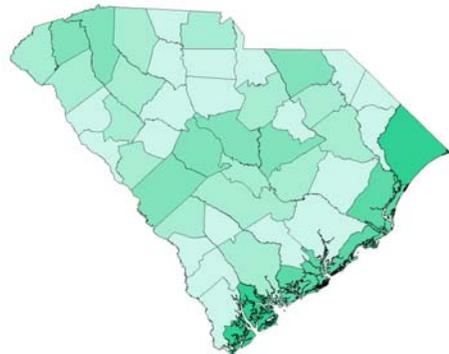
	Groundwater	Surface Water
Source Total:	3,699.103	9,531.359

Total Golf Course Use (million gallons):	13,230.462
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Golf Course Use Source Comparison



Average daily use for any reporting golf course (254 total) in 2004 equaled 39,433 gallons of groundwater and 101,604 gallons of surface water per day.



Distribution of reported golf course water use in South Carolina, 2004. Darker shades indicate the highest use areas.

Mining Use

Water withdrawal associated with mining activities at 13 reporting facilities totaled 2.456 billion gallons, with groundwater accounting for all reported use.

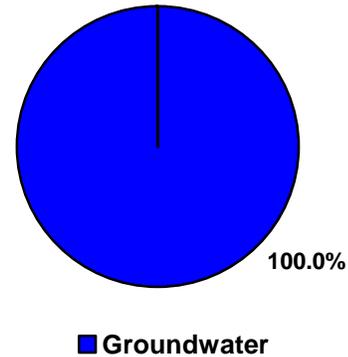
County	Groundwater	Surface Water	County Total
Aiken	29.160	NR	29.160
Berkeley	2.654	NR	2.654
Lexington	464.850	NR	464.850
Orangeburg	1711.087	NR	1711.087
Richland	235.872	NR	235.872
York	13.000	NR	13.000

NR = None Reported

	Groundwater	Surface Water
Source Total:	2456.623	NR

Total Irrigation Use (million gallons):	2456.623
--	-----------------

Mining Use Source Comparison



Aquaculture Use

Water withdrawal from 10 reporting aquaculture-farming facilities totaled 1.320 billion gallons, with 12 surface water sources accounting for 1.312 billion gallons and 8 groundwater sources accounting for 238.249 million gallons.

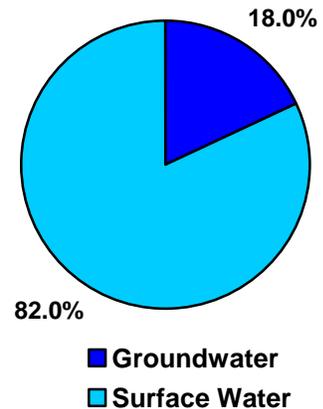
County	Groundwater	Surface Water	County Total
Beaufort	5.984	78.234	84.218
Berkeley	2.961	94.492	97.453
Charleston	NR	895.620	895.620
Dillon	33.700	NR	33.700
Hampton	128.304	NR	128.304
Richland	67.300	13.900	81.200
Spartanburg	NR	35.136	35.136

NR = None Reported

	Groundwater	Surface Water
Source Total:	238.249	1082.246

Total Aquaculture Use (million gallons):	1320.495
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Aquaculture Use Source Comparison



Other Use

Water withdrawal for other, non-specific use from 2 reporting facilities totaled 85.505 million gallons, with groundwater accounting for all reported use.

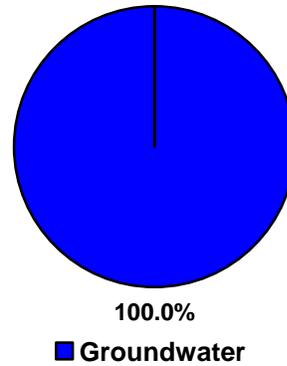
<i>County</i>	<i>Groundwater</i>	<i>Surface Water</i>	<i>County Total</i>
Beaufort	41.430	NR	41.430
Horry	44.075	NR	44.075

NR = None Reported

	<i>Groundwater</i>	<i>Surface Water</i>
Source Total:	85.505	NR

Total Other Use (million gallons):	85.505
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**Other Use
Source Comparison**



Appendix A: Surface and Groundwater Use Summary Tables

Surface Water Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Water Supply
Abbeville	29,636.236	28,619.000	NR	NR	NR	NR	NR	NR	1,017.236
Aiken	69,408.535	NR	46,744.000	NR	179.523	19,383.065	1,020.000	NR	2,081.947
Allendale	432.680	NR	NR	NR	NR	NR	432.680	NR	NR
Anderson	45,435.419	274.193	37,417.276	NR	107.177	57.300	NR	NR	7,579.473
Bamberg	645.928	NR	NR	NR	NR	NR	645.928	NR	NR
Barnwell	137.093	NR	NR	NR	59.178	NR	77.915	NR	NR
Beaufort	9,455.648	NR	NR	78.234	2,150.114	NR	20.700	NR	7,206.600
Berkeley	1,391,572.486	1,213,836.312	167,653.708	94.492	12.555	3,774.825	1,093.194	NR	5,107.400
Calhoun	28,465.237	NR	NR	NR	48.800	28,274.894	141.543	NR	NR
Charleston	29,531.416	NR	NR	895.620	226.615	9,624.900	35.491	NR	18,748.790
Cherokee	459,132.326	455,113.000	NR	NR	NR	483.126	NR	NR	3,536.200
Chester	2,172,431.373	2,171,229.000	NR	NR	14.000	91.173	NR	NR	1,097.200
Chesterfield	1,251.120	NR	NR	NR	222.230	NR	NR	NR	1,028.890
Clarendon	182.906	NR	NR	NR	30.820	NR	152.086	NR	NR
Colleton	1,884.225	NR	1,616.455	NR	1.085	NR	265.000	1.685	NR
Darlington	293,162.665	NR	285,140.000	NR	95.849	7,768.653	158.163	NR	NR
Dorchester	174.455	NR	NR	NR	NR	174.455	NR	NR	NR
Edgefield	1,001,905.644	999,809.310	NR	NR	43.500	NR	506.840	NR	1,545.994
Fairfield	3,273,235.626	3,025,896.060	246,543.778	NR	NR	NR	NR	NR	795.788
Florence	8,837.261	NR	NR	NR	32.721	7,202.600	12.000	NR	1,589.940
Georgetown	20,782.144	NR	4,687.310	NR	915.344	11,288.732	1,670.289	NR	2,220.469
Greenville	164,932.879	140,851.000	NR	NR	255.429	NR	24.750	NR	23,801.700
Greenwood	322,131.560	317,017.000	116.137	NR	47.645	49.850	NR	NR	4,900.928
Hampton	16.000	NR	NR	NR	NR	NR	16.000	NR	NR
Horry	56,297.099	NR	38,448.870	NR	3,296.873	2.749	283.847	219.360	14,045.400
Jasper	0.000	NR	NR	NR	NR	NR	NR	NR	NR
Kershaw	1,210,066.867	1,207,267.000	NR	NR	57.470	923.742	NR	NR	1,818.655
Lancaster	1,102,559.265	1,093,794.000	NR	NR	2.700	1,010.530	NR	NR	7,752.035
Laurens	1,813.637	149.400	NR	NR	54.612	NR	NR	NR	1,609.625
Lee	8.000	NR	NR	NR	NR	NR	8.000	NR	NR
Lexington	264,846.802	201,784.930	46,310.870	NR	204.818	10,197.980	496.570	563.955	5,287.679
Marion	48.158	NR	NR	NR	26.158	NR	22.000	NR	NR
Marlboro	7,831.272	NR	NR	NR	NR	7,743.082	88.190	NR	NR
McCormick	461.524	NR	NR	NR	39.568	NR	NR	NR	421.956
Newberry	2,405.862	NR	NR	NR	10.000	NR	125.700	NR	2,270.162
Oconee	2,152,551.968	12.200	2,147,899.000	NR	103.235	674.440	282.850	NR	3,580.243
Orangeburg	4,753.744	NR	0.328	NR	93.528	154.767	1,497.681	NR	3,007.440
Pickens	2,619,190.603	2,611,758.000	NR	NR	406.088	3,044.110	NR	NR	3,982.405
Richland	676,941.322	473,338.480	169,724.200	13.900	341.138	10,263.504	0.300	NR	23,259.800
Saluda	355.870	NR	NR	NR	NR	NR	355.870	NR	NR
Spartanburg	27,734.856	13,852.416	NR	35.136	120.252	NR	100.124	NR	13,626.928
Sumter	787.343	NR	NR	NR	200.493	NR	586.850	NR	NR
Union	318,082.246	316,309.036	NR	NR	8.750	516.200	NR	NR	1,248.260
Williamsburg	4.300	NR	NR	NR	NR	NR	4.300	NR	NR
York	998,316.773	932,089.000	37,762.000	NR	123.091	22,809.904	2.450	NR	5,530.328
Grand Total:	18,769,838.373	15,202,999.337	3,230,063.932	1,117.382	9,531.359	145,514.581	10,127.311	785.000	169,699.471

NR = None Reported

Groundwater Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Other	Water Supply
Abbeville	2.798	NR	NR	NR	NR	NR	NR	NR	NR	2.798
Aiken	6,872.790	NR	NR	NR	29.900	1,450.483	484.652	29.160	NR	4,878.595
Allendale	4,623.956	NR	NR	NR	NR	890.420	3,325.401	NR	NR	408.135
Bamberg	1,015.472	NR	NR	NR	NR	NR	512.490	NR	NR	502.982
Barnwell	1,219.787	NR	NR	NR	NR	NR	134.763	NR	NR	1,085.024
Beaufort	6,615.466	NR	NR	5.984	1,571.158	143.902	720.401	NR	41.430	4,132.591
Berkeley	1,306.157	1.181	12.035	2.961	11.648	1,100.794	0.240	2.654	NR	174.644
Calhoun	1,264.852	NR	NR	NR	38.200	138.448	853.542	NR	NR	234.662
Charleston	3,805.764	NR	NR	NR	766.056	33.722	12.852	NR	NR	2,993.134
Cherokee	1.326	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chester	19.432	NR	NR	NR	18.000	1.432	NR	NR	NR	NR
Chesterfield	857.257	NR	NR	NR	NR	NR	238.797	NR	NR	618.460
Clarendon	936.408	NR	NR	NR	24.950	NR	182.026	NR	NR	729.432
Colleton	1,795.500	NR	1.828	NR	54.803	NR	929.700	NR	NR	809.169
Darlington	4,777.118	NR	363.509	NR	10.600	1,896.045	0.995	NR	NR	2,505.969
Dillon	1,775.004	NR	NR	33.700	NR	NR	34.900	NR	NR	1,706.404
Dorchester	1,552.463	NR	NR	NR	29.000	916.381	NR	NR	NR	607.082
Edgefield	96.850	NR	NR	NR	75.850	NR	21.000	NR	NR	NR
Fairfield	64.334	NR	NR	NR	NR	NR	NR	NR	NR	64.334
Florence	4,915.050	NR	NR	NR	137.536	798.964	105.208	NR	NR	3,873.342
Georgetown	1,039.081	NR	NR	NR	0.900	110.301	19.743	NR	NR	908.137
Greenville	89.513	NR	NR	NR	3.674	47.702	NR	NR	NR	38.137
Greenwood	35.307	NR	NR	NR	6.980	NR	1.200	NR	NR	27.127
Hampton	1,946.981	NR	NR	128.304	30.067	393.200	876.001	NR	NR	519.409
Horry	1,947.448	NR	NR	NR	607.426	165.340	179.111	NR	44.075	951.496
Jasper	706.566	NR	NR	NR	NR	NR	270.970	NR	NR	435.596
Kershaw	1,139.654	NR	NR	NR	47.561	417.738	NR	NR	NR	674.355
Lancaster	1.224	NR	NR	NR	1.224	NR	NR	NR	NR	NR
Lee	694.407	NR	NR	NR	NR	NR	98.439	NR	NR	595.968
Lexington	2,979.681	NR	NR	NR	36.780	414.221	1,622.548	464.850	NR	441.282
Marion	1,392.562	NR	NR	NR	7.277	NR	28.400	NR	NR	1,356.885
Marlboro	1,405.783	NR	NR	NR	NR	230.453	191.894	NR	NR	983.436
Newberry	91.656	NR	NR	NR	NR	NR	60.700	NR	NR	30.956
Oconee	58.070	NR	NR	NR	NR	NR	NR	NR	NR	58.070
Orangeburg	7,052.551	NR	1,661.441	NR	20.105	701.127	2,282.848	1,711.087	NR	675.943
Richland	1,344.667	NR	NR	67.300	22.239	677.192	7.088	235.872	NR	334.976
Saluda	2.397	NR	NR	NR	NR	NR	NR	NR	NR	2.397
Spartanburg	46.643	NR	NR	NR	5.686	15.113	NR	NR	NR	25.844
Sumter	6,870.329	NR	NR	NR	82.703	315.873	796.649	NR	NR	5,675.104
Union	2.530	NR	NR	NR	NR	2.530	NR	NR	NR	NR
Williamsburg	1,618.458	NR	NR	NR	NR	929.368	NR	NR	NR	689.090
York	89.341	NR	NR	NR	58.780	3.694	NR	13.000	NR	13.867
Grand Total:	74,072.633	1.181	2,038.813	238.249	3,699.103	11,794.443	13,992.558	2,456.623	85.505	39,764.832

NR = None Reported

Appendix B: Surface and Groundwater Use Summary by County in South Carolina, 2004

The following tables list reported surface water and groundwater withdrawals for the 2004 calendar year by county. Water usage data are shown by water use category and, in the case of power generation, includes surface water use that is typically considered non-consumptive. As presented throughout this report, all water use figures presented are in millions of gallons.

Abbeville County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	2.798
Other:	NR
Total:	2.798

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	28619.000
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1017.236
Total:	29636.236

Aiken County



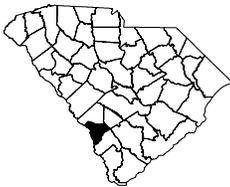
Groundwater Use

Aquaculture:	NR
Golf Course:	29.900
Industrial:	1450.483
Irrigation:	484.652
Mining:	29.160
Water Supply:	4878.595
Other:	NR
Total:	6872.790

Surface Water Use

Aquaculture:	NR
Golf Course:	179.523
Hydroelectric:	NR
Industrial:	19383.065
Irrigation:	1020.000
Mining:	NR
Thermal Power:	46744.000
Water Supply:	2081.947
Total:	69408.535

Allendale County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	890.420
Irrigation:	3325.401
Mining:	NR
Water Supply:	408.135
Other:	NR
Total:	4623.956

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	432.68
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	432.68

Anderson County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	107.177
Hydroelectric:	274.193
Industrial:	57.300
Irrigation:	NR
Mining:	NR
Thermal Power:	37417.276
Water Supply:	7579.473
Total:	45435.419

NR = None Reported

Bamberg County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	512.490
Mining:	NR
Water Supply:	502.982
Other:	NR
Total:	1015.472

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	645.928
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	645.928

Barnwell County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	134.763
Mining:	NR
Water Supply:	1085.024
Other:	NR
Total:	1219.787

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	59.178
Irrigation:	77.915
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	137.093

Beaufort County



Groundwater Use

Aquaculture:	5.984
Golf Course:	1571.158
Industrial:	143.902
Irrigation:	702.401
Mining:	NR
Water Supply:	4132.591
Other:	41.430
Total:	6615.166

Surface Water Use

Aquaculture:	78.234
Golf Course:	2150.114
Hydroelectric:	NR
Industrial:	NR
Irrigation:	20.700
Mining:	NR
Thermal Power:	NR
Water Supply:	7206.600
Total:	9455.648

Berkeley County



Groundwater Use

Aquaculture:	2.916
Golf Course:	11.648
Industrial:	1100.794
Irrigation:	0.240
Mining:	02.654
Water Supply:	174.644
Hydroelectric:	1.181
Thermal Power:	12.035
Total:	1306.157

Surface Water Use

Aquaculture:	94.492
Golf Course:	12.555
Hydroelectric:	1213836.312
Industrial:	3774.825
Irrigation:	1093.194
Mining:	NR
Thermal Power:	167653.708
Water Supply:	5107.400
Total:	1391572.486

NR = None Reported

Calhoun County



Groundwater Use

Aquaculture:	NR
Golf Course:	38.200
Industrial:	138.448
Irrigation:	853.542
Mining:	NR
Water Supply:	234.662
Other:	NR
Total:	1264.852

Surface Water Use

Aquaculture:	NR
Golf Course:	48.800
Hydroelectric:	NR
Industrial:	28274.894
Irrigation:	141.543
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	28465.237

Charleston County



Groundwater Use

Aquaculture:	NR
Golf Course:	766.056
Industrial:	33.722
Irrigation:	12.852
Mining:	NR
Water Supply:	2993.134
Other:	NR
Total:	3805.764

Surface Water Use

Aquaculture:	895.620
Golf Course:	226.615
Hydroelectric:	NR
Industrial:	9624.900
Irrigation:	35.491
Mining:	NR
Thermal Power:	NR
Water Supply:	18748.790
Total:	29531.416

Cherokee County



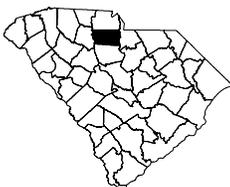
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Thermal Power:	1.326
Total:	1.326

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	455113.000
Industrial:	483.126
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	3536.200
Total:	459132.326

Chester County



Groundwater Use

Aquaculture:	NR
Golf Course:	18.000
Industrial:	1.432
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	19.432

Surface Water Use

Aquaculture:	NR
Golf Course:	14.000
Hydroelectric:	2171229.000
Industrial:	91.173
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1097.200
Total:	2172461.373

NR = None Reported



Chesterfield County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	NR	Golf Course:	222.230
Industrial:	NR	Hydroelectric:	NR
Irrigation:	238.797	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	618.460	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	857.257	Water Supply:	1028.890
		Total:	1251.120



Clarendon County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	24.950	Golf Course:	30.820
Industrial:	NR	Hydroelectric:	NR
Irrigation:	182.026	Industrial:	NR
Mining:	NR	Irrigation:	152.086
Water Supply:	729.432	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	936.408	Water Supply:	NR
		Total:	182.906



Colleton County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	54.803	Golf Course:	1.085
Industrial:	NR	Hydroelectric:	NR
Irrigation:	929.700	Industrial:	NR
Mining:	NR	Irrigation:	265.000
Water Supply:	809.169	Mining:	1.685
Thermal Power	1.828	Thermal Power:	1616.455
Other:	NR	Water Supply:	NR
Total:	1795.500	Total:	1884.225



Darlington County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	10.600	Golf Course:	95.849
Industrial:	1896.045	Hydroelectric:	NR
Irrigation:	0.995	Industrial:	7768.653
Mining:	NR	Irrigation:	158.163
Nuclear Power:	363.509	Mining:	NR
Water Supply:	2505.969	Nuclear Power:	285140.000
Other:	0	Water Supply:	NR
Total:	4777.118	Total:	293162.665

NR = None Reported

Dillon County

**Groundwater Use**

Aquaculture:	33.700
Golf Course:	NR
Industrial:	NR
Irrigation:	34.900
Mining:	NR
Water Supply:	1706.404
Other:	NR
Total:	1775.004

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	NR

Dorchester County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	29.000
Industrial:	916.381
Irrigation:	NR
Mining:	NR
Water Supply:	607.082
Other:	NR
Total:	1552.463

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	174.455
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	174.455

Edgefield County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	75.850
Industrial:	NR
Irrigation:	21.000
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	96.850

Surface Water Use

Aquaculture:	NR
Golf Course:	43.500
Hydroelectric:	999809.310
Industrial:	NR
Irrigation:	506.840
Mining:	NR
Thermal Power:	NR
Water Supply:	1545.994
Total:	1001905.644

Fairfield County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	64.334
Other:	NR
Total:	64.334

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	3025896.060
Industrial:	NR
Irrigation:	NR
Mining:	NR
Nuclear Power:	246543.778
Water Supply:	795.788
Total:	3273235.626

NR = None Reported

Florence County



Groundwater Use

Aquaculture:	NR
Golf Course:	137.536
Industrial:	798.964
Irrigation:	105.208
Mining:	NR
Water Supply:	3873.342
Other:	NR
Total:	4915.050

Surface Water Use

Aquaculture:	NR
Golf Course:	32.721
Hydroelectric:	NR
Industrial:	7202.600
Irrigation:	12.00
Mining:	NR
Thermal Power:	NR
Water Supply:	1589.940
Total:	8837.261

Georgetown County



Groundwater Use

Aquaculture:	NR
Golf Course:	0.900
Industrial:	110.301
Irrigation:	19.743
Mining:	NR
Water Supply:	908.137
Other:	NR
Total:	1039.081

Surface Water Use

Aquaculture:	NR
Golf Course:	915.344
Hydroelectric:	NR
Industrial:	11288.732
Irrigation:	1670.289
Mining:	NR
Thermal Power:	4687.31
Water Supply:	2220.469
Total:	20782.144

Greenville County



Groundwater Use

Aquaculture:	NR
Golf Course:	3.674
Industrial:	47.702
Irrigation:	NR
Mining:	NR
Water Supply:	38.137
Other:	NR
Total:	89.513

Surface Water Use

Aquaculture:	NR
Golf Course:	255.429
Hydroelectric:	140851.000
Industrial:	NR
Irrigation:	24.750
Mining:	NR
Thermal Power:	NR
Water Supply:	23801.700
Total:	164932.879

Greenwood County



Groundwater Use

Aquaculture:	NR
Golf Course:	6.980
Industrial:	NR
Irrigation:	1.200
Mining:	NR
Water Supply:	27.127
Other:	NR
Total:	35.307

Surface Water Use

Aquaculture:	NR
Golf Course:	47.645
Hydroelectric:	317017.000
Industrial:	49.850
Irrigation:	NR
Mining:	NR
Thermal Power:	116.137
Water Supply:	4900.928
Total:	3221131.560

NR = None Reported

Hampton County



Groundwater Use

Aquaculture:	128.304
Golf Course:	30.067
Industrial:	383.200
Irrigation:	876.001
Mining:	NR
Water Supply:	519.409
Other:	NR
Total:	1946.981

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	16.000
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	16.000

Horry County



Groundwater Use

Aquaculture:	NR
Golf Course:	607.426
Industrial:	165.340
Irrigation:	179.111
Mining:	NR
Water Supply:	951.496
Other:	44.075
Total:	1947.448

Surface Water Use

Aquaculture:	NR
Golf Course:	3296.873
Hydroelectric:	NR
Industrial:	2.749
Irrigation:	283.847
Mining:	219.360
Thermal Power:	38448.870
Water Supply:	14045.400
Total:	56297.009

Jasper County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	270.970
Mining:	NR
Water Supply:	435.596
Other:	NR
Total:	706.566

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	NR

Kershaw County



Groundwater Use

Aquaculture:	NR
Golf Course:	47.561
Industrial:	417.738
Irrigation:	NR
Mining:	NR
Water Supply:	674.355
Other:	NR
Total:	1139.654

Surface Water Use

Aquaculture:	NR
Golf Course:	57.470
Hydroelectric:	1207267.000
Industrial:	923.742
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1818.655
Total:	1210066.867

NR = None Reported

Lancaster County



Groundwater Use

Aquaculture:	NR
Golf Course:	1.244
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	1.244

Surface Water Use

Aquaculture:	NR
Golf Course:	54.612
Hydroelectric:	1093794.000
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1609.625
Total:	1102559.265

Laurens County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	54.612
Hydroelectric:	149.400
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1609.625
Total:	1813.637

Lee County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	98.439
Mining:	NR
Water Supply:	595.968
Other:	NR
Total:	694.407

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	8.000
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	8.000

Lexington County



Groundwater Use

Aquaculture:	NR
Golf Course:	36.780
Industrial:	414.221
Irrigation:	1622.548
Mining:	464.850
Water Supply:	441.282
Other:	NR
Total:	2979.681

Surface Water Use

Aquaculture:	NR
Golf Course:	204.818
Hydroelectric:	201784.930
Industrial:	10197.980
Irrigation:	496.570
Mining:	563.955
Thermal Power:	46310.870
Water Supply:	5287.679
Total:	264846.802

NR = None Reported

Marion County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	7.277
Industrial:	NR
Irrigation:	28.400
Mining:	NR
Water Supply:	1356.885
Other:	NR
Total:	1392.562

Surface Water Use

Aquaculture:	NR
Golf Course:	26.158
Hydroelectric:	NR
Industrial:	NR
Irrigation:	22.000
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	48.158

Marlboro County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	NR
Industrial:	230.453
Irrigation:	191.894
Mining:	NR
Water Supply:	983.436
Other:	NR
Total:	1405.783

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	7743.082
Irrigation:	88.190
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	7831.272

McCormick County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	39.568
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	421.956
Total:	461.524

Newberry County

**Groundwater Use**

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	60.700
Mining:	NR
Water Supply:	30.956
Other:	NR
Total:	91.656

Surface Water Use

Aquaculture:	NR
Golf Course:	10.000
Hydroelectric:	NR
Industrial:	NR
Irrigation:	125.700
Mining:	NR
Thermal Power:	NR
Water Supply:	2270.162
Total:	2405.862

NR = None Reported

Oconee County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	58.070
Other:	NR
Total:	58.070

Surface Water Use

Aquaculture:	NR
Golf Course:	103.235
Hydroelectric:	12.200
Industrial:	674.440
Irrigation:	282.85
Mining:	NR
Nuclear Power:	2147899.000
Water Supply:	3580.243
Total:	2152551.968

Orangeburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	20.105
Industrial:	701.127
Irrigation:	2282.848
Mining:	1711.087
Thermal Power:	1661.441
Water Supply:	675.943
Other:	NR
Total:	7052.551

Surface Water Use

Aquaculture:	NR
Golf Course:	93.528
Hydroelectric:	NR
Industrial:	154.767
Irrigation:	1497.681
Mining:	NR
Thermal Power:	0.328
Water Supply:	3007.440
Total:	4753.744

Pickens County



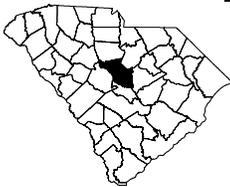
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	406.088
Hydroelectric:	2611758.000
Industrial:	3044.110
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	3982.405
Total:	2619190.603

Richland County



Groundwater Use

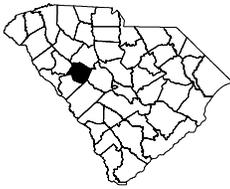
Aquaculture:	67.300
Golf Course:	22.239
Industrial:	677.192
Irrigation:	7.088
Mining:	235.872
Water Supply:	334.976
Other:	NR
Total:	1344.667

Surface Water Use

Aquaculture:	13.900
Golf Course:	341.138
Hydroelectric:	473338.480
Industrial:	10263.504
Irrigation:	0.300
Mining:	NR
Thermal Power:	169724.200
Water Supply:	23259.800
Total:	676941.322

NR = None Reported

Saluda County



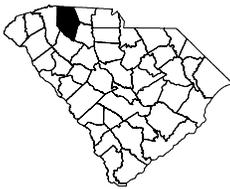
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	2.397
Other:	NR
Total:	2.397

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	355.870
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	355.870

Spartanburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	5.686
Industrial:	15.113
Irrigation:	NR
Mining:	NR
Water Supply:	25.844
Other:	NR
Total:	46.643

Surface Water Use

Aquaculture:	35.136
Golf Course:	120.252
Hydroelectric:	13852.416
Industrial:	NR
Irrigation:	100.124
Mining:	NR
Thermal Power:	NR
Water Supply:	13626.928
Other:	27734.856

Sumter County



Groundwater Use

Aquaculture:	NR
Golf Course:	82.703
Industrial:	315.873
Irrigation:	796.649
Mining:	NR
Water Supply:	5675.104
Other:	NR
Total:	6870.329

Surface Water Use

Aquaculture:	NR
Golf Course:	200.496
Hydroelectric:	NR
Industrial:	NR
Irrigation:	586.850
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	787.343

Union County



Groundwater Use

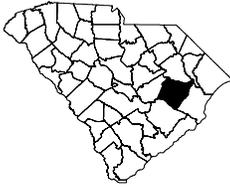
Aquaculture:	NR
Golf Course:	NR
Industrial:	2.530
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	8.750
Hydroelectric:	316309.036
Industrial:	516.200
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1248.260
Total:	318082.246

NR = None Reported

Williamsburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	929.368
Irrigation:	NR
Mining:	NR
Water Supply:	689.090
Other:	NR
Total:	1618.458

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	4.300
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	4.300

York County



Groundwater Use

Aquaculture:	NR
Golf Course:	58.780
Industrial:	3.694
Irrigation:	NR
Mining:	13.00
Water Supply:	13.867
Other:	NR
Total:	89.341

Surface Water Use

Aquaculture:	NR
Golf Course:	123.091
Hydroelectric:	932089.000
Industrial:	22809.904
Irrigation:	2.450
Mining:	NR
Nuclear Power:	37762.000
Water Supply:	5530.328
Total:	998316.773

NR = None Reported

Appendix C: Population by County

Population and Projections by County

County	2000	2005	2010	2015	2020	2025
Abbeville	26,167	26,740	27,610	28,480	29,350	30,210
Aiken	142,552	153,900	163,950	174,000	184,060	194,110
Allendale	11,211	11,820	11,960	12,110	12,260	12,400
Anderson	165,740	172,120	180,280	188,440	196,590	204,750
Bamberg	16,658	16,130	15,740	15,340	14,950	14,560
Barnwell	23,478	24,350	25,390	26,440	27,490	28,540
Beaufort	120,937	132,760	146,440	160,110	173,790	187,460
Berkeley	142,651	156,610	167,520	178,420	189,330	200,230
Calhoun	15,185	15,570	16,350	17,130	17,910	18,690
Charleston	309,969	320,080	328,570	337,070	345,560	354,060
Cherokee	52,537	54,770	57,860	60,960	64,050	67,140
Chester	34,068	34,630	35,500	36,370	37,240	38,110
Chesterfield	42,768	43,100	44,310	45,520	46,730	47,940
Clarendon	32,502	33,300	34,650	35,990	37,330	38,680
Colleton	38,264	39,910	41,590	43,260	44,940	46,610
Darlington	67,394	67,910	69,260	70,610	71,960	73,310
Dillon	30,722	30,220	30,280	30,340	30,400	30,460
Dorchester	96,413	106,590	115,430	124,280	133,130	141,980
Edgefield	24,595	25,490	27,400	29,320	31,230	33,150
Fairfield	23,454	24,260	25,010	25,770	26,520	27,280
Florence	125,761	130,140	134,510	138,870	143,230	147,590
Georgetown	55,797	58,300	61,770	65,240	68,710	72,190
Greenville	379,616	397,580	421,210	444,840	468,470	492,100
Greenwood	66,271	68,590	71,170	73,750	76,330	78,910
Hampton	21,386	21,810	22,690	23,570	24,450	25,330
Horry	196,629	215,850	239,020	262,190	285,360	308,530
Jasper	20,678	21,390	23,000	24,610	26,220	27,830
Kershaw	52,647	55,300	58,880	62,460	66,040	69,620
Lancaster	61,351	61,940	63,940	65,950	67,950	69,950
Laurens	69,567	72,800	77,190	81,580	85,960	90,350
Lee	20,119	20,540	21,010	21,480	21,960	22,430
Lexington	216,014	233,060	252,580	272,090	291,600	311,120
McCormick	9,958	10,670	11,290	11,910	12,530	13,150
Marion	35,466	35,930	36,390	36,840	37,300	37,760
Marlboro	28,818	28,100	27,460	26,820	26,170	25,530
Newberry	36,108	37,270	38,530	39,790	41,050	42,320
Oconee	66,215	70,910	75,470	80,040	84,600	89,160
Orangeburg	91,582	94,260	96,890	99,510	102,140	104,770
Pickens	110,757	119,040	127,110	135,190	143,260	151,330
Richland	320,677	331,810	345,660	359,520	373,370	387,220
Saluda	19,181	19,400	20,090	20,790	21,480	22,180
Spartanburg	253,791	267,390	280,590	293,790	306,990	320,190
Sumter	104,646	112,030	116,100	120,180	124,260	128,330
Union	29,881	29,720	29,480	29,240	29,010	28,770
Williamsburg	37,217	36,960	36,820	36,680	36,540	36,400
York	164,614	177,420	192,290	207,160	222,030	236,900
South Carolina:	4,012,012	4,218,460	4,446,240	4,674,050	4,901,810	5,129,630

Appendix D: Glossary

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Fall Line –

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Mining water use (water use category) – Water that is used for in conjunction with surface or subsurface mining of minerals or natural materials

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth's surface such as a stream, lake, or

reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent withdrawal over time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy).

Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from the natural hydrological system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation

Bureau of Water

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report 2005 Annual Summary





South Carolina Water Use Report 2005 Summary

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

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David Baize, Director**

**Groundwater Management Section
Robert Devlin, Manager**

Technical Document Number: 006-06

**Bureau of Water
April 2006**

Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina *Surface Water Withdrawal and Reporting Act*, §49-4-10 et. seq., and the South Carolina *Groundwater Use and Reporting Act*, §49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report use annually to the Water Use Program at DHEC.

Water Use data is used by the State of South Carolina to better define the distribution and demand for our surface and groundwater resources across the state. Data from the Water Use Program at DHEC is shared between other local, state, and federal regulatory and scientific agencies to establish a common understanding of the demands placed upon our water resources. This common database has proven critical in water management decisions and water use conflict resolution.

Statistics utilized in this report represent data obtained from registered users of the Water Use Program. Consumptive use from private domestic wells, small surface water irrigation intakes, facilities that do not meet the reporting threshold, or data from facilities failing to report their annual water use are not included in this annual summary. For the year 2005, compliance of reporting facilities exceeded 99.9%, with eight (8) facilities failing to report water use prior to the writing of this report.

If you have questions about this or previous Annual Water Use Reports, or would like to obtain further information about reported water withdrawals in South Carolina, please contact:

**Water Use Program
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Introduction

South Carolinians have enjoyed an available fresh water supply that is clean, abundant, easily attainable and, for all practical purposes, inexhaustible. In South Carolina today, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and sundry uses. According to the U.S. Census Bureau, South Carolina will increase its population by 600,000 people by 2025 and the U.S. Department of Agriculture reports development converts approximately 100,000 acres per year to urban uses. This growth and development in the state has placed increasing demand on our water supplies.

In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that,

“...the groundwater resources of the State be put to beneficial use to the fullest extent to which they [are] capable and to provide and maintain conditions which are conducive to the development and use of all water resources.”

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the annual *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2005. The Department maintains and continually updates the water use and facility databases utilized in this report. Water use data were collected by annual reporting of water use by registered users, as required and mandated by state law, and are reported in **million gallons** unless stated otherwise.

South Carolina Climate

The climate in South Carolina is affected by many factors, notably its location in the mid-latitudes and its proximity to the Appalachian Mountains and the Atlantic Ocean. During the summer, ocean current-driven air masses such as the Bermuda High routinely push tropical air from the Gulf of Florida upland from the coast. These warm, moist currents collide with cooler, drier air masses to generate rainfall, and at times, severe thunderstorms. In contrast, the Appalachian region in the northwest portion of the state experiences cooler temperatures, owing in part to orographic lifting of air masses and subsequent cooling effect provided by the increase in altitude. Altitude change also causes the additional phenomenon of down-slope heating as air masses from the mountains settle and compress over the eastern Blue Ridge and Piedmont region. During the winter months, the highlands of the Blue Ridge escarpment deflect northerly cold air to the southwest, often lessening the impact of major cold fronts and winter storms.

The vast majority of the state is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. Average temperature varies from the mid-50s °F in the mountains to low-60s °F along the coast. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. According to the South Carolina State Climatology Office, no month in South Carolina averages less than two inches of precipitation, regardless of location within the state. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990, 1993, and most recently 1998. The latest multiyear drought was one of the most severe in South Carolina's history, with average precipitation, groundwater levels, and stream flows at or near record lows. In 2005 the average statewide temperature was 62.6°F, and the average rainfall for 2005 was 49.08 inches¹.

¹ Southeast Regional Climate Center, 1885-2006, "Monthly and Seasonal Climate Information"

South Carolina Geography and Hydrology

Geography and Physiography

South Carolina has a distinct natural beauty and an ecological diversity covering nearly 31,189 square miles, with approximately 30,111 square miles land area, 1,078 square miles inland or coastal waterways and 135 miles of coastline. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (**Figure 1**). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina.

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties, and is distinguished from other parts of South Carolina by greater elevations (1,000 – 3,300 feet) and surface relief. Dissected mountains, rugged hills and thick forest regions characterize the land surface. Surface water in the Blue Ridge takes the form of high gradient creeks and streams and natural or man-made lakes, while groundwater occurs in the fractures of the bedrock and a thin veneer of soil and saprolite. In general, water quality of streams and groundwater is excellent in the Blue Ridge owing to the constant replenishment from abundant local rainfall.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line, exclusive of those counties within the Blue Ridge province. Although similar to the Blue Ridge, the region demonstrates lower topographic relief, and therefore lower gradient streams, while elevations range from between 450 to 1000 feet above sea level. Counties in the Piedmont and Blue Ridge physiographic provinces depend primarily on the abundant regional rainfall that recharges lakes, reservoirs and major river systems. These surface water bodies constitute the primary source of water for public supply, industry, agriculture, and power production in the Piedmont Region. Similar to the Blue Ridge Province, groundwater occurs in the fractures of the bedrock and overlying soil and saprolite, and is also of good quality, except in locations where its chemical quality has been impacted by man.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the Fall Line east to the Atlantic Ocean. Elevations of the exposed Coastal Plain range between 450 feet to sea level. Once below the Fall Line, rivers and streams assume a different character than found in the Piedmont. Where streams once rolled across exposed Piedmont rocks and tumbled down the occasional stretch of whitewater, the Coastal Plain dictates a slower pace and quiet meandering river channels with adjacent wetlands are common. Regional geology of the Coastal Plain is characterized by aquifers developed in layers of sands, silts, or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The vast majority of South Carolina's water resources are contained as groundwater in the Coastal Plain, and in general, reliance on groundwater for irrigation, industrial uses, and public water supply increases dramatically east of the Fall Line (**Figure 7**). A generalized cross-section for the Coastal Plain aquifers is presented as **Figure 2**, and a brief outline of the major aquifers in South Carolina follows.

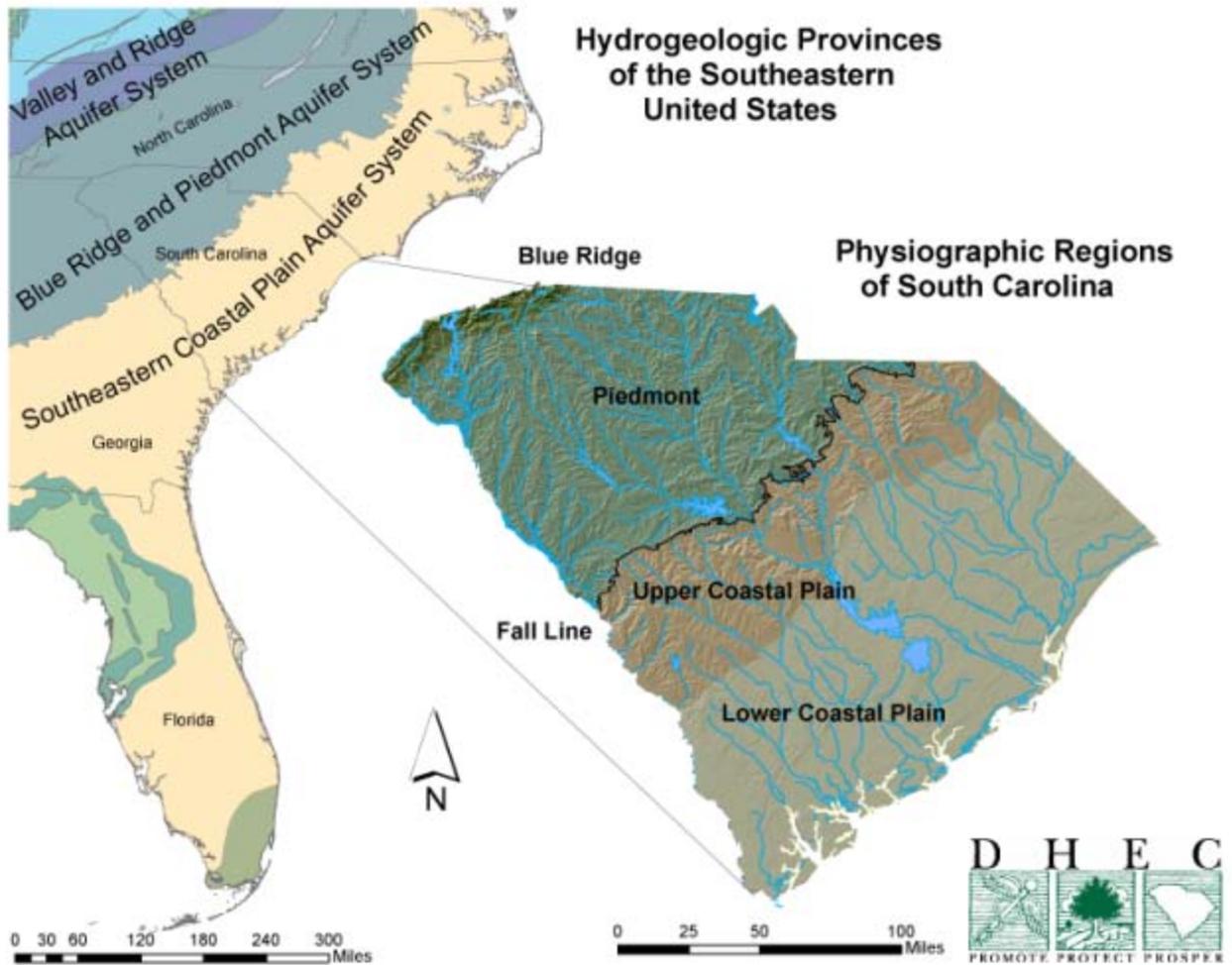


Figure 1: Hydrogeologic and Physiographic Setting for Water Use in South Carolina

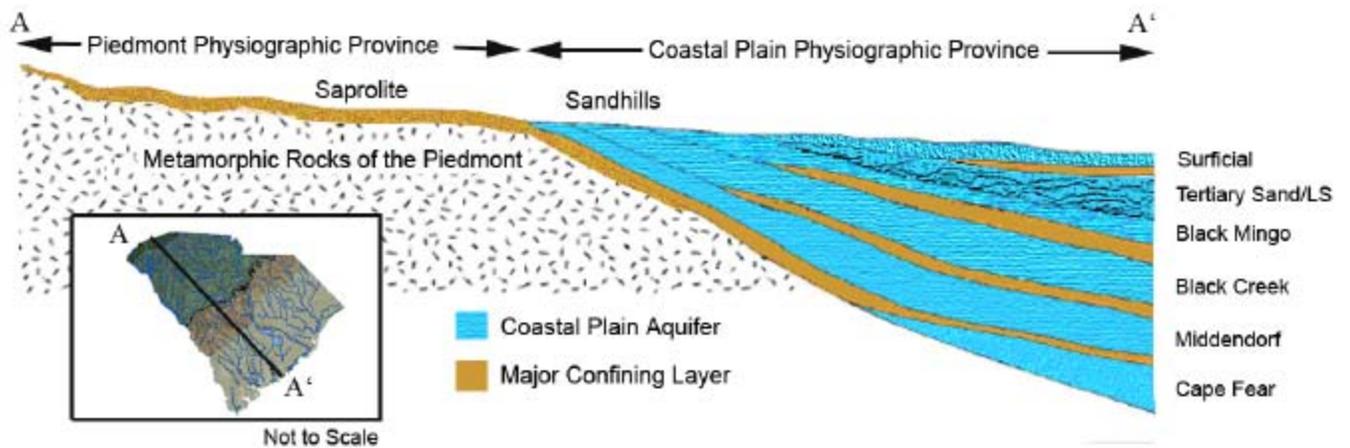


Figure 2: Generalized Hydrogeologic Cross-Section from the Blue Ridge through the Lower Coastal Plain in South Carolina

Groundwater Resources

Groundwater resources are found throughout the subsurface of South Carolina in varying quantities, qualities, and depths that reflect the nature of the geologic materials that host the respective aquifers. The following is a brief description of the State's major groundwater resources.

Crystalline Rock Aquifer System of the Blue Ridge and Piedmont

Geology of the Blue Ridge is typically characterized by clayey saprolite, ranging in depth from several feet to tens of feet, overlying metamorphic crystalline rock. The saprolite grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Geology of the Piedmont is similar to that of the Blue Ridge, but the diminished relief allows for greater thickness of saprolite development. In general, wells in the Blue Ridge and Piedmont regions yield little water when compared to wells drilled in the Coastal Plain owing to the inherently low porosity and permeability of the crystalline rock present in the upstate.

Surficial Aquifer System

Shallow sands that comprise the Surficial aquifer are among the youngest of the Coastal Plain sediments and are found exclusively in the Lower Coastal Plain (**Figure 1**). This system is capable of producing water in modest amounts for irrigation and private drinking water supply, but is especially susceptible to contamination due to its shallow, unconfined nature. The Surficial sands are highly influenced by local precipitation and river stage and are especially prone to dramatic water level declines during times of drought.

Tertiary Limestone/Sand Aquifer System (Floridan Aquifer System)

In the southern half of the Coastal Plain, Tertiary aquifers consisting of sand grade southeastward into an ever thickening wedge of limestone. Development of the aquifer system is common in the Charleston, Dorchester, and Berkeley County area. Southwest of the Combahee and Salkehatchie Rivers, upper sections of the limestone become increasingly permeable owing to abundant voids created from dissolved marine fossils, and are capable of storing and supplying tremendous amounts of water. The majority of utilization of the aquifer occurs near the upper, highly permeable zone that supplies the majority of residential wells in Beaufort and Jasper Counties, and is the primary source of water for public supply, irrigation, and industry in the Low Country. This southern section of the Tertiary Limestone correlates regionally with the Upper Floridan Aquifer that extends from southern South Carolina to the southern keys of Florida.

Black Mingo Aquifer

Development of the Black Mingo is common in the vicinity of Charleston, Dorchester, and Berkeley counties, but has been largely overlooked south of Dorchester County owing to the increasingly prolific nature of the more shallow Tertiary Limestone (Floridan Aquifer System). Like the majority of Coastal Plain sediments, the nature of the aquifer differs dramatically from one area to the next. In the Charleston area, the aquifer is composed of permeable sand and limestone, while within the Upper Coastal Plain the Black Mingo is often a poorly producing aquifer composed of fine silt and clay, and therefore is unused in favor of the Middendorf or Tertiary Sand Aquifer.

Pee Dee Aquifer

The Pee Dee aquifer, where present, generally produces quality water at moderate rates. The aquifer matrix is composed of sand and silt separated by discontinuous intervals of clay. Development of the Pee Dee aquifer usually takes place in conjunction with the more prolific Black Creek aquifer and has become an excellent alternative to the often-overburdened Black

Creek for many uses, especially irrigation. The Pee Dee aquifer is most utilized in the northeast portion of the State, with the most demand centered between Florence and Horry Counties.

Black Creek Aquifer

Though present throughout much of the Coastal Plain, development of the Black Creek aquifer has been conducted primarily in the mid-to-northern portions of the Coastal Plain. The aquifer is composed of silt and fine sand with coarse sand in the Upper Coastal Plain. The Black Creek aquifer is an important source of water for public supply, irrigation, and industry from Marion County southeast to Georgetown County.

Middendorf Aquifer

The Middendorf Aquifer is a prolific source of water throughout the majority of the coastal plain and consists of coarse-grained fluvial sands near the Fall Line that grade to fine-grained marine sands and clay in the northern and eastern Lower Coastal Plain. The majority of the Pee Dee region, including Chesterfield, Darlington, Florence, and Marlboro Counties, as well as Orangeburg and Sumter Counties rely heavily on the Middendorf for irrigation, public supply, and industrial use. In the past decade, use of the Middendorf has increased along the southern coast in areas such as Charleston County.

Cape Fear Aquifer

Little published information exists from this deep sand aquifer owing to the few wells that have penetrated the formation. In general, water quality from the Cape Fear aquifer is poor over much of its extent owing to ancient, unflushed seawater and extensive mineralization. In South Carolina, the Cape Fear aquifer is largely unused.

Surface Water Resources

South Carolina's land surface is drained by eight (8) major river basins, all of which are critical to public water supply, irrigation, industry, and/or power generation. These major watersheds are shown as **Figure 3**, and a brief description of each major watershed follows.

Broad River Basin

The Broad River Watershed encompasses portions of North and South Carolina and drains the majority of Cherokee, Union, Spartanburg, and Greenville Counties. Portions of Chester, Fairfield, Richland and York counties are also included in the basin, and are drained by the Enoree, Pacolet, and Tyger Rivers, major tributary streams to the Broad River.

Catawba River Basin

Similar to the Broad River Basin, the watershed of the Catawba River drains counties in North and South Carolina east of a hydrologic divide in York, Chester, and Fairfield Counties. All or portions of the following counties lie within the basin: Chester, Fairfield, Kershaw, Lancaster, Richland, Sumter and York. The Catawba basin hosts Lake Wylie, Fishing Creek Reservoir, Lake Wateree, the Catawba and Wateree Rivers and associated tributary streams.

Edisto River Basin

The Edisto River Basin encompasses nearly all of Orangeburg County and portions of Aiken, Berkeley, Calhoun, Dorchester, and Lexington counties. The basin drains the central Coastal Plain and contains the North and South Forks of the Edisto River and tributaries, as well as numerous ecologically important wetland areas.

Pee Dee River Basin

The Pee Dee River Basin is the largest of South Carolina's watersheds and drains all or portions of Chesterfield, Darlington, Dillon, Georgetown, Horry, Kershaw, Lancaster, Lee, Marion, Marlboro, Williamsburg counties, and portions of southeastern North Carolina. The

Greater Pee Dee Watershed encompasses 5.1 million acres and includes the Pee Dee, Lynches, Waccamaw, and Sampit watersheds, as well as the Intracoastal Waterway and Winyah Bay.

Salkehatchie River Basin

The Salkehatchie basin is located entirely in the Coastal Plain and drains portions of Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper counties. The Coosawhatchie, Salkehatchie and Little Salkehatchie Rivers, along with their associated tributaries and local wetlands drain the basin and form tide-dominated distributary channels near the coast.

Saluda River Basin

The Saluda River Basin drains the central portion of South Carolina's Piedmont Region and encompasses major portions of Greenville and Pickens counties, as well as portions of Abbeville, Greenwood, Laurens, Lexington, Richland, and Saluda Counties. The basin includes all tributary streams to the Saluda River and Lakes Greenwood and Murray, the latter being a critical source for public water supply and hydroelectric power in central South Carolina.

Santee River Basin

The Santee River basin originates near the confluence of the Catawba and Broad River Basins and includes two of the State's largest reservoirs, Lake Marion and Lake Moultrie. These two major surface water resources are important power generating assets for the South Carolina. The basin drains Berkeley, Calhoun, Charleston, Clarendon, Dorchester, and small portions of Georgetown and Sumter Counties via tributaries of the Cooper, Santee and Ashley Rivers.

Savannah River Basin

The Savannah River Basin stretches from the Blue Ridge to the Atlantic Ocean and encompasses the border counties of South Carolina. The watershed drains major portions of Abbeville, Aiken, Allendale, Anderson, Edgefield, Greenwood, Hapton, McCormick, Oconee, and Pickens County, as well as adjacent counties in Georgia. The watershed includes the Savannah, Chatooga, Seneca, Little River, Stevens Creek, Rocky, and Tugaloo Rivers, and discharges approximately 8.0 billion gallons per day.



Figure 3: Major River Basins of South Carolina

Demographics

According to the 2000 Census, South Carolina's estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities (**Figure 4**). South Carolina has approximately 25,000 farms, occupying 4,846,000 acres (7,572 square miles). Of this, approximately 2,270,000 acres (3,547 square miles) are cropland². Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and the Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area³. South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2005) totaled 94,363 million kilowatt hours⁴.

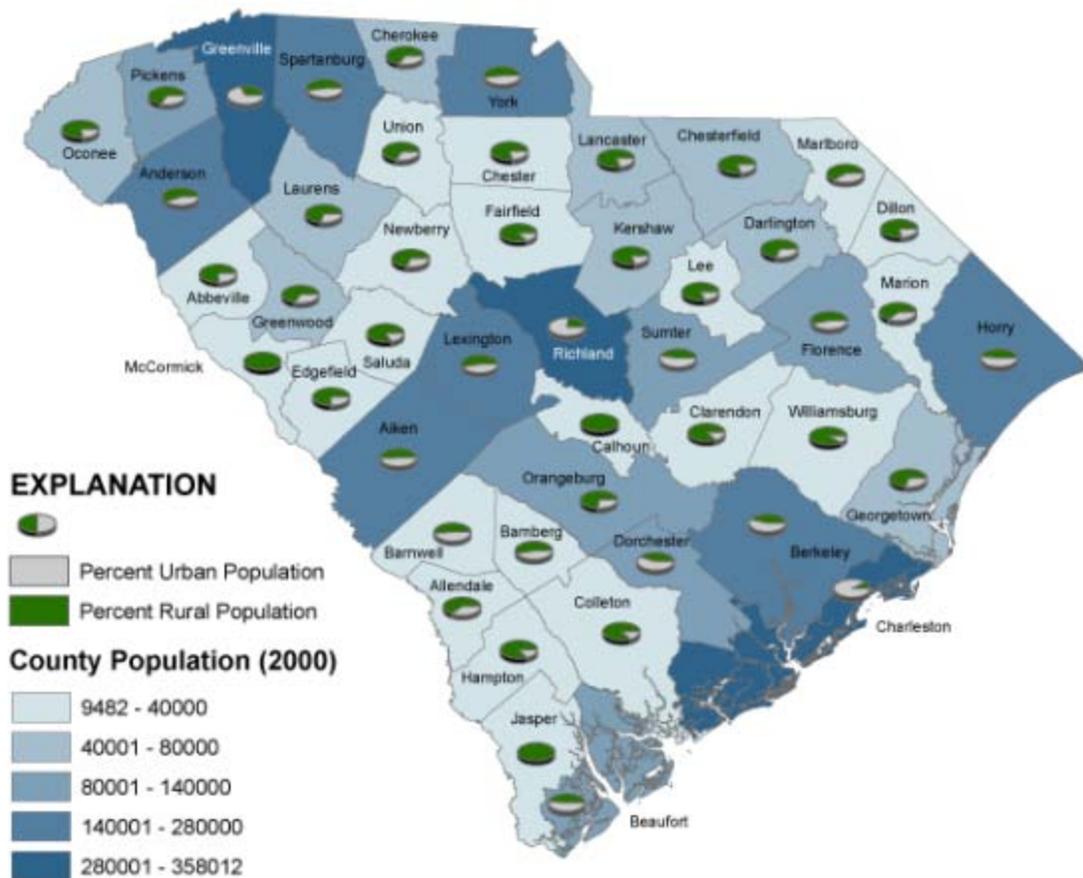


Figure 4: Population by County in South Carolina, 2000

² 2002 Census of Agriculture, Volume 1 Geographic Area Series, Historical Highlights: "Table 1: 2002 and Earlier Census Years"

³ S.C. Department of Commerce, 2000/2001 "South Carolina Industrial Directory."

⁴ S.C. Budget and Control Board Statistical Abstract 2004

2005 Water Use Profile

Surface and Groundwater Use Summary by Category and County in South Carolina, 2005

The following section outlines all reported water use for the State of South Carolina for the calendar year 2005. Water use is summarized by category, and further tabulated on a county-by-county basis. Where appropriate, the spatial distribution of the magnitude of water use is demonstrated on an accompanying map with a breakdown chart of groundwater and surface water use as a percentage of total use for the category.

Reporting Water Withdrawers

For the reporting year 2005, South Carolina had registered 862 water withdrawers with 2,506 sources, 481 surface water facilities with 702 sources and 541 groundwater facilities with 1,804 sources.

Water Use Category	Facilities	GW Source	SW Source
Golf Course	248	262	272
Water Supply	223	770	78
Irrigation	222	491	237
Industrial	93	222	52
Hydroelectric	31	1	32
Thermoelectric	19	8	16
Mining	12	10	7
Aquaculture	9	11	8
Other	5	29	0
Total	862	1,804	702

Total Reported Water Use

Total water use reported for 2005 was more than 20 trillion gallons from 862 reporting facilities. Surface water withdrawal from 481 facilities accounted for approximately 20.4 trillion gallons, approximately 99.6% of total water use. Groundwater withdrawal from 541 reporting facilities accounted for approximately 72.1 billion gallons or approximately 0.4% of total use.

Water Use Category	Groundwater	Surface Water	Total	Percentage
Aquaculture	182.93	227.37	410.31	0.0020%
Golf Courses	3,099.41	8,808.68	11,908.10	0.0583%
Industrial	11,830.92	140,255.88	152,086.80	0.7445%
Irrigation	14,065.22	7,858.81	21,924.04	0.1073%
Mining	2,709.77	595.40	3,305.18	0.0162%
Other	105.63	NR	105.63	0.0005%
Hydroelectric	0.33	15,766,866.75	15,766,867.08	77.1793%
Thermoelectric	2,043.32	4,254,461.12	4,256,504.44	20.8357%
Water Supply	38,113.35	177,657.70	215,771.05	1.0562%

NR = None Reported

Water Use	2000	2001	2002	2003	2004	2005
Hydroelectric	10,281,681.91	9,796,267.91	11,415,081.44	18,958,207.77	15,203,000.521	15,766,867.08
Thermoelectric	2,240,508.37	1,624,984.88	2,467,042.32	3,558,474.88	3,232,104.071	4,256,504.44
Water Supply	148,265.21	193,525.29	212,402.79	197,088.27	209,464.303	215,771.05
Industrial	157,463.33	180,579.90	167,051.34	168,334.76	157,309.024	152,086.80
Irrigation	3,182.73	27,121.14	29,668.39	12,172.86	24,119.869	21,924.04
Golf Course	6,806.35	13,302.54	14,022.92	10,373.47	13,230.462	11,908.10
Mining	3,056.08	2,691.75	3,159.88	4,935.07	3,241.623	3,305.18
Aquaculture	13.67	865.17	2,283.95	1,451.98	1,355.631	410.31
Other	223.61	204.84	106.22	59.033	85.505	105.63
Total	12,841,201.26	11,839,543.42	14,310,819.25	22,911,098.09	18,843,911.009	20,428,882.61
Facilities	577	931	848	833	848	862

Water Use in Power Production

According to the 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

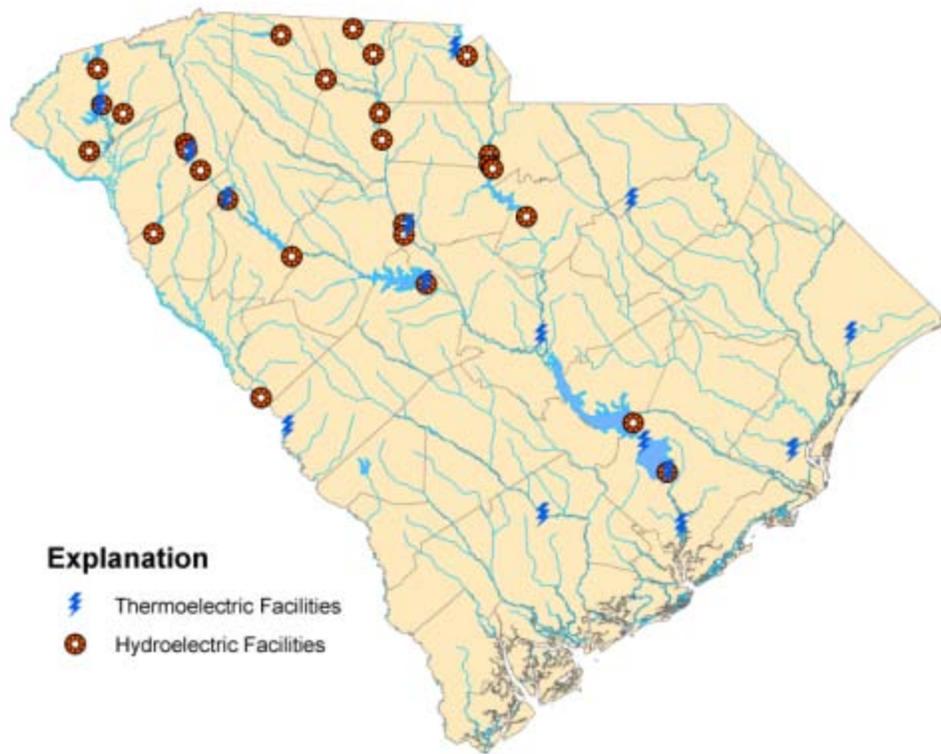


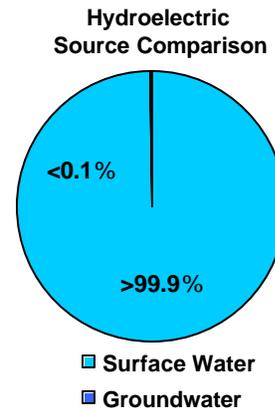
Figure 5: Distribution of Hydroelectric and Thermoelectric Facilities in South Carolina

Hydroelectric Water Use

Hydroelectric facilities employ energy from flowing water to generate electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river), or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 31 hydroelectric sources accounted for approximately 15.766 trillion gallons, approximately 78.7% of reported water use for power production and 77.1% of total reported water use for the year.

County	Surface Water	Groundwater	County Total
Abbeville	37,686.0	NR	37,686.0
Anderson	191,000.0	NR	191,000.0
Berkeley	1,251,619.0	0.3	1,251,619.3
Cherokee	407,518.0	NR	407,518.0
Chester	2,067,474.0	NR	2,067,474.0
Edgefield	1,150,053.5	NR	1,150,053.5
Fairfield	2,944,701.1	NR	2,944,701.1
Greenwood	363,517.0	NR	363,517.0
Kershaw	1,242,431.0	NR	1,242,431.0
Lancaster	1,204,198.0	NR	1,204,198.0
Laurens	120,000.0	NR	120,000.0
Lexington	371,476.6	NR	371,476.6
Oconee	12,700.0	NR	12,700.0
Pickens	2,769,742.0	NR	2,769,742.0
Richland	469,660.9	NR	469,660.9
Spartanburg	17,962.7	NR	17,962.7
Union	186,662.0	NR	186,662.0
York	958,465.0	NR	958,465.0

NR = None Reported



	Surface Water	Groundwater
Source Total:	15,766,866.7	0.3

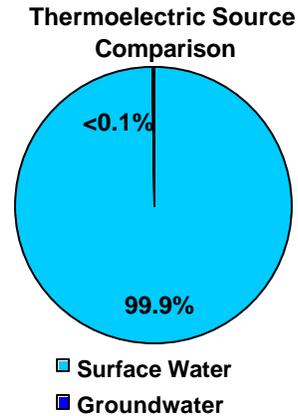
Total Hydro Power Use (million gallons):	15,766,867.0
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Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 19 thermoelectric sources accounted for more than 4.254 trillion gallons, approximately 21.3% of reported water use for power production and 20.8% of total reported water use for the year.

County	Surface Water	Groundwater	County Total
Aiken	45,545.000	NR	45,545.000
Anderson	49,744.210	NR	49,744.210
Berkeley	12.283	NR	12.283
Berkeley	203,543.688	NR	203,543.688
Cherokee	NR	1.022	1.022
Colleton	0.677	NR	0.677
Colleton	1,484.532	NR	1,484.532
Darlington	277,346.000	362.284	277,708.284
Fairfield	561,069.950	NR	561,069.950
Georgetown	4,324.245	NR	4,324.245
Horry	44,742.870	NR	44,742.870
Lexington	56,018.900	NR	56,018.900
Oconee	2,814,848.000	NR	2,814,848.000
Orangeburg	NR	1,667.052	1,667.052
Richland	158,609.723	NR	158,609.723
York	37,184.000	NR	37,184.000

NR = None Reported



	Surface Water	Groundwater
Source Total:	4,254,474.08	2,030.36
Total Thermoelectric Use (million gallons):	4,256,504.44	

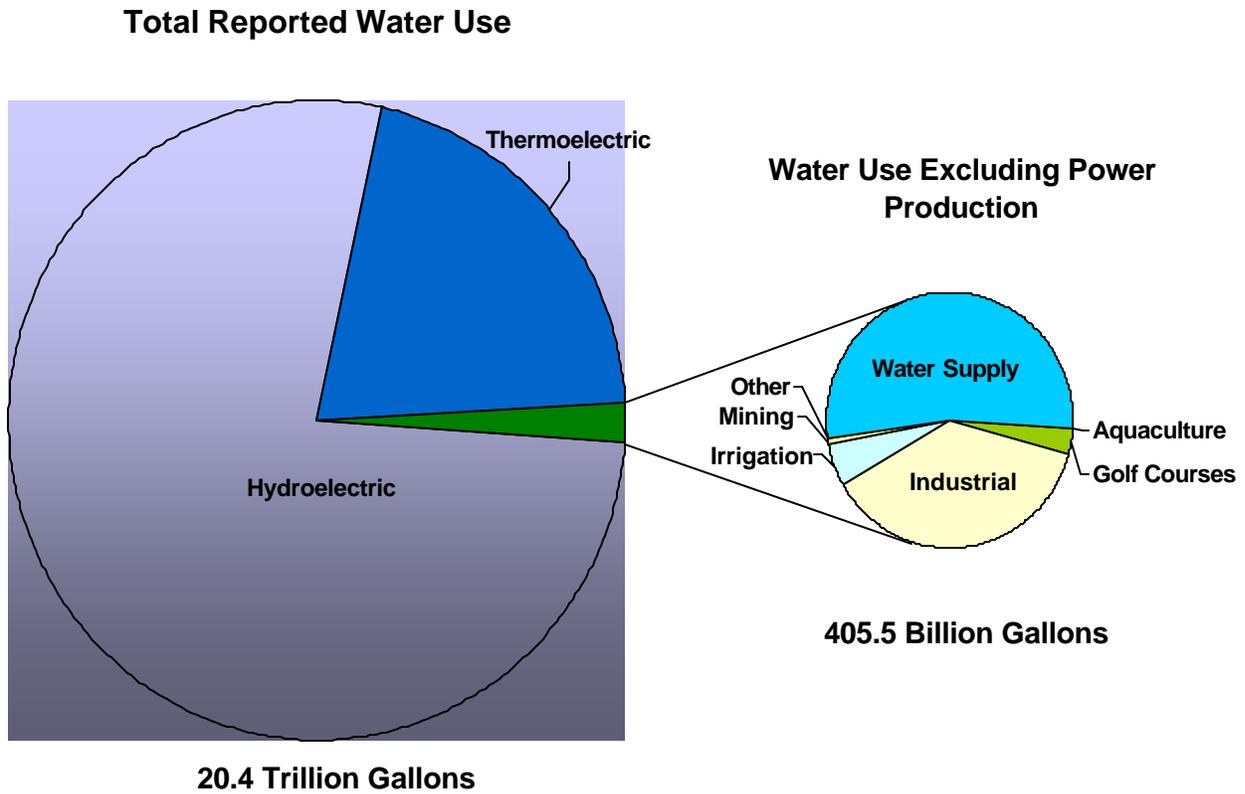


Figure 6: Reported Water Use by Category in South Carolina, 2005

Reported Water Use Excluding Power Production

During 2005, reported water use (excluding power production) totaled more than 405.5 billion gallons with surface water withdrawal accounting for 335.4 billion gallons or approximately 82.7%, and groundwater withdrawal accounting for 70.1 billion gallons or approximately 17.3%. Non-power production-oriented water use accounted for 1.9% of all reported water use in 2005.

	<i>Groundwater</i>	<i>Surface Water</i>	<i>Total</i>	<i>Percentage of Total Non-Power Use</i>
Aquaculture	182.93	227.37	410.31	0.10%
Golf Courses	3,099.41	8,808.68	11,908.10	2.94%
Industrial	11,830.92	140,255.88	152,086.80	37.50%
Irrigation	14,065.22	7,858.81	21,924.04	5.41%
Mining	2,709.77	595.40	3,305.18	0.82%
Other	105.63	NR	105.63	0.03%
Water Supply	38,113.35	177,657.70	215,771.05	53.21%
Total Non-Power Water Use			405,511.10	million gallons

NR = None Reported

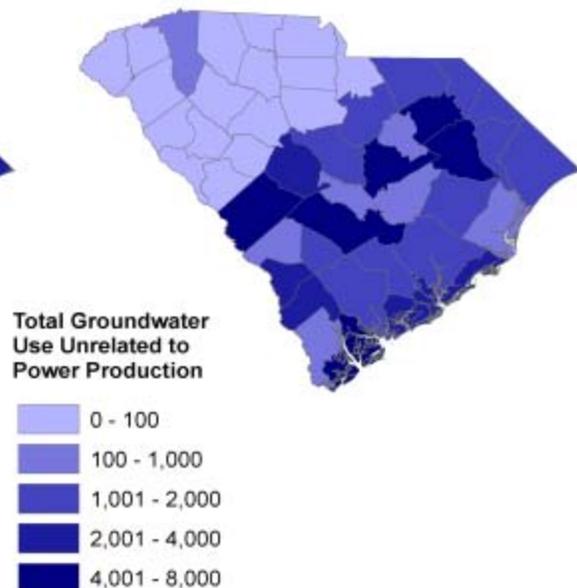
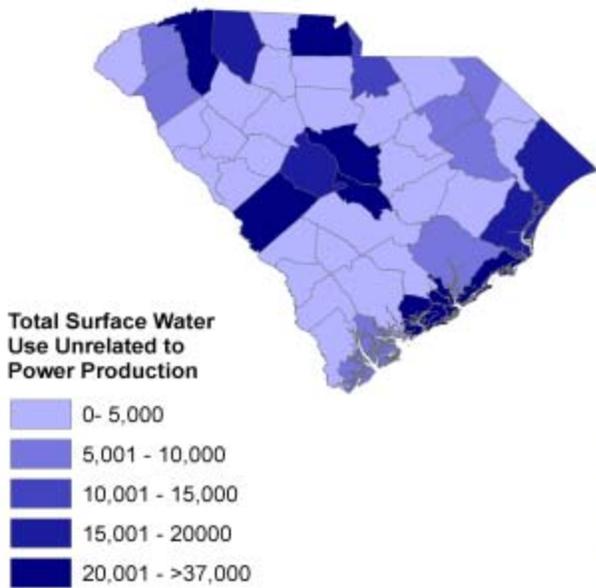
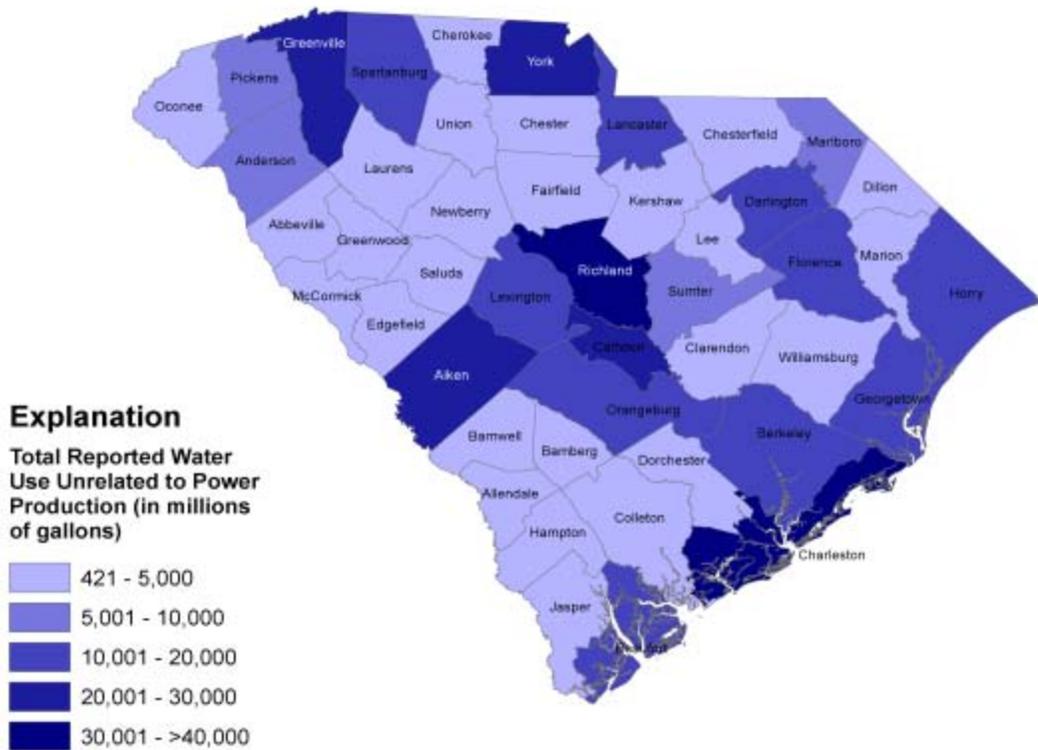


Figure 7: Distribution of Reported Water Usage Unrelated to Power Production, 2005. Figures in millions of gallons per year.

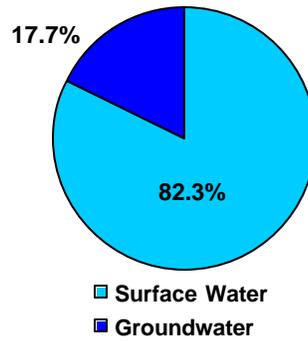
Water Supply

South Carolina has federally 1,551 defined public water systems, of which 685 are community water systems. The public water systems provide water to 3,450,928 citizens. Water withdrawal for public water supply from 223 reporting suppliers totaled 209.464 billion gallons, with 82 surface water sources accounting for 169.699 billion gallons and 745 groundwater sources accounting for 39.764 billion gallons.

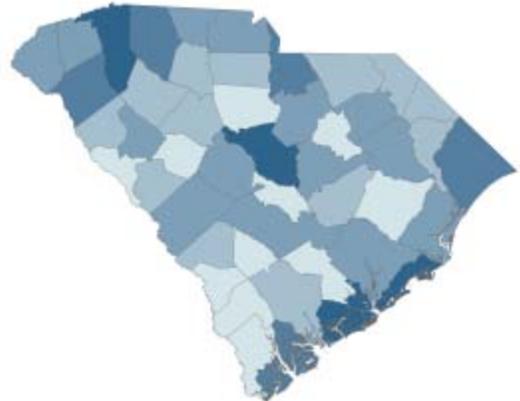
County	Groundwater	Surface Water	County Total
Abbeville	3.31	1,033.64	1,036.95
Aiken	4,786.54	2,395.24	7,181.78
Allendale	383.40	NR	383.40
Anderson	NR	7,664.00	7,664.00
Bamberg	477.66	NR	477.66
Barnwell	830.31	NR	830.31
Beaufort	3,906.87	7,096.70	11,003.57
Berkeley	195.05	5,071.40	5,266.45
Calhoun	133.34	NR	133.34
Charleston	2,398.08	27,901.81	30,299.88
Cherokee	NR	2,561.60	2,561.60
Chester	NR	1,192.20	1,192.20
Chesterfield	851.34	768.53	1,619.87
Clarendon	695.59	NR	695.59
Colleton	731.80	NR	731.80
Darlington	2,361.41	NR	2,361.41
Dillon	1,594.17	NR	1,594.17
Dorchester	655.46	NR	655.46
Edgefield	NR	1,450.00	1,450.00
Fairfield	67.82	568.29	636.12
Florence	3,927.20	1,461.58	5,388.78
Georgetown	853.25	2,268.05	3,121.30
Greenville	34.71	24,125.50	24,160.21
Greenwood	7.93	4,496.20	4,504.13
Hampton	534.26	NR	534.26
Horry	782.16	14,890.15	15,672.31
Jasper	334.03	NR	334.03
Kershaw	624.70	1,711.02	2,335.72
Lancaster	NR	8,081.36	8,081.36
Laurens	NR	1,624.37	1,624.37
Lee	604.46	NR	604.46
Lexington	434.25	5,102.52	5,536.78
Marion	1,315.39	NR	1,315.39
Marlboro	956.03	0.00	956.03
McCormick	NR	388.65	388.65
Newberry	21.63	1,928.53	1,950.16
Oconee	53.88	3,557.52	3,611.40
Orangeburg	625.79	3,153.58	3,779.37
Pickens	NR	3,454.32	3,454.32
Richland	325.04	22,683.18	23,008.22
Saluda	79.02	NR	79.02
Spartanburg	24.85	14,045.89	14,070.74
Sumter	5,921.14	NR	5,921.14
Union	NR	1,200.99	1,200.99
Williamsburg	551.86	NR	551.86
York	29.63	5,780.89	5,810.52

NR = None Reported

Water Supply Use Source Comparison



Average daily use for any reporting water supply facility (223 total) in 2005 equaled 468,251 gallons of groundwater and 2,182,661 gallons of surface water per day.



Distribution of reported water supply water use in South Carolina, 2005. Darker shades indicate the highest use areas.

	Groundwater	Surface Water
Source Total:	38,113.35	177,657.70

Total Water Supply Use (millions of gallons):	215,771.05
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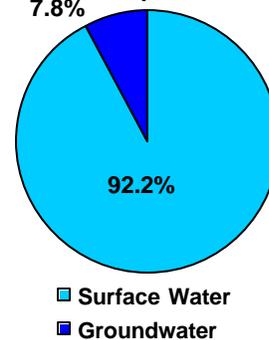
Industrial Use

Water withdrawal for industrial use from 93 reporting industries totaled 152.086 billion gallons, with 52 surface water sources accounting for 140.255 billion gallons and 222 groundwater sources accounting for 11.830 billion gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

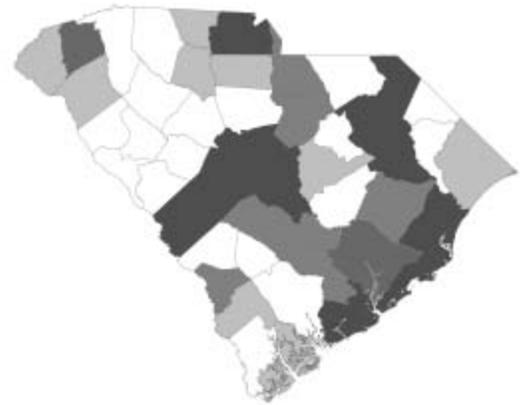
County	Groundwater	Surface Water	County Total
Aiken	1,323.157	20,847.091	22,170.248
Allendale	817.910	NR	817.910
Anderson	NR	89.900	89.900
Beaufort	139.794	NR	139.794
Berkeley	1,200.791	3,110.428	4,311.219
Calhoun	132.610	26,392.680	26,525.290
Charleston	42.456	8,873.806	8,916.262
Cherokee	NR	504.126	504.126
Chester	1.963	94.377	96.340
Darlington	1,488.859	7,036.072	8,524.931
Dorchester	998.879	54.703	1,053.582
Florence	718.343	7,652.703	8,371.046
Georgetown	112.980	12,294.862	12,407.842
Greenville	59.315	NR	59.315
Greenwood	8.000	53.600	61.600
Hampton	488.500	NR	488.500
Horry	160.116	15.880	175.996
Kershaw	499.542	978.150	1,477.692
Lancaster	NR	2,212.771	2,212.771
Lexington	409.109	9,691.832	10,100.941
Marion	NR	NR	0.000
Marlboro	280.237	7,609.400	7,889.637
Oconee	NR	583.026	583.026
Orangeburg	1,044.567	171.420	1,215.987
Pickens	NR	3,279.949	3,279.949
Richland	660.463	10,260.403	10,920.866
Spartanburg	13.673	NR	13.673
Sumter	318.687	NR	318.687
Union	2.780	571.500	574.280
Williamsburg	902.648	NR	902.648
York	5.539	17,877.200	17,882.739

NR = None Reported

Industrial Use Source Comparison



Average daily use for any reporting industrial facility (93 total) in 2005 equaled 348,532 gallons of groundwater and 4,131,856 gallons of surface water per day.



	Groundwater	Surface Water
Source Total:	11,830.92	140,255.88

Total Industrial Use (millions of gallons):	152,086.80
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Irrigation Use

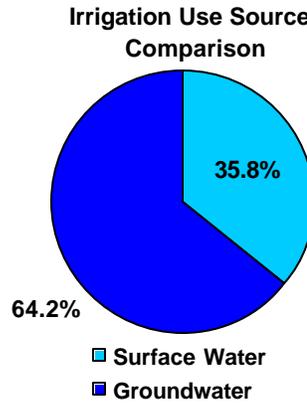
Water withdrawal for irrigation use from 222 reporting entities totaled 21.924 billion gallons, with 491 surface water sources accounting for 7.858 billion gallons and 413 groundwater sources accounting for 14.065 billion gallons.

County	Groundwater	Surface Water	County Total
Aiken	161.33	17.59	178.92
Allendale	2,791.02	156.01	2,947.03
Bamberg	744.07	493.16	1,237.24
Barnwell	112.83	83.84	196.67
Beaufort	659.45	18.29	677.74
Berkeley	0.24	1,110.14	1,110.38
Calhoun	541.10	113.13	654.22
Charleston	0.25	26.99	27.23
Chesterfield	230.03	23.23	253.26
Clarendon	44.83	49.03	93.86
Colleton	756.50	227.00	983.50
Darlington	5.13	221.68	226.80
Dillon	34.40	NR	34.40
Edgefield	21.00	456.05	477.05
Florence	253.64	7.20	260.84
Georgetown	21.80	2,025.72	2,047.52
Greenville	0.40	19.00	19.40
Greenwood	1.20	NR	1.20
Hampton	1,246.03	18.00	1,264.03
Horry	145.60	66.33	211.93
Jasper	425.15	0.00	425.15
Lee	79.86	7.00	86.86
Lexington	1,794.75	513.97	2,308.72
Marion	25.60	0.01	25.61
Marlboro	117.01	74.77	191.78
McCormick	NR	0.00	0.00
Newberry	55.23	122.50	177.73
Oconee	NR	287.75	287.75
Orangeburg	2,664.31	738.56	3,402.87
Pickens	NR	0.00	0.00
Richland	14.69	0.20	14.89
Saluda	NR	367.52	367.52
Spartanburg	NR	105.06	105.06
Sumter	1,117.81	504.40	1,622.22
Williamsburg	NR	2.15	2.15
York	NR	2.55	2.55

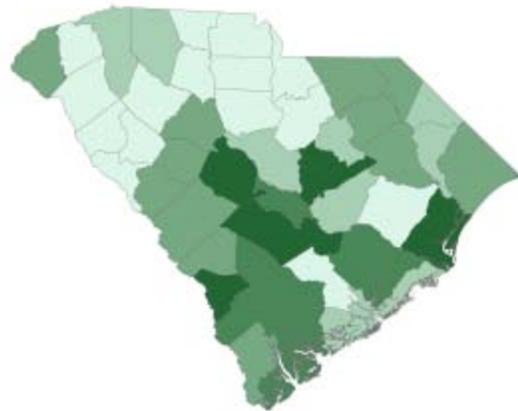
NR = None Reported

	Groundwater	Surface Water
Source Total:	14,065.22	7,858.81

Total Irrigation Use (millions of gallons):	21,924.04
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Average daily use for any reporting irrigation facility (222 total) in 2005 equaled 173,580 gallons of groundwater and 96,986 gallons of surface water per day.

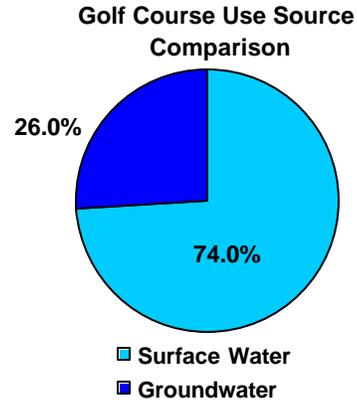


Distribution of reported irrigation water use in South Carolina, 2005. Darker shades indicate the highest use areas.

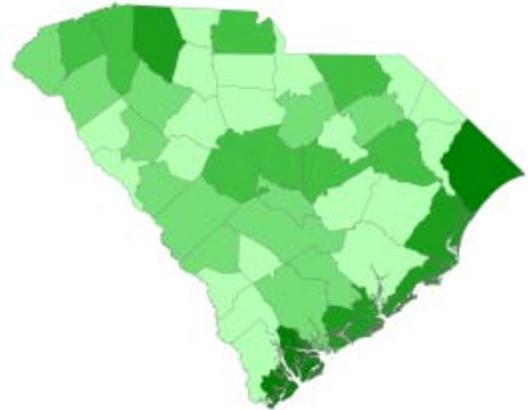
Golf Course Use

Water withdrawal from 248 reporting courses for golf course irrigation totaled 13.230 billion gallons, with 272 surface water sources accounting for 8.808 billion gallons and 262 groundwater sources accounting for 3.099 billion gallons.

County	Groundwater	Surface Water	County Total
Aiken	13.10	100.33	113.43
Anderson	NR	76.37	76.37
Barnwell	NR	59.62	59.62
Beaufort	1,115.37	1,418.36	2,533.73
Berkeley	19.20	6.42	25.62
Calhoun	28.30	41.10	69.40
Charleston	648.03	199.50	847.52
Chester	22.50	9.00	31.50
Chesterfield	NR	268.48	268.48
Clarendon	5.08	37.90	42.98
Colleton	63.03	1.37	64.40
Darlington	3.00	126.90	129.90
Dorchester	44.00	NR	44.00
Edgefield	43.61	39.00	82.61
Florence	128.95	61.41	190.37
Georgetown	0.00	775.90	775.90
Greenville	30.77	171.35	202.12
Greenwood	10.20	59.54	69.74
Hampton	34.75	NR	34.75
Horry	587.00	2,899.80	3,486.80
Kershaw	39.52	54.80	94.32
Lancaster	0.73	8.92	9.65
Laurens	NR	84.08	84.08
Lexington	28.95	173.59	202.54
Marion	0.00	21.31	21.31
McCormick	NR	32.65	32.65
Newberry	12.00	6.00	18.00
Oconee	NR	86.50	86.50
Orangeburg	18.67	90.77	109.45
Pickens	NR	229.76	229.76
Richland	24.53	320.87	345.40
Spartanburg	10.51	1,009.38	1,019.89
Sumter	120.57	175.31	295.87
Union	NR	9.00	9.00
York	47.06	153.41	200.47
		NR = None Reported	
	Groundwater	Surface Water	
Source Total:	3,099.41	8,808.68	
Total Golf Course Use (million gallons):	11,908.10		



Average daily use for any reporting golf course (248 total) in 2005 equaled 34,240 gallons of groundwater and 97,311 gallons of surface water per day.



Distribution of reported golf course water use in South Carolina, 2005. Darker shades indicate the highest use areas.

Mining Use

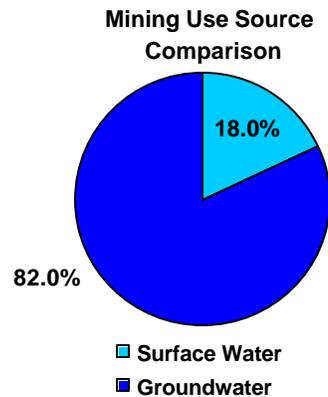
Water withdrawal associated with mining activities at 12 reporting facilities totaled 3.305 billion gallons, with 10 surface water sources accounting for 595.40 million gallons and 7 groundwater sources accounting for 2.709.77 billion gallons.

County	Groundwater	Surface Water	County Total
Aiken	21.310	NR	21.310
Berkeley	2.982	NR	2.982
Colleton	NR	2.164	2.164
Horry	NR	177.600	177.600
Lexington	446.870	415.640	862.510
Orangeburg	1,909.200	NR	1,909.200
Richland	312.850	NR	312.850
York	16.560	NR	16.560

NR = None Reported

	Groundwater	Surface Water
Source Total:	2,709.772	595.404

**Total Irrigation Use
(million gallons):** 3,305.176



Aquaculture Use

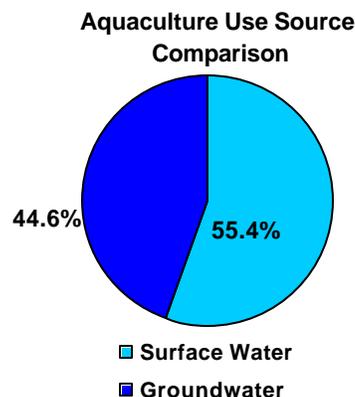
Water withdrawal from 9 reporting aquaculture-farming facilities totaled 0.410 billion gallons, with 8 surface water sources accounting for 227.37 million gallons and 11 groundwater sources accounting for 182.93 million gallons.

County	Groundwater	Surface Water	County Total
Beaufort	9.273	63.037	72.310
Berkeley	3.277	99.695	102.972
Charleston	NR	2.300	2.300
Dillon	35.600	NR	35.600
Hampton	122.283	NR	122.283
Richland	12.500	27.300	39.800
Spartanburg	NR	35.040	35.040

NR = None Reported

	Groundwater	Surface Water
Source Total:	182.933	227.372

**Total Aquaculture Use
(million gallons):** 410.305



Other Use

Water withdrawal for other, non-specific use from 5 reporting facilities totaled 105.63 million gallons, with groundwater withdrawn from 29 sources accounting for all reported use.

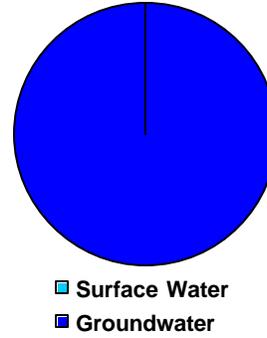
County	Groundwater	Surface Water	County Total
Beaufort	34.760	NR	34.760
Charleston	1.564	NR	1.564
Darlington	0.465	NR	0.465
Dorchester	0.989	NR	0.989
Horry	67.856	NR	67.856

NR = None Reported

	Groundwater	Surface Water
Source Total:	105.634	NR

**Total Other Use
(million gallons): 105.634**

Other Use Source Comparison



Appendix A: Surface and Groundwater Use Summary Tables

Surface Water Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Water Supply
Abbeville	38,719.64	37,686.00	NR	NR	NR	NR	NR	NR	1,033.64
Aiken	68,905.24	NR	45,545.00	NR	100.33	20,847.09	17.59	NR	2,395.24
Allendale	156.01	NR	NR	NR	NR	NR	156.01	NR	NR
Anderson	248,574.47	191,000.00	49,744.21	NR	76.37	89.90	NR	NR	7,664.00
Bamberg	493.16	NR	NR	NR	NR	NR	493.16	NR	NR
Barnwell	143.46	NR	NR	NR	59.62	NR	83.84	NR	NR
Beaufort	8,596.38	NR	NR	63.04	1,418.36	NR	18.29	NR	7,096.70
Berkeley	1,464,560.78	1,251,619.01	203,543.69	99.70	6.42	3,110.43	1,110.14	NR	5,071.40
Calhoun	26,546.91	NR	NR	NR	41.10	26,392.68	113.13	NR	NR
Charleston	37,004.39	NR	NR	2.30	199.50	8,873.81	26.99	NR	27,901.81
Cherokee	410,583.73	407,518.00	NR	NR	NR	504.13	NR	NR	2,561.60
Chester	2,068,769.58	2,067,474.00	NR	NR	9.00	94.38	NR	NR	1,192.20
Chesterfield	1,060.24	NR	NR	NR	268.48	NR	23.23	NR	768.53
Clarendon	86.93	NR	NR	NR	37.90	NR	49.03	NR	NR
Colleton	1,715.07	NR	1,484.53	NR	1.37	NR	227.00	2.16	NR
Darlington	284,730.65	NR	277,346.00	NR	126.90	7,036.07	221.68	NR	NR
Dorchester	54.70	NR	NR	NR	0.00	54.70	NR	NR	NR
Edgefield	1,151,998.50	1,150,053.45	NR	NR	39.00	NR	456.05	NR	1,450.00
Fairfield	3,506,339.36	2,944,701.12	561,069.95	NR	NR	NR	NR	NR	568.29
Florence	9,182.90	NR	NR	NR	61.41	7,652.70	7.20	NR	1,461.58
Georgetown	21,688.77	NR	4,324.25	NR	775.90	12,294.86	2,025.72	NR	2,268.05
Greenville	24,315.85	0.00	NR	NR	171.35	NR	19.00	NR	24,125.50
Greenwood	368,126.34	363,517.00	0.00	NR	59.54	53.60	NR	NR	4,496.20
Hampton	18.00	NR	NR	NR	NR	NR	18.00	NR	NR
Horry	62,792.63	NR	44,742.87	NR	2,899.80	15.88	66.33	177.60	14,890.15
Jasper	0.00	NR	NR	NR	NR	NR	0.00	NR	NR
Kershaw	1,245,174.97	1,242,431.00	NR	NR	54.80	978.15	NR	NR	1,711.02
Lancaster	1,214,501.04	1,204,198.00	NR	NR	8.92	2,212.77	NR	NR	8,081.36
Laurens	121,708.45	120,000.00	NR	NR	84.08	NR	NR	NR	1,624.37
Lee	7.00	NR	NR	NR	NR	NR	7.00	NR	NR
Lexington	443,393.01	371,476.55	56,018.90	NR	173.59	9,691.83	513.97	415.64	5,102.52
Marion	21.31	NR	NR	NR	21.31	NR	0.01	NR	NR
Marlboro	7,684.17	NR	NR	NR	NR	7,609.40	74.77	NR	0.00
McCormick	421.30	NR	NR	NR	32.65	NR	0.00	NR	388.65
Newberry	2,057.03	NR	NR	NR	6.00	NR	122.50	NR	1,928.53
Oconee	2,832,062.80	12,700.00	2,814,848.00	NR	86.50	583.03	287.75	NR	3,557.52
Orangeburg	4,154.34	NR	0.00	NR	90.77	171.42	738.56	NR	3,153.58
Pickens	2,776,706.04	2,769,742.00	NR	NR	229.76	3,279.95	0.00	NR	3,454.32
Richland	661,562.56	469,660.89	158,609.72	27.30	320.87	10,260.40	0.20	NR	22,683.18
Saluda	367.52	NR	NR	NR	NR	NR	367.52	NR	NR
Spartanburg	33,158.09	17,962.72	NR	35.04	1,009.38	NR	105.06	NR	14,045.89
Sumter	679.71	NR	NR	NR	175.31	NR	504.40	NR	NR
Union	188,443.50	186,662.01	NR	NR	9.00	571.50	NR	NR	1,200.99
Williamsburg	2.15	NR	NR	NR	NR	NR	2.15	NR	NR
York	1,019,463.06	958,465.00	37,184.00	NR	153.41	17,877.20	2.55	NR	5,780.89
Grand Total:	20,356,731.72	15,766,86.75	4,254,461.12	227.37	8,808.68	140,255.88	7,858.81	595.40	177,657.70

NR = None Reported

Groundwater Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Other	Water Supply
Abbeville	3.31	NR	NR	NR	NR	NR	NR	NR	NR	3.31
Aiken	6305.436	NR	NR	NR	13.1	1323.157	161.33	21.31	NR	4786.539
Allendale	3992.331	NR	NR	NR	NR	817.91	2791.018	NR	NR	383.403
Bamberg	1221.734	NR	NR	NR	NR	NR	744.073	NR	NR	477.661
Barnwell	943.142	NR	NR	NR	NR	NR	112.831	NR	NR	830.311
Beaufort	5865.52	NR	NR	9.273	1115.368	139.794	659.452	NR	34.76	3906.873
Berkeley	1434.151	0.329	12.283	3.277	19.2	1200.791	0.24	2.982	NR	195.049
Calhoun	835.351	NR	NR	NR	28.3	132.61	541.097	NR	NR	133.344
Charleston	3090.368	NR	NR	NR	648.027	42.456	0.245	NR	1.564	2398.076
Cherokee	1.022	NR	1.022	NR	NR	NR	NR	NR	NR	NR
Chester	24.463	NR	NR	NR	22.5	1.963	NR	NR	NR	NR
Chesterfield	1081.367	NR	NR	NR	NR	NR	230.032	0	NR	851.335
Clarendon	745.499	NR	NR	NR	5.08	NR	44.825	NR	NR	695.594
Colleton	1552.005	NR	0.677	NR	63.027	NR	756.5	NR	NR	731.801
Darlington	4221.139	NR	362.284	NR	3	1488.859	5.125	NR	0.465	2361.406
Dillon	1664.173	NR	NR	35.6	NR	NR	34.4	NR	NR	1594.173
Dorchester	1699.324	NR	NR	NR	44	998.879	NR	NR	0.989	655.456
Edgefield	64.605	NR	NR	NR	43.605	NR	21	NR	NR	NR
Fairfield	67.823	NR	NR	NR	NR	NR	NR	NR	NR	67.823
Florence	5028.126	NR	NR	NR	128.951	718.343	253.637	NR	NR	3927.195
Georgetown	988.028	NR	NR	NR	0	112.98	21.797	NR	NR	853.251
Greenville	125.195	NR	NR	NR	30.773	59.315	0.4	NR	NR	34.707
Greenwood	27.328	NR	NR	NR	10.2	8	1.2	NR	NR	7.928
Hampton	2425.814	NR	NR	122.283	34.75	488.5	1246.025	NR	NR	534.256
Horry	1742.73	NR	NR	NR	586.996	160.116	145.598	NR	67.856	782.164
Jasper	759.179	NR	NR	0	NR	NR	425.146	NR	NR	334.033
Kershaw	1163.758	NR	NR	NR	39.52	499.542	NR	NR	NR	624.696
Lancaster	0.734	NR	NR	NR	0.734	NR	NR	NR	NR	NR
Lee	684.318	NR	NR	NR	NR	NR	79.858	NR	NR	604.46
Lexington	3113.93	NR	NR	NR	28.95	409.109	1794.748	446.87	NR	434.253
Marion	1340.989	NR	NR	NR	0	NR	25.6	NR	NR	1315.389
Marlboro	1353.281	NR	NR	NR	NR	280.237	117.01	NR	NR	956.034
Newberry	88.853	NR	NR	NR	12	NR	55.228	NR	NR	21.625
Oconee	53.88	NR	NR	NR	NR	NR	NR	NR	NR	53.88
Orangeburg	7929.589	NR	1667.052	NR	18.672	1044.567	2664.31	1909.2	NR	625.788
Richland	1350.066	NR	NR	12.5	24.53	660.463	14.686	312.85	NR	325.037
Saluda	79.02	NR	NR	NR	NR	NR	NR	NR	NR	79.02
Spartanburg	49.032	NR	NR	NR	10.51	13.673	NR	NR	NR	24.849
Sumter	7478.204	NR	NR	NR	120.565	318.687	1117.811	NR	NR	5921.141
Union	2.78	NR	NR	NR	NR	2.78	NR	NR	NR	NR
Williamsburg	1454.508	NR	NR	NR	NR	902.648	NR	NR	NR	551.86
York	98.784	NR	NR	NR	47.055	5.539	NR	16.56	NR	29.63
Grand Total:	72,150.89	0.33	2,043.32	182.93	3,099.41	11,830.92	14,065.22	2,709.77	105.63	38,113.35

NR = None Reported

Appendix B: Surface and Groundwater Use Summary by County in South Carolina, 2005

The following tables list reported surface water and groundwater withdrawals for the 2005 calendar year by county. Water usage data are shown by water use category, and in the case of power generation, include surface water use that is typically considered non-consumptive. As presented throughout this report, all water use figures presented are in millions of gallons.

Abbeville County



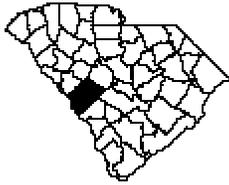
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	3.31
Other:	NR
Total:	3.31

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	37,686.30
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1,033.64
Total:	38,719.64

Aiken County



Groundwater Use

Aquaculture:	NR
Golf Course:	13.10
Industrial:	1323.16
Irrigation:	161.33
Mining:	21.31
Water Supply:	4786.54
Other:	NR
Total:	6,305.44

Surface Water Use

Aquaculture:	NR
Golf Course:	100.33
Hydroelectric:	NR
Industrial:	20,847.09
Irrigation:	17.585
Mining:	NR
Thermal Power:	45,545
Water Supply:	2,395.24
Total:	68,905.24

Allendale County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	817.91
Irrigation:	2,791.02
Mining:	NR
Water Supply:	383.40
Other:	NR
Total:	3,992.33

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	156.01
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	156.01

Anderson County



Groundwater Use

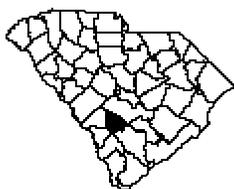
Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	76.37
Hydroelectric:	191,000
Industrial:	89.9
Irrigation:	NR
Mining:	NR
Thermal Power:	49,744.21
Water Supply:	7,663.995
Total:	248,574.47

NR = None Reported

Bamberg County



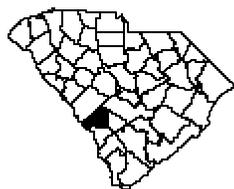
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	744.07
Mining:	NR
Water Supply:	477.661
Other:	NR
Total:	1,221.73

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	493.16
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	493.16

Barnwell County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	112.83
Mining:	NR
Water Supply:	830.31
Other:	NR
Total:	943.14

Surface Water Use

Aquaculture:	NR
Golf Course:	59.62
Hydroelectric:	NR
Industrial:	NR
Irrigation:	83.84
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	143.46

Beaufort County



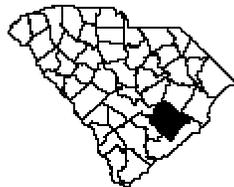
Groundwater Use

Aquaculture:	9.27
Golf Course:	1,115.37
Industrial:	139.794
Irrigation:	659.45
Mining:	NR
Water Supply:	3906.87
Other:	34.76
Total:	5,865.52

Surface Water Use

Aquaculture:	63.04
Golf Course:	1,418.36
Hydroelectric:	NR
Industrial:	NR
Irrigation:	18.29
Mining:	NR
Thermal Power:	NR
Water Supply:	7096.70
Total:	8,596.38

Berkeley County



Groundwater Use

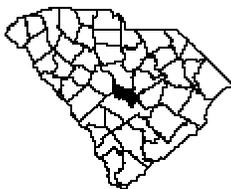
Aquaculture:	3.28
Golf Course:	19.20
Industrial:	1,200.79
Irrigation:	0.24
Mining:	2.98
Water Supply:	195.05
Hydroelectric:	0.33
Thermal Power:	12.28
Total:	1,434.15

Surface Water Use

Aquaculture:	99.70
Golf Course:	6.42
Hydroelectric:	1,251,619.01
Industrial:	3110.43
Irrigation:	1110.14
Mining:	NR
Thermal Power:	203,543.69
Water Supply:	5,071.4
Total:	1,464,560.78

NR = None Reported

Calhoun County



Groundwater Use

Aquaculture:	NR
Golf Course:	28.30
Industrial:	132.61
Irrigation:	541.097
Mining:	NR
Water Supply:	133.34
Other:	NR
Total:	835.35

Surface Water Use

Aquaculture:	NR
Golf Course:	41.10
Hydroelectric:	NR
Industrial:	26,392.68
Irrigation:	113.125
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	26,546.91

Charleston County



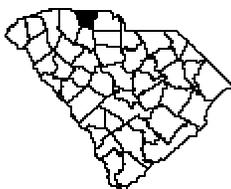
Groundwater Use

Aquaculture:	NR
Golf Course:	648.03
Industrial:	42.46
Irrigation:	0.25
Mining:	NR
Water Supply:	2398.07
Other:	1.56
Total:	3,090.37

Surface Water Use

Aquaculture:	2.30
Golf Course:	199.49
Hydroelectric:	NR
Industrial:	8,873.81
Irrigation:	26.99
Mining:	NR
Thermal Power:	NR
Water Supply:	27,901.80
Total:	37,004.39

Cherokee County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Thermal Power:	1.02
Total:	1.02

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	407,518.00
Industrial:	504.13
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	2,561.6
Total:	410,583.73

Chester County



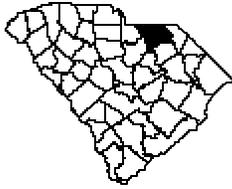
Groundwater Use

Aquaculture:	NR
Golf Course:	22.50
Industrial:	1.96
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	24.46

Surface Water Use

Aquaculture:	NR
Golf Course:	9.00
Hydroelectric:	2,067,474.00
Industrial:	94.38
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1192.2
Total:	2,068,769.58

NR = None Reported



Chesterfield County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	NR	Golf Course:	268.48
Industrial:	NR	Hydroelectric:	NR
Irrigation:	230.03	Industrial:	NR
Mining:	NR	Irrigation:	23.23
Water Supply:	851.34	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	1,081.37	Water Supply:	768.53
		Total:	1,060.24



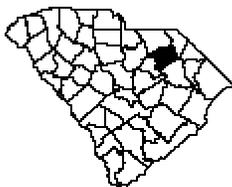
Clarendon County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	5.08	Golf Course:	37.90
Industrial:	NR	Hydroelectric:	NR
Irrigation:	44.83	Industrial:	NR
Mining:	NR	Irrigation:	49.03
Water Supply:	695.59	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	745.50	Water Supply:	NR
		Total:	86.93



Colleton County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	63.03	Golf Course:	1.37
Industrial:	NR	Hydroelectric:	NR
Irrigation:	756.50	Industrial:	NR
Mining:	NR	Irrigation:	227.00
Water Supply:	731.80	Mining:	2.16
Thermal Power	0.68	Thermal Power:	1,484.53
Other:	NR	Water Supply:	NR
Total:	1,552.01	Total:	1,715.07



Darlington County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	3.00	Golf Course:	126.90
Industrial:	1,488.86	Hydroelectric:	NR
Irrigation:	5.13	Industrial:	7,036.07
Mining:	NR	Irrigation:	221.68
Nuclear Power:	362.28	Mining:	NR
Water Supply:	2505.969	Nuclear Power:	277,346.00
Other:	0.47	Water Supply:	NR
Total:	4,221.14	Total:	284,730.65

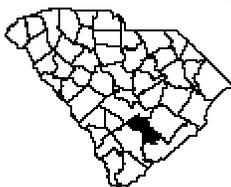
NR = None Reported

Dillon County



Groundwater Use		Surface Water Use	
Aquaculture:	35.60	Aquaculture:	NR
Golf Course:	NR	Golf Course:	NR
Industrial:	NR	Hydroelectric:	NR
Irrigation:	34.40	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	1,594.17	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	1,664.17	Water Supply:	NR
		Total:	NR

Dorchester County



Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	44.00	Golf Course:	NR
Industrial:	998.88	Hydroelectric:	NR
Irrigation:	NR	Industrial:	54.70
Mining:	NR	Irrigation:	NR
Water Supply:	655.46	Mining:	NR
Other:	.99	Thermal Power:	NR
Total:	1,699.32	Water Supply:	NR
		Total:	54.70

Edgefield County



Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	43.61	Golf Course:	39.00
Industrial:	NR	Hydroelectric:	1,150,053.45
Irrigation:	21.000	Industrial:	NR
Mining:	NR	Irrigation:	456.05
Water Supply:	NR	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	64.61	Water Supply:	1450.00
		Total:	1,151,998.50

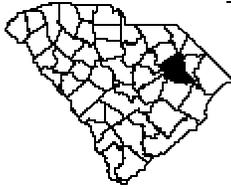
Fairfield County



Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	NR	Golf Course:	NR
Industrial:	NR	Hydroelectric:	2,944,701.12
Irrigation:	NR	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	67.82	Mining:	NR
Other:	NR	Nuclear Power:	561,069.95
Total:	67.82	Water Supply:	568.29
		Total:	3,506,339.36

NR = None Reported

Florence County



Groundwater Use

Aquaculture:	NR
Golf Course:	128.95
Industrial:	718.34
Irrigation:	253.64
Mining:	NR
Water Supply:	3,927.20
Other:	NR
Total:	5,028.13

Surface Water Use

Aquaculture:	NR
Golf Course:	61.41
Hydroelectric:	NR
Industrial:	7,652.70
Irrigation:	7.20
Mining:	NR
Thermal Power:	NR
Water Supply:	1,461.58
Total:	9,182.90

Georgetown County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	112.98
Irrigation:	21.80
Mining:	NR
Water Supply:	853.25
Other:	NR
Total:	988.03

Surface Water Use

Aquaculture:	NR
Golf Course:	775.90
Hydroelectric:	NR
Industrial:	12,294.86
Irrigation:	2,025.72
Mining:	NR
Thermal Power:	4,324.25
Water Supply:	2,268.05
Total:	21,688.77

Greenville County



Groundwater Use

Aquaculture:	NR
Golf Course:	30.77
Industrial:	59.32
Irrigation:	NR
Mining:	NR
Water Supply:	34.70
Other:	NR
Total:	125.20

Surface Water Use

Aquaculture:	NR
Golf Course:	171.35
Hydroelectric:	NR
Industrial:	NR
Irrigation:	19.00
Mining:	NR
Thermal Power:	NR
Water Supply:	24,125.5
Total:	24,315.85

Greenwood County



Groundwater Use

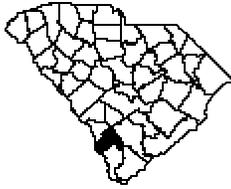
Aquaculture:	NR
Golf Course:	10.20
Industrial:	8.00
Irrigation:	1.200
Mining:	NR
Water Supply:	7.93
Other:	NR
Total:	27.33

Surface Water Use

Aquaculture:	NR
Golf Course:	59.54
Hydroelectric:	363,517.00
Industrial:	53.60
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	4,496.20
Total:	368,126.34

NR = None Reported

Hampton County



Groundwater Use

Aquaculture:	122.28
Golf Course:	34.75
Industrial:	488.50
Irrigation:	1,246.03
Mining:	NR
Water Supply:	534.26
Other:	NR
Total:	2,425.81

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	18.00
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	18.00

Horry County



Groundwater Use

Aquaculture:	NR
Golf Course:	586.00
Industrial:	160.12
Irrigation:	145.60
Mining:	NR
Water Supply:	782.164
Other:	67.86
Total:	1,742.73

Surface Water Use

Aquaculture:	NR
Golf Course:	2,899.80
Hydroelectric:	NR
Industrial:	15.88
Irrigation:	66.33
Mining:	177.60
Thermal Power:	44,742.87
Water Supply:	14,890.15
Total:	62,792.63

Jasper County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	425.146
Mining:	NR
Water Supply:	334.03
Other:	NR
Total:	759.18

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	NR

Kershaw County



Groundwater Use

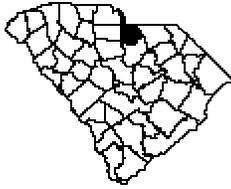
Aquaculture:	NR
Golf Course:	39.52
Industrial:	499.54
Irrigation:	NR
Mining:	NR
Water Supply:	624.70
Other:	NR
Total:	1,163.76

Surface Water Use

Aquaculture:	NR
Golf Course:	54.80
Hydroelectric:	1,242,431.00
Industrial:	978.15
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1,711.02
Total:	1,245,174.97

NR = None Reported

Lancaster County



Groundwater Use

Aquaculture:	NR
Golf Course:	0.73
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	0.73

Surface Water Use

Aquaculture:	NR
Golf Course:	8.92
Hydroelectric:	1,204,198.00
Industrial:	2,212.77
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	8,081.36
Total:	1,214,501.04

Laurens County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	84.08
Hydroelectric:	120,000
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1,624.37
Total:	121,708.45

Lee County



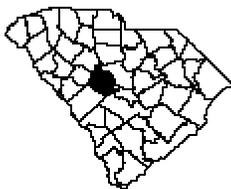
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	79.86
Mining:	NR
Water Supply:	604.46
Other:	NR
Total:	684.32

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	7.00
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	7.00

Lexington County



Groundwater Use

Aquaculture:	NR
Golf Course:	28.95
Industrial:	409.11
Irrigation:	1,794.75
Mining:	446.87
Water Supply:	434.25
Other:	NR
Total:	3,113.93

Surface Water Use

Aquaculture:	NR
Golf Course:	173.59
Hydroelectric:	371,476.55
Industrial:	9,691.83
Irrigation:	513.97
Mining:	415.64
Thermal Power:	56018.9
Water Supply:	5,102.52
Total:	443,393.01

NR = None Reported

Marion County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	25.60
Mining:	NR
Water Supply:	1,315.39
Other:	NR
Total:	1,340.99

Surface Water Use

Aquaculture:	NR
Golf Course:	21.31
Hydroelectric:	NR
Industrial:	NR
Irrigation:	0.001
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	21.31

Marlboro County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	280.24
Irrigation:	117.01
Mining:	NR
Water Supply:	956.03
Other:	NR
Total:	1,353.28

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	7,609.4
Irrigation:	74.77
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	7,684.17

McCormick County



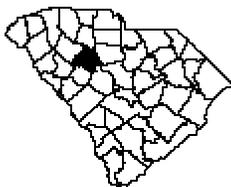
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	32.65
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	388.65
Total:	421.30

Newberry County



Groundwater Use

Aquaculture:	NR
Golf Course:	12.00
Industrial:	NR
Irrigation:	55.23
Mining:	NR
Water Supply:	21.63
Other:	NR
Total:	88.85

Surface Water Use

Aquaculture:	NR
Golf Course:	6.00
Hydroelectric:	NR
Industrial:	NR
Irrigation:	122.50
Mining:	NR
Thermal Power:	NR
Water Supply:	1,928.53
Total:	2,057.03

NR = None Reported

Oconee County



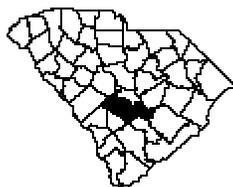
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	53.88
Other:	NR
Total:	53.88

Surface Water Use

Aquaculture:	NR
Golf Course:	86.50
Hydroelectric:	12,700.00
Industrial:	583.03
Irrigation:	287.75
Mining:	NR
Nuclear Power:	2,814,848.00
Water Supply:	3,557.52
Total:	2,832,062.80

Orangeburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	18.67
Industrial:	1,044.57
Irrigation:	2,664.31
Mining:	1,909.20
Thermal Power:	1,667.05
Water Supply:	625.79
Other:	NR
Total:	7,929.59

Surface Water Use

Aquaculture:	NR
Golf Course:	90.77
Hydroelectric:	12,700.00
Industrial:	171.42
Irrigation:	738.56
Mining:	NR
Thermal Power:	NR
Water Supply:	3,153.58
Total:	4,154.34

Pickens County



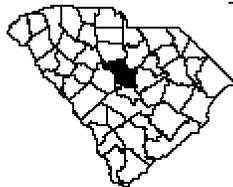
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	229.76
Hydroelectric:	2,769,742.00
Industrial:	3,279.95
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	3,454.32
Total:	2,776,706.04

Richland County



Groundwater Use

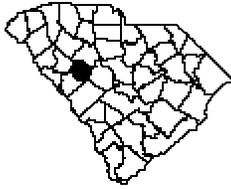
Aquaculture:	12.50
Golf Course:	24.53
Industrial:	660.46
Irrigation:	14.69
Mining:	312.85
Water Supply:	325.04
Other:	NR
Total:	1,350.07

Surface Water Use

Aquaculture:	27.30
Golf Course:	320.87
Hydroelectric:	469,660.89
Industrial:	10,260.40
Irrigation:	0.20
Mining:	NR
Thermal Power:	158,609.72
Water Supply:	22,683.18
Total:	661,562.56

NR = None Reported

Saluda County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	79.02
Other:	NR
Total:	79.02

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	367.52
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	367.52

Spartanburg County



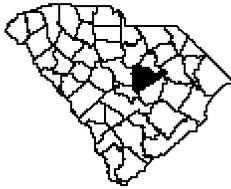
Groundwater Use

Aquaculture:	NR
Golf Course:	10.51
Industrial:	13.67
Irrigation:	NR
Mining:	NR
Water Supply:	24.85
Other:	NR
Total:	49.03

Surface Water Use

Aquaculture:	35.04
Golf Course:	1,009.375
Hydroelectric:	17,962.72
Industrial:	NR
Irrigation:	105.06
Mining:	NR
Thermal Power:	NR
Water Supply:	14,045.89
Other:	33,158.09

Sumter County



Groundwater Use

Aquaculture:	NR
Golf Course:	120.56
Industrial:	318.69
Irrigation:	1,117.81
Mining:	NR
Water Supply:	5,921.14
Other:	NR
Total:	7,478.20

Surface Water Use

Aquaculture:	NR
Golf Course:	175.31
Hydroelectric:	NR
Industrial:	NR
Irrigation:	504.40
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	679.71

Union County



Groundwater Use

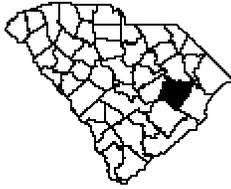
Aquaculture:	NR
Golf Course:	NR
Industrial:	2.78
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	9.00
Hydroelectric:	186,662.01
Industrial:	571.5
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1200.99
Total:	188,443.50

NR = None Reported

Williamsburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	902.65
Irrigation:	NR
Mining:	NR
Water Supply:	551.86
Other:	NR
Total:	1,454.51

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	2.15
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	2.15

York County



Groundwater Use

Aquaculture:	NR
Golf Course:	47.06
Industrial:	5.54
Irrigation:	NR
Mining:	16.56
Water Supply:	29.63
Other:	NR
Total:	98.78

Surface Water Use

Aquaculture:	NR
Golf Course:	153.41
Hydroelectric:	958,465.00
Industrial:	17,877.20
Irrigation:	2.55
Mining:	NR
Nuclear Power:	37,184.00
Water Supply:	5,780.89
Total:	1,019,463.06

NR = None Reported

Appendix C: Population by County

Population and Projections by County

County	2000	2005	2010	2015	2020	2025
Abbeville	26,167	26,740	27,610	28,480	29,350	30,210
Aiken	142,552	153,900	163,950	174,000	184,060	194,110
Allendale	11,211	11,820	11,960	12,110	12,260	12,400
Anderson	165,740	172,120	180,280	188,440	196,590	204,750
Bamberg	16,658	16,130	15,740	15,340	14,950	14,560
Barnwell	23,478	24,350	25,390	26,440	27,490	28,540
Beaufort	120,937	132,760	146,440	160,110	173,790	187,460
Berkeley	142,651	156,610	167,520	178,420	189,330	200,230
Calhoun	15,185	15,570	16,350	17,130	17,910	18,690
Charleston	309,969	320,080	328,570	337,070	345,560	354,060
Cherokee	52,537	54,770	57,860	60,960	64,050	67,140
Chester	34,068	34,630	35,500	36,370	37,240	38,110
Chesterfield	42,768	43,100	44,310	45,520	46,730	47,940
Clarendon	32,502	33,300	34,650	35,990	37,330	38,680
Colleton	38,264	39,910	41,590	43,260	44,940	46,610
Darlington	67,394	67,910	69,260	70,610	71,960	73,310
Dillon	30,722	30,220	30,280	30,340	30,400	30,460
Dorchester	96,413	106,590	115,430	124,280	133,130	141,980
Edgefield	24,595	25,490	27,400	29,320	31,230	33,150
Fairfield	23,454	24,260	25,010	25,770	26,520	27,280
Florence	125,761	130,140	134,510	138,870	143,230	147,590
Georgetown	55,797	58,300	61,770	65,240	68,710	72,190
Greenville	379,616	397,580	421,210	444,840	468,470	492,100
Greenwood	66,271	68,590	71,170	73,750	76,330	78,910
Hampton	21,386	21,810	22,690	23,570	24,450	25,330
Horry	196,629	215,850	239,020	262,190	285,360	308,530
Jasper	20,678	21,390	23,000	24,610	26,220	27,830
Kershaw	52,647	55,300	58,880	62,460	66,040	69,620
Lancaster	61,351	61,940	63,940	65,950	67,950	69,950
Laurens	69,567	72,800	77,190	81,580	85,960	90,350
Lee	20,119	20,540	21,010	21,480	21,960	22,430
Lexington	216,014	233,060	252,580	272,090	291,600	311,120
McCormick	9,958	10,670	11,290	11,910	12,530	13,150
Marion	35,466	35,930	36,390	36,840	37,300	37,760
Marlboro	28,818	28,100	27,460	26,820	26,170	25,530
Newberry	36,108	37,270	38,530	39,790	41,050	42,320
Oconee	66,215	70,910	75,470	80,040	84,600	89,160
Orangeburg	91,582	94,260	96,890	99,510	102,140	104,770
Pickens	110,757	119,040	127,110	135,190	143,260	151,330
Richland	320,677	331,810	345,660	359,520	373,370	387,220
Saluda	19,181	19,400	20,090	20,790	21,480	22,180
Spartanburg	253,791	267,390	280,590	293,790	306,990	320,190
Sumter	104,646	112,030	116,100	120,180	124,260	128,330
Union	29,881	29,720	29,480	29,240	29,010	28,770
Williamsburg	37,217	36,960	36,820	36,680	36,540	36,400
York	164,614	177,420	192,290	207,160	222,030	236,900
South Carolina:	4,012,012	4,218,460	4,446,240	4,674,050	4,901,810	5,129,630

Appendix D: Glossary

Aquifer – A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs. An alternate definition includes saturated material capable of providing economically viable amounts of water to wells or springs.

Aquaculture water use (water use category) – Water used for raising, farming and/or harvesting of organisms that live in water, such as fish, shrimp and other shellfish and vegetal matter (seaweed).

Consumptive water use – The amount of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

Effluent (wastewater) – Water conveyed out of a wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastewater. Effluent is often highly treated and is an excellent option for reuse of wastewater for irrigation.

Evapotranspiration – Collective term, including water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and plant transpiration.

Fall Line – The geologic and physiographic surface boundary separating the sedimentary deposits of the Coastal Plain from the metamorphic and igneous rocks of the Piedmont.

Farm – Any operation from which \$1000.00 or more of agricultural products were sold or normally would be sold during the year.

Golf course irrigation (water use category) – Water applied to maintain golf course turf, including tee boxes, fairways, putting greens, associated practice areas and periphery aesthetic landscaping.

Groundwater – Generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone.

Hydroelectric water use (water use category) – Water used in generating electricity where turbine generators are driven by falling water.

Industrial water use (water use category) – Water used for commercial and industrial purposes, including fabrication, processing, washing, in-plant conveyance and cooling.

Irrigated acreage – Acreage capable of being irrigated, with regard to availability of water, suitable soils and topography of land.

Irrigation water use (water use category) – Water that is used for agricultural and landscaping purposes including turf farming and livestock management.

Mining water use (water use category) – Water that is used for in conjunction with surface or subsurface mining of minerals or natural materials

Other use (water use category) – Any use of surface water or groundwater not specifically identified in any of the other categories.

Reclaimed water – Wastewater treatment plant effluent that has been diverted, intercepted, or otherwise conveyed for use before it reaches a natural waterway or aquifer.

Surface water – Water flowing or stored on the earth’s surface such as a stream, lake, or reservoir.

Thermoelectric water use (water use category) – Water used in generating electricity from fossil fuel (coal, oil, natural gas), geothermal, biomass, solid waste, or nuclear energy.

Water supply (water use category) – Water withdrawn by public and private water suppliers and conveyed to users or groups of users. Water suppliers provide water for a variety of uses including domestic, commercial, industrial and public water use.

Water usage rates – As utilized in this report, measurements to quantitatively represent volumetric withdrawals per unit of time; as in gallons per minute (gpm), gallons per day (gpd) and gallons per year (gpy). Unless otherwise stated, figures in this report are presented in millions of gallons per year.

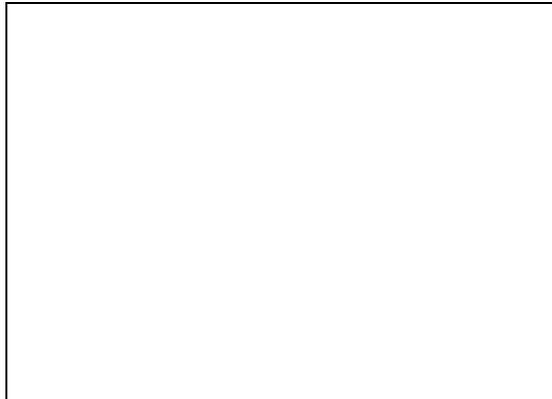
Water use – Generally, water that is used for a specific purpose (i.e., domestic use, industrial, etc.). Broadly, human interaction with and influence on the hydrologic cycle, and includes water withdrawal, distribution, consumptive use, wastewater collection and return flow.

Withdrawal – The removal of surface water or groundwater from its current setting in the natural hydrologic system for use, including, but not limited to, water supply, industrial use, commercial use, domestic use, irrigation, livestock, power generation

Bureau of Water

South Carolina Department of Health and Environmental Control

South Carolina Water Use Report 2006 Annual Summary





South Carolina Water Use Report 2006 Summary

**South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201**

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Groundwater Management Section**

**Bureau of Water
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**Water Monitoring, Assessment, and Protection Division
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Technical Document Number: 004-07

**Bureau of Water
July 2007**

Definitions

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Forward

The South Carolina Department of Health and Environmental Control (DHEC) is committed to the responsible management of South Carolina's water resources by encouraging continued conservation and reasonable use to ensure a sustainable supply for present and future demands. The South Carolina *Surface Water Withdrawal and Reporting Act*, §49-4-10 et. seq., and the South Carolina *Groundwater Use and Reporting Act*, §49-5-10 et. seq., require water users that withdraw three (3) million gallons or greater in any month to register with and report that use annually to the Water Use Program at DHEC.

Water Use data is used by the State of South Carolina to better define the distribution and demand for our surface and groundwater resources across the state. Data from the Water Use Program at DHEC is shared between other local, state, and federal regulatory and scientific agencies to establish a common understanding of the demands placed upon our water resources. This common database has proven critical in water management decisions and water use conflict resolution.

Statistics utilized in this report represent data obtained from users registered with the Water Use Program. Consumptive use from private domestic wells, small surface water irrigation intakes, facilities that do not meet the reporting threshold, or data from facilities failing to report their annual water use are not included in this annual summary. For the year 2006, compliance of reporting facilities exceeded 99.9%.

If you have questions about this or previous Annual Water Use Reports, or would like to obtain further information about reported water withdrawals in South Carolina, please contact:

Water Use Program
SCDHEC Bureau of Water
2600 Bull Street
Columbia, SC 29201
www.scdhec.net/water

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Introduction

South Carolinians have enjoyed an available fresh water supply that is clean, abundant, and easily attainable. In South Carolina today, close to 1.2 million people rely on groundwater and 2.8 million people rely on surface water for their drinking water and other uses. According to the U.S. Census Bureau, South Carolina will increase its population by 600,000 (Appendix C) people by 2025 and the U.S. Department of Agriculture reports development converts approximately 100,000 acres per year to urban uses. This growth and development in the state has placed increasing demand on our water supplies. With limited and sporadic rainfall events, groundwater systems and surface water bodies under continuous natural discharge and, in recent years, human use (pumpage) showed steady and, at times, drastic water level declines with numerous waterways reaching record low flow conditions. Due to the low flow conditions, excursions of saltwater inland along coastal waterways threatened some surface water intakes. Some homeowners that rely on shallow water wells have been forced to drill deeper wells or seek alternate sources of water supply.

In conjunction with natural conditions, the continued impact to groundwater systems through human induced contamination (physical and chemical) or natural impact demonstrate the vulnerability of this finite resource and the continuing need to closely monitor, manage and preserve the resource in South Carolina for current and future generations. The state General Assembly declared that,

“...the groundwater resources of the State be put to beneficial use to the fullest extent to which they [are] capable and to provide and maintain conditions which are conducive to the development and use of all water resources.”

Consistent and accurate data collection is requisite in establishing water use trends and implementing reasonable management strategies. Water use reporting outside of designated Capacity Use Areas has been historically voluntary. As of January 1, 2001, anyone withdrawing groundwater or surface water in excess of three (3) million gallons per month (in any month) must register and report that use annually to the South Carolina Department of Health and Environmental Control (Department). Registration and reporting is now a requirement of law and the Department has authority to take enforcement action against those not reporting.

Purpose and Methodology

The purpose of the annual *South Carolina Water Use Report* is to summarily present reported water use in South Carolina by county and use category during calendar year 2006. The Department maintains and continually updates the water use and facility databases utilized in this report. Water use data were collected by annual reporting of water use by registered users, as required and mandated by state law, and are reported in **million gallons** unless stated otherwise.

South Carolina Climate

The climate in South Carolina is affected by many factors, notably its location in the mid-latitudes and its proximity to the Appalachian Mountains and the Atlantic Ocean. During the summer, ocean current-driven air masses such as the Bermuda High routinely push tropical air from the Gulf of Florida upland from the coast. These warm, moist currents collide with cooler, drier air masses to generate rainfall, and at times, severe thunderstorms. In contrast, the Appalachian region in the northwest portion of the state experiences cooler temperatures, owing in part to upward lifting of air masses and subsequent cooling effect provided by the increase in altitude. Altitude change also causes the additional phenomenon of down-slope heating as air masses from the mountains settle and compress over the eastern Blue Ridge and Piedmont region. During the winter months, the highlands of the Blue Ridge escarpment deflect northerly cold air to the southwest, often lessening the impact of major cold fronts and winter storms.

The vast majority of the state is classified as humid subtropical except in the Blue Ridge physiographic province, where it is humid continental. Average temperature varies from the mid-50s °F in the mountains to low-60s °F along the coast. The average annual precipitation is approximately 48 inches, with an annual total in the mountains of 70 to 80 inches, an annual total in the Midlands of 42 to 47 inches and an annual total along the coast of 50 to 52 inches. According to the South Carolina State Climatology Office, no month in South Carolina averages less than two inches of precipitation, regardless of location within the state. Measurable snowfall is rare, occurring one to three times a year with accumulations seldom remaining more than a day or two. Since 1900 severe droughts have occurred statewide in 1925, 1933, 1954, 1977, 1983, 1986, 1990, 1993, and most recently 1998. The latest multiyear drought was one of the most severe in South Carolina's history, with average precipitation, groundwater levels, and stream flows at or near record lows. In 2006 the average statewide temperature was 63.4°F. The average rainfall for 2006 was 45.01 inches¹.

¹ Southeast Regional Climate Center, 1885-2006, "Monthly and Seasonal Climate Information"

South Carolina Geography and Hydrology

Geography and Physiography

South Carolina has a distinct natural beauty and an ecological diversity covering nearly 31,189 square miles, with approximately 30,111 square miles land area, 1,078 square miles inland or coastal waterways and 135 miles of coastline. The diversity we experience is resultant of climatic conditions, geology and three major physiographic regions: the Blue Ridge, the Piedmont and the Coastal Plain (**Figure 1**). The physiographic regions exhibit variations in topography, geology, hydrology and vegetation that directly affect the quantity, quality and availability of water resources in South Carolina.

Blue Ridge

The Blue Ridge physiographic province is located in the extreme northwest portion of Oconee and Pickens counties, and is distinguished from other parts of South Carolina by greater elevations (1,000 – 3,300 feet) and surface relief. Dissected mountains, rugged hills and thick forest regions characterize the land surface. Surface water in the Blue Ridge takes the form of high gradient creeks and streams and natural or man-made lakes, while groundwater occurs in the fractures of the bedrock and a thin veneer of soil and saprolite overlying the bedrock. In general, water quality of streams and groundwater is excellent in the Blue Ridge owing to the constant replenishment from abundant local rainfall.

Piedmont

The Piedmont physiographic province includes all counties, or portions of counties, northwest of and to the Fall Line, exclusive of those counties within the Blue Ridge province. Although similar to the Blue Ridge, the region demonstrates lower topographic relief, and therefore lower gradient streams, while elevations range from between 450 to 1000 feet above sea level. Counties in the Piedmont and Blue Ridge physiographic provinces depend primarily on the abundant regional rainfall that recharges lakes, reservoirs and major river systems. These surface water bodies constitute the primary source of water for public supply, industry, agriculture, and power production in the Piedmont Region. Similar to the Blue Ridge Province, groundwater occurs in the fractures of the bedrock and overlying soil and saprolite, and is also of good quality, except in locations where its chemical quality has been impacted by man.

Coastal Plain

The Coastal Plain physiographic province includes all counties, or portions of counties, extending from the Fall Line east to the Atlantic Ocean. Elevations of the exposed Coastal Plain range between 450 feet to sea level. Once below the Fall Line, rivers and streams assume a different character than those found in the Piedmont. Where streams once rolled across exposed Piedmont rocks and tumbled down the occasional stretch of whitewater, the Coastal Plain streams have a slower pace with quiet meandering river channels with adjacent wetlands common. Regional geology of the Coastal Plain is characterized by aquifers developed in layers of sands, silts, or high-permeability limestone confined by units of clay and silts or low-permeability limestone. The vast majority of South Carolina's water resources are contained as groundwater in the Coastal Plain, and in general, reliance on groundwater for irrigation, industrial uses, and public water supply increases dramatically east of the Fall Line (**Figure 7**). A generalized cross-section for the Coastal Plain aquifers is presented as **Figure 2**, and a brief outline of the major aquifers in South Carolina follows.

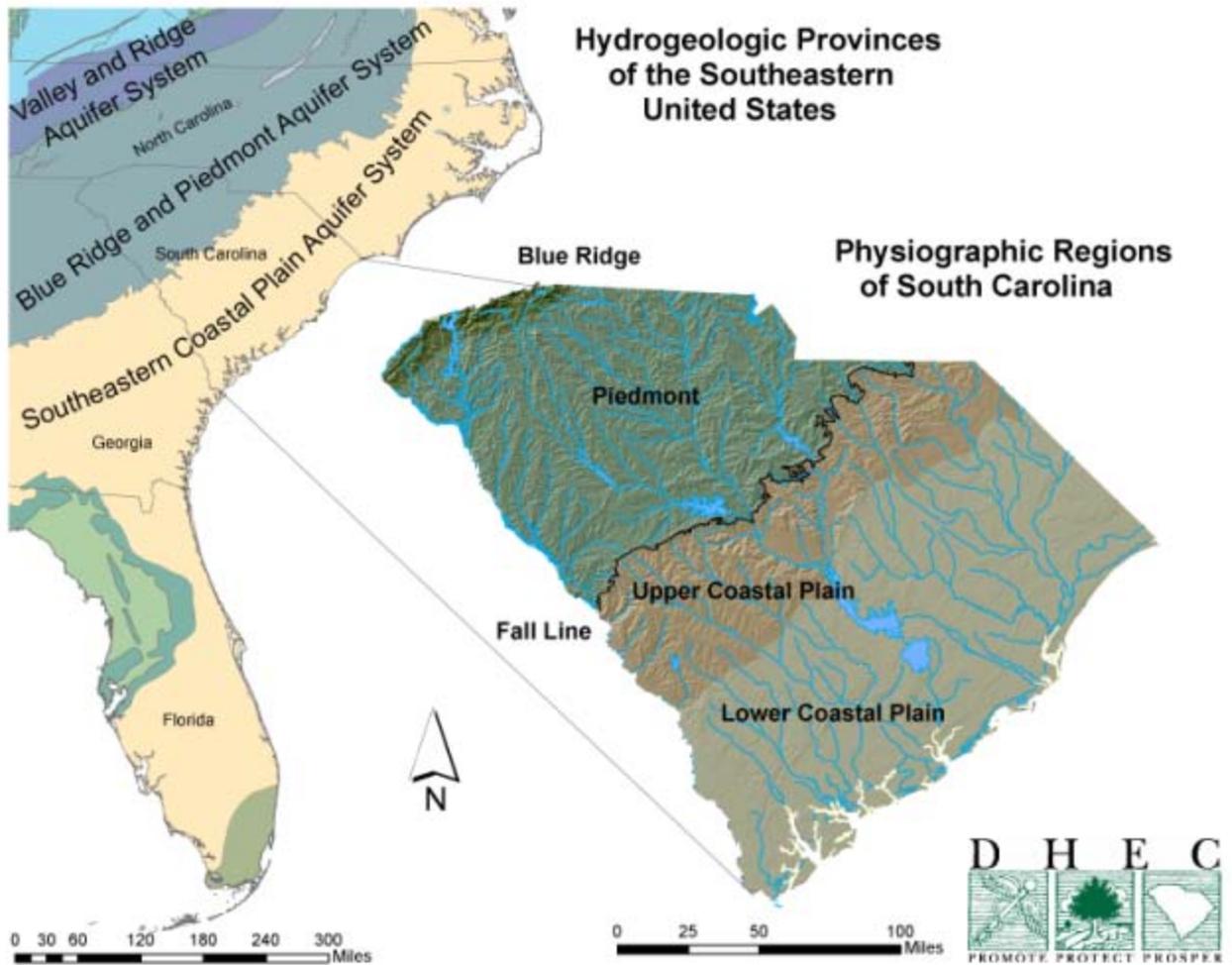


Figure 1: Hydrogeologic and Physiographic Setting for Water Use in South Carolina

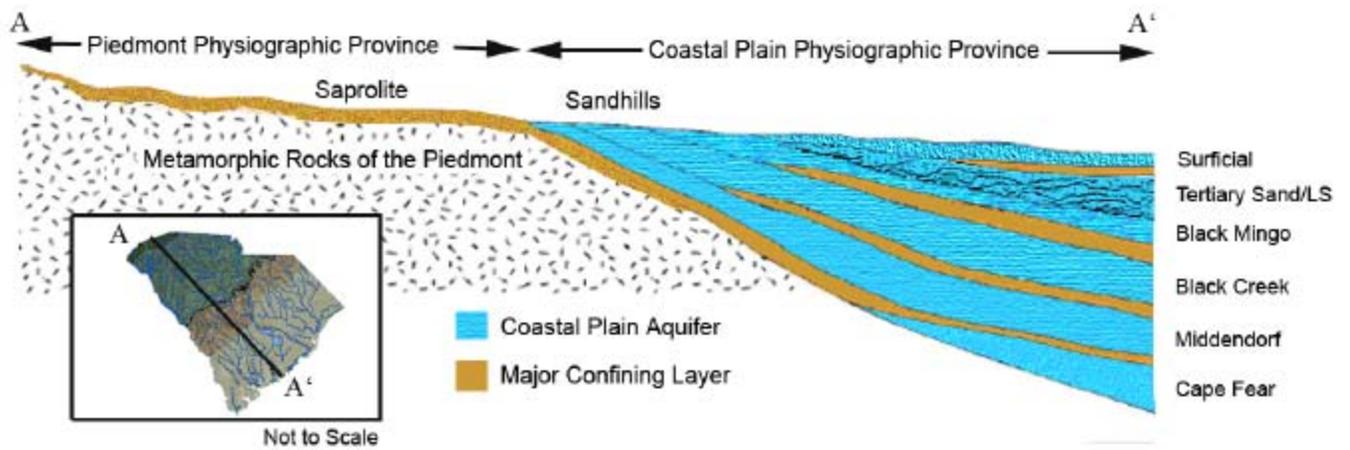


Figure 2: Generalized Hydrogeologic Cross-Section from the Blue Ridge through the Lower Coastal Plain in South Carolina

Groundwater Resources

Groundwater resources are found throughout the subsurface of South Carolina in varying quantities, qualities, and depths that reflect the nature of the geologic materials that host the respective aquifers. The following is a brief description of the State's major groundwater resources.

Crystalline Rock Aquifer System of the Blue Ridge and Piedmont

Geology of the Blue Ridge is typically characterized by clayey saprolite, ranging in depth from several feet to tens of feet, overlying metamorphic crystalline rock. The saprolite grades downward through a highly permeable transition zone to unaltered parent bedrock. Groundwater conditions of the bedrock are dependent on the number of fractures and degree of interconnection of the fracture systems. Groundwater moves slowly through the saprolite and discharges to surface water bodies, wells, or is released from storage to the underlying bedrock through fractures. Geology of the Piedmont is similar to that of the Blue Ridge, but the diminished relief allows for greater thickness of saprolite development. In general, wells in the Blue Ridge and Piedmont regions yield little water when compared to wells drilled in the Coastal Plain owing to the inherently low porosity and permeability of the crystalline rock present in the upstate.

Surficial Aquifer System

Shallow sands that comprise the Surficial aquifer are among the youngest of the Coastal Plain sediments and are found exclusively in the Lower Coastal Plain (**Figure 1**). This system is capable of producing water in modest amounts for irrigation and private drinking water supply, but is susceptible to contamination due to its shallow, unconfined nature. The Surficial sands are highly influenced by local precipitation and river stage and are prone to dramatic water level declines during times of drought.

Tertiary Limestone/Sand Aquifer System (Floridan Aquifer System)

In the southern half of the Coastal Plain, Tertiary aquifers consisting of sand grade southeastward into an ever thickening wedge of limestone. Development of the aquifer system is common in the Charleston, Dorchester, and Berkeley County area. Southwest of the Combahee and Salkehatchie Rivers, upper sections of the limestone become increasingly permeable owing to abundant voids created from dissolved marine fossils, and are capable of storing and supplying tremendous amounts of water. The majority of utilization of the aquifer occurs near the upper, highly permeable zone that supplies the majority of residential wells in Beaufort and Jasper Counties, and is the primary source of water for public supply, irrigation, and industry in the Low Country. This southern section of the Tertiary Limestone correlates regionally with the Upper Floridan Aquifer that extends from southern South Carolina to the southern keys of Florida.

Black Mingo Aquifer

Development of the Black Mingo is common in the vicinity of Charleston, Dorchester, and Berkeley counties, but has been largely overlooked south of Dorchester County owing to the increasingly prolific nature of the more shallow Tertiary Limestone (Floridan Aquifer System). Like the majority of Coastal Plain sediments, the nature of the aquifer differs dramatically from one area to the next. In the Charleston area, the aquifer is composed of permeable sand and limestone, while within the Upper Coastal Plain the Black Mingo is often a poorly producing aquifer composed of fine silt and clay, and therefore is unused in favor of the Middendorf or Tertiary Sand Aquifer.

Pee Dee Aquifer

The Pee Dee aquifer, where present, generally produces quality water at moderate rates. The aquifer matrix is composed of sand and silt separated by discontinuous intervals of clay. Development of the Pee Dee aquifer usually takes place in conjunction with the more prolific Black Creek aquifer and has become an excellent alternative to the often-overburdened Black

Creek for many uses, especially irrigation. The Pee Dee aquifer is most utilized in the northeast portion of the State, with the most demand centered between Florence and Horry Counties.

Black Creek Aquifer

Though present throughout much of the Coastal Plain, development of the Black Creek aquifer has been conducted primarily in the mid-to-northern portions of the Coastal Plain. The aquifer is composed of silt and fine sand with coarse sand in the Upper Coastal Plain. The Black Creek aquifer is an important source of water for public supply, irrigation, and industry from Marion County southeast to Georgetown County.

Middendorf Aquifer

The Middendorf Aquifer is a prolific source of water throughout the majority of the coastal plain and consists of coarse-grained fluvial sands near the Fall Line that grade to fine-grained marine sands and clay in the northern and eastern Lower Coastal Plain. The majority of the Pee Dee region, including Chesterfield, Darlington, Florence, and Marlboro Counties, as well as Orangeburg and Sumter Counties rely heavily on the Middendorf for irrigation, public supply, and industrial use. In the past decade, use of the Middendorf has increased along the southern coast in areas such as Charleston County.

Cape Fear Aquifer

Little information exists from this deep sand aquifer owing to the few wells that have penetrated the formation. In general, water quality from the Cape Fear aquifer is poor over much of its extent owing to ancient, unflushed seawater and extensive mineralization. In South Carolina, the Cape Fear aquifer is largely unused.

Surface Water Resources

South Carolina's land surface is drained by eight (8) major river basins, all of which are critical to public water supply, irrigation, industry, and/or power generation. These major watersheds are shown as **Figure 3**, and a brief description of each major watershed follows.

Broad River Basin

The Broad River Watershed encompasses portions of North and South Carolina and drains the majority of Cherokee, Union, Spartanburg, and Greenville Counties. Portions of Chester, Fairfield, Richland and York counties are also included in the basin, and are drained by the Enoree, Pacolet, and Tyger Rivers, major tributary streams to the Broad River.

Catawba River Basin

Similar to the Broad River Basin, the watershed of the Catawba River drains counties in North and South Carolina east of a hydrologic divide in York, Chester, and Fairfield Counties. All or portions of the following counties lie within the basin: Chester, Fairfield, Kershaw, Lancaster, Richland, Sumter and York. The Catawba basin hosts Lake Wylie, Fishing Creek Reservoir, Lake Wateree, the Catawba and Wateree Rivers and associated tributary streams.

Edisto River Basin

The Edisto River Basin encompasses nearly all of Orangeburg County and portions of Aiken, Berkeley, Calhoun, Dorchester, and Lexington counties. The basin drains the central Coastal Plain and contains the North and South Forks of the Edisto River and tributaries, as well as numerous ecologically important wetland areas.

Pee Dee River Basin

The Pee Dee River Basin is the largest of South Carolina's watersheds and drains all or portions of Chesterfield, Darlington, Dillon, Georgetown, Horry, Kershaw, Lancaster, Lee, Marion, Marlboro, Williamsburg counties, and portions of southeastern North Carolina. The

Greater Pee Dee Watershed encompasses 5.1 million acres and includes the Pee Dee, Lynches, Waccamaw, and Sampit watersheds, as well as the Intracoastal Waterway and Winyah Bay.

Salkehatchie River Basin

The Salkehatchie basin is located entirely in the Coastal Plain and drains portions of Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper counties. The Coosawhatchie, Salkehatchie and Little Salkehatchie Rivers, along with their associated tributaries and local wetlands drain the basin and form tide-dominated distributary channels near the coast.

Saluda River Basin

The Saluda River Basin drains the central portion of South Carolina's Piedmont Region and encompasses major portions of Greenville and Pickens counties, as well as portions of Abbeville, Greenwood, Laurens, Lexington, Richland, and Saluda Counties. The basin includes all tributary streams to the Saluda River and Lakes Greenwood and Murray, the latter being a critical source for public water supply and hydroelectric power in central South Carolina.

Santee River Basin

The Santee River basin originates near the confluence of the Catawba and Broad River Basins and includes two of the State's largest reservoirs, Lake Marion and Lake Moultrie. These two major surface water resources are important power generating assets for the South Carolina. The basin drains Berkeley, Calhoun, Charleston, Clarendon, Dorchester, and small portions of Georgetown and Sumter Counties via tributaries of the Cooper, Santee and Ashley Rivers.

Savannah River Basin

The Savannah River Basin stretches from the Blue Ridge to the Atlantic Ocean and encompasses the border counties of South Carolina. The watershed drains major portions of Abbeville, Aiken, Allendale, Anderson, Edgefield, Greenwood, Hapton, McCormick, Oconee, and Pickens County, as well as adjacent counties in Georgia. The watershed includes the Savannah, Chatooga, Seneca, Little River, Stevens Creek, Rocky, and Tugaloo Rivers, and discharges approximately 8.0 billion gallons per day.



Figure 3: Major River Basins of South Carolina

Demographics

According to the 2000 Census, South Carolina's estimated population is 4,012,012. Approximately 54.6% of the population resides in an urban setting and approximately 45.4% reside in rural communities (**Figure 4**). South Carolina has approximately 25,000 farms, occupying 4,846,000 acres (7,572 square miles). Of this, approximately 2,270,000 acres (3,547 square miles) are cropland². Major manufacturing industries are located along the I-26/I-85 corridor, specifically in the Greenville-Spartanburg Metropolitan Statistical Area (MSA), Columbia MSA, Charlotte-Gastonia-Rock Hill MSA and the Charleston MSA. Other manufacturing concentrations are located in the Augusta-Aiken MSA, and the Florence area³. South Carolina is served by 47 electric utilities and nine (9) generating utility companies with 51 power plants (206 generators) with a total rating capacity of 18,827.4 megawatts. Power production in the State (2005) totaled 94,363 million kilowatt hours⁴.

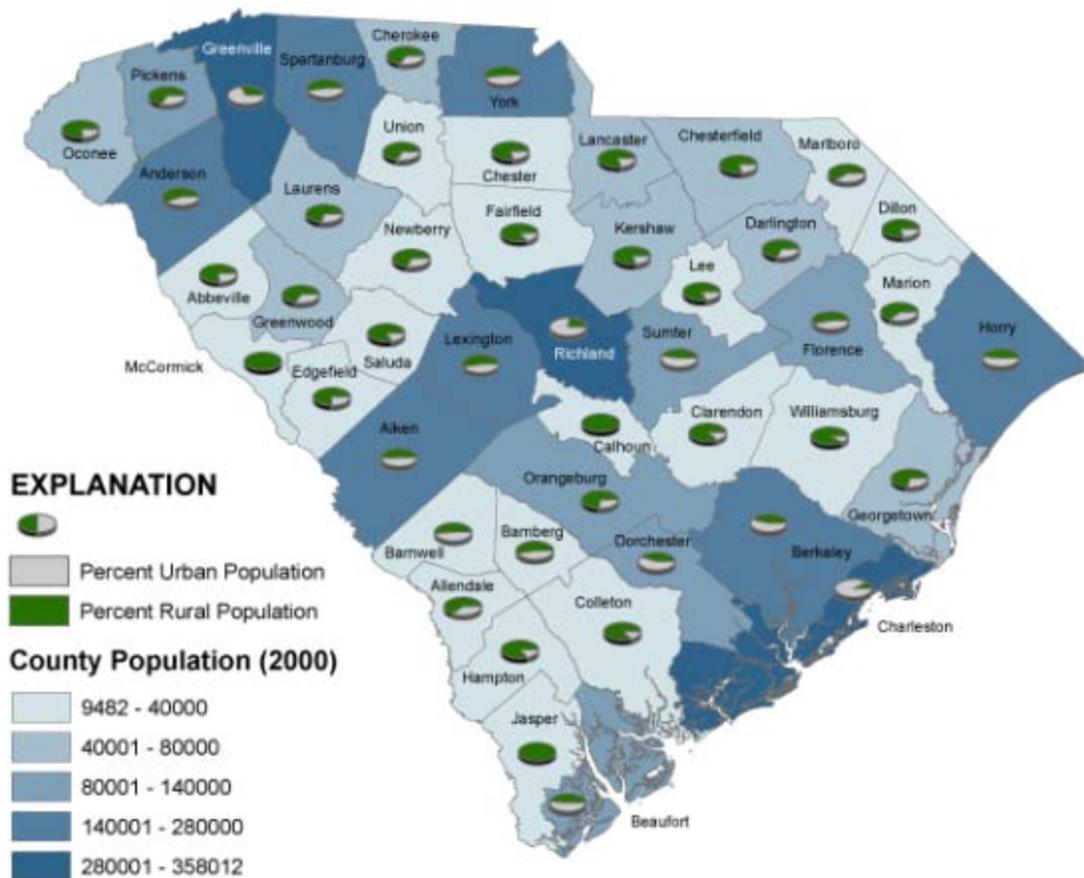


Figure 4: Population by County in South Carolina, 2000

² 2002 Census of Agriculture, Volume 1 Geographic Area Series, Historical Highlights: "Table 1: 2002 and Earlier Census Years"

³ S.C. Department of Commerce, 2000/2001 "South Carolina Industrial Directory."

⁴ S.C. Budget and Control Board Statistical Abstract 2004

2006 Water Use Profile

Surface and Groundwater Use Summary by Category and County in South Carolina, 2006

The following section outlines all reported water use for the State of South Carolina for the calendar year 2006. Water use is summarized by category, (Appendix A) and further tabulated on a county-by-county basis (Appendix B). Where appropriate, the spatial distribution of the magnitude of water use is demonstrated on an accompanying map with a breakdown chart of groundwater and surface water use as a percentage of total use for the category.

Reporting Water Withdrawers

For the reporting year 2006, South Carolina had registered 849 water withdrawers with 2492 sources, 468 surface water facilities with 685 sources and 536 groundwater facilities with 1807 sources.

Water Use Category	Facilities	GW Source	SW Source
Golf Course	243	250	266
Water Supply	224	778	76
Irrigation	216	489	229
Industrial	94	226	51
Hydroelectric	31	1	32
Thermoelectric	19	16	22
Mining	11	10	4
Aquaculture	7	11	5
Other	4	26	0
Total	849	1,807	685

Total Reported Water Use

Total water use reported for 2006 was more than 16.4 trillion gallons from 849 reporting facilities. Surface water withdrawal from 468 facilities accounted for approximately 16.3 trillion gallons, approximately 99.3% of total water use. Groundwater withdrawal from 536 reporting facilities accounted for approximately 81.5 billion gallons or approximately 0.7%.

Water Use Category	Groundwater	Surface Water	Total	Percentage
Aquaculture	148.13	171.87	320.00	0.0020%
Golf Courses	3,371.75	9,275.15	12,646.90	0.0771%
Industrial	11,137.61	138,188.07	149,325.68	0.9105%
Irrigation	17,980.52	11,176.64	29,157.46	0.1777%
Mining	3,225.35	498.44	3,723.79	0.0227%
Other	54.01	NR	54.01	0.0003%
Hydroelectric	0.88	12,408,954	12,408,954.88	75.6679%
Thermoelectric	6,261.24	3,563,955.928	3,570,217.168	21.7696%
Water Supply	39,271.52	186,149.202	225,420.72	1.3745%

NR = None Reported

Water Use	2001	2002	2003	2004	2005	2006
Hydroelectric	9,796,267.91	11,415,081.44	18,958,207.77	15,203,000.52	15,766,867.08	12,408,954.88
Thermoelectric	1,624,984.88	2,467,042.32	3,558,474.88	3,232,104.071	4,256,504.44	3,570,217.168
Water Supply	193,525.29	212,402.79	197,088.27	209,464.303	215,771.05	225,420.72
Industrial	180,579.90	167,051.34	168,334.76	157,309.024	152,086.80	138,188.07
Irrigation	27,121.14	29,668.39	12,172.86	24,119.869	21,924.04	29,157.46
Golf Course	13,302.54	14,022.92	10,373.47	13,230.462	11,908.10	12,646.90
Mining	2,691.75	3,159.88	4,935.07	3,241.623	3,305.18	3,723.79
Aquaculture	865.17	2,283.95	1,451.98	1,355.631	410.31	320.00
Other	204.84	106.22	59.033	85.505	105.63	54.01
Total	11,839,543.4	14,310,819.25	22,911,098.09	18,843,911.00	20,428,882.61	16,400,793.21
Facilities	931	848	833	848	862	849

Water Use in Power Production

According to the 2001 Energy Use Profile, South Carolina has 9 power generating utility companies with 51 power plants containing 206 generators with a total rating capacity of 18,827.4 megawatts (2000). The type generators are as follows:

- 96- Hydraulic Turbine (conventional)
- 54- Gas Combustion Turbine
- 37- Steam Turbine (boiler)
- 16- Hydraulic Turbine (pump storage)
- 3- Internal Combustion (diesel)

The primary energy source for the generators is as follows:

- 112- Water
- 32- Diesel Fuel Oil
- 28- Coal
- 25- Natural Gas
- 7- Nuclear
- 2- Residual Fuel Oil

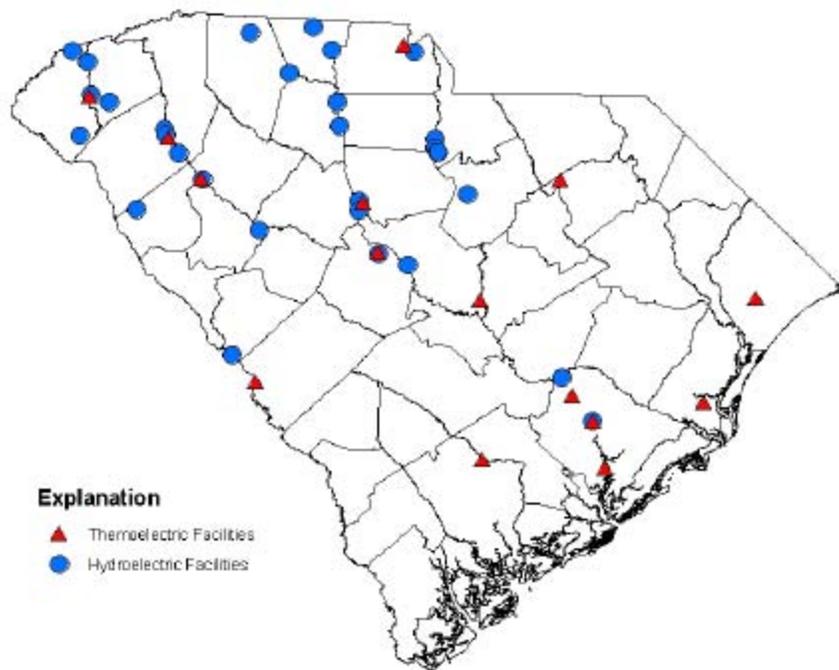


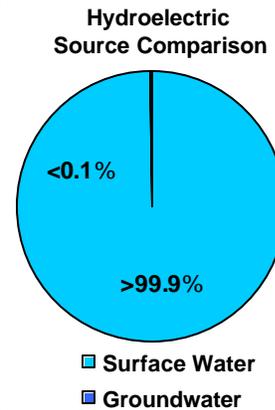
Figure 5: Distribution of Hydroelectric and Thermoelectric Facilities in South Carolina

Hydroelectric Water Use

Hydroelectric facilities employ energy from flowing water to generate electricity. Hydroelectric facilities utilize *impoundments* (reservoirs), *diversion* (run-of river), or *pumped storage* (reversible turbines). Water use is typically non-consumptive flow-through, with temporary diversion from down stream users. Reported water use for 32 hydroelectric sources accounted for approximately 12.409 trillion gallons, approximately 76% of reported water use for power production.

County	Surface Water	Groundwater	County Total
Abbeville	15,807	NR	15,807
Anderson	118000	NR	118000
Berkeley	1,131,435.6	0.9	1,131,436.5
Cherokee	246,549	NR	246,549
Chester	1,617,728	NR	1,617,728
Edgefield	939,325.5	NR	939,325.5
Fairfield	2,518,500.1	NR	2,518,500.1
Greenville	92,268	NR	92,268
Greenwood	93,433	NR	93,433
Kershaw	923,086	NR	923,086
Lancaster	859,455	NR	859,455
Laurens	0	NR	0
Lexington	149,243.6	NR	149,243.6
Oconee	9,800	NR	9,800
Pickens	2,324,587	NR	2,324,587
Richland	350,770.5	NR	350,770.5
Spartanburg	11,852.3	NR	11,852.3
Union	327,175.2	NR	327,175.2
York	679,938	NR	679,938

NR = None Reported



	Surface Water	Groundwater
Source Total:	12,408,954	0.9

Total Hydro Power Use (million gallons):	12,408,954.9
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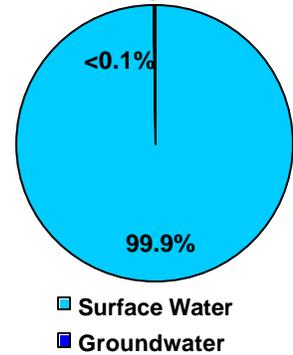
Thermoelectric Water Use

Thermoelectric facilities generate electricity by superheating water to steam then passing the steam under pressure to turbines. Boilers are fired by coal, nuclear power or residual fuel oil. Large volumes of cooling water are required to condense the steam to the liquid state. Reported water use for 19 thermoelectric sources accounted for more than 4.254 trillion gallons, approximately 22% of total reported water use for the year.

County	Surface Water	Groundwater	County Total
Aiken	56,012.00	NR	56,012.00
Anderson	32,090.71	NR	32,090.71
Berkeley	188,139.56	10.85	188,150.41
Cherokee	NR	0	0
Colleton	2,313.26	0.69	2,313.95
Darlington	296,062.00	362.54	296,424.54
Fairfield	271,236.32	NR	271,236.32
Georgetown	4,715.25	NR	4,715.25
Greenwood	56,000.00	NR	56,000.00
Horry	44,499.40	NR	44,499.40
Lexington	50,963.92	NR	50,963.92
Oconee	2,332,136.00	NR	2,332,136.00
Orangeburg	0	5887.16	5887.16
Richland	146,348.50	NR	146,348.50
York	83,439.00	NR	83,439.00

NR = None Reported

Thermoelectric Source Comparison



	Surface Water	Groundwater
Source Total:	3,563,955.92	6,261.24

Total Thermoelectric Use (million gallons): 3,570,217.16

Total Reported Water Use

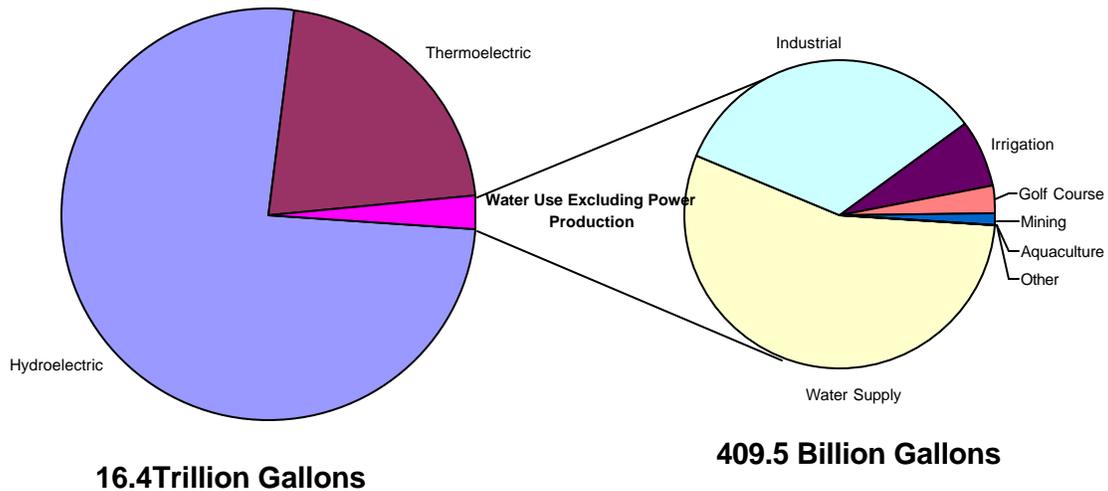


Figure 6: Reported Water Use by Category in South Carolina, 2006

Reported Water Use Excluding Power Production

During 2006, reported water use (excluding power production) totaled more than 409.5 billion gallons with surface water withdrawal accounting for 335.4 billion gallons or approximately 82.7%, and groundwater withdrawal accounting for 70.1 billion gallons or approximately 17.3%. Non-power production-oriented water use accounted for 1.9% of all reported water use in 2005.

	Groundwater	Surface Water	Total	Percentage of Total Non-Power Use
Aquaculture	148.13	171.87	320.00	.07%
Golf Courses	3371.75	9,275.15	12,646.90	3.09%
Industrial	11,137.61	138,188.07	149,325.68	36.46%
Irrigation	17,980.52	11,176.64	29,157.16	7.11%
Mining	3,225.35	498.44	3,723.79	0.91%
Other	54.01	NR	54.01	0.01%
Water Supply	39,271.52	186,149.20	225,420.72	55.05%

Total Non-Power Water Use **409,510.95** million gallons

NR = None Reported

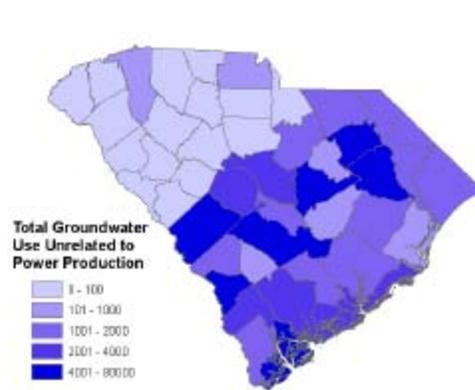
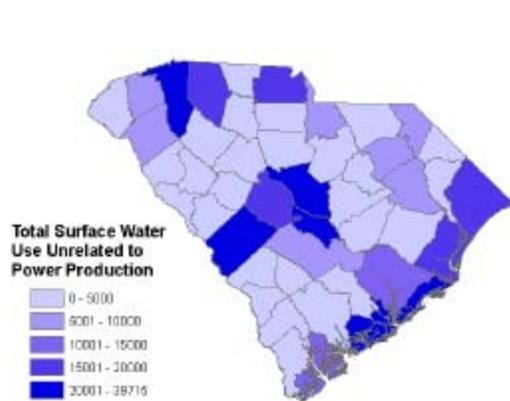
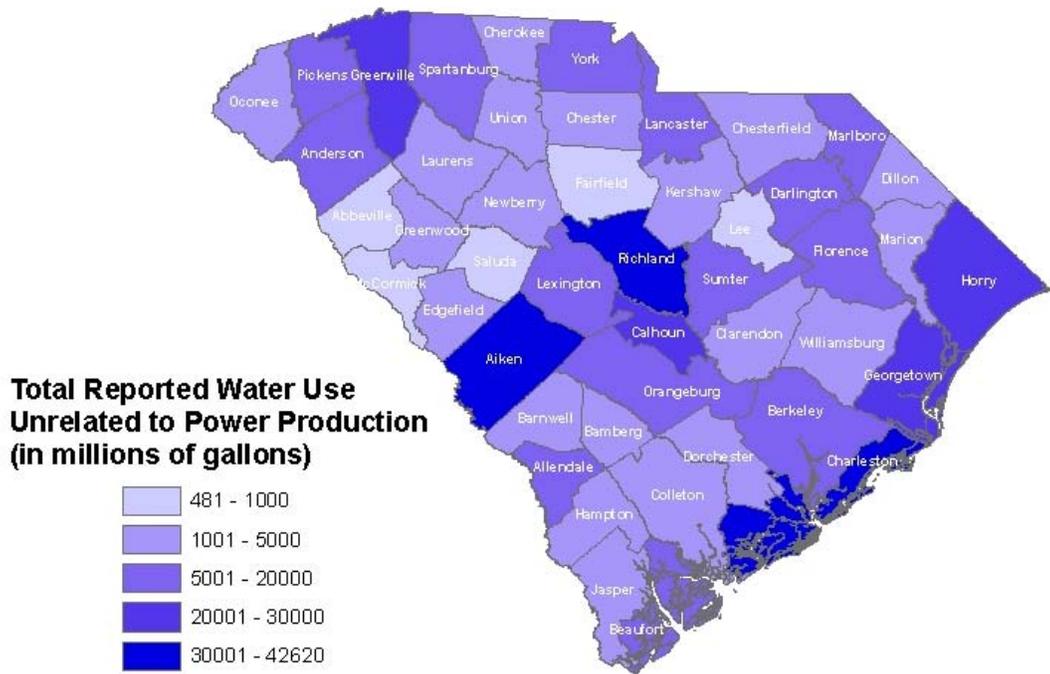


Figure 7: Distribution of Reported Water Usage Unrelated to Power Production, 2006. Figures in millions of gallons per year.

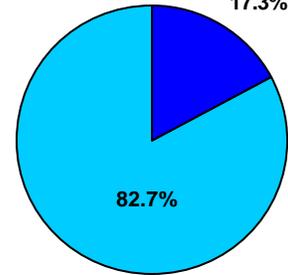
Water Supply

Water withdrawal for public water supply from 224 reporting suppliers totaled 226.3 billion gallons, with 76 surface water sources accounting for 186.15 billion gallons and 778 groundwater sources accounting for 39.27 billion gallons.

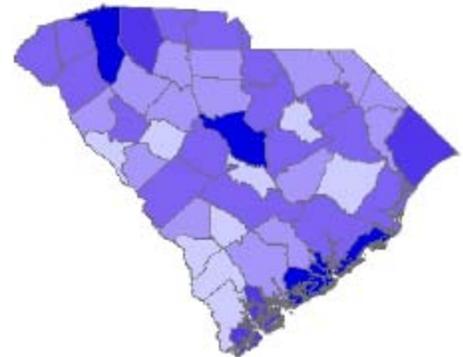
County	Groundwater	Surface Water	County Total
Abbeville	3.187	969.912	973.099
Aiken	4959.595	2374.26	7333.855
Allendale	441.754	NR	441.754
Anderson	NR	7906.997	7906.997
Bamberg	515.041	NR	515.041
Barnwell	763.273	NR	763.273
Beaufort	4346.911	8072.238	12419.15
Berkeley	186.958	5658.4	5845.358
Calhoun	256.747	NR	256.747
Charleston	2121.047	30247.328	32368.38
Cherokee	NR	2581.6	2581.6
Chester	NR	1088.79	1088.79
Chesterfield	956.312	737.295	1693.607
Clarendon	738.631	NR	738.631
Colleton	746.51	NR	746.51
Darlington	2392.724	NR	2392.724
Dillon	1570.631	NR	1570.631
Dorchester	705.715	NR	705.715
Edgefield	NR	1652.454	1652.454
Fairfield	71.9	722.306	794.206
Florence	4432.022	1343.48	5775.502
Georgetown	724.405	2320.782	3045.187
Greenville	27.765	25194.5	25222.27
Greenwood	5.362	4238.023	4243.385
Hampton	519.285	NR	519.285
Horry	854.291	15868.7	16722.99
Jasper	362.795	NR	362.795
Kershaw	544.458	1835.431	2379.889
Lancaster	NR	7964.4	7964.4
Laurens	NR	1748.686	1748.686
Lee	609.7	NR	609.7
Lexington	441.274	5640.81	6082.084
Marion	1295.523	NR	1295.523
Marlboro	1163.126	392.75	1555.876
McCormick	NR	445.135	445.135
Newberry	19.697	1903.844	1923.541
Oconee	43.841	3887.078	3930.919
Orangeburg	660.226	3484.8	4145.026
Pickens	NR	3998.539	3998.539
Richland	331.511	22910.18	23241.69
Saluda	13.395	NR	13.395
Spartanburg	25.502	14725.447	14750.95
Sumter	5775.757	NR	5775.757
Union	NR	1259.814	1259.814
Williamsburg	556.959	NR	556.959
York	90.874	5945.135	6036.009

NR = None Reported

Water Supply Use Source Comparison



■ Groundwater
■ Surface Water



Distribution of reported water supply water use in South Carolina, 2006. Darker shades indicate the highest use areas.

	Groundwater	Surface Water
Source Total:	39,274.704	187,119.114

Total Water Supply Use (millions of gallons): 226,393.8

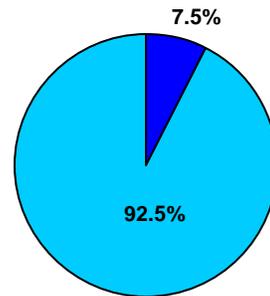
Industrial Use

Water withdrawal for industrial use from 94 reporting industries totaled 149.3 billion gallons, with 51 surface water sources accounting for 138.188 billion gallons and 226 groundwater sources accounting for 11.137 billion gallons. Water use at industrial facilities is predominantly cooling water (contact and non-contact) with return to surface water systems through permitted NPDES discharges.

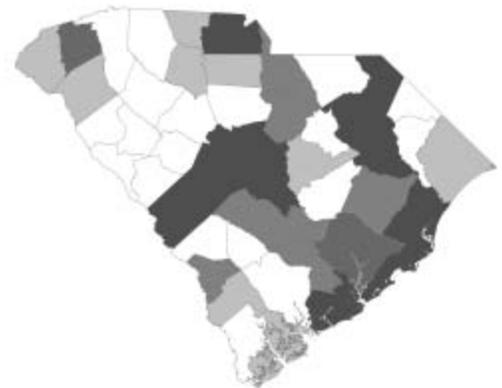
County	Groundwater	Surface Water	County Total
Abbeville	NR	NR	NR
Aiken	1110.989	22232.029	23343.02
Allendale	850.02	NR	850.02
Anderson	NR	73.171	73.171
Bamberg	NR	NR	NR
Barnwell	158.331	NR	158.331
Beaufort	92.198	NR	92.198
Berkeley	1293.15	3682.251	4975.401
Calhoun	133	28262.149	28395.15
Charleston	43.057	9168.09	9211.147
Cherokee	NR	620.524	620.524
Chester	1.484	99.643	101.127
Chesterfield	NR	NR	NR
Clarendon	NR	NR	NR
Colleton	NR	NR	NR
Darlington	1521.046	7190.234	8711.28
Dillon	NR	NR	NR
Dorchester	458.114	0	458.114
Edgefield	NR	NR	NR
Fairfield	NR	NR	NR
Florence	763.328	7988.89	8752.218
Georgetown	99.04	12574.901	12673.94
Greenville	68.706	NR	68.706
Greenwood	9.16	36.9	46.06
Hampton	311.2	NR	311.2
Horry	179.053	8.23	187.283
Jasper	NR	NR	NR
Kershaw	517.349	824.944	1342.293
Lancaster	NR	1756	1756
Laurens	NR	NR	NR
Lee	NR	NR	NR
Lexington	455.825	9482.331	9938.156
Marion	NR	NR	NR
Marlboro	282.297	7176.483	7458.78
McCormick	NR	NR	NR
Newberry	NR	NR	NR
Oconee	NR	510.168	510.168
Orangeburg	1130.881	166.994	1297.875
Pickens	NR	2526.624	2526.624
Richland	701.29	10597.317	11298.61
Saluda	NR	NR	NR
Spartanburg	13.991	NR	13.991
Sumter	272.491	NR	272.491
Union	2.659	458	460.659
Williamsburg	665.904	NR	665.904
York	3.042	12752.2	12755.24

NR = None Reported

Industrial Use Source Comparison



■ Groundwater
■ Surface Water



Distribution of reported Industrial water use in South Carolina, 2006. Darker shades indicate the highest use areas.

	Groundwater	Surface Water
Source Total:	11137.61	138188.07

Total Industrial Use (millions of gallons): 149325.7

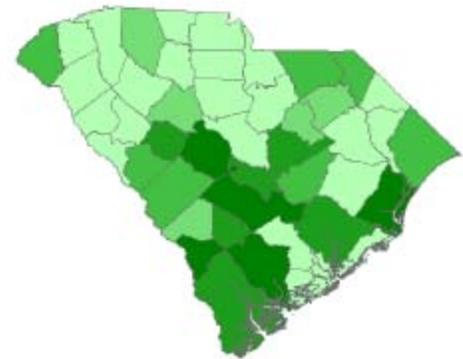
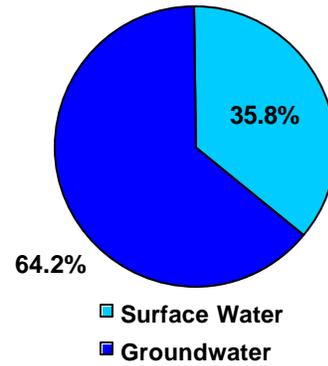
Irrigation Use

Water withdrawal for irrigation use from 216 reporting entities totaled 29.157 billion gallons, with 229 surface water sources accounting for 11.176 billion gallons and 489 groundwater sources accounting for 17.980 billion gallons.

County	Groundwater	Surface Water	County Total
Abbeville	NR	NR	NR
Aiken	233.657	4.105	237.762
Allendale	3390.417	617.29	4007.707
Anderson	NR	NR	NR
Bamberg	378.347	403.964	782.311
Barnwell	82.165	31.2	113.365
Beaufort	690.524	25.905	716.429
Berkeley	0.24	1051.6	1051.84
Calhoun	987.504	72.339	1059.843
Charleston	8.885	19.266	28.151
Cherokee	NR	NR	NR
Chester	NR	NR	NR
Chesterfield	350.975	6.039	357.014
Clarendon	175.823	50.705	226.528
Colleton	1900.5	790	2690.5
Darlington	35.378	127.587	162.965
Dillon	36.4	NR	36.4
Dorchester	NR	NR	NR
Edgefield	NR 0	289.55	289.55
Fairfield	NR	NR	NR
Florence	63.303	0	63.303
Georgetown	23.568	3608.627	3632.195
Greenville	0.2	30.82	31.02
Greenwood	1.2		1.2
Hampton	1586.599	34.5	1621.099
Horry	200.354	67.554	267.908
Jasper	660.825	0	660.825
Kershaw	NR	NR	NR
Lancaster	NR	NR	NR
Laurens	NR	NR	NR
Lee	126.067	7.28	133.347
Lexington	1864.216	530.749	2394.965
Marion	24.39	5	29.39
Marlboro	191.407	87.993	279.4
McCormick	NR	NR	NR
Newberry	47.89	135.316	183.206
Oconee		279.76	279.76
Orangeburg	3498.51	1634.881	5133.391
Pickens	NR	NR	NR
Richland	33.304	0.8	34.104
Saluda	NR	599.8	599.8
Spartanburg	NR	107.66	107.66
Sumter	1387.87	553.682	1941.552
Union	NR	NR	NR
Williamsburg	NR	NR	NR
York	NR	2.67	2.67

NR = None Reported

Irrigation Use Source Comparison



Distribution of reported irrigation water use in South Carolina, 2006. Darker shades indicate the highest use areas.

	Groundwater	Surface Water
Source Total:	17980.52	11176.64

Total Irrigation Use (millions of gallons): 29157.16

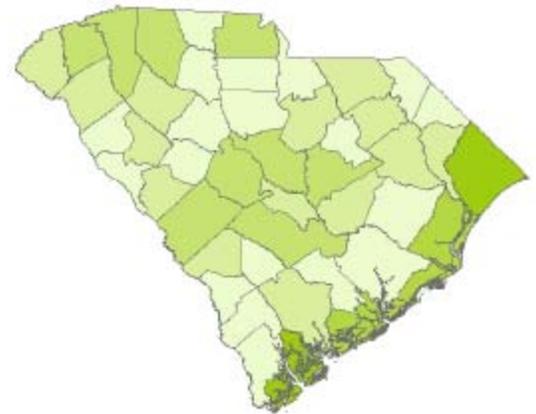
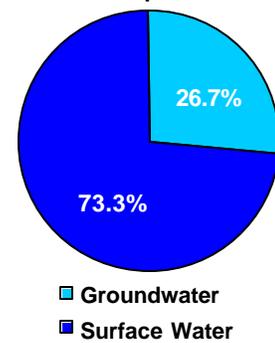
Golf Course Use

Water withdrawal from 243 reporting courses for golf course irrigation totaled 12.646 billion gallons, with 266 surface water sources accounting for 9.275 billion gallons and 250 groundwater sources accounting for 3.371 billion gallons.

County	Groundwater	Surface Water	County Total
Abbeville	NR	NR	NR 0
Aiken	15.33	225.686	241.016
Allendale	NR	NR	NR 0
Anderson	NR	138.09	138.09
Bamberg	NR	NR	NR 0
Barnwell	NR	62.75	62.75
Beaufort	1228.673	1969.695	3198.368
Berkeley	13	13	26
Calhoun	27.5	33.1	60.6
Charleston	732.025	279.807	1011.832
Cherokee	NR	NR	NR
Chester	31.9	11.5	43.4
Chesterfield		82.781	82.781
Clarendon	4.6	52.42	57.02
Colleton	63.577	1.264	64.841
Darlington	22.1	118.5	140.6
Dillon	NR	NR	NR
Dorchester	29	NR	29
Edgefield	99.75	37.5	137.25
Fairfield	NR	NR	NR
Florence	116.255	36.822	153.077
Georgetown		1082.865	1082.865
Greenville	11.788	194.243	206.031
Greenwood	0.186	58.465	58.651
Hampton	45.43	NR	45.43
Horry	568.317	2733.038	3301.355
Jasper	14.2	NR	14.2
Kershaw	36.626	56.4	93.026
Lancaster	13.1	3.67	16.77
Laurens	NR	48.57	48.57
Lee	NR	NR	NR
Lexington	25.68	167.116	192.796
Marion	NR	48.546	48.546
Marlboro	NR	NR	NR
McCormick	NR	36.351	36.351
Newberry	NR	0.084	0.084
Oconee	NR	114.565	114.565
Orangeburg	64.383	147.198	211.581
Pickens	NR	317.592	317.592
Richland	32.357	374.326	406.683
Saluda	NR	NR	NR
Spartanburg	11.105	416.197	427.302
Sumter	98.78	252.228	351.008
Union	NR	7.2	7.2
Williamsburg	NR	NR	NR
York	66.09	153.576	219.666

NR = None Reported

Golf Course Use Source Comparison



Distribution of reported golf course water use in South Carolina, 2005. Darker shades indicate the highest use areas.

	Groundwater	Surface Water
Source Total:	3371.752	9275.145

**Total Golf Course Use
(millions of gallons): 12646.9**

Mining Use

Water withdrawal associated with mining activities at 11 reporting facilities totaled 3.305 billion gallons, with 4 surface water sources accounting for 498 million gallons and 10 groundwater sources accounting for 3.225 billion gallons.

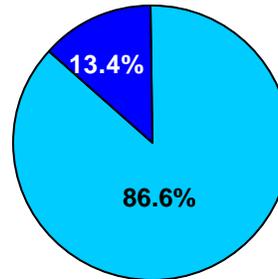
County	Groundwater	Surface Water	County Total
Berkeley	3.372	NR	3.372
Chesterfield	16.77	NR	16.77
Colleton	NR	3.136	3.136
Horry	NR	103.6	103.6
Lexington	318.48	391.707	710.186
Orangeburg	1891.2	NR	1891.168
Richland	981.96	NR	981.96
York	13.598	NR	13.598

NR = None Reported

	Groundwater	Surface Water
Source Total:	3225.347	498.443

**Total Irrigation Use
(million gallons): 3723.79**

Mining Use Source Comparison



■ Groundwater
■ Surface Water

Aquaculture Use

Water withdrawal from 7 reporting aquaculture-farming facilities totaled 320 Million gallons, with 5 surface water sources accounting for 171.872 million gallons and 11 groundwater sources accounting for 148.129 million gallons.

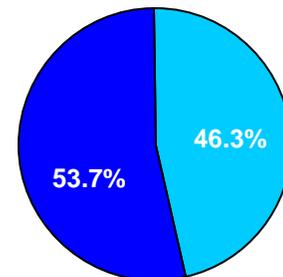
County	Groundwater	Surface Water	County Total
Beaufort	12.442	47.491	59.933
Berkeley	4.187	67.541	71.728
Dillon	33	NR	33
Hampton	83	NR	83
Richland	15.5	21.8	37.3
Spartanburg	NR	35.04	35.04

NR = None Reported

	Groundwater	Surface Water
Source Total:	148.129	171.872

**Total Aquaculture Use
(million gallons): 320.001**

Aquaculture Use Source Comparison



■ Groundwater
■ Surface Water

Other Use

Water withdrawal for other, non-specific use from 4 reporting facilities totaled 105.634 million gallons, with groundwater accounting for all reported use.

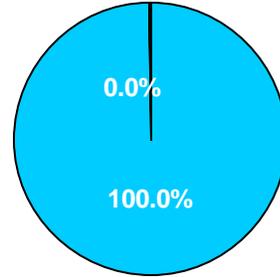
County	Groundwater	Surface Water	County Total
Beaufort	32.53	NR	32.53
Darlington	0	NR	0
Dorchester	0.11	NR	0.11
Horry	21.368	NR	21.368

NR = None Reported

	Groundwater	Surface Water
Source Total:	54.008	NR

**Total Other Use
(million gallons): 54.008**

Other Use Source Comparison



- Groundwater
- Surface Water

Appendix A: Surface and Groundwater Use Summary Tables

Surface Water Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Water Supply
Abbeville	16776.912	15807							969.912
Aiken	80848.08		80848.08		225.686	22232.029	4.105		2374.26
Allendale	617.29						617.29		
Anderson	158208.972	118000	276209		138.09	73.171			7906.997
Bamberg	403.964						403.964		
Barnwell	93.95				62.75		31.2		
Beaufort	10115.329			47.491	1969.695		25.905		8072.238
Berkeley	1330047.91	1131435.56	2461483	67.541	13	3682.251	1051.6		5658.4
Calhoun	28367.588				33.1	28262.149	72.339		
Charleston	39714.491				279.807	9168.09	19.266		30247.328
Cherokee	249751.124	246549				620.524			2581.6
Chester	1618927.933	1617728			11.5	99.643			1088.79
Chesterfield	826.115				82.781		6.039		737.295
Clarendon	103.125				52.42		50.705		
Colleton	3107.664		3107.664		1.264		790	3.136	
Darlington	303498.321		303498.3		118.5	7190.234	127.587		
Dorchester	0				0	0			
Edgefield	941305.024	939325.52			37.5		289.55		1652.454
Fairfield	2790458.748	2518500.12	5308959						722.306
Florence	9369.192				36.822	7988.89	0		1343.48
Georgetown	24302.422		24302.42		1082.865	12574.901	3608.627		2320.782
Greenville	117687.563	92268			194.243		30.82		25194.5
Greenwood	153766.388	93433	247199.4		58.465	36.9			4238.023
Hampton	34.5						34.5		
Horry	63280.522		63280.52		2733.038	8.23	67.554	103.6	15868.7
Jasper	0						0		
Kershaw	925802.775	923086			56.4	824.944			1835.431
Lancaster	869179.07	859455			3.67	1756			7964.4
Laurens	1797.256	0			48.57				1748.686
Lee	7.28						7.28		
Lexington	216420.233	149243.6	365663.8		167.116	9482.331	530.749	391.707	5640.81
Marion	53.546				48.546		5		
Marlboro	7657.226					7176.483	87.993		392.75
McCormick	481.486				36.351				445.135
Newberry	2039.244				0.084		135.316		1903.844
Oconee	2346727.571	9800	2356528		114.565	510.168	279.76		3887.078
Orangeburg	5433.873		5433.873		147.198	166.994	1634.881		3484.8
Pickens	2331429.755	2324587			317.592	2526.624	0		3998.539
Richland	531023.413	350770.49	881793.9	21.8	374.326	10597.317	0.8		22910.18
Saluda	599.8						599.8		
Spartanburg	27136.634	11852.29		35.04	416.197		107.66		14725.447
Sumter	805.91				252.228		553.682		
Union	328900.242	327175.228			7.2	458			1259.814
Williamsburg	0						0		
York	782230.581	679938	1462169		153.576	12752.2	2.67		5945.135
Grand Total:	16319339.02	12408953.8	13840475	171.87	9275.145	138188.07	11176.64	498.443	187119.11

Blank = None Reported

Groundwater Use Summary Table (Figures in Millions of Gallons)

County	County Total	Hydroelectric	Thermoelectric	Aquaculture	Golf Course	Industry	Irrigation	Mining	Other	Water Supply
Abbeville	3.187									3.187
Aiken	6319.571				15.33	1110.989	233.657	0		4959.595
Allendale	4682.191					850.02	3390.417			441.754
Bamberg	893.388						378.347			515.041
Barnwell	1003.769					158.331	82.165			763.273
Beaufort	6403.278			12.442	1228.673	92.198	690.524		32.53	4346.911
Berkeley	1512.645	0.884	10.854	4.187	13	1293.15	0.24	3.372		186.958
Calhoun	1404.751				27.5	133	987.504			256.747
Charleston	2905.014				732.025	43.057	8.885			2121.047
Cherokee	0		0							
Chester	33.384				31.9	1.484				
Chesterfield	1324.057						350.975	16.77		956.312
Clarendon	919.054				4.6		175.823			738.631
Colleton	2711.276		0.689		63.577		1900.5			746.51
Darlington	4333.792		362.544		22.1	1521.046	35.378		0	2392.724
Dillon	1640.031			33			36.4			1570.631
Dorchester	1192.939				29	458.114			0.11	705.715
Edgefield	99.75				99.75		0			
Fairfield	71.9									71.9
Florence	5374.908				116.255	763.328	63.303			4432.022
Georgetown	847.013					99.04	23.568			724.405
Greenville	108.459				11.788	68.706	0.2			27.765
Greenwood	15.908				0.186	9.16	1.2			5.362
Hampton	2545.514			83	45.43	311.2	1586.599			519.285
Horry	1823.383				568.317	179.053	200.354		21.368	854.291
Jasper	1037.82			0	14.2		660.825			362.795
Kershaw	1098.433				36.626	517.349				544.458
Lancaster	13.1				13.1					
Lee	735.767						126.067			609.7
Lexington	3105.474				25.68	455.825	1864.216	318.48		441.274
Marion	1319.913				0		24.39			1295.523
Marlboro	1636.83					282.297	191.407			1163.126
Newberry	67.587				0		47.89			19.697
Oconee	43.841									43.841
Orangeburg	13132.324		5887.156		64.383	1130.881	3498.51	1891.2		660.226
Richland	2095.922			15.5	32.357	701.29	33.304	981.96		331.511
Saluda	13.395									13.395
Spartanburg	50.598				11.105	13.991				25.502
Sumter	7534.898				98.78	272.491	1387.87			5775.757
Union	2.659					2.659				
Williamsburg	1222.863					665.904				556.959
York	173.604				66.09	3.042		13.598		90.874
Grand Total:	81454.19	0.884	6261.243	148.129	3371.752	11137.61	17980.52	3225.3	54.008	39274.7

Blank = None Reported

Appendix B: Surface and Groundwater Use Summary by County in South Carolina, 2006

The following tables list reported surface water and groundwater withdrawals for the 2006 calendar year by county. Water usage data are shown by water use category, and in the case of power generation, include surface water use that is typically considered non-consumptive. As presented throughout this report, all water use figures presented are in millions of gallons.

Abbeville County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	3.19
Other:	NR
Total:	3.19

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	15,807.00
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	969.91
Total:	16,776.91

Aiken County



Groundwater Use

Aquaculture:	NR
Golf Course:	15.33
Industrial:	1,110.99
Irrigation:	233.66
Mining:	0.00
Water Supply:	4959.60
Other:	NR
Total:	6319.58

Surface Water Use

Aquaculture:	NR
Golf Course:	225.686
Hydroelectric:	NR
Industrial:	22,232.03
Irrigation:	4.10
Mining:	NR
Thermal Power:	56,012.00
Water Supply:	2374.26
Total:	80,848.08

Allendale County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	850.02
Irrigation:	3,390.42
Mining:	NR
Water Supply:	441.75
Other:	NR
Total:	4682.19

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	617.29
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	617.29

Anderson County



Groundwater Use

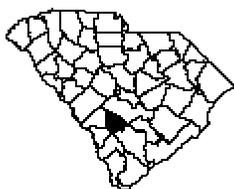
Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	138.09
Hydroelectric:	118,000.00
Industrial:	73.17
Irrigation:	NR
Mining:	NR
Thermal Power:	32,090.71
Water Supply:	7,906.99
Total:	158,208.96

NR = None Reported

Bamberg County



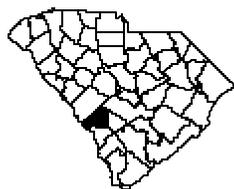
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	378.35
Mining:	NR
Water Supply:	515.041
Other:	NR
Total:	893.39

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	403.96
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	403.96

Barnwell County



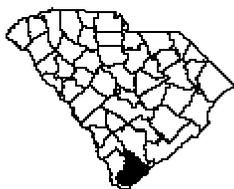
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	158.33
Irrigation:	82.17
Mining:	NR
Water Supply:	763.27
Other:	NR
Total:	1003.77

Surface Water Use

Aquaculture:	NR
Golf Course:	62.75
Hydroelectric:	NR
Industrial:	NR
Irrigation:	31.20
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	93.95

Beaufort County



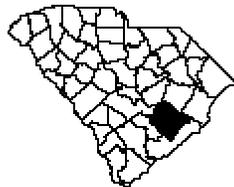
Groundwater Use

Aquaculture:	12.44
Golf Course:	1,228.67
Industrial:	92.20
Irrigation:	690.52
Mining:	NR
Water Supply:	4,346.91
Other:	32.53
Total:	6403.27

Surface Water Use

Aquaculture:	47.49
Golf Course:	1,969.70
Hydroelectric:	NR
Industrial:	NR
Irrigation:	25.91
Mining:	NR
Thermal Power:	NR
Water Supply:	8,072.24
Total:	10,115.34

Berkeley County



Groundwater Use

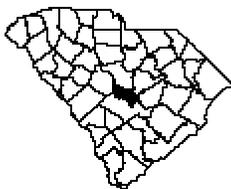
Aquaculture:	4.19
Golf Course:	13.00
Industrial:	1,293.15
Irrigation:	0.24
Mining:	2.98
Water Supply:	186.96
Hydroelectric:	0.33
Thermal Power:	10.854
Total:	1,511.704

Surface Water Use

Aquaculture:	67.54
Golf Course:	13.00
Hydroelectric:	1,131,435.56
Industrial:	3682.251
Irrigation:	1110.14
Mining:	NR
Thermal Power:	188,139.56
Water Supply:	5,656.40
Total:	1,330,104

NR = None Reported

Calhoun County



Groundwater Use

Aquaculture:	NR
Golf Course:	27.5
Industrial:	133
Irrigation:	987.504
Mining:	NR
Water Supply:	256.747
Other:	NR
Total:	1,404.751

Surface Water Use

Aquaculture:	NR
Golf Course:	33.1
Hydroelectric:	NR
Industrial:	28,262.149
Irrigation:	72.339
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	28,367.59

Charleston County



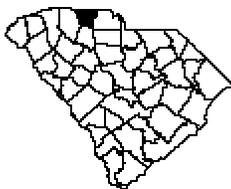
Groundwater Use

Aquaculture:	NR
Golf Course:	732.025
Industrial:	43.057
Irrigation:	8.885
Mining:	NR
Water Supply:	2121.047
Other:	NR
Total:	2,905.014

Surface Water Use

Aquaculture:	2.30
Golf Course:	279.807
Hydroelectric:	NR
Industrial:	9,168.09
Irrigation:	19.266
Mining:	NR
Thermal Power:	NR
Water Supply:	30,247.328
Total:	39,716.79

Cherokee County



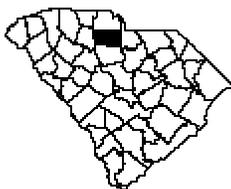
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Thermal Power:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	246,549
Industrial:	620.524
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	2581.6
Total:	249,751.1

Chester County



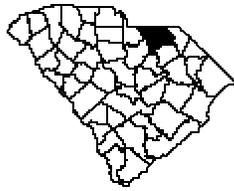
Groundwater Use

Aquaculture:	NR
Golf Course:	31.9
Industrial:	1.484
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	33.384

Surface Water Use

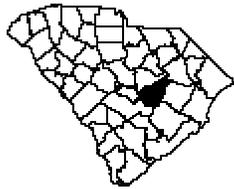
Aquaculture:	NR
Golf Course:	11.5
Hydroelectric:	1,617,728
Industrial:	99.643
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1088.79
Total:	1,618,928

NR = None Reported



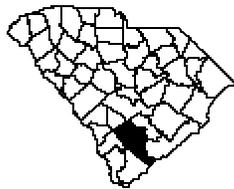
Chesterfield County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	NR	Golf Course:	82.781
Industrial:	NR	Hydroelectric:	NR
Irrigation:	350.975	Industrial:	NR
Mining:	16.77	Irrigation:	6.039
Water Supply:	956.312	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	1,324.057	Water Supply:	737.295
		Total:	826.115



Clarendon County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	4.6	Golf Course:	52.42
Industrial:	NR	Hydroelectric:	NR
Irrigation:	175.823	Industrial:	NR
Mining:	NR	Irrigation:	50.705
Water Supply:	738.631	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	919.054	Water Supply:	NR
		Total:	103.125



Colleton County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	63.577	Golf Course:	1.264
Industrial:	NR	Hydroelectric:	NR
Irrigation:	1,900.5	Industrial:	NR
Mining:	NR	Irrigation:	790
Water Supply:	746.51	Mining:	3.136
Thermal Power	0.689	Thermal Power:	2,313.264
Other:	NR	Water Supply:	NR
Total:	2,711.276	Total:	3,107.664



Darlington County

Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	22.1	Golf Course:	118.5
Industrial:	1521.046	Hydroelectric:	NR
Irrigation:	35.378	Industrial:	7,190.234
Mining:	NR	Irrigation:	127.587
Nuclear Power:	362.544	Mining:	NR
Water Supply:	2392.724	Nuclear Power:	296,062
Other:	0	Water Supply:	NR
Total:	4,333.792	Total:	303,498.3

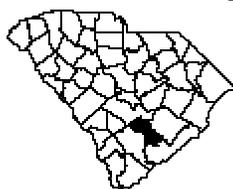
NR = None Reported

Dillon County



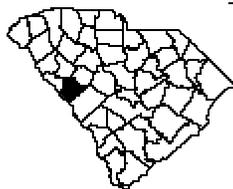
Groundwater Use		Surface Water Use	
Aquaculture:	33	Aquaculture:	NR
Golf Course:	NR	Golf Course:	NR
Industrial:	NR	Hydroelectric:	NR
Irrigation:	36.4	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	1,570.631	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	1,640.031	Water Supply:	NR
		Total:	NR

Dorchester County



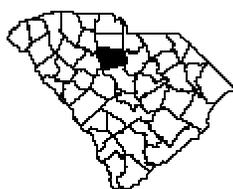
Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	29	Golf Course:	NR
Industrial:	458.114	Hydroelectric:	NR
Irrigation:	NR	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	705.715	Mining:	NR
Other:	.11	Thermal Power:	NR
Total:	1,192.939	Water Supply:	NR
		Total:	NR

Edgefield County



Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	99.75	Golf Course:	37.5
Industrial:	NR	Hydroelectric:	939,325.52
Irrigation:	NR	Industrial:	NR
Mining:	NR	Irrigation:	289.55
Water Supply:	NR	Mining:	NR
Other:	NR	Thermal Power:	NR
Total:	99.75	Water Supply:	1,652.452
		Total:	941,305

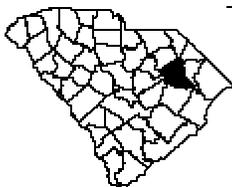
Fairfield County



Groundwater Use		Surface Water Use	
Aquaculture:	NR	Aquaculture:	NR
Golf Course:	NR	Golf Course:	NR
Industrial:	NR	Hydroelectric:	2,518,500.12
Irrigation:	NR	Industrial:	NR
Mining:	NR	Irrigation:	NR
Water Supply:	71.9	Mining:	NR
Other:	NR	Nuclear Power:	271,236.322
Total:	71.9	Water Supply:	722.306
		Total:	2,790,458.75

NR = None Reported

Florence County



Groundwater Use

Aquaculture:	NR
Golf Course:	116.255
Industrial:	763.328
Irrigation:	63.303
Mining:	NR
Water Supply:	4,432.022
Other:	NR
Total:	5,374.908

Surface Water Use

Aquaculture:	NR
Golf Course:	36.822
Hydroelectric:	NR
Industrial:	7,988.89
Irrigation:	0
Mining:	NR
Thermal Power:	NR
Water Supply:	1,343.48
Total:	9,369.192

Georgetown County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	99.04
Irrigation:	23.568
Mining:	NR
Water Supply:	724.405
Other:	NR
Total:	847.013

Surface Water Use

Aquaculture:	NR
Golf Course:	1082.865
Hydroelectric:	NR
Industrial:	12,574.901
Irrigation:	3,608.627
Mining:	NR
Thermal Power:	4,715.247
Water Supply:	2,320.782
Total:	24,302.42

Greenville County



Groundwater Use

Aquaculture:	NR
Golf Course:	11.788
Industrial:	68.706
Irrigation:	0.2
Mining:	NR
Water Supply:	27.765
Other:	NR
Total:	108.459

Surface Water Use

Aquaculture:	NR
Golf Course:	194.243
Hydroelectric:	92,268
Industrial:	NR
Irrigation:	30.82
Mining:	NR
Thermal Power:	NR
Water Supply:	25,194.5
Total:	117,687.6

Greenwood County



Groundwater Use

Aquaculture:	NR
Golf Course:	0.186
Industrial:	9.16
Irrigation:	1.2
Mining:	NR
Water Supply:	5.362
Other:	NR
Total:	15.908

Surface Water Use

Aquaculture:	NR
Golf Course:	58.465
Hydroelectric:	93433
Industrial:	36.9
Irrigation:	NR
Mining:	NR
Thermal Power:	56000
Water Supply:	4,238.023
Total:	153,766.4

NR = None Reported

Hampton County



Groundwater Use

Aquaculture:	83
Golf Course:	45.43
Industrial:	311.2
Irrigation:	1586.599
Mining:	NR
Water Supply:	519.285
Other:	NR
Total:	2,545.514

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	34.5
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	34.5

Horry County



Groundwater Use

Aquaculture:	NR
Golf Course:	568.317
Industrial:	179.053
Irrigation:	200.354
Mining:	NR
Water Supply:	854.291
Other:	21.368
Total:	1,823.383

Surface Water Use

Aquaculture:	NR
Golf Course:	2733.038
Hydroelectric:	NR
Industrial:	8.23
Irrigation:	67.554
Mining:	103.6
Thermal Power:	44499.4
Water Supply:	15868.7
Total:	63,280.52

Jasper County



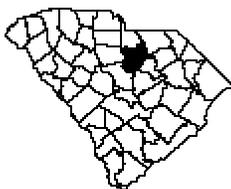
Groundwater Use

Aquaculture:	NR
Golf Course:	14.2
Industrial:	NR
Irrigation:	660.825
Mining:	NR
Water Supply:	362.795
Other:	NR
Total:	1037.82

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	NR

Kershaw County



Groundwater Use

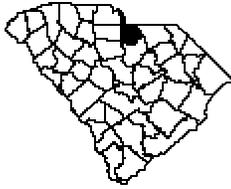
Aquaculture:	NR
Golf Course:	36.626
Industrial:	517.349
Irrigation:	NR
Mining:	NR
Water Supply:	544.458
Other:	NR
Total:	1098.433

Surface Water Use

Aquaculture:	NR
Golf Course:	56.4
Hydroelectric:	923,086
Industrial:	824.944
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1835.431
Total:	925,802.8

NR = None Reported

Lancaster County



Groundwater Use

Aquaculture:	NR
Golf Course:	13.1
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	13.1

Surface Water Use

Aquaculture:	NR
Golf Course:	3.67
Hydroelectric:	1,204,198.00
Industrial:	1,756
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	7964.4
Total:	1,213,922.07

Laurens County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	48.57
Hydroelectric:	0
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1748.686
Total:	1,797.256

Lee County



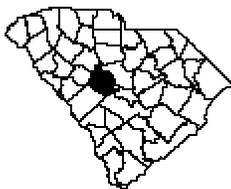
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	126.067
Mining:	NR
Water Supply:	609.7
Other:	NR
Total:	735.767

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	7.28
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	7.28

Lexington County



Groundwater Use

Aquaculture:	NR
Golf Course:	167.116
Industrial:	455.825
Irrigation:	1,864.216
Mining:	318.479
Water Supply:	441.274
Other:	NR
Total:	3,246.91

Surface Water Use

Aquaculture:	NR
Golf Course:	173.59
Hydroelectric:	149,243.6
Industrial:	9,482.331
Irrigation:	530.749
Mining:	391.707
Thermal Power:	50,963.92
Water Supply:	5,640.81
Total:	216,426.7

NR = None Reported

Marion County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	24.39
Mining:	NR
Water Supply:	1,295.523
Other:	NR
Total:	1,319.913

Surface Water Use

Aquaculture:	NR
Golf Course:	48.546
Hydroelectric:	NR
Industrial:	NR
Irrigation:	5
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	53.546

Marlboro County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	282.297
Irrigation:	191.407
Mining:	NR
Water Supply:	1163.126
Other:	NR
Total:	1,636.83

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	7,176.483
Irrigation:	87.993
Mining:	NR
Thermal Power:	NR
Water Supply:	392.75
Total:	7,657.226

McCormick County



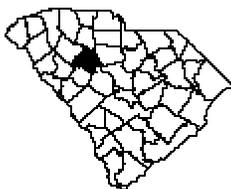
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	36.351
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	445.135
Total:	481.486

Newberry County



Groundwater Use

Aquaculture:	NR
Golf Course:	0
Industrial:	NR
Irrigation:	47.89
Mining:	NR
Water Supply:	19.697
Other:	NR
Total:	67.587

Surface Water Use

Aquaculture:	NR
Golf Course:	0.084
Hydroelectric:	NR
Industrial:	NR
Irrigation:	135.316
Mining:	NR
Thermal Power:	NR
Water Supply:	1,903.844
Total:	2,039.244

NR = None Reported

Oconee County



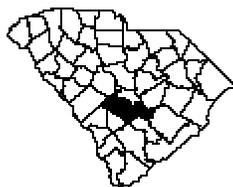
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	43.841
Other:	NR
Total:	43.841

Surface Water Use

Aquaculture:	NR
Golf Course:	114.565
Hydroelectric:	9800
Industrial:	510.168
Irrigation:	279.76
Mining:	NR
Nuclear Power:	2332136
Water Supply:	3887.078
Total:	2,346,728

Orangeburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	64.383
Industrial:	1,130.881
Irrigation:	3,498.51
Mining:	1,891.168
Thermal Power:	5,887.156
Water Supply:	660.226
Other:	NR
Total:	13,132.32

Surface Water Use

Aquaculture:	NR
Golf Course:	147.198
Hydroelectric:	12,700.00
Industrial:	166.994
Irrigation:	1,634.881
Mining:	NR
Thermal Power:	NR
Water Supply:	3,484.8
Total:	18,133.87

Pickens County



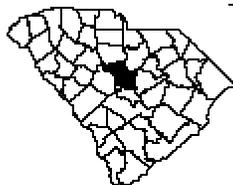
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	NR

Surface Water Use

Aquaculture:	NR
Golf Course:	317.592
Hydroelectric:	2324587
Industrial:	2526.624
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	3998.539
Total:	2,331,430

Richland County



Groundwater Use

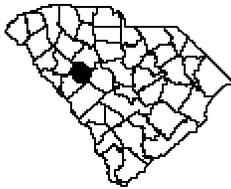
Aquaculture:	15.5
Golf Course:	32.357
Industrial:	701.29
Irrigation:	33.304
Mining:	981.96
Water Supply:	331.511
Other:	NR
Total:	2,095.922

Surface Water Use

Aquaculture:	21.8
Golf Course:	374.326
Hydroelectric:	350,770.49
Industrial:	10,597.317
Irrigation:	0.8
Mining:	NR
Thermal Power:	146348.5
Water Supply:	22910.18
Total:	531,023.4

NR = None Reported

Saluda County



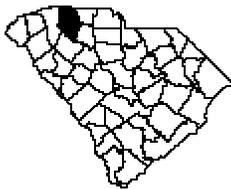
Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Water Supply:	13.395
Other:	NR
Total:	13.395

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	599.8
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	599.8

Spartanburg County



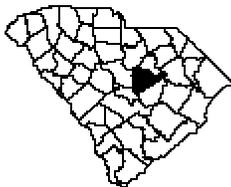
Groundwater Use

Aquaculture:	NR
Golf Course:	11.105
Industrial:	13.991
Irrigation:	NR
Mining:	NR
Water Supply:	25.502
Other:	NR
Total:	50.598

Surface Water Use

Aquaculture:	35.04
Golf Course:	416.197
Hydroelectric:	11852.29
Industrial:	NR
Irrigation:	107.66
Mining:	NR
Thermal Power:	NR
Water Supply:	14725.447
Other:	27,136.63

Sumter County



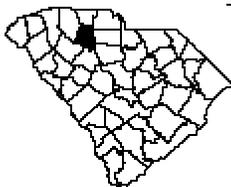
Groundwater Use

Aquaculture:	NR
Golf Course:	98.78
Industrial:	272.491
Irrigation:	1387.87
Mining:	NR
Water Supply:	5,775.757
Other:	NR
Total:	7,534.898

Surface Water Use

Aquaculture:	NR
Golf Course:	252.228
Hydroelectric:	NR
Industrial:	NR
Irrigation:	553.682
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	805.91

Union County



Groundwater Use

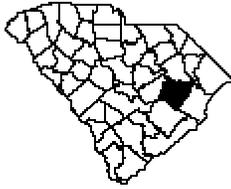
Aquaculture:	NR
Golf Course:	NR
Industrial:	2.659
Irrigation:	NR
Mining:	NR
Water Supply:	NR
Other:	NR
Total:	2.659

Surface Water Use

Aquaculture:	NR
Golf Course:	7.2
Hydroelectric:	327,175.228
Industrial:	458
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	1,259.814
Total:	328,900.2

NR = None Reported

Williamsburg County



Groundwater Use

Aquaculture:	NR
Golf Course:	NR
Industrial:	665.904
Irrigation:	NR
Mining:	NR
Water Supply:	556.959
Other:	NR
Total:	1,222.863

Surface Water Use

Aquaculture:	NR
Golf Course:	NR
Hydroelectric:	NR
Industrial:	NR
Irrigation:	NR
Mining:	NR
Thermal Power:	NR
Water Supply:	NR
Total:	NR

York County



Groundwater Use

Aquaculture:	NR
Golf Course:	66.09
Industrial:	3.042
Irrigation:	NR
Mining:	13.598
Water Supply:	90.874
Other:	NR
Total:	173.604

Surface Water Use

Aquaculture:	NR
Golf Course:	153.576
Hydroelectric:	679938
Industrial:	12752.2
Irrigation:	2.67
Mining:	NR
Nuclear Power:	83439
Water Supply:	5945.135
Total:	782,230.6

NR = None Reported

Appendix C: Population by County

Population and Projections by County

County	2000	2005	2010	2015	2020	2025
Abbeville	26,167	26,740	27,610	28,480	29,350	30,210
Aiken	142,552	153,900	163,950	174,000	184,060	194,110
Allendale	11,211	11,820	11,960	12,110	12,260	12,400
Anderson	165,740	172,120	180,280	188,440	196,590	204,750
Bamberg	16,658	16,130	15,740	15,340	14,950	14,560
Barnwell	23,478	24,350	25,390	26,440	27,490	28,540
Beaufort	120,937	132,760	146,440	160,110	173,790	187,460
Berkeley	142,651	156,610	167,520	178,420	189,330	200,230
Calhoun	15,185	15,570	16,350	17,130	17,910	18,690
Charleston	309,969	320,080	328,570	337,070	345,560	354,060
Cherokee	52,537	54,770	57,860	60,960	64,050	67,140
Chester	34,068	34,630	35,500	36,370	37,240	38,110
Chesterfield	42,768	43,100	44,310	45,520	46,730	47,940
Clarendon	32,502	33,300	34,650	35,990	37,330	38,680
Colleton	38,264	39,910	41,590	43,260	44,940	46,610
Darlington	67,394	67,910	69,260	70,610	71,960	73,310
Dillon	30,722	30,220	30,280	30,340	30,400	30,460
Dorchester	96,413	106,590	115,430	124,280	133,130	141,980
Edgefield	24,595	25,490	27,400	29,320	31,230	33,150
Fairfield	23,454	24,260	25,010	25,770	26,520	27,280
Florence	125,761	130,140	134,510	138,870	143,230	147,590
Georgetown	55,797	58,300	61,770	65,240	68,710	72,190
Greenville	379,616	397,580	421,210	444,840	468,470	492,100
Greenwood	66,271	68,590	71,170	73,750	76,330	78,910
Hampton	21,386	21,810	22,690	23,570	24,450	25,330
Horry	196,629	215,850	239,020	262,190	285,360	308,530
Jasper	20,678	21,390	23,000	24,610	26,220	27,830
Kershaw	52,647	55,300	58,880	62,460	66,040	69,620
Lancaster	61,351	61,940	63,940	65,950	67,950	69,950
Laurens	69,567	72,800	77,190	81,580	85,960	90,350
Lee	20,119	20,540	21,010	21,480	21,960	22,430
Lexington	216,014	233,060	252,580	272,090	291,600	311,120
McCormick	9,958	10,670	11,290	11,910	12,530	13,150
Marion	35,466	35,930	36,390	36,840	37,300	37,760
Marlboro	28,818	28,100	27,460	26,820	26,170	25,530
Newberry	36,108	37,270	38,530	39,790	41,050	42,320
Oconee	66,215	70,910	75,470	80,040	84,600	89,160
Orangeburg	91,582	94,260	96,890	99,510	102,140	104,770
Pickens	110,757	119,040	127,110	135,190	143,260	151,330
Richland	320,677	331,810	345,660	359,520	373,370	387,220
Saluda	19,181	19,400	20,090	20,790	21,480	22,180
Spartanburg	253,791	267,390	280,590	293,790	306,990	320,190
Sumter	104,646	112,030	116,100	120,180	124,260	128,330
Union	29,881	29,720	29,480	29,240	29,010	28,770
Williamsburg	37,217	36,960	36,820	36,680	36,540	36,400
York	164,614	177,420	192,290	207,160	222,030	236,900
South Carolina:	4,012,012	4,218,460	4,446,240	4,674,050	4,901,810	5,129,630

