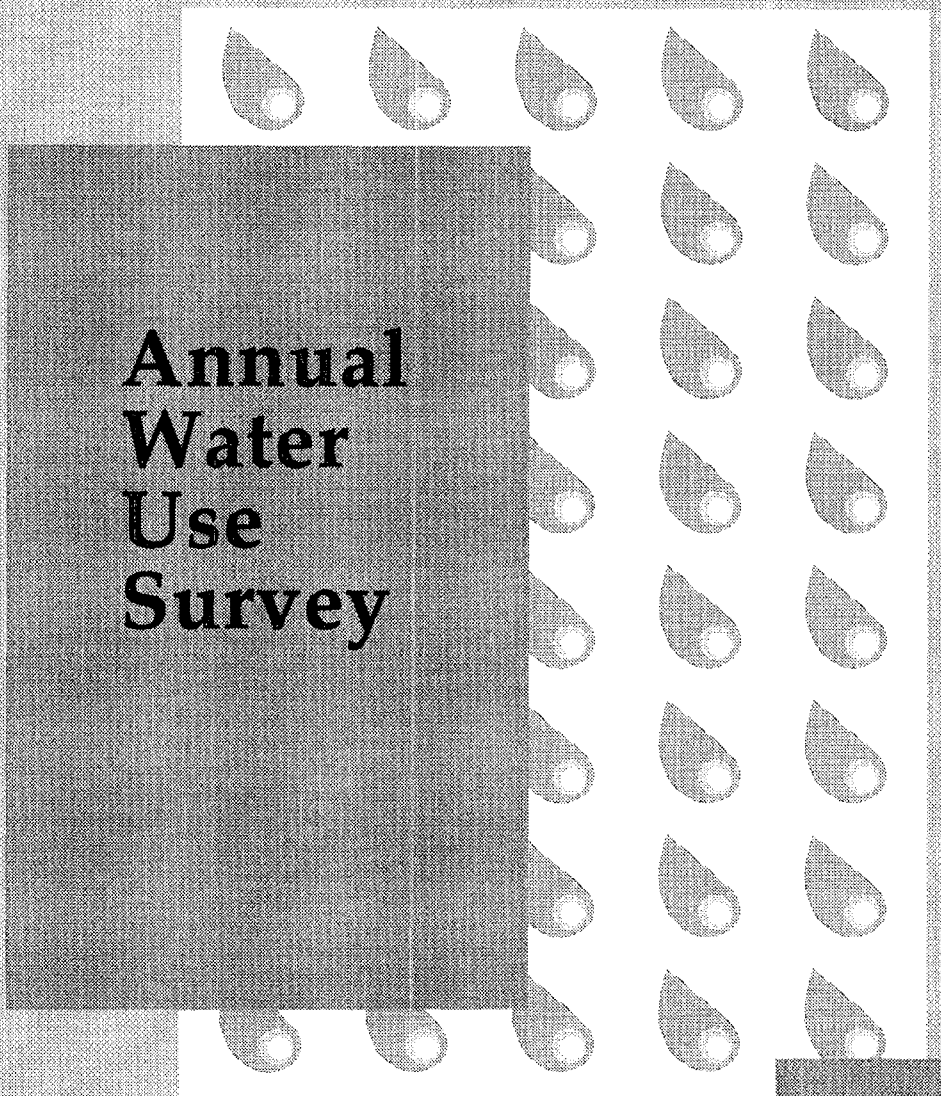
Technical Publication SJ99-3



Annual Water Use Survey

1996

St. Johns River Water Management District

Technical Publication SJ99-3

ANNUAL WATER USE SURVEY: 1996

by

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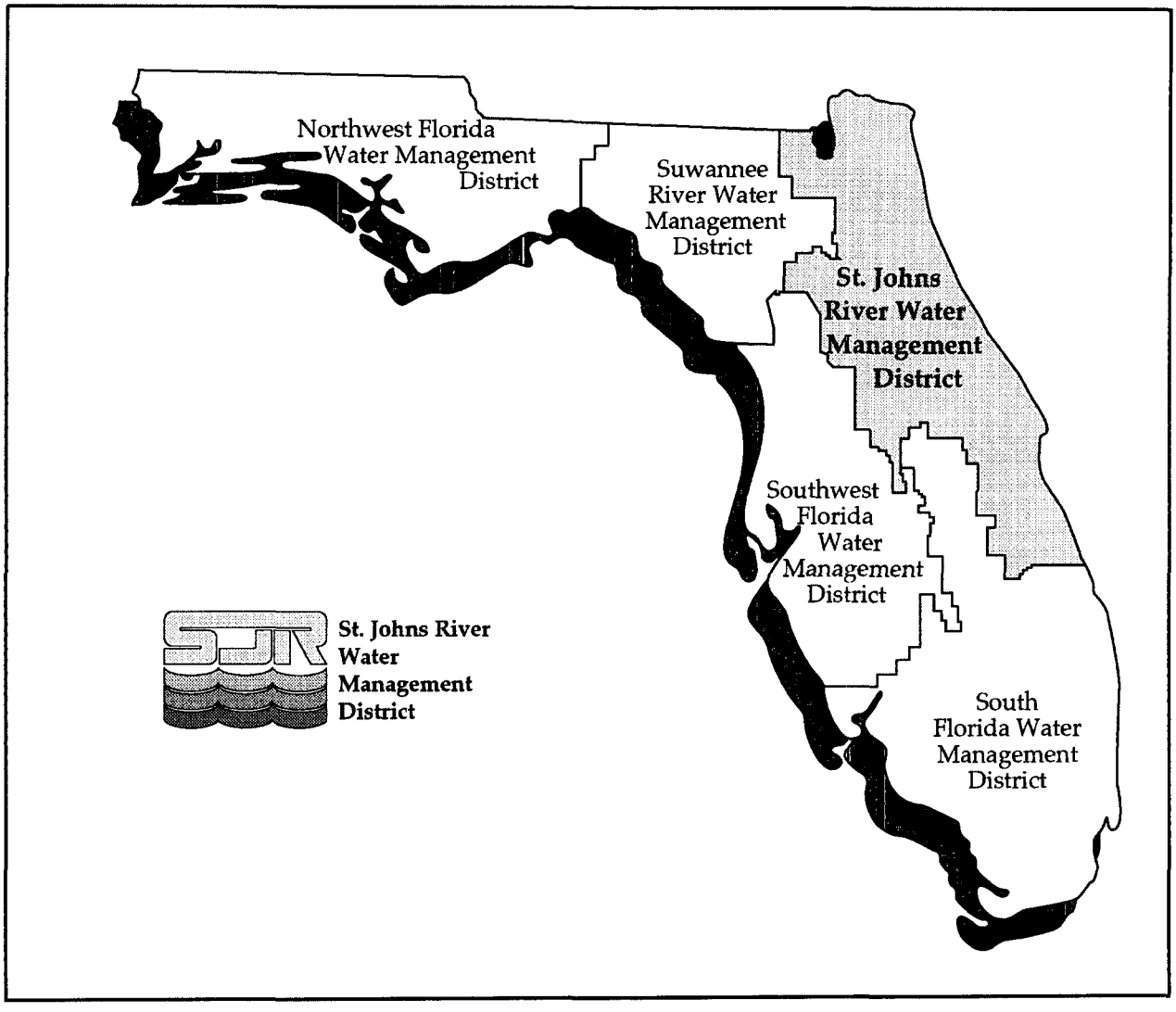
Palatka, Florida

1999



The St. Johns River Water Management District (SJRWMD) was created by the Florida Legislature in 1972 to be one of five water management districts in Florida. It includes all or part of 19 counties in northeast Florida. The mission of SJRWMD is to manage water resources to ensure their continued availability while maximizing environmental and economic benefits. It accomplishes its mission through regulation; applied research; assistance to federal, state, and local governments; operation and maintenance of water control works; and land axquisition and management.

Technical Publications are published to disseminate information collected by SJRWMD in pursuit of its mission. Copies of this report can be obtained from:

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EXECUTIVE SUMMARY

Water use data have been published annually by the St. Johns River Water Management District (SJRWMD) since 1978. This report assesses water use in SJRWMD for 1996; it presents the total quantities of water used. The information is arranged by source (ground or surface), category of use, and county. Water use covers all water withdrawals from ground or surface water sources and is expressed in million gallons per day (mgd).

The total amount of water used in SJRWMD in 1996, including fresh and saline water, was 3,027.07 mgd. Of that total, 1,375.62 mgd, or 45%, was freshwater. The total surface water use for SJRWMD was 1,899.75 mgd, of which 1,651.45 mgd was saline and 248.30 mgd was fresh. The total amount of groundwater withdrawn in SJRWMD was 1,127.32 mgd. All groundwater was freshwater.

The largest use of fresh groundwater was for public supply—475.07 mgd, or 42% of the total fresh groundwater use in SJRWMD. Agricultural fresh groundwater use was 313.27 mgd, or 28% of the groundwater total.

The largest use of fresh surface water was for agriculture—189.30 mgd, or 76% of the total fresh surface water use in SJRWMD. Most surface water used was saline water, used primarily for thermoelectric power generation (1,649.20 mgd).

Brevard County had the largest total water use, at 1,319.94 mgd, and the highest total freshwater use, at 218.49 mgd.

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INTRODUCTION

Water use data have been published annually by the St. Johns River Water Management District (SJRWMD) since 1978. This report assesses water use in SJRWMD for 1996; it presents the total quantities of water used. The information is arranged by source (ground or surface), category of use, and county.

Water use covers all water withdrawals from ground or surface water sources and is expressed in million gallons per day (mgd). This unit, mgd, is based on the average annual water use (see glossary).

SJRWMD includes all or part of 19 counties in northeast Florida (Figure 1). The following counties are wholly or partly* included in SJRWMD:

Alachua*	AL	Nassau	NS
Baker*	BK	Okeechobee*	OK
Bradford*	BF	Orange*	OR
Brevard	BV	Osceola*	OS
Clay	CL	Polk*	PK
Duval	DU	Putnam*	PT
Flagler	FL	St. Johns	SJ
Indian River	IR	Seminole	SM
Lake*	LK	Volusia	VL
Marion*	MR		

SJRWMD covers 11,089 square miles, or 21% of the state (Floyd et al. 1997).

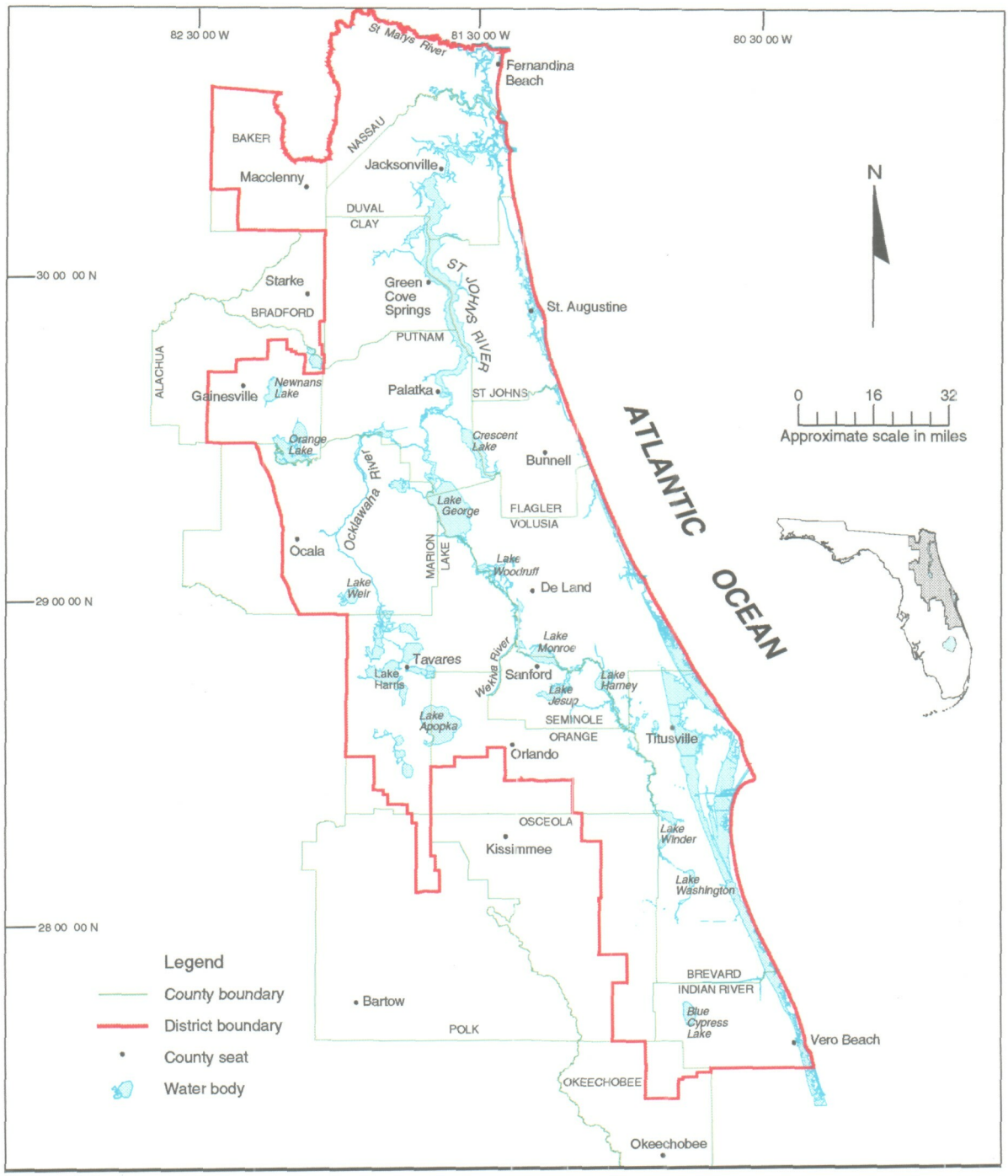

Figure 1. The St. Johns River Water Management District

WATER USE CATEGORIES

Water withdrawal information is reported for seven categories of use:

- Public supply
- Domestic self-supply
- Commercial/industrial use
- Agriculture
- Recreational and landscape irrigation
- Thermoelectric power generation
- Abandoned artesian wells

PUBLIC SUPPLY

The public supply category consists of water supplied by utilities to homes and industries. The reported amounts are a minimum, because some utilities report water withdrawals from the groundwater system as water enters the treatment plant and others report only the amount of water delivered from the plant, which can be less than the actual withdrawals. Utilities that serve 400 or more people or that withdraw more than 0.01 mgd from ground or surface water sources are included in the public supply category. Public supply water use data come from utility records and are estimated to the nearest 0.01 mgd.

In 1996, 289 public supply utilities served 3,057,402 people, or 86% of the total population in SJRWMD (Table 1 and appendix). Public supply population is defined as the permanent resident population served by the supplier. The rest of the population is assumed to use domestic self-supplied systems. County, city, and municipal population data are estimated from Florida Bureau of Economics and Business Research figures (University of Florida 1997a, 1997b). If none of these data are available, estimates are made either by multiplying the supplier's previous-year population by the yearly percent change in county population or by communicating with the supplier. Estimates can also be obtained from the data collected by the Florida Department of Environmental Protection (FDEP) (1997). To maintain consistency for each utility from year to year, the same data source is used to determine public supply population.

Table 1. Population in the St. Johns River Water Management District (SJRWMD) by county, 1996

County	County Population	SJRWMD Population	Percentage of County Population in SJRWMD	Public Supply Population	Domestic Self-Supply Population
Alachua	202,140	164,138	81.2	155,275	8,863
Baker	20,709	19,674	95.0	4,620	15,054
Bradford	24,983	1,874	7.5	472	1,402
Brevard	450,164	450,164	100.0	409,271	40,893
Clay	125,431	125,431	100.0	105,323	20,108
Duval	728,437	728,437	100.0	657,428	71,009
Flagler	39,052	39,052	100.0	27,756	11,296
Indian River	102,211	102,211	100.0	61,932	40,279
Lake	182,309	180,486	99.0	168,973	11,513
Marion	229,260	179,511	78.3	83,414	96,097
Nassau	51,097	51,097	100.0	26,715	24,382
Okeechobee	33,643	505	1.5	0	505
Orange	777,556	614,269	79.0	565,261	49,008
Osceola	139,724	3,214	2.3	0	3,214
Polk	452,707	4,527	1.0	1,679	2,848
Putnam	70,188	70,188	100.0	21,986	48,202
St. Johns	101,729	101,729	100.0	82,525	19,204
Seminole	329,031	329,031	100.0	296,074	32,957
Volusia	407,199	407,199	100.0	388,698	18,501
Total	4,467,669	3,572,737		3,057,402	515,335

Source: University of Florida 1997a.

Note: Total population for the state of Florida in 1996 was 14,411,563.

DOMESTIC SELF-SUPPLY

The domestic self-supply category includes water withdrawn from individual domestic wells or provided by utilities that serve fewer than 400 people. All domestic self-supplied water is assumed to be groundwater, and it is assumed that the wells are drilled into the easiest accessible aquifer that could produce potable water. Small utilities and domestic wells are not inventoried, so water use in this category is estimated from population and per capita water use figures.

Populations are based initially on the 1990 census data. SJRWMD follows watershed boundaries and not county boundaries; therefore,

some counties are only partially included in SJRWMD. SJRWMD population figures for those counties are based on estimated population percentages (Florence 1997).

Domestic self-supply water use is derived by (1) subtracting the number of people served by public supply systems from the water use population of the county to obtain a domestic self-supplied population and (2) multiplying the result by the county per capita water use. Per capita water use is derived by dividing the public supply water use by the population served by the public supply systems.

Commercial/Industrial Use

The commercial/industrial use category consists of the larger commercial and industrial users not served by public supply utilities. The commercial category includes businesses and institutions, such as government facilities, military installations, schools, prisons, and hospitals. The industrial category includes mining, processing, and manufacturing facilities; it does not include water used for power generation by thermoelectric power plants.

Only commercial/industrial facilities that use, on average, more than 0.01 mgd of ground or surface water were inventoried. Sixty industrial users and 75 commercial users, including 73 institutions, are included in this report of 1996 water use (see appendix). Of the commercial/industrial users, five users had an average water use in 1996 that was less than 0.01 mgd. Water used for transporting materials from the mine pit to the plant and for dewatering mine pits is considered conveyance and is not included in estimates of water use.

The data for this category are based on reported water use or permitted allowances. The data were collected using information from the consumptive use permits (CUPs) issued by SJRWMD to the facilities and from monthly operating reports received by SJRWMD, FDEP, or the Florida Department of Health and Rehabilitative Services (HRS). Industries not reporting to FDEP, HRS, or SJRWMD were contacted by SJRWMD staff.

AGRICULTURE

The agricultural water use category consists of estimated water withdrawals from ground and surface sources for crop irrigation. This water is not provided by public supply utilities. Estimates of the acreage planted in various crops are multiplied by estimates of the water necessary to irrigate those crops per acre. Nonirrigation water uses include water used for livestock and fish farming.

Water use for agricultural irrigation is assessed by crop, because crops have specific consumptive use requirements (USDA 1970). Thirty-one crop categories were assessed for 1996, and these are divided into four groups (Table 2):

- Vegetable crops
- Fruit crops
- Field crops
- Ornamentals and grasses

Table 2. Crops included in estimates of agricultural water use

Irrigation				Nonirrigation
Vegetable Crops	Fruit Crops	Field Crops	Ornamentals and Grasses	
Cabbage	Blueberries	Cotton	Ferns	Livestock
Carrots	Citrus	Field corn	Ornamentals (field grown)	Fish farming
Cucumbers	Grapes	Peanuts	Ornamentals (container grown)	Miscellaneous
Peppers	Peaches	Rice	Improved pasture	
Potatoes	Pecans	Sorghum	Sod	
Tomatoes	Strawberries	Soybeans		
Sweet Corn	Watermelons	Sugar cane		
Miscellaneous	Miscellaneous	Tobacco		
		Wheat		
		Miscellaneous		

Acreage data are supplied primarily by the Cooperative Extension Service of the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida, supplemented by information from SJRWMD. In

some instances, discrepancies exist between IFAS and SJRWMD crop acreage estimates (e.g., fern acreage in Volusia County and irrigated pasture acreage in Indian River and Brevard counties). IFAS figures have been used in the 1996 survey to maintain consistency with previous surveys.

The estimates of irrigation necessary for each crop acre are calculated using the modified Blaney-Criddle irrigation model (USDA 1970) and data from the SJRWMD Benchmark Farms irrigation monitoring project (Singleton 1997), supplemented by other information from the U.S. Department of Agriculture Soil Conservation Service (USDA 1970, 1982) and the National Oceanographic and Atmospheric Administration (NOAA 1996).

Recreational and Landscape Irrigation

Recreational irrigation includes water used to irrigate turf grass for golf courses; landscape irrigation includes water used to irrigate recreation areas other than golf courses. This water is not provided by public supply utilities. Prior to the 1992 *Annual Water Use Survey* report, turf grass irrigation was included in the agricultural water use category as "turf grass (golf)." In the 1992 survey (Florence 1995), the recreational irrigation category included turf grass used for golf and other purposes. Since 1992, recreational irrigation includes only turf grass for golf courses. Water used for recreational and landscape irrigation is assumed to be freshwater and does not include estimates of reclaimed water use.

The acreage data are supplied primarily by the Cooperative Extension Service of IFAS at the University of Florida, supplemented by information from the CUP files at SJRWMD. The estimates of irrigation necessary for the crop acreage are calculated using the modified Blaney-Criddle irrigation model (USDA 1970).

Thermoelectric Power Generation

The thermoelectric power generation category of water use consists of water used by power plants primarily for cooling. This water is not provided by public supply utilities. These figures are derived from information in the CUP files at SJRWMD or from data supplied by the power companies to SJRWMD, FDEP, or HRS in monthly operating

reports. In 1996, water use data were collected for 12 self-supplied thermoelectric power plants.

ABANDONED ARTESIAN WELLS

The abandoned artesian wells category consists of water flowing from abandoned artesian wells. According to available data, all abandoned artesian wells are supplied by the Floridan aquifer system. Water flowing from abandoned artesian wells is estimated based on an average of metered flow from monitored wells multiplied by an estimated number of wells. For counties where known flows exist, the average of the known flows in that county is used to estimate flow from the wells of unknown flow. For counties where no flows have been measured, the districtwide average for all wells of known flow is used. In 1996, the districtwide average for all wells of known flow was about 0.25 mgd per well (W. Curtis, SJRWMD, pers. com. 1999).

Prior to 1990, the estimated amount of water flowing from abandoned artesian wells was included in the miscellaneous category of water use along with other types of water use.

Abandoned artesian well reports are dated by the year in which the fiscal year ends (e.g., October 1995 through September 1996 data are included in the 1996 report).

1996 WATER USE BY SOURCE

Water in SJRWMD is withdrawn from both ground and surface water sources. Water quality from either source is defined as fresh, saline, or slightly saline (see glossary).

For the purposes of this report, freshwater (ground or surface) is defined as any water containing 1,000 milligrams per liter (mg/L) or less of total dissolved solids (TDS). Some of the surface water use recorded in this report is saline water. Saline water is defined as water with a TDS concentration of more than 3,000 mg/L.

TOTAL WATER USE

Total water use in 1996 was 3,027.07 mgd, of which 1,899.75 mgd came from surface water sources (fresh and saline) and 1,127.32 mgd came from groundwater sources (Table 3). These figures do not include reuse of reclaimed water. Over half the total water use was saline water (1,651.45 mgd); the remaining water use was freshwater (1,375.62 mgd).

The largest use of saline surface water was for thermoelectric power generation—1,649.20 mgd (Table 4), or nearly all of the total saline surface water use in SJRWMD.

The largest use of freshwater was for agriculture—502.57 mgd (Table 4), or 37% of the total freshwater. The second largest use of freshwater was for public supply—486.14 mgd, or 35% of the total freshwater use in SJRWMD.

SURFACE WATER

In 1996, surface water accounted for a total of 1,899.75 mgd of water use (Table 4). This use included water from both fresh and saline surface water sources. Thirteen percent (248.30 mgd) of the total surface water used in SJRWMD came from fresh surface water sources. The remaining 87% of surface water came from saline sources. All of the saline water discussed in this report came from surface water sources.

Table 3. Total 1996 water use by county, St. Johns River Water Management District (in million gallons per day)

County	Freshwater			Saline Water*	Total Water Use
	Ground	Surface	Total		
Alachua	31.83	0.16	31.99	0.00	31.99
Baker	5.54	0.94	6.48	0.00	6.48
Bradford	0.37	0.00	0.37	0.00	0.37
Brevard†	195.30	23.19	218.49	1,101.45	1,319.94
Clay	21.82	0.31	22.13	0.00	22.13
Duval	155.34	0.73	156.07	497.98	654.05
Flagler	13.31	1.42	14.73	0.00	14.73
Indian River	87.84	129.86	217.70	49.77	267.47
Lake	79.31	8.25	87.56	0.00	87.56
Marion	42.46	1.02	43.48	0.00	43.48
Nassau	47.19	0.19	47.38	2.25	49.63
Okeechobee	10.29	0.00	10.29	0.00	10.29
Orange‡	141.41	29.70	171.11	0.00	171.11
Osceola	5.70	8.25	13.95	0.00	13.95
Polk	2.46	0.17	2.63	0.00	2.63
Putnam	51.33	34.29	85.62	0.00	85.62
St. Johns	51.70	0.93	52.63	0.00	52.63
Seminole	81.06	1.10	82.16	0.00	82.16
Volusia	103.06	7.79	110.85	0.00	110.85
Total	1,127.32	248.30	1,375.62	1,651.45	3,027.07

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day [mgd]) or did not occur.

*Saline water is all from surface water sources.
†Includes 25.34 mgd withdrawn from Orange County for public supply use in Brevard County.
‡Does not include 25.34 mgd withdrawn for use in Brevard County. Does not include 37.81 mgd consumed in the South Florida Water Management District.

Table 4. Total 1996 water withdrawals by category, St. Johns River Water Management District (in million gallons per day)

Category	Freshwater			Saline Water*
	Ground	Surface	Total	
Public supply	475.07	11.07	486.14	0.00
Domestic self-supply	86.05	0.00	86.05	0.00
Commercial/industrial use	108.19	17.99	126.18	2.25
Agriculture	313.27	189.30	502.57	0.00
Recreational/landscape irrigation	28.20	12.23	40.43	0.00
Thermoelectric power generation	19.07	17.71	36.78	1,649.20
Abandoned artesian wells	97.47	0.00	97.47	0.00
Total	1,127.32	248.30	1,375.62	1,651.45

*Saline water is all from surface water sources.

Freshwater

The county using the most fresh surface water (129.86 mgd) was Indian River County (Table 3). Virtually all of this water was for agricultural irrigation (see appendix). Putnam County used 34.29 mgd of fresh surface water, about half of which was for commercial/industrial use. Combined water use in these two counties totaled 164.15 mgd, or 66% of the total fresh surface water use in SJRWMD in 1996.

The category with the highest fresh surface water use was agriculture, which accounted for 189.30 mgd (Table 4), or 76% (Figure 2) of the total fresh surface water use in SJRWMD. Fresh surface water use for commercial/industrial use accounted for 17.99 mgd, or 7% of the total. Thermoelectric power generation fresh surface water use accounted for 17.71 mgd, or 7% of the total fresh surface water use in SJRWMD. Fresh surface water withdrawn for recreational and landscape irrigation accounted for 12.23 mgd, or 5% of the total fresh surface water used. Fresh surface water withdrawn for public supply accounted for 11.07 mgd, or 4% of the total fresh surface water used.

Saline Water

Total saline water use in SJRWMD in 1996 was 1,651.45 mgd (Tables 3 and 4). Saline surface water is primarily used in SJRWMD for thermoelectric power generation or for commercial/industrial plant operation. Thermoelectric power plants use large amounts of saline water for cooling purposes. This saline water is recorded as a water use in this report even though nearly all of the cooling water is returned to its original source.

Brevard County had the highest saline surface water use—1,101.45 mgd (Table 3)—for thermoelectric power generation at two plants (see appendix):

- Florida Power and Light, Cape Canaveral (676.31 mgd)
- Orlando Utilities Commission, Indian River (425.14 mgd)

Duval County had the next highest saline surface water use—497.98 mgd (Table 3)—for thermoelectric power generation at two plants (see appendix):

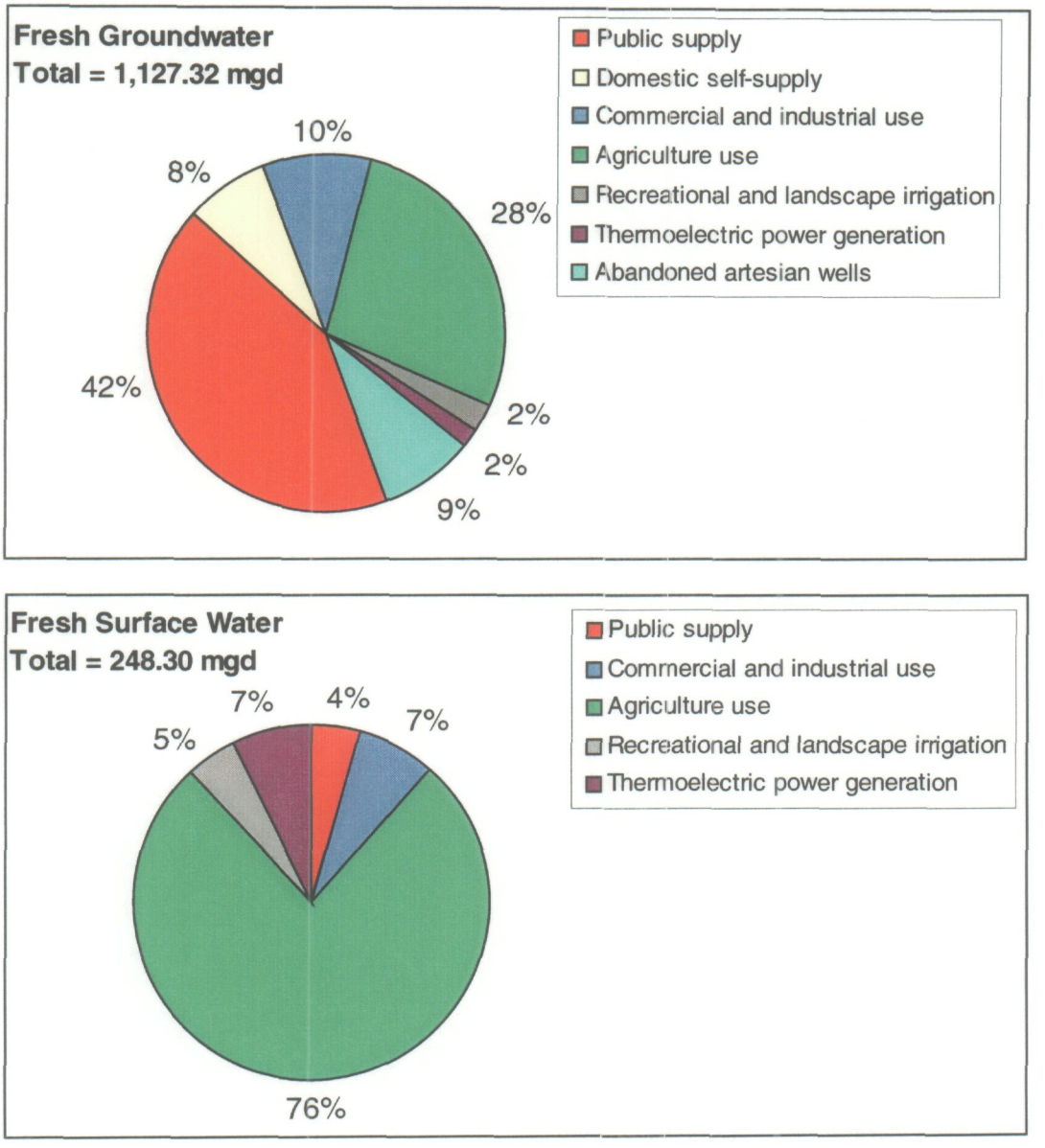

Figure 2. Total freshwater use, 1996. *Most of the freshwater used in the St. Johns River Water Management District came from groundwater sources. Surface water was used primarily for agricultural uses and thermoelectric power generation. (Note: Percentages may not equal 100 because of rounding.)*

- Jacksonville Electric Authority, Eastport Power Plant (447.58 mgd)
- St. Johns River Power Park (50.40 mgd)

Indian River County had a saline surface water use of 49.77 mgd at the Vero Beach Municipal Power Plant, and Nassau County had a saline water use of 2.25 mgd at the Rayonier paper mill (see appendix).

GROUNDWATER

There are three aquifer systems that yield groundwater in SJRWMD: the surficial, the intermediate, and the Floridan. Most groundwater used in SJRWMD comes from the Floridan aquifer system.

In 1996, groundwater accounted for a total of 1,127.32 mgd of water use (Table 3), or 82% of the total freshwater use in SJRWMD. Generally, almost all groundwater withdrawals are from freshwater sources.

The counties in SJRWMD where the most groundwater was used were Brevard (195.30 mgd), Duval (155.34 mgd), and Orange (141.41 mgd) (Table 3). These counties had a combined total of 492.05 mgd, or 44% of the total groundwater use in SJRWMD in 1996.

The category with the highest groundwater use in SJRWMD in 1996 was public supply, which accounted for 475.07 mgd (Table 4), or 42% of the total groundwater use (Figure 2). The category with the second highest groundwater use was agriculture, accounting for 313.27 mgd, or 28% of the total groundwater use. Commercial/industrial water use accounted for 108.19 mgd, or 10% of the total; abandoned artesian wells accounted for 97.47 mgd, or 9% of the total groundwater use; domestic self-supply water use accounted for 86.05 mgd, or 8% of the total; recreational and landscape irrigation accounted for 28.20 mgd, or 2% of the total; and thermoelectric power generation accounted for 19.07 mgd, or 2% of the total groundwater use.

1996 WATER USE BY CATEGORY

In the following five categories of water use, all of the water used is freshwater:

- Public supply
- Domestic self-supply
- Agriculture
- Recreational and landscape irrigation
- Abandoned artesian wells

In the following two categories of water use, both fresh and saline water are used:

- Commercial/industrial use
- Thermoelectric power generation

PUBLIC SUPPLY

The public supply category consists of water supplied by utilities to homes and industries. Total water use from ground and surface sources for public supply in 1996 was 486.14 mgd (Tables 4 and 5). All public supply water was freshwater, and most of the water supplied in 1996 (98%) was groundwater (Table 4). Fresh surface water (11.07 mgd) was used for public supply in Brevard County (see appendix). Of the groundwater used in SJRWMD for public supply, 89% was withdrawn from the Floridan aquifer system; the remaining 11% was withdrawn from the intermediate and surficial aquifer systems (SJRWMD 1992). The public supply category of groundwater use accounted for 42% of the total groundwater use in SJRWMD in 1996 (Figure 2).

The figures in this report for fresh groundwater use include a small amount of slightly saline groundwater that was treated by reverse osmosis or blended with freshwater for use in public supply systems.

Per Capita Use

The average per capita water use in SJRWMD in 1996, based on the population served by public supply, was 159 gallons per day (Table 5).

Table 5. Public supply and domestic self-supply water use in the St. Johns River Water Management District, 1996 (in million gallons per day [mgd])

County	Public Supply Population	Public Supply Water Use	Per Capita (gallons per day)	Domestic Self-Supply Population	Domestic Self-Supply Water Use
Alachua	155,275	22.70	146	8,863	1.29
Baker	4,620	0.75	162	15,054	2.44
Bradford	472	0.04	85	1,402	0.12
Brevard	409,271	53.57*	131	40,893	5.36
Clay	105,323	12.19	116	20,108	2.33
Duval	657,428	106.81	162	71,009	11.50
Flagler	27,756	4.50	162	11,296	1.83
Indian River	61,932	11.36	183	40,279	7.37
Lake	168,973	29.35	174	11,513	2.00
Marion	83,414	15.15	182	96,097	17.49
Nassau	26,715	5.01	188	24,382	4.58
Okeechobee	0	0.00	159†	505	0.08
Orange	565,261	108.66‡	192	49,008	9.41
Osceola	0	0.00	159†	3,214	0.51
Polk	1,679	0.26	155	2,848	0.44
Putnam	21,986	3.91	178	48,202	8.60
St. Johns	82,525	11.53	140	19,204	2.69
Seminole	296,074	50.76	171	32,957	5.64
Volusia	388,698	49.59	128	18,501	2.37
Total	3,057,402	486.14	159§	515,335	86.05**

*Includes 25.34 mgd withdrawn in Orange County.
†Districtwide per capita (see footnote "§").
‡Does not include 25.34 mgd withdrawn in Orange County for use in Brevard County.
§Represents average districtwide per capita based on counties for which per capita data were available.
**Total of the county domestic self-supply figures, not based on SJRWMD per capita.

This amount includes water used for residential as well as non-residential purposes.

Water Use by County

The counties with the largest public supply populations in SJRWMD—and consequently the counties with the largest public supply water use—are Duval County (657,428) and Orange County (565,261) (Table 5 and Figure 3). Together, these counties represent about 40% of the SJRWMD public supply water use population.

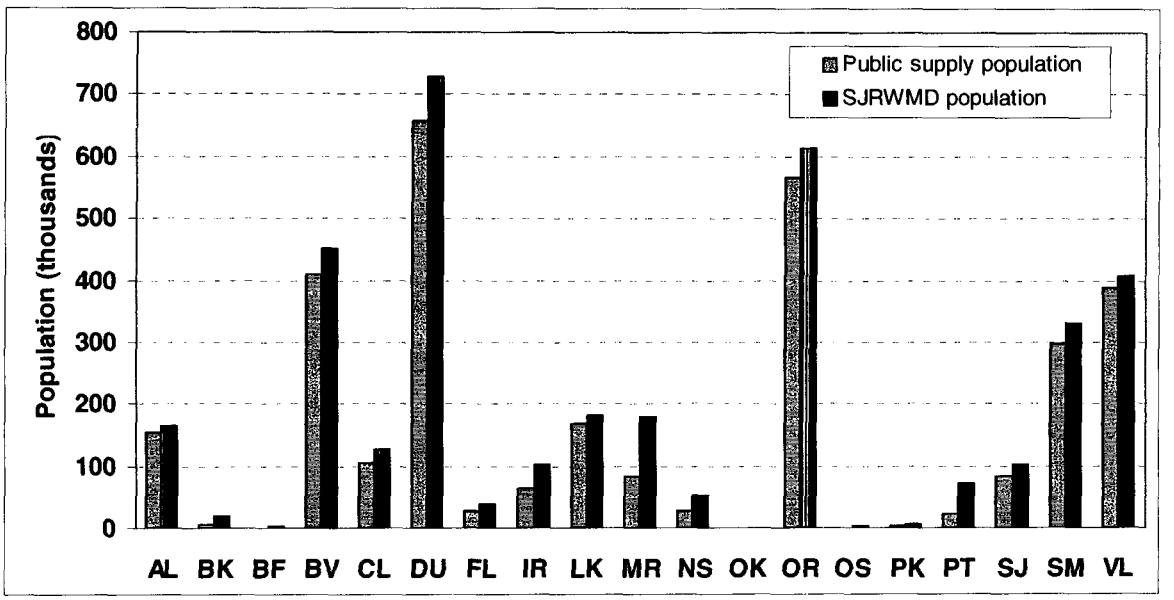

Figure 3. Population served by public supply in the St. Johns River Water Management District (SJRWMD), 1996. *Duval and Orange counties were the largest in population in SJRWMD. Okeechobee and Osceola counties did not have a public supply population in SJRWMD. (County abbreviations are listed on page 1.)*

Combined water use for public supply in Orange County (108.66 mgd) and Duval County (106.81 mgd) was 215.47 mgd, or 44% of the public supply water use in SJRWMD in 1996. Orange County falls within two water management districts; 37.81 mgd of public supply water withdrawn in Orange County was used in the South Florida Water Management District and therefore is not included in the totals in this report (see appendix). Also, some of the

water withdrawn in Orange County (25.34 mgd) was for the City of Cocoa public supply system in Brevard County (Table 5).

The City of Jacksonville (Duval County), which has the largest public supply utility in SJRWMD, supplied its 488,377 customers with 80.84 mgd of fresh groundwater in 1996 (see appendix).

Domestic Self-Supply

In 1996, an estimated 515,335 people used 86.05 mgd of domestic self-supplied water (Tables 4 and 5), or 8% of the total fresh groundwater use in SJRWMD (Figure 2). All of the domestic self-supplied water was assumed to be groundwater.

Marion County had the largest self-supplied population—96,097 people (Tables 1 and 5). Duval County had the second largest, with 71,009 people, followed by Orange County, with 49,008 people.

Commercial/Industrial Use

The total freshwater use in the commercial/industrial use category was 126.18 mgd (Tables 4 and 6), or 9% of the total freshwater use in SJRWMD. Of this total, 108.19 mgd was groundwater and 17.99 mgd was fresh surface water. In addition, 2.25 mgd of saline water was used in this category.

Most of the water withdrawn for commercial/industrial purposes supplied the pulp and paper industries in Putnam, Nassau, and Duval counties. In 1996, water use for pulp and paper production included 68.10 mgd of fresh groundwater, 15.50 mgd of fresh surface water, and 2.25 mgd of saline surface water (see appendix). The second largest water user in this category was the mining industry, which accounted for 13.71 mgd of fresh groundwater and 2.49 mgd of fresh surface water. Together, pulp and paper production and mining accounted for 99.8 mgd of freshwater, or 79% of the commercial/industrial freshwater use in SJRWMD.

The largest amount of freshwater used for commercial/industrial purposes (37.62 mgd) was in Putnam County (Table 6). Nassau County (35.73 mgd) and Duval County (24.15 mgd) also had significant amounts of freshwater use in this category. Of the total freshwater used for commercial/industrial purposes in SJRWMD, 77% (97.50 mgd) was used in these three counties.

Table 6. Commercial/industrial water use in the St. Johns River Water Management District, 1996 (in million gallons per day)

County	Freshwater			Saline Water*
	Ground	Surface†	Total	
Alachua	1.91	0.00	1.91	0.00
Baker	0.19	0.00	0.19	0.00
Bradford	0.00	0.00	0.00	0.00
Brevard	1.75	0.00	1.75	0.00
Clay	5.02	0.00	5.02	0.00
Duval	24.15	0.00	24.15	0.00
Flagler	0.07	0.00	0.07	0.00
Indian River	0.14	0.00	0.14	0.00
Lake	8.51	0.73	9.24	0.00
Marion	1.76	0.00	1.76	0.00
Nassau	35.73	0.00	35.73	2.25
Okeechobee	0.03	0.00	0.03	0.00
Orange	3.15	0.00	3.15	0.00
Osceola	0.00	0.00	0.00	0.00
Polk	0.02	0.00	0.02	0.00
Putnam	20.36	17.26	37.62	0.00
St. Johns	0.05	0.00	0.05	0.00
Seminole	0.15	0.00	0.15	0.00
Volusia	5.20	0.00	5.20	0.00
Total	108.19	17.99	126.18	2.25

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

*Saline water is all from surface water sources.
†Does not include water used in mining for dewatering and transport.

AGRICULTURE

Almost all the water used for agricultural irrigation in SJRWMD was freshwater. Information from the CUP files at SJRWMD indicates that a small but undetermined amount of moderately saline water (TDS >1,000 but <3,000 mg/L) was used for agricultural irrigation in Indian River County. Total freshwater use for agriculture was estimated at 502.57 mgd, or 37% of the total freshwater use in SJRWMD in 1996 (Tables 4 and 7). Of this total, 313.27 mgd, or 62% of the total water used for agriculture, was groundwater. Most groundwater used for agricultural irrigation was assumed to come from the Upper and Lower Floridan aquifers.

Table 7. Agricultural water use in the St. Johns River Water Management District, 1996 (in million gallons per day)

County	Freshwater			Acreage	
	Ground	Surface	Total	Farmed	Irrigated
Alachua	4.16	0.07	4.23	37,980	5,075
Baker	1.99	0.94	2.93	14,699	571
Bradford	0.11	0.00	0.11	150	150
Brevard	96.61	9.33	105.94	129,210	86,670
Clay	1.12	0.00	1.12	44,040	798
Duval	1.09	0.08	1.17	13,250	1,402
Flagler	6.66	0.00	6.66	23,205	5,740
Indian River	49.80	128.56	178.36	134,489	94,978
Lake	37.21	6.48	43.69	77,877	24,400
Marion	4.27	0.46	4.73	71,266	5,090
Nassau	0.18	0.00	0.18	6,693	175
Okeechobee	10.18	0.00	10.18	34,785	7,785
Orange	14.64	29.14	43.78	68,076	29,830
Osceola	5.19	8.25	13.44	126,974	12,354
Polk	1.74	0.17	1.91	1,060	1,060
Putnam	16.14	1.12	17.26	51,740	9,590
St. Johns	28.24	0.00	28.24	31,780	27,280
Seminole	6.25	0.21	6.46	10,564	4,011
Volusia	27.69	4.49	32.18	13,238	11,956
Total	313.27	189.30	502.57	891,076	328,915

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

Water Use by County

The largest water use for agricultural irrigation occurred in Indian River County—178.36 mgd of freshwater (Table 7), or 35% of the agricultural water use in SJRWMD. Most of this amount, 128.56 mgd, was fresh surface water. The second largest water use for agriculture was in Brevard County—105.94 mgd, most of which was groundwater. The combined water use in these two counties was 284.30 mgd, or 57% of the total agriculture water use in SJRWMD in 1996.

Water Use by Acreage and Crop

An estimated 891,076 acres were farmed in SJRWMD in 1996, of which 328,915 acres were irrigated (Table 7). Of the total acreage

irrigated, 231,548 acres were irrigated by flood systems, 56,967 acres were irrigated by low-pressure/low-volume systems, and 40,400 acres were irrigated by sprinkler systems (see appendix). The amount of irrigated acres decreased from 332,203 acres in 1995 (not including turf grass [golf])—a net decrease of 3,288 acres (Florence 1997).

The largest water use for a crop type was for fruit crops, which accounted for 47% of the agricultural water use (Figure 4). The largest water use for a single crop was for citrus irrigation, which accounted for 233.31 mgd, or 46% of the agricultural water use in SJRWMD (see appendix). Irrigation of improved pastureland accounted for 111.15 mgd, or 22% of the agricultural water use. Fern water use was 32.70 mgd, which includes water use for freeze protection. Water used for nonirrigation in SJRWMD totaled 8.22 mgd, or 2% of the agricultural water use in SJRWMD. Livestock used 6.36 mgd, and fish farming used 1.86 mgd. Brevard County used 5.11 mgd, the largest amount for livestock in SJRWMD, and Putnam County used 1.46 mgd, the largest amount for fish farming. These figures were obtained from the CUP database at SJRWMD and are the permitted amounts for 1996.

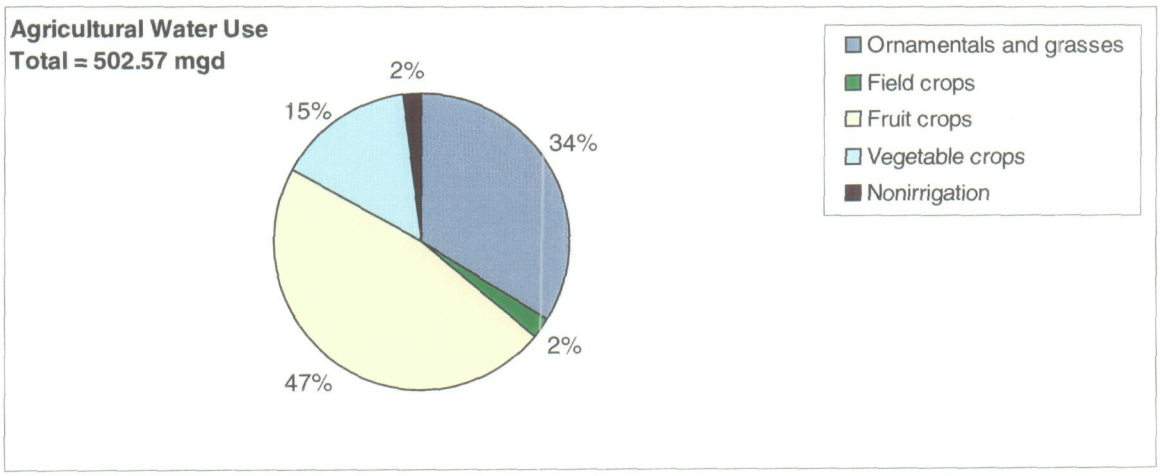

Figure 4. Water use in the St. Johns River Water Management District for four crop types, 1996. *Fruit crops accounted for 47% of agricultural water use in 1996.*

RECREATIONAL AND LANDSCAPE IRRIGATION

Water used in the recreational and landscape irrigation category totaled 40.43 mgd, or about 3% of the total freshwater use in SJRWMD (Tables 4 and 8). Of this amount, 28.20 mgd was groundwater. Golf course irrigation accounted for 86% (34.57 mgd) of total water used in this category (see appendix).

The largest water use for recreational and landscape irrigation occurred in Brevard County—6.08 mgd (Table 8). The second largest water use was in Volusia County—5.78 mgd.

Table 8. Recreational and landscape irrigation water use in the St. Johns River Water Management District, 1996 (in million gallons per day)

County	Freshwater			Total	Irrigated
	Ground	Surface	Total	Acreage	Acreage
Alachua	1.58	0.09	1.67	886	734
Baker	0.17	0.00	0.17	124	60
Bradford	0.10	0.00	0.10	50	40
Brevard	3.29	2.79	6.08	2,550	2,125
Clay	0.86	0.31	1.17	676	526
Duval	2.97	0.65	3.62	3,142	1,563
Flagler	0.18	1.42	1.60	512	512
Indian River	2.42	1.30	3.72	1,691	1,330
Lake	1.48	1.04	2.52	1,711	889
Marion	0.96	0.56	1.52	1,583	583
Nassau	1.29	0.19	1.48	713	595
Okeechobee	0.00	0.00	0.00	0	0
Orange	2.91	0.56	3.47	1,915	1,320
Osceola	0.00	0.00	0.00	0	0
Polk	0.00	0.00	0.00	0	0
Putnam	0.32	0.00	0.32	221	101
St. Johns	1.65	0.93	2.58	1,212	1,031
Seminole	3.74	0.89	4.63	3,011	1,814
Volusia	4.28	1.50	5.78	3,445	2,245
Total	28.20	12.23	40.43	23,442	15,468

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

Approximately 15,468 of 23,442 acres were irrigated using sprinkler systems (see appendix).

THERMOELECTRIC POWER GENERATION

Total water use for the 12 self-supplied power plants accounted for 1,649.20 mgd of saline surface water, 17.71 mgd of fresh surface water, and 19.07 mgd of fresh groundwater (Tables 4 and 9). The largest amount of saline water used for thermoelectric power generation was in Brevard County—1,101.45 mgd. The largest amount of freshwater used was in Putnam County—16.46 mgd.

Table 9. Thermoelectric power generation water use in the St. Johns River Water Management District, 1996 (in million gallons per day)

County	Freshwater			Saline Water*
	Ground	Surface	Total	
Alachua	0.19	0.00	0.19	0.00
Baker	0.00	0.00	0.00	0.00
Bradford	0.00	0.00	0.00	0.00
Brevard	0.33	0.00	0.33	1,101.45
Clay	0.00	0.00	0.00	0.00
Duval	4.54	0.00	4.54	497.98
Flagler	0.00	0.00	0.00	0.00
Indian River	0.00	0.00	0.00	49.77
Lake	0.00	0.00	0.00	0.00
Marion	0.00	0.00	0.00	0.00
Nassau	0.00	0.00	0.00	0.00
Okeechobee	0.00	0.00	0.00	0.00
Orange	0.72	0.00	0.72	0.00
Osceola	0.00	0.00	0.00	0.00
Polk	0.00	0.00	0.00	0.00
Putnam	0.55	15.91	16.46	0.00
St. Johns	0.00	0.00	0.00	0.00
Seminole	0.00	0.00	0.00	0.00
Volusia	12.74	1.80	14.54	0.00
Total	19.07	17.71	36.78	1,649.20

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

*Saline water is all from surface water sources.

ABANDONED ARTESIAN WELLS

Water flowing from 514 abandoned artesian wells totaled an estimated 97.47 mgd in SJRWMD (Tables 4 and 10). The total known flow for 60 wells was 13.10 mgd. The estimated flow from 454 wells of unknown flow was 84.37 mgd. All water was fresh groundwater (W. Curtis, SJRWMD, pers. com. 1999).

Table 10. Estimated flow from abandoned artesian wells in the St. Johns River Water Management District, 1996 (in million gallons per day)

County	Number of Wells of Known Flow	Known Flow	Number of Wells of Unknown Flow	Estimated Flow	Total Estimated Flow
Alachua	0	0.00	0	0.00	0.00
Baker	0	0.00	0	0.00	0.00
Bradford	0	0.00	0	0.00	0.00
Brevard	18	9.08	129	36.38	45.46
Clay	0	0.00	2	0.30	0.30
Duval	0	0.00	11	4.28	4.28
Flagler	0	0.00	2	0.07	0.07
Indian River	5	2.27	33	14.48	16.75
Lake	1	0.19	12	0.57	0.76
Marion	0	0.00	13	2.83	2.83
Nassau	0	0.00	5	0.40	0.40
Okeechobee	0	0.00	0	0.00	0.00
Orange	0	0.00	30	1.92	1.92
Osceola	0	0.00	0	0.00	0.00
Polk	0	0.00	0	0.00	0.00
Putnam	4	0.30	21	1.15	1.45
St. Johns	3	0.37	25	7.17	7.54
Seminole	25	0.76	158	13.76	14.52
Volusia	4	0.13	13	1.06	1.19
Total	60	13.10	454	84.37	97.47

Source: W. Curtis, St. Johns River Water Management District, pers. com. 1999.

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day) or did not occur.

SJRWMD began its Abandoned Artesian Well Plugging Program in 1976. As of 1996, 2,648 abandoned artesian wells had been identified, of which 1,221 wells had been plugged or repaired by

SJRWMD, 913 had been plugged or repaired by the well owners, and 514 were still flowing (W. Curtis, SJRWMD, pers. com. 1999). From October 1, 1995, to September 30, 1996, an estimated 31.48 mgd of freshwater had been saved as a result of properly plugging or abandoning wells. As of September 1996, a total estimated 293.71 mgd of freshwater had been saved as a result of properly plugging or abandoning wells.

TRENDS

1987 TO 1996

The 10-year (yr) period from 1987 to 1996 shows no significant trend in total freshwater use, despite a 22% increase in SJRWMD population between 1987 and 1996 (Figure 5 and Table 11). A 21% average increase in public supply water use has been offset by a 7% average decrease in agricultural and recreational water use and a 13% average decrease in commercial/industrial water use. However, neither the increase nor the decreases are consistent; in any one year, total water use may increase or decrease depending on climatic conditions. No comparable trend analysis was performed for saline water use.

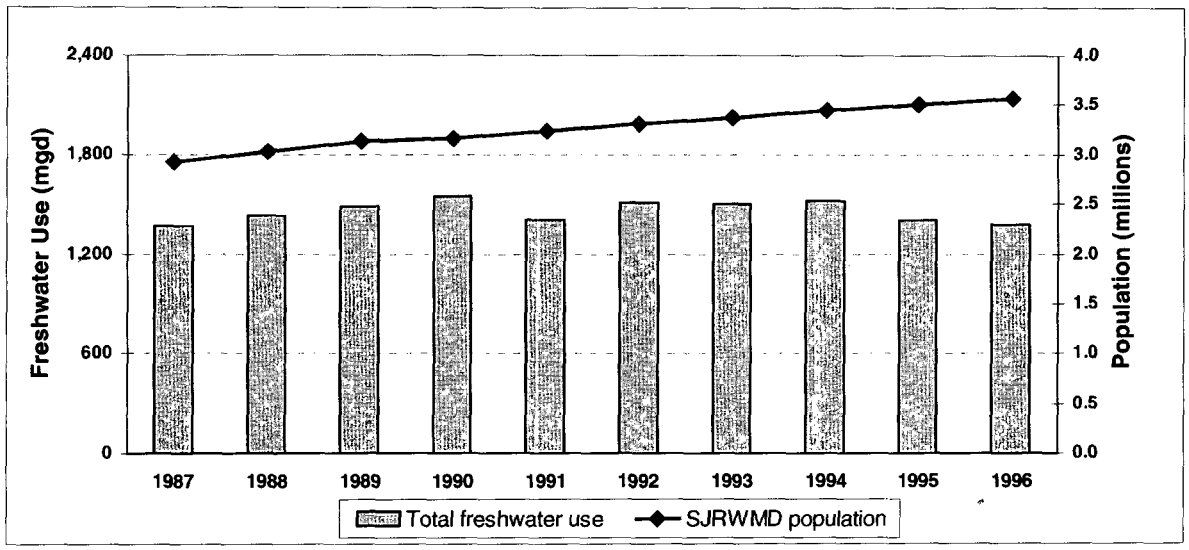

Figure 5. Population and freshwater use in the St. Johns River Water Management District (SJRWMD), 1987–96. *Water use has remained constant, changing only slightly from year to year, while population has increased gradually.*

The normal yearly rainfall for the period 1961–90 is 49.84 inches (in.) (SJRWMD 1997). The average rainfall of 51.75 in. for the 10-yr period 1987–96 (Table 12) is nearly 4% above normal and in 1996 was 4% above

Table 11. Population and freshwater use (in million gallons per day) in the St. Johns River Water Management District (SJRWMD), 1987–96

Category	1987	1988	1989*	1990	1991	1992	1993	1994	1995	1996	10-Year Average
Population											
SJRWMD population	2,919,028	3,023,277	3,135,756	3,166,715	3,243,380	3,313,721	3,375,486	3,439,716	3,506,188	3,572,737	NA
Public supply population	2,403,847	2,498,520	2,598,404	2,665,791	2,700,294	2,785,107	2,858,527	2,889,409	2,939,130	3,057,402	NA
Domestic self-supply population	515,181	521,607	537,352	500,924	543,086	528,614	516,959	550,307	567,058	515,335	NA
Public supply per capita	167	164	166	167	153	152	154	150	157	159	NA
Water Use by Source											
Fresh groundwater	1,012.03	1,054.55	1,119.32	1,085.97	1,027.22	1,042.67	1,099.52	1,117.59	1,073.93	1,127.32	1,076.01
Fresh surface water	353.47	379.15	360.47	459.00	373.41	469.22	404.15	403.62	330.40	248.30	378.12
Total freshwater	1,365.50	1,433.70	1,479.79	1,544.97	1,400.63	1,511.89	1,503.67	1,521.21	1,404.33	1,375.62	1,454.13
Water Use by Category											
Public supply	400.39	409.29	431.12	444.14	414.15	424.63	440.86	434.06	461.80	486.14	434.66
Domestic self-supply	85.71	86.73	90.24	83.86	84.51	84.92	82.20	85.35	93.42	86.05	86.30
Commercial/industrial	145.67	150.11	148.66	137.65	144.24	148.20	133.74	125.87	131.64	126.18	139.20
Agriculture†	581.24	630.92	600.09	605.31	561.12	642.04	607.18	607.56	519.25	543.00	589.77
Thermoelectric power generation	134.37	135.78	137.11	213.31	139.99	136.43	136.96	142.37	92.46	36.78	130.56
Abandoned artesian wells	18.12	20.87	56.60	60.70	56.62	75.67	102.73	126.00	105.76	97.47	72.05

Source: Marella 1990; Florence 1990, 1991, 1992, 1994, 1995, 1996a, 1996b, 1997; W. Curtis, SJRWMD, pers. com. 1999.

Note: Over the years, some of the methods for determining water use have changed. Check each source before making any detailed comparisons.

NA = not applicable

*Abandoned artesian well data came from Steele (pers. com. 1992); the sum of water use by category will not match the total by source.

†In 1992, recreational irrigation water use became a separate category; it had previously been included under agricultural irrigation. For this table, the 1996 quantity is a sum of both categories.

Table 12. Average annual rainfall from ten rainfall stations in the St. Johns River Water Management District, 1987–96 (in inches)

Station	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average
Clermont	52.92	58.89	49.89	44.58	43.34	53.78	38.63	65.47	52.90	46.93	50.73
Daytona Beach	45.72	40.91	44.65	36.12	67.19	46.41	35.71	66.64	52.88	56.26	49.25
Titusville	50.32	59.80	45.62	47.24	73.20	58.84	40.18	74.20	49.95	64.29	56.36
Glen St. Mary	53.97	59.00	43.10	31.61	74.16	61.82	53.43	53.08	49.03	43.00	52.22
Gainesville Airport	46.63	61.21	46.38	47.56	57.00	51.65	42.42	50.12	51.73	51.16	50.59
Jacksonville Airport	43.39	60.68	51.45	31.20	79.63	63.18	50.12	67.30	48.57	58.24	55.38
Melbourne Airport	50.38	36.11	43.00	48.00	58.58	49.36	33.90	79.13	70.56	49.65	51.87
Ocala	50.58	55.23	51.88	33.94	48.86	45.07	40.78	55.80	58.04	52.11	49.23
Orlando Airport	56.79	52.49	45.66	31.68	60.90	52.96	42.23	67.93	42.10	55.24	50.80
Sanford	46.23	60.00	40.65	36.59	69.28	68.88	34.49	35.49	59.32	59.58	51.05
Average	49.69	54.43	46.23	38.85	63.21	55.20	41.19	61.52	53.51	53.65	51.75

Source: Florence 1997; NOAA 1996; AWIS 1997.

the 10-yr average. The average total freshwater use for this 10-yr period is 1,454.13 mgd. The highest total water use occurred in 1990, at 1,544.97 mgd, 6% above the 10-yr average. That year was the driest year of the period, with an average of 38.85 in. of rainfall, or 22% below normal and 25% below the 10-yr average.

The year 1991 was the wettest year during the period, with an average rainfall of 63.21 in. (Table 12), or 27% above normal and 22% above the 10-yr average. The lowest amount of freshwater use occurred in 1987, at 1,365.50 mgd, or 6% below the 10-yr average.

Public supply water use increased most rapidly from 1987 to 1990, after which the rate of increase began to level off until 1995 when the demand began to increase again (Figure 6 and Table 11). Water use for this category was highest in 1996 (486.14 mgd) and lowest in 1987 (400.39 mgd). The average for this 10-yr period is 434.66 mgd; water use in 1996 was 12% above the average. Districtwide per capita use for 1991 to 1996 ranged from 150 to 159 gallons per day, whereas the average annual use between 1987 and 1990 ranged from 164 to 167 gallons per day.

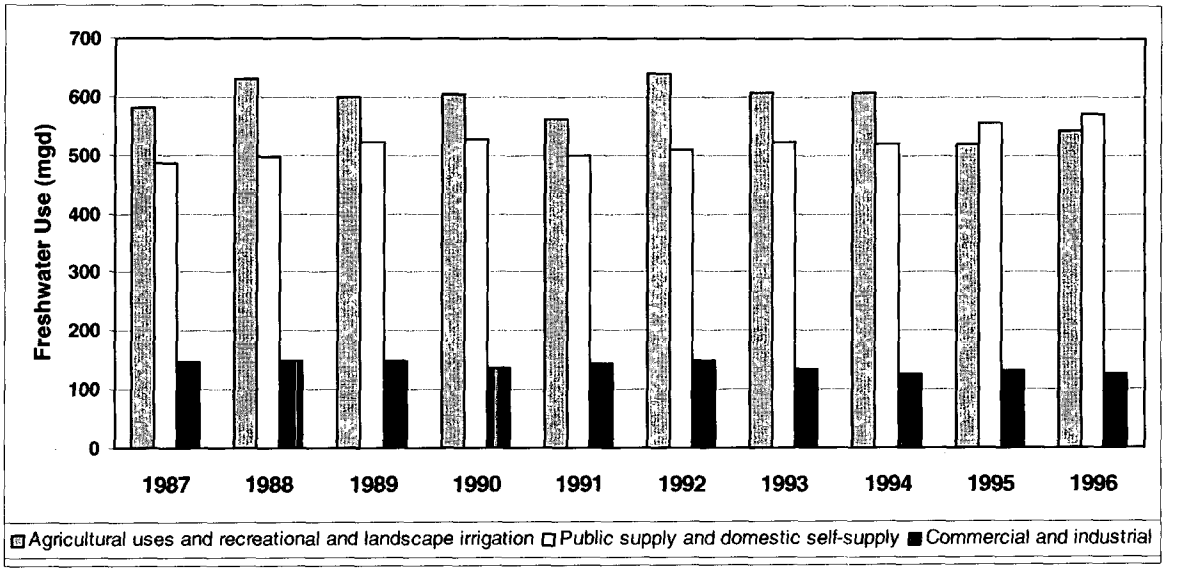

Figure 6. Freshwater use in the St. Johns River Water Management District by category, 1987–96

Domestic self-supply water use has fluctuated over the 10-yr period between a low of 82.20 mgd (1993) and a high of 93.42 mgd (1995) (Table 11). The average for this 10-yr period is 86.30 mgd; water use in 1996 was less than 1% below the average.

Commercial/industrial water use has remained relatively constant, with an overall average decline of 13% between 1987 and 1996 (Figure 6 and Table 11). Water use for this category was highest in 1988 (150.11 mgd)

and lowest in 1994 (125.87 mgd). The average for this 10-yr period is 139.20 mgd; water use in 1996 was 9% below the average.

Between 1987 and 1996, the combined agricultural and recreational (turf grass) irrigation water use had an overall average decline of 7% between 1987 and 1996; however, this decline was not steady or constant (Figure 6 and Table 11). Water use for this category was highest in 1992 (642.04 mgd) and lowest in 1995 (519.25 mgd). The average for this 10-yr period is 589.77 mgd; water use in 1996 for this category was 8% below the average.

For thermoelectric power generation and abandoned artesian wells, either data over the 10-yr period are incomplete or the methods for determining water use have varied. Therefore, comparisons of data for these categories are inappropriate.

1995 TO 1996

From 1995 to 1996, total freshwater use in SJRWMD decreased from 1,404.33 mgd to 1,375.62 mgd, or about 2% (Table 11). Fresh groundwater use increased from 1,073.93 mgd in 1995 to 1,127.32 mgd in 1996, or 5%. Fresh surface water use decreased from 330.40 mgd in 1995 to 248.30 mgd in 1996, or 25%. Saline surface water use decreased from 1,828.24 mgd in 1995 to 1,651.45 mgd in 1996, or 10% (Table 4; Florence 1997).

Three categories of freshwater use increased from 1995 to 1996:

- Public supply freshwater use increased 5%, from 461.80 mgd in 1995 to 486.14 mgd in 1996 (Table 11). This increase can be attributed primarily to population growth during the year.

- Agricultural freshwater use increased about 1%, from 496.34 mgd in 1995 to 502.57 mgd in 1996 (Table 4; Florence 1997).

- Recreational and landscape irrigation freshwater use increased 76%, from 22.91 mgd in 1995 to 40.43 mgd in 1996 (Table 4; Florence 1997).

Four categories of freshwater use decreased from 1995 to 1996 (Table 11):

- Thermoelectric power generation freshwater use decreased 60%, from 92.46 mgd in 1995 to 36.78 mgd in 1996.

- Abandoned artesian well estimated flows decreased 8%, from 105.76 mgd in 1995 to 97.47 mgd in 1996.

- Domestic self-supply freshwater use decreased 8%, from 93.42 mgd in 1995 to 86.05 mgd in 1996.

- Commercial/industrial freshwater use decreased 4%, from 131.64 mgd in 1995 to 126.18 mgd in 1996. Saline surface water withdrawals, however, remained unchanged—2.25 mgd in 1995 and 1996 (Table 4; Florence 1997).

SEASONAL TRENDS

Seasonal trends were evaluated based on the monthly totals. The monthly totals for each water use category were summed and divided by 366 days (leap year) to get an average value in million gallons per day.

In 1996, total freshwater use was highest in April (Figure 7 and Table 13). Monthly trends in total water use follow the trends in agricultural water use, which depend on rainfall and growing season. March, April, and May tend to be both Florida's dry season and peak crop irrigation months, so irrigation demand usually increases during these months (Figure 8). In 1996, the peak agricultural water use continued through the month of May (Figure 7). Demand for residential lawn irrigation also tends to increase during these months, generating an increase in public supply water use.

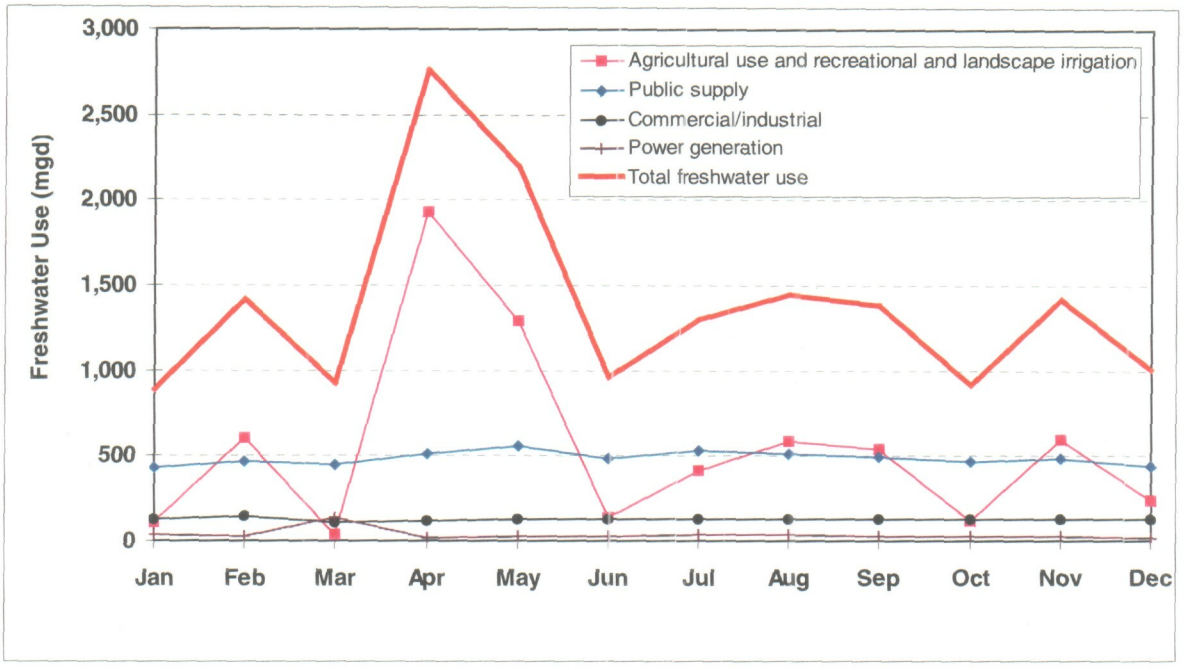

Figure 7. Total monthly freshwater use and freshwater use by category in the St. Johns River Water Management District, 1996. *Total monthly fluctuations in water use followed the fluctuations in agricultural irrigation. Note: Total freshwater use includes domestic self-supply and abandoned artesian well water uses, which are not individually graphed because of their low values.*

Public Supply

Public supply water use in SJRWMD in 1996 fluctuated from a low of 426.77 mgd in January to a high of 561.88 mgd in May (Figures 7 and 9 and Table 14). Typically, water use increases during the warm season (April through October), when outdoor residential use is at a high. The enclosed diskette (see pocket) provides a table showing monthly public supply water use by utility.

Commercial/Industrial Use

Commercial/industrial freshwater use in SJRWMD in 1996 varied from a low of 113.99 mgd in March to a high of 132.35 mgd in August (Figures 7 and 10 and Table 15). The enclosed diskette (see pocket)

Table 13. Total monthly freshwater use by county, 1996 (in million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Alachua	24.53	28.57	24.62	47.48	54.08	30.62	30.74	29.68	32.83	26.11	28.65	23.24	31.76
Baker	3.76	3.84	3.71	5.54	6.52	6.17	7.09	3.91	4.89	3.33	4.76	3.83	4.78
Bradford	0.24	0.43	0.18	0.94	0.63	0.31	0.26	0.26	0.47	0.25	0.28	0.22	0.37
Brevard	106.02	137.28	106.18	791.28	626.35	116.51	152.69	139.34	135.83	107.54	132.71	116.31	222.34
Clay	18.30	20.83	18.49	26.26	33.75	20.93	24.01	22.68	20.96	18.57	21.10	17.70	21.97
Duval	138.27	148.46	140.66	162.52	187.32	158.46	174.17	167.44	160.47	147.62	153.10	144.42	156.91
Flagler	7.86	13.22	7.16	29.42	29.67	12.54	10.54	8.42	17.64	6.85	16.88	6.93	13.93
Indian River	36.75	277.40	35.55	564.89	207.34	38.89	145.40	487.11	381.28	36.11	383.46	144.11	228.19
Lake	40.46	66.92	37.61	121.02	144.76	73.60	127.91	67.12	103.25	100.72	104.50	63.03	87.58
Marion	34.68	41.63	35.49	56.86	60.64	49.00	41.81	39.52	43.62	40.17	42.37	36.47	43.52
Nassau	45.59	46.44	40.21	45.33	51.69	51.60	49.03	50.28	47.68	45.94	47.91	45.82	47.29
Okeechobee	0.11	14.15	0.11	37.23	10.78	0.11	4.79	23.54	18.82	0.10	18.82	4.78	11.11
Orange	111.13	163.24	114.56	309.92	256.70	163.92	202.98	129.13	135.62	143.65	178.67	142.35	170.99
Osceola	0.51	2.40	0.51	73.73	73.73	0.51	6.65	2.40	2.40	4.75	4.75	2.40	14.56
Polk	0.58	1.80	0.70	5.01	6.05	0.77	4.04	1.98	1.99	1.96	3.99	1.72	2.55
Putnam	84.85	101.92	71.04	105.17	105.76	76.41	81.36	74.54	78.42	69.33	70.39	75.16	82.86
St. Johns	21.34	88.06	21.87	166.92	119.84	27.28	33.37	26.07	29.29	20.24	30.47	22.09	50.57
Seminole	63.90	80.82	66.17	102.27	103.18	68.57	98.09	87.43	79.83	72.48	93.10	68.61	82.04
Volusia	144.25	159.47	199.62	111.55	114.99	68.54	99.72	82.75	81.96	69.45	84.14	91.23	108.97
Total	883.13	1,396.88	924.44	2,763.34	2,193.78	964.74	1,294.65	1,443.60	1,377.25	915.17	1,420.05	1,010.42	1,382.29

Note: Total includes all categories of water use.

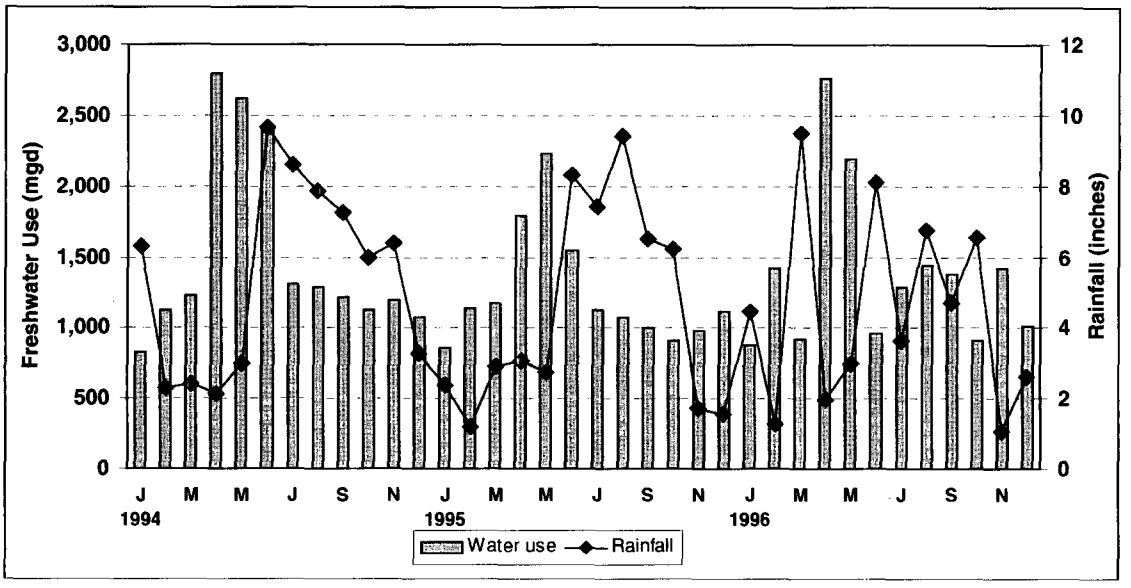

Figure 8. Total monthly freshwater use and average rainfall in the St. Johns River Water Management District, 1994–96. *Water use was usually higher during periods of low rainfall.*

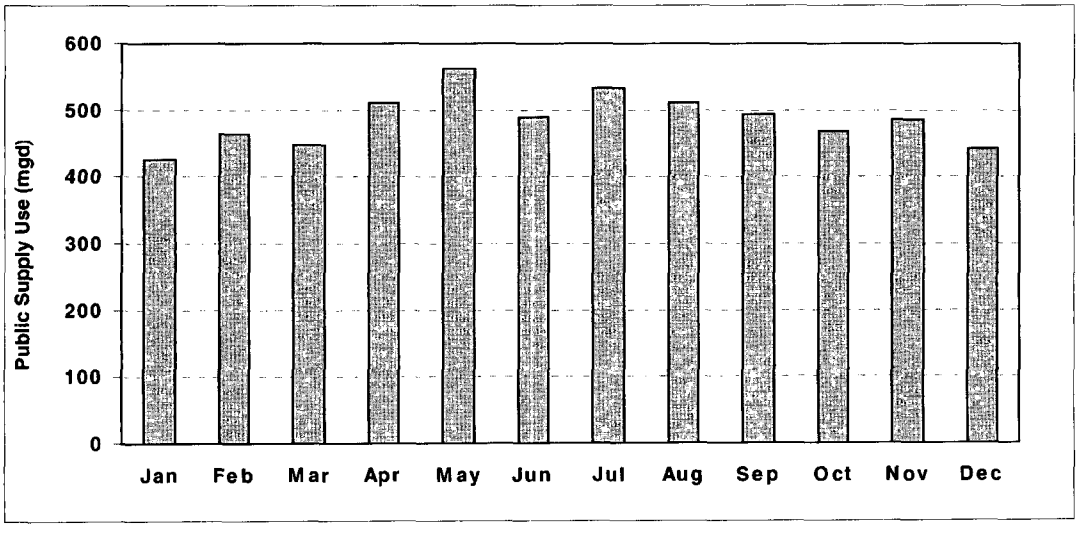

Figure 9. Monthly freshwater use for public supply in the St. Johns River Water Management District, 1996. Water use increases when outdoor residential use is high, typically during the warmer months of the year.

Table 14. Monthly public supply water use by county, 1996 (in million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	20.33	21.73	20.87	24.30	27.06	23.25	25.00	23.90	23.02	21.56	21.86	19.61
Baker	0.66	0.74	0.64	0.74	0.91	0.74	0.80	0.79	0.82	0.72	0.69	0.71
Bradford	0.03	0.04	0.03	0.06	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.07
Brevard	51.28	53.17	52.97	54.38	55.55	55.90	58.34	55.89	52.51	52.56	51.83	48.43
Clay	9.96	11.19	10.64	13.56	16.45	12.76	14.00	12.81	12.70	11.20	11.14	9.89
Duval	93.27	99.38	95.55	109.26	125.02	111.10	119.57	115.81	112.25	102.15	102.26	95.64
Flagler	3.82	4.27	4.71	4.41	4.92	4.20	4.80	4.90	4.59	4.41	4.65	4.16
Indian River	10.89	12.50	11.15	13.03	10.77	11.83	10.21	10.70	11.50	10.43	12.36	11.11
Lake	23.54	27.18	25.10	30.51	34.95	28.13	32.45	31.67	30.81	28.59	31.45	27.18
Marion	12.64	14.58	13.60	15.24	17.99	15.22	16.40	15.03	15.93	14.96	15.38	13.89
Nassau	3.82	3.99	4.34	5.29	5.79	5.88	5.92	5.90	5.14	4.81	4.71	4.47
Okeechobee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orange	94.56	101.92	98.32	114.96	125.44	107.42	118.44	112.00	109.92	106.20	111.42	102.69
Osceola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polk	0.11	0.15	0.15	0.23	0.29	0.25	0.35	0.34	0.35	0.33	0.35	0.20
Putnam	3.49	3.86	3.70	4.08	4.45	3.76	4.01	4.01	4.15	3.77	3.90	3.78
St. Johns	9.76	11.02	11.59	13.27	13.61	11.66	12.53	12.49	11.50	9.94	10.41	10.50
Seminole	43.40	47.75	45.79	54.64	62.06	48.22	55.88	52.10	50.85	49.55	54.74	44.14
Volusia	45.21	49.89	48.85	52.85	56.56	48.73	54.33	52.10	47.38	46.20	48.17	44.96
Total	426.77	463.36	448.00	510.81	561.88	489.09	533.07	510.48	493.46	467.42	485.36	441.43

Note: Okeechobee and Osceola counties did not have public supply water use in the St. Johns River Water Management District in 1996.

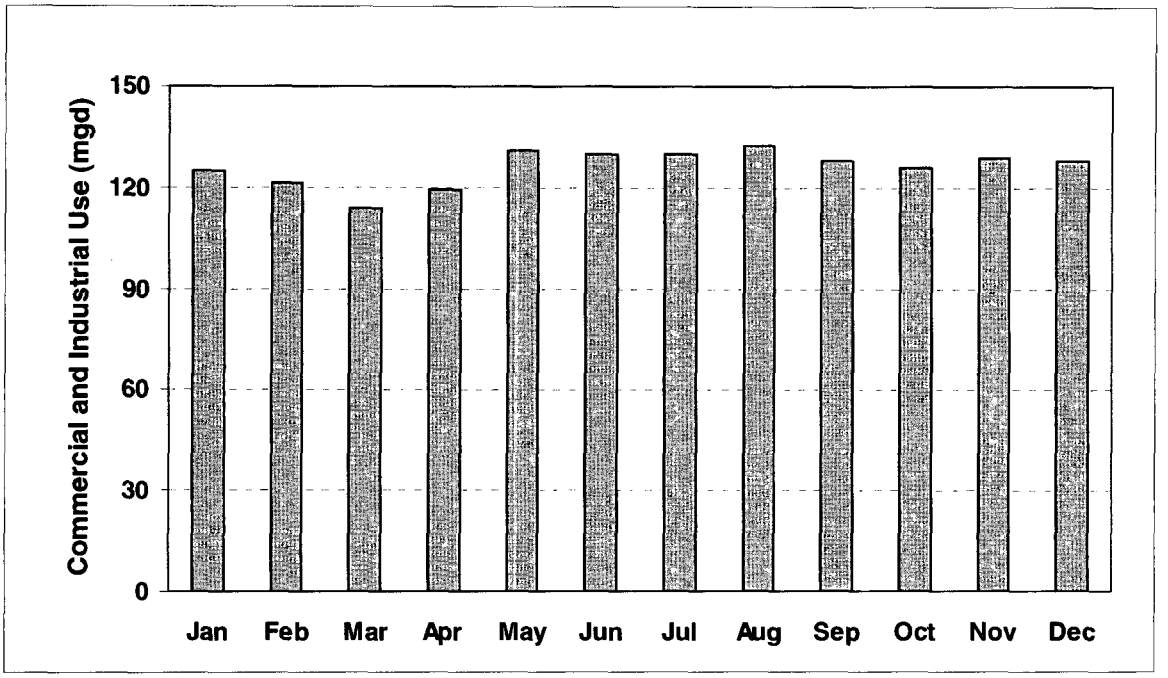

Figure 10. Monthly freshwater use for commercial, industrial, and institutional self-supply in the St. Johns River Water Management District, 1996. *Water use fluctuated slightly over the year.*

provides a table showing monthly commercial/industrial water use by user.

Agricultural Use and Recreational and Landscape Irrigation

Agricultural water use and recreational and landscape irrigation water use combined in 1996 had a greater seasonal fluctuation than any other water use category—from a low of 40.89 mgd in March to a high of 1,933.53 mgd in April (Figures 7 and 11 and Table 16). These fluctuations are typical of irrigation water use and are inversely correlated to rainfall.

Table 15. Monthly commercial and industrial freshwater use by county, 1996 (in million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	1.89	1.84	1.89	1.93	1.93	1.94	1.96	1.93	1.91	1.90	1.90	1.89
Baker	0.18	0.18	0.15	0.20	0.19	0.21	0.17	0.20	0.19	0.17	0.19	0.20
Bradford	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brevard	1.26	1.39	2.08	2.37	2.67	1.63	1.84	1.89	1.85	1.54	1.25	1.18
Clay	5.11	5.03	4.76	4.75	5.71	5.08	4.35	5.73	5.17	4.74	5.35	4.58
Duval	22.15	23.29	22.69	22.62	23.22	23.87	25.61	25.52	25.37	24.51	25.00	25.85
Flagler	0.07	0.08	0.08	0.08	0.06	0.07	0.08	0.07	0.06	0.07	0.06	0.05
Indian River	0.16	0.18	0.18	0.19	0.12	0.10	0.12	0.15	0.09	0.12	0.15	0.17
Lake	8.11	6.77	7.55	9.08	9.97	10.09	9.36	9.47	9.66	9.78	10.37	10.63
Marion	1.50	2.03	1.49	1.29	2.13	1.57	1.90	1.59	1.38	2.27	2.17	1.60
Nassau	36.19	35.65	30.89	32.20	37.34	37.96	35.68	37.65	36.96	36.15	36.40	35.80
Okeechobee	0.03	0.03	0.03	0.04	0.03	0.03	0.04	0.05	0.03	0.02	0.03	0.03
Orange	4.20	3.25	2.16	2.51	3.08	3.42	3.71	3.22	2.84	2.40	3.24	3.70
Osceola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polk	0.03	0.03	0.05	0.04	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02
Putnam	38.81	36.65	34.96	36.84	38.96	38.83	39.26	39.05	36.94	36.30	37.41	37.16
St. Johns	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.07	0.07	0.05
Seminole	0.12	0.13	0.14	0.15	0.17	0.17	0.18	0.15	0.16	0.13	0.16	0.12
Volusia	5.11	4.62	4.84	5.09	5.42	5.07	5.43	5.61	5.28	5.76	5.38	4.76
Total	124.96	121.20	113.99	119.43	131.07	130.11	129.75	132.35	127.97	125.94	129.15	127.79

Note: Bradford and Osceola counties did not have any commercial/industrial water use in the St. Johns River Water Management District in 1996.

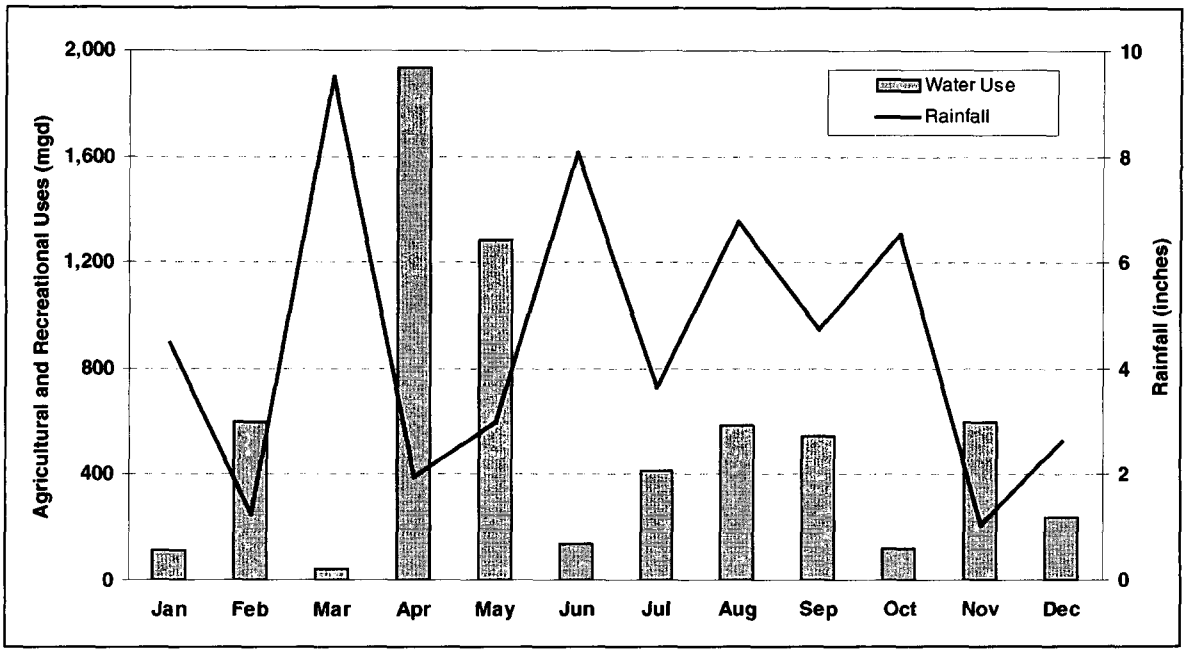

Figure 11. Monthly freshwater use for agriculture and recreational and landscape irrigation in the St. Johns River Water Management District, 1996. *Agricultural water use and recreational and landscape irrigation (golf course) water use combined was inversely correlated to rainfall.*

Thermoelectric Power Generation

Thermoelectric power generation freshwater use in SJRWMD in 1996 fluctuated from a low of 16.12 mgd in April to a high of 138.11 mgd in March (Figures 7 and 12 and Table 17). Fluctuations in water use are related to power plant shutdowns for maintenance or increased power demands during periods of extremely high or low temperature. The enclosed diskette (see pocket) provides a table showing monthly thermoelectric power generation water use by utility.

Table 16. Monthly agricultural water use and recreational and landscape irrigation water use by county, 1996 (in million gallons per day)

County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	0.95	3.66	0.43	19.90	23.51	3.85	2.05	2.13	6.28	1.21	3.58	0.43
Baker	0.48	0.48	0.48	2.16	2.98	2.78	3.68	0.48	1.44	0.00	1.44	0.48
Bradford	0.09	0.27	0.03	0.76	0.45	0.15	0.10	0.10	0.31	0.09	0.12	0.03
Brevard	2.37	31.61	0.00	683.38	517.00	7.78	41.26	30.36	30.36	2.33	28.49	15.59
Clay	0.60	1.98	0.46	5.32	8.96	0.46	3.03	1.51	0.46	0.00	1.98	0.60
Duval	1.62	4.89	1.47	10.52	18.02	2.07	7.35	4.57	1.47	0.00	4.89	1.62
Flagler	2.07	6.97	0.47	23.03	22.79	6.37	3.76	1.55	11.09	0.47	10.27	0.82
Indian River	1.58	240.60	0.10	527.55	172.33	2.84	110.95	452.14	345.57	1.44	346.83	108.71
Lake	6.05	30.21	2.20	78.67	97.08	32.62	83.34	23.22	60.02	59.59	59.92	22.46
Marion	0.22	4.70	0.08	20.01	20.20	11.89	3.19	2.58	5.99	2.62	4.50	0.66
Nassau	0.60	1.82	0.00	2.86	3.58	2.78	2.45	1.75	0.60	0.00	1.82	0.57
Okeechobee	0.00	14.04	0.00	37.11	10.67	0.00	4.67	23.41	18.71	0.00	18.71	4.67
Orange	0.44	46.09	1.95	180.06	116.06	41.04	68.80	1.83	10.88	23.05	52.12	23.96
Osceola	0.00	1.89	0.00	73.22	73.22	0.00	6.14	1.89	1.89	4.24	4.24	1.89
Polk	0.00	1.18	0.06	4.30	5.30	0.06	3.24	1.18	1.18	1.18	3.18	1.06
Putnam	17.92	36.88	6.18	44.31	34.43	6.24	6.81	2.05	6.83	3.18	5.88	8.43
St. Johns	1.31	66.76	0.00	143.37	95.95	5.34	10.56	3.30	7.50	0.00	9.76	1.31
Seminole	0.22	12.78	0.08	27.32	20.79	0.02	21.87	15.02	8.66	2.64	18.04	4.19
Volusia	73.99	92.83	26.90	49.68	42.25	10.72	28.09	15.83	22.86	13.45	20.71	37.55
Total	110.51	599.64	40.89	1,933.53	1,285.57	137.01	411.34	584.90	542.10	115.49	596.48	235.03

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day [mgd]) or did not occur.

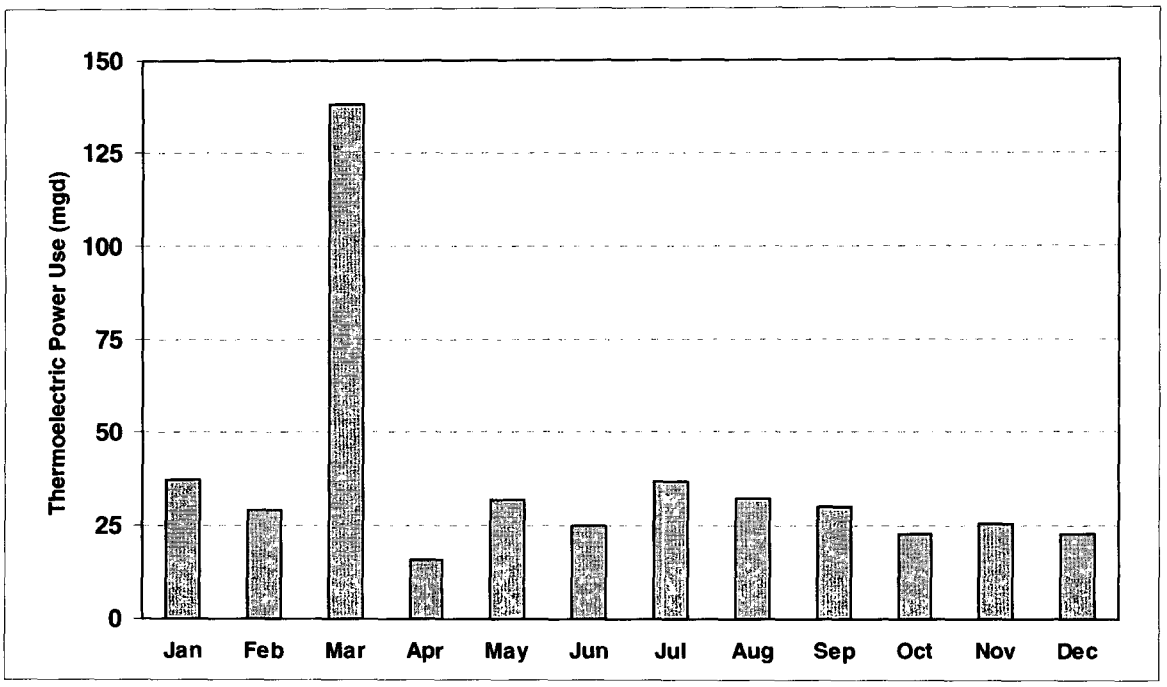

Figure 12. Monthly freshwater use for thermoelectric power generation in the St. Johns River Water Management District, 1996. *Monthly fluctuations in water use for power generation are due to increased seasonal power demands or plant shutdowns for maintenance.*

Table 17. Monthly thermoelectric power generation water use by county, 1996 (in million gallons per day)

County*	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alachua	0.07	0.05	0.14	0.06	0.29	0.29	0.44	0.43	0.33	0.15	0.02	0.02
Brevard	0.29	0.29	0.31	0.33	0.31	0.38	0.43	0.38	0.29	0.29	0.32	0.29
Duval	5.45	5.12	5.17	4.34	5.28	5.64	5.86	5.76	5.60	5.18	5.17	5.53
Orange	0.60	0.65	0.80	1.06	0.79	0.71	0.70	0.75	0.65	0.67	0.56	0.67
Putnam	0.48	0.53	0.52	0.49	0.66	0.49	0.57	0.54	0.48	0.52	0.69	0.66
Volusia	16.38	8.57	115.43	0.37	7.20	0.46	0.47	0.45	0.43	0.44	0.40	0.40
Total Fresh Groundwater	23.27	15.21	122.37	6.65	14.53	7.97	8.47	8.31	7.78	7.25	7.16	7.57
Putnam	14.17	14.02	15.70	9.47	17.28	17.11	20.73	18.91	20.04	15.58	12.53	15.15
Volusia	0.00	0.00	0.04	0.00	0.00	0.00	7.84	5.20	2.45	0.04	5.92	0.00
Total Fresh Surface Water	14.17	14.02	15.74	9.47	17.28	17.11	28.57	24.11	22.49	15.62	18.45	15.15
Total Freshwater	37.44	29.23	138.11	16.12	31.81	25.08	37.04	32.42	30.27	22.87	25.61	22.72
Brevard	979.06	1,021.45	1,096.23	1,055.97	1,200.52	1,159.03	1,299.48	1,190.55	1,146.73	980.29	1,018.13	1,063.97
Duval	411.06	397.00	434.49	408.93	463.02	667.83	814.22	717.10	580.07	364.40	206.97	500.05
Indian River	79.15	75.49	31.09	52.39	67.34	49.68	51.17	38.77	40.67	42.73	51.37	18.94
Total Saline Surface Water	1,469.27	1,493.94	1,561.81	1,517.29	1,730.88	1,876.54	2,164.87	1,946.42	1,767.47	1,387.42	1,276.47	1,582.96

Note: A 0.00 value means pumpage was insignificant (less than 0.01 million gallons per day [mgd]) or did not occur.

*Counties not listed did not have any thermoelectric power generation water use in the St. Johns River Water Management District in 1996.

GLOSSARY

Abandoned artesian well. An artesian well, with or without a mechanism for controlling discharge, that allows water to flow continuously at the land surface or into other aquifers through internal flow because of improper well construction or condition. Also called *wild flowing well, free-flowing well,* or *uncontrolled artesian well.*

Aquifer. A reservoir of groundwater. In the St. Johns River Water Management District, there are three major aquifer systems: the Floridan, the intermediate, and the surficial. In this report, data for the intermediate and surficial aquifers are combined.

Average annual water use. The estimated annual average daily use determined by dividing the total quantity of water withdrawn from ground or surface water sources during the year (in gallons) by 365 days, except in a leap year. Total quantity is calculated by summing monthly totals reported in million gallons per month. Water use is reported in million gallons per day.

Desalinization. The process of removing dissolved salts, notably sodium chloride, from seawater and brackish waters.

Freshwater. Water with a total dissolved solids concentration less than or equal to 1,000 milligrams per liter. The freshwater category includes both potable and nonpotable water.

Per capita use. The average amount of water used per person during a standard time period, generally per day. Public supply per capita use refers to the amount of water withdrawn for all uses by public supply water, divided by the population served.

Reverse osmosis. A water treatment process which uses pressure to separate inorganic salts and/or simple organic compounds from water.

Saline water. Water with a chloride concentration greater than 1,000 milligrams per liter or a total dissolved solids concentration greater than 3,000 milligrams per liter.

Self-supplied water. Water withdrawn from a ground or surface water source by a user and not obtained from a public supply.

Slightly saline water. Water with a chloride concentration between 250 and 1,000 milligrams per liter or a total dissolved solids concentration between 500 and 3,000 milligrams per liter. This water is nonpotable, but treatable. Slightly saline water is either diluted with freshwater or treated by a desalinization process to potable standards for public supply. For other uses, this water is generally not treated. In this report, treated or diluted slightly saline water is included in the reported quantities of freshwater.

Water use. The quantity of water used and the way in which the water is used in the St. Johns River Water Management District. In most cases, water use equals withdrawals; however, in some cases, water is withdrawn in one county for use in another county. In the latter case, notations are made; otherwise, water use equals withdrawal.

Water withdrawal. The amount of water withdrawn from a source (ground or surface). Withdrawals are equivalent to *intake, water diversion*, or *pumpage*, terms commonly associated with industrial, agricultural irrigation, and public supply use, respectively. Water withdrawals are considered water use for this report.

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APPENDIX: 1996 WATER USE BY COUNTY

This appendix presents the detailed water use data from which this report is constructed. First, totals for the St. Johns River Water Management District (SJRWMD) are presented for population, land area (University of Florida 1997a), water withdrawals by category, and agricultural acreage and water use by crop.

Then, for each county, tables present population and land area totals; water withdrawals by category; reported water use of large water users; and agricultural and recreational acreage, irrigation system type, and water use. On the county water user tables, the withdrawal source is freshwater unless designated (by footnote) as saline water. Monthly freshwater use is graphed for public supply water use and total freshwater use is graphed by water use category except for Okeechobee and Osceola counties, which have only a small area within SJRWMD and where the numbers are very small. Some totals may not equal 100% because of rounding.

CONTENTS

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Population		Land Area (acres)	
Total	3,572,737	Total area	7,096,817 (11,089 mi²)
Public supply	3,057,402	Farmed	914,518
Self-supplied	515,335	Irrigated	344,383
Per capita (gallons per day)	159		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply*	475.07	11.07	486.14	0.00
Domestic self-supply	86.05	0.00	86.05	0.00
Commercial/industrial use	108.19	17.99	126.18	2.25
Agriculture	313.27	189.30	502.57	0.00
Recreational/landscape irrigation	28.20	12.23	40.43	0.00
Thermoelectric power generation	19.07	17.71	36.78	1,649.20
Abandoned artesian wells	97.47	0.00	97.47	0.00
Total	1,127.32	248.30	1,375.62	1,651.45

Total ground	1,127.32
Total surface	1,899.75
SJRWMD total	3,027.07

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with freshwater

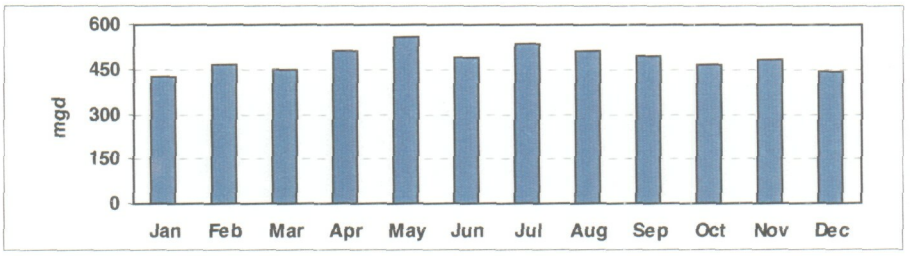

Figure A1. Monthly public supply water use in the St. Johns River Water Management District, 1996

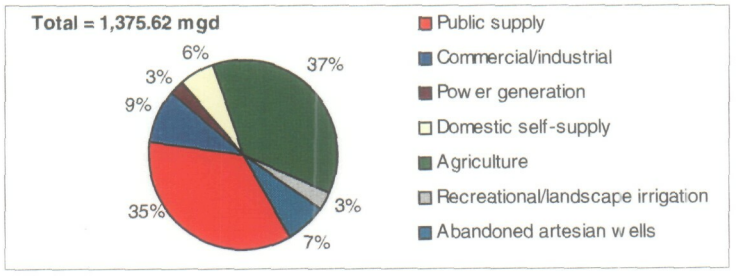

Figure A2. St. Johns River Water Management District—percentages, by category, of freshwater use, 1996

1996 Agricultural, Recreational, and Landscape Water Use, St. Johns River Water Management District

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Vegetable Crops								
Cabbage	5,980	5,650	200	5,450	0	3.53	0.07	3.60
Carrots	14,150	7,525	0	7,525	0	1.36	8.57	9.93
Cucumbers	2,090	1,795	350	1,445	0	1.31	0.16	1.47
Peppers	340	330	200	80	50	0.35	0.00	0.35
Potatoes	29,100	29,100	0	29,100	0	30.09	0.00	30.09
Tomatoes	95	95	85	5	5	0.11	0.00	0.11
Sweet corn	15,415	8,660	240	8,420	0	2.05	9.78	11.83
Miscellaneous	23,997	16,565	2,914	13,591	60	8.39	11.63	20.02
Fruit Crops								
Blueberries	831	804	587	32	185	0.52	0.00	0.52
Citrus	111,542	103,532	7,730	41,333	54,469	105.49	127.82	233.31
Grapes	139	136	40	0	96	0.13	0.00	0.13
Peaches	75	75	58	0	17	0.13	0.00	0.13
Pecans	2,915	390	10	0	380	0.52	0.00	0.52
Strawberries	142	142	65	10	67	0.10	0.00	0.10
Watermelons	3,975	3,130	2,770	200	160	1.49	0.01	1.50
Miscellaneous	450	340	215	100	25	0.79	0.02	0.81
Field Crops								
Cotton	1,300	1,300	0	1,300	0	2.44	0.00	2.44
Field corn	16,490	7,340	1,500	5,840	0	5.10	1.92	7.02
Peanuts	2,250	209	209	0	0	0.12	0.00	0.12
Rice	50	50	0	50	0	0.18	0.00	0.18
Sorghum	6,450	350	350	0	0	0.08	0.08	0.16
Soybeans	300	200	200	0	0	0.04	0.04	0.08
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	168	120	120	0	0	0.03	0.09	0.12
Wheat	150	0	0	0	0	0.00	0.00	0.00
Miscellaneous	7,894	510	210	300	0	0.18	0.10	0.28
Ornamentals and Grasses								
Ferns	8,856	8,856	8,856	0	0	27.18	5.52	32.70
Ornamentals (field grown)	1,897	1,897	1,002	400	495	5.79	0.34	6.13
Ornamentals (container grown)	4,058	3,669	2,671	40	958	10.99	1.64	12.63
Improved pasture	623,130	119,428	4,601	114,827	0	91.70	19.45	111.15
Sod	6,847	6,717	5,217	1,500	0	4.86	2.06	6.92
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	6.36	0.00	6.36
Fish farming	0	0	0	0	0	1.86	0.00	1.86
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	20,798	12,862	12,862	0	0	23.28	11.29	34.57
Turf grass (lawn)	2,644	2,606	2,606	0	0	4.92	0.94	5.86
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	891,076	328,915	40,400	231,548	56,967	305.05	189.30	494.35
Agricultural nonirrigation	0	0	0	0	0	8.22	0.00	8.22
Recreational/landscape	23,442	15,468	15,468	0	0	28.20	12.23	40.43
Grand Total	914,518	344,383	55,868	231,548	56,967	341.47	201.53	543.00

ALACHUA COUNTY

Total population	202,140
Total area	874 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	164,138	Total area	280,799 (439 mi^2)
Public supply	155,275	Farmed	38,866
Self-supplied	8,863	Irrigated	5,809
Per capita (gallons per day)	146		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	22.70	0.00	22.70	0.00
Domestic self-supply	1.29	0.00	1.29	0.00
Commercial/industrial use	1.91	0.00	1.91	0.00
Agriculture	4.16	0.07	4.23	0.00
Recreational/landscape irrigation	1.58	0.09	1.67	0.00
Thermoelectric power generation	0.19	0.00	0.19	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	31.83	0.16	31.99	0.00

Total ground	31.83
Total surface	0.16
County total	31.99

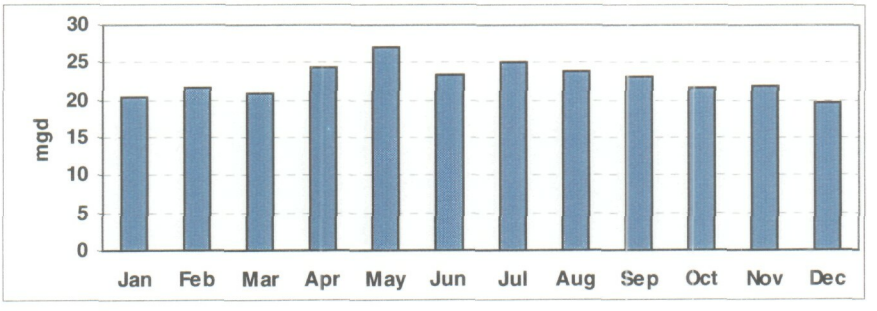

Figure A3. Monthly public supply water use in Alachua County, 1996

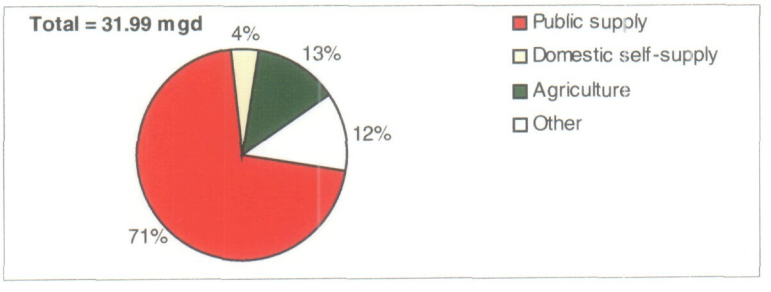

Figure A4. Alachua County—percentages, by category, of freshwater use, 1996. *The "other" category includes commercial and industrial use, recreational and landscape irrigation, thermoelectric power generation, and abandoned artesian wells.*

1996 Water Users in Alachua County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Arredondo Estates	Public supply	575	0.07	Floridan aquifer	0.00	
Arredondo Farms subdivision	Public supply	600	0.06	Floridan aquifer	0.00	
Gainesville, City of	Public supply	150,000	22.09	Floridan aquifer	0.00	
Hawthorne, City of	Public supply	1,381	0.19	Floridan aquifer	0.00	
Hillcrest township	Public supply	250	0.02	Floridan aquifer	0.00	
Kincaid Hills subdivision	Public supply	772	0.10	Floridan aquifer	0.00	
Micanopy, Town of	Public supply	837	0.07	Floridan aquifer	0.00	
Oak Park MHP	Public supply	621	0.06	Floridan aquifer	0.00	
West Gate MHP	Public supply	239	0.04	Floridan aquifer	0.00	
Total Public Supply		155,275	22.70		0.00	
Tacachale	Institutional		0.21	Floridan aquifer	0.00	
University of Florida*	Institutional		1.70	Floridan aquifer	0.00	
Total Commercial/Industrial			1.91		0.00	
Gainesville Regional Utilities, J.R. Kelly plant	Power generation		0.19	Floridan aquifer	0.00	
Total Power Generation			0.19		0.00	

Note: MHP = mobile home park

*1995 figure

1996 Agricultural, Recreational, and Landscape Water Use, Alachua County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Vegetable Crops								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	300	300	300	0	0	0.17	0.00	0.17
Peppers	250	250	200	0	50	0.24	0.00	0.24
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	200	200	200	0	0	0.14	0.00	0.14
Miscellaneous	1,300	1,300	1,300	0	0	1.12	0.00	1.12
Fruit Crops								
Blueberries	450	450	400	0	50	0.25	0.00	0.25
Citrus	40	40	0	0	40	0.06	0.00	0.06
Grapes	30	30	0	0	30	0.02	0.00	0.02
Peaches	15	15	15	0	0	0.02	0.00	0.02
Pecans	2,600	300	0	0	300	0.37	0.00	0.37
Strawberries	5	5	5	0	0	0.00	0.00	0.00
Watermelons	1,100	1,100	1,000	0	100	0.53	0.00	0.53
Miscellaneous	90	80	80	0	0	0.14	0.00	0.14
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	1,200	100	100	0	0	0.07	0.00	0.07
Peanuts	200	75	75	0	0	0.04	0.00	0.04
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	1,500	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	100	100	75	0	25	0.42	0.07	0.49
Improved pasture	28,500	680	680	0	0	0.44	0.00	0.44
Sod	100	50	50	0	0	0.05	0.00	0.05
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.08	0.00	0.08
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	480	328	328	0	0	0.77	0.09	0.86
Turf grass (lawn)	406	406	406	0	0	0.81	0.00	0.81
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	37,980	5,075	4,480	0	595	4.08	0.07	4.15
Agricultural nonirrigation	0	0	0	0	0	0.08	0.00	0.08
Recreational/landscape	886	734	734	0	0	1.58	0.09	1.67
Grand Total	38,866	5,809	5,214	0	595	5.74	0.16	5.90

BAKER COUNTY

Total population	20,709
Total area	585 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	19,674	Total area	341,453 (534 mi^2)
Public supply	4,620	Farmed	14,823
Self-supplied	15,054	Irrigated	631
Per capita (gallons per day)	162		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	Surface	Total Fresh	Surface
Public supply	0.75	0.00	0.75	0.00
Domestic self-supply	2.44	0.00	2.44	0.00
Commercial/industrial use	0.19	0.00	0.19	0.00
Agriculture	1.99	0.94	2.93	0.00
Recreational/landscape irrigation	0.17	0.00	0.17	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	5.54	0.94	6.48	0.00

Total ground	5.54
Total surface	0.94
County total	6.48

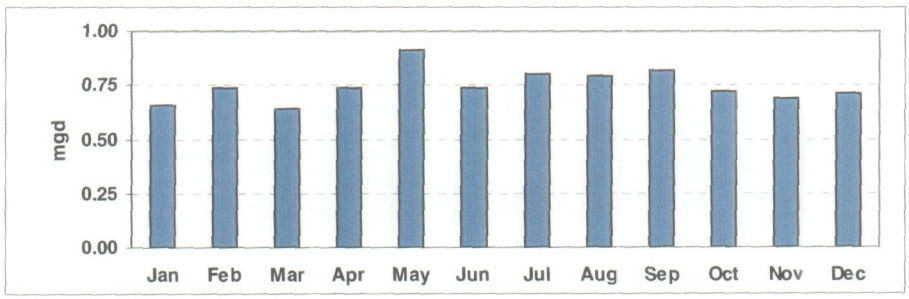

Figure A5. Monthly public supply water use in Baker County, 1996

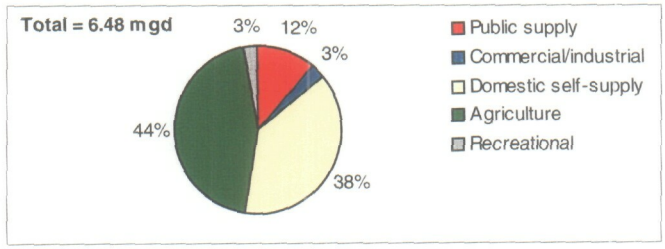

Figure A6. Baker County—percentages, by category, of freshwater use, 1996

1996 Water Users in Baker County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Macclenny, City of	Public supply	4,500	0.71	Floridan aquifer	0.00	
Macclenny II subdivision	Public supply	120	0.04	Floridan aquifer	0.00	
Total Public Supply		4,620	0.75		0.00	
Florida Wire and Cable	Industrial		0.05	Floridan aquifer	0.00	
Northeast Florida State Hospital	Institutional		0.14	Floridan aquifer	0.00	
Total Commercial/Industrial			0.19		0.00	

1996 Agricultural, Recreational, and Landscape Water Use, Baker County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	10	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	20	0	0	0	0	0.00	0.00	0.00
Peppers	10	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	100	0	0	0	0	0.00	0.00	0.00
Miscellaneous	522	4	4	0	0	0.00	0.00	0.00
Fruit Crops								
Blueberries	5	0	0	0	0	0.00	0.00	0.00
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	2	2	0	0	2	0.00	0.00	0.00
Peaches	3	3	3	0	0	0.00	0.00	0.00
Pecans	50	0	0	0	0	0.00	0.00	0.00
Strawberries	2	2	0	0	2	0.00	0.00	0.00
Watermelons	400	60	0	0	60	0.03	0.00	0.03
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	800	0	0	0	0	0.00	0.00	0.00
Peanuts	50	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	100	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	128	80	80	0	0	0.00	0.09	0.09
Wheat	150	0	0	0	0	0.00	0.00	0.00
Miscellaneous	1,584	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	763	420	420	0	0	1.31	0.85	2.16
Improved pasture	10,000	0	0	0	0	0.00	0.00	0.00
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.25	0.00	0.25
Fish farming	0	0	0	0	0	0.40	0.00	0.40
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	124	60	60	0	0	0.17	0.00	0.17
Turf grass (lawn)	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	14,699	571	507	0	64	1.34	0.94	2.28
Agricultural nonirrigation	0	0	0	0	0	0.65	0.00	0.65
Recreational/landscape	124	60	60	0	0	0.17	0.00	0.17
Grand Total	14,823	631	567	0	64	2.16	0.94	3.10

BRADFORD COUNTY

Total population	24,983
Total area	293 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	1,874	Total area	3,750 (6 mi^2)
Public supply	472	Farmed	200
Self-supplied	1,402	Irrigated	190
Per capita (gallons per day)	85		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	Surface	Total Fresh	Surface
Public supply	0.04	0.00	0.04	0.00
Domestic self-supply	0.12	0.00	0.12	0.00
Commercial/industrial use	0.00	0.00	0.00	0.00
Agriculture	0.11	0.00	0.11	0.00
Recreational/landscape irrigation	0.10	0.00	0.10	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	0.37	0.00	0.37	0.00

Total ground	0.37
Total surface	0.00
County total	0.37

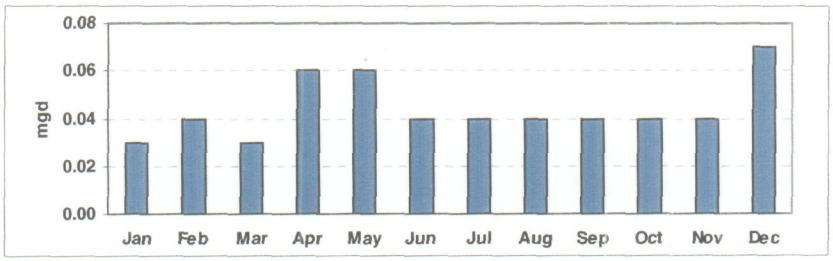

Figure A7. Monthly public supply water use in Bradford County, 1996

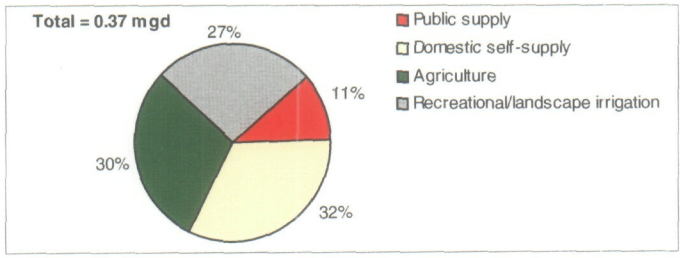

Figure A8. Bradford County—percentages, by category, of freshwater use, 1996

1996 Water Users in Bradford County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Southern States Utilities, Keystone Club Estates	Public supply	472	0.04	Floridan aquifer	0.00	
Total Public Supply		472	0.04		0.00	

1996 Agricultural, Recreational, and Landscape Water Use, Bradford County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	50	50	50	0	0	0.03	0.00	0.03
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	50	50	50	0	0	0.04	0.00	0.04
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	50	50	50	0	0	0.04	0.00	0.04
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	0	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	0	0	0	0	0	0.00	0.00	0.00
Improved pasture	0	0	0	0	0	0.00	0.00	0.00
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	40	30	30	0	0	0.08	0.00	0.08
Turf grass (lawn)	10	10	10	0	0	0.02	0.00	0.02
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	150	150	150	0	0	0.11	0.00	0.11
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	50	40	40	0	0	0.10	0.00	0.10
Grand Total	200	190	190	0	0	0.21	0.00	0.21

BREVARD COUNTY

Total population	450,164
Total area	1,019 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	450,164	Total area	652,160 (1,019 mi^2)
Public supply	409,271	Farmed	131,760
Self-supplied	40,893	Irrigated	88,795
Per capita (gallons per day)	131		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply*	42.50	11.07	53.57	0.00
Domestic self-supply	5.36	0.00	5.36	0.00
Commercial/industrial use	1.75	0.00	1.75	0.00
Agriculture	96.61	9.33	105.94	0.00
Recreational/landscape irrigation	3.29	2.79	6.08	0.00
Thermoelectric power generation	0.33	0.00	0.33	1,101.45
Abandoned artesian wells	45.46	0.00	45.46	0.00
Total	195.30	23.19	218.49	1,101.45

Total ground	195.30
Total surface	1,124.64
County total	1,319.94

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with freshwater; includes 25.34 mgd of water withdrawn in Orange County for public supply use in Brevard County.

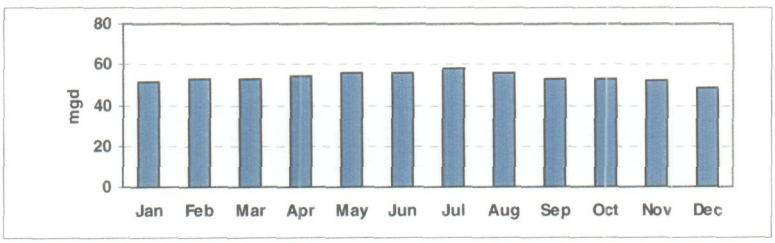

Figure A9. Monthly public supply water use in Brevard County, 1996

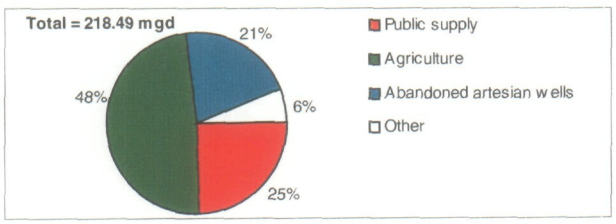

Figure A10. Brevard County—percentages, by category, of freshwater use, 1996. *The "other" category includes domestic self-supply, commercial and industrial use, recreational and landscape irrigation, and thermoelectric power generation.*

1996 Water Users in Brevard County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Aquarina Utilities	Public supply	210	0.03	Floridan aquifer and R/O	0.00	
Avatar Utilities (Barefoot Bay)	Public supply	9,073	0.45	Surficial aquifer	0.00	
Cocoa Wellfield*	Public supply	163,944	25.34	Floridan aquifer	0.00	
Melbourne, City of	Public supply	112,944	5.68	Floridan aquifer and R/O	11.07	Lake Washington
Mobile Manor Trailer Park	Public supply	243	0.03	Surficial aquifer	0.00	
North Brevard County Utilities (Mims)	Public supply	5,373	0.59	Surficial aquifer	0.00	
Northgate Trailer Park	Public supply	243	0.02	Floridan aquifer and R/O	0.00	
Palm Bay Utilities	Public supply	74,395	5.15	Surficial aquifer	0.00	
Pinewood Village	Public supply	180	0.02	Floridan aquifer	0.00	
South Brevard Water Co-op	Public supply	825	0.07	Floridan aquifer	0.00	
Snug Harbor Village	Public supply	520	0.06	Floridan aquifer	0.00	
Titusville, City of	Public supply	41,321	5.06	Floridan aquifer	0.00	
Total Public Supply		409,271	42.50		11.07	
Harris Corporation	Industrial		0.02	Surficial aquifer	0.00	
Praxair, Inc.	Industrial		0.09	Surficial aquifer	0.00	
FDOT I-95 rest facility	Institutional		0.01	Surficial aquifer	0.00	
JFK Space Center	Institutional		1.62	Surficial aquifer	0.00	
Longpoint Recreation Park	Institutional		0.01	Surficial aquifer	0.00	
Total Commercial/Industrial			1.75		0.00	
FPL, Cape Canaveral	Power generation		0.18	Surficial aquifer	676.31	Indian River†
OUC, Indian River	Power generation		0.15	Surficial aquifer	425.14	Indian River†
Total Power Generation			0.33		1,101.45	

Note: FDOT = Florida Department of Transportation
FPL = Florida Power & Light
OUC = Orlando Utilities Commission
R/O = reverse osmosis

*Water withdrawals from Orange County
†Saline water

1996 Agricultural, Recreational, and Landscape Water Use, Brevard County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	1,000	1,000	0	1,000	0	1.03	0.00	1.03
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	100	100	0	40	60	0.10	0.00	0.10
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	9,000	6,450	250	2,000	4,200	10.98	4.27	15.25
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	40	40	0	0	40	0.03	0.00	0.03
Watermelons	250	100	0	100	0	0.07	0.01	0.08
Miscellaneous	20	20	20	0	0	0.05	0.00	0.05
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	1,500	1,500	500	1,000	0	1.59	0.00	1.59
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	100	100	25	0	75	0.34	0.00	0.34
Ornamentals (container grown)	200	200	190	0	10	0.69	0.00	0.69
Improved pasture	115,700	75,860	0	75,860	0	75.92	4.00	79.92
Sod	1,300	1,300	500	800	0	0.70	1.05	1.75
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	5.11	0.00	5.11
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,900	1,475	1,475	0	0	1.67	2.77	4.44
Turf grass (lawn)	650	650	650	0	0	1.62	0.02	1.64
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	129,210	86,670	1,485	80,800	4,385	91.50	9.33	100.83
Agricultural nonirrigation	0	0	0	0	0	5.11	0.00	5.11
Recreational/landscape	2,550	2,125	2,125	0	0	3.29	2.79	6.08
Grand Total	131,760	88,795	3,610	80,800	4,385	99.90	12.12	112.02

CLAY COUNTY

Total population	125,431
Total area	601 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	125,431	Total area	384,640 (601 mi^2)
Public supply	105,323	Farmed	44,716
Self-supplied	20,108	Irrigated	1,324
Per capita (gallons per day)	116		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	12.19	0.00	12.19	0.00
Domestic self-supply	2.33	0.00	2.33	0.00
Commercial/industrial use	5.02	0.00	5.02	0.00
Agriculture	1.12	0.00	1.12	0.00
Recreational/landscape irrigation	0.86	0.31	1.17	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.30	0.00	0.30	0.00
Total	21.82	0.31	22.13	0.00

Total ground	21.82
Total surface	0.31
County total	22.13

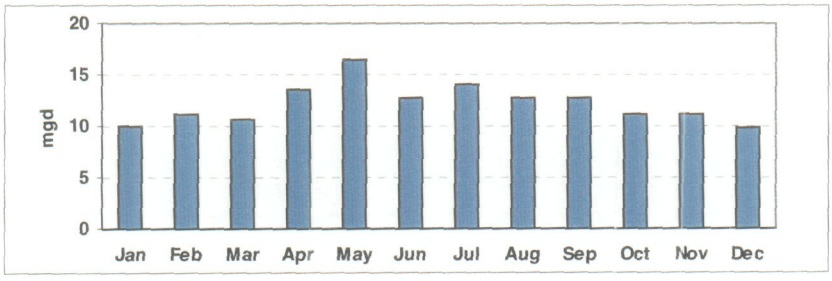

Figure A11. Monthly public supply water use in Clay County, 1996

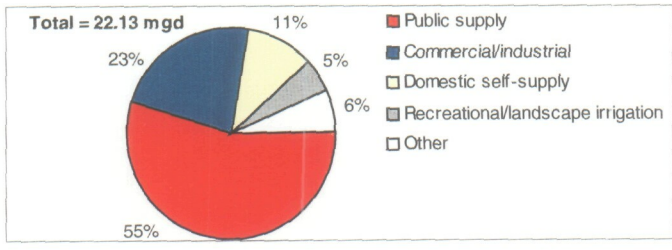

Figure A12. Clay County—percentages, by category, of freshwater use, 1996. *The "other" category includes agricultural use and abandoned artesian wells*

1996 Water Users in Clay County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Black Creek subdivision	Public supply	114	0.03	Floridan aquifer	0.00	
Clay County Utilities Authority	Public supply	85,000	8.79	Floridan aquifer	0.00	
Green Cove Springs, Town of	Public supply	4,988	1.13	Floridan aquifer	0.00	
Magnolia Apartments	Public supply	852	0.09	Floridan aquifer	0.00	
McRae Landing	Public supply	268	0.03	Floridan aquifer	0.00	
Orange Park, City of	Public supply	9,508	1.63	Floridan aquifer	0.00	
Penney Farms, Town of	Public supply	636	0.04	Floridan aquifer	0.00	
Penney Retirement Community	Public supply	400	0.06	Floridan aquifer	0.00	
Southern States Utilities	Public supply	3,557	0.39	Floridan aquifer	0.00	
Total Public Supply		105,323	12.19		0.00	
E. I. DuPont, Trail Ridge	Industrial*		1.32	Floridan aquifer	0.00	
E. I. DuPont, Maxville	Industrial*		0.40	Floridan aquifer	0.00	
FRI, Goldhead Sand	Industrial*		1.03	Floridan aquifer	0.00	
Gilman Building Products	Industrial		0.04	Floridan aquifer	0.00	
J-M Manufacturing	Industrial		0.13	Floridan aquifer	0.00	
RGC Mineral Sands	Industrial*		1.51	Floridan aquifer	0.00	
Camp Blanding Military Base	Institutional		0.46	Floridan aquifer	0.00	
Lake Asbury Elementary	Institutional		0.02	Floridan aquifer	0.00	
Ridgeview Junior High	Institutional		0.03	Floridan aquifer	0.00	
St. Johns River Community College	Institutional		0.06	Floridan aquifer	0.00	
Tynes Elementary	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			5.02		0.00	

Note: FRI = Florida Rock Industries

*Mining industry

1996 Agricultural, Recreational, and Landscape Water Use, Clay County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	200	60	60	0	0	0.05	0.00	0.05
Fruit Crops								
Blueberries	15	13	0	10	3	0.01	0.00	0.01
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	800	100	0	100	0	0.11	0.00	0.11
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	2,800	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	150	150	75	0	75	0.37	0.00	0.37
Ornamentals (container grown)	75	75	25	0	50	0.18	0.00	0.18
Improved pasture	40,000	400	0	400	0	0.40	0.00	0.40
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	530	380	380	0	0	0.59	0.31	0.90
Turf grass (lawn)	146	146	146	0	0	0.27	0.00	0.27
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	44,040	798	160	510	128	1.12	0.00	1.12
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	676	526	526	0	0	0.86	0.31	1.17
Grand Total	44,716	1,324	686	510	128	1.98	0.31	2.29

DUVAL COUNTY

Total population	728,437
Total area	774 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	728,437	Total area	495,360 (774 mi^2)
Public supply	657,428	Farmed	16,392
Self-supplied	71,009	Irrigated	2,965
Per capita (gallons per day)	162		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	106.81	0.00	106.81	0.00
Domestic self-supply	11.50	0.00	11.50	0.00
Commercial/industrial use	24.15	0.00	24.15	0.00
Agriculture	1.09	0.08	1.17	0.00
Recreational/landscape irrigation	2.97	0.65	3.62	0.00
Thermoelectric power generation	4.54	0.00	4.54	497.98
Abandoned artesian wells	4.28	0.00	4.28	0.00
Total	155.34	0.73	156.07	497.98

Total ground	155.34
Total surface	498.71
County total	654.05

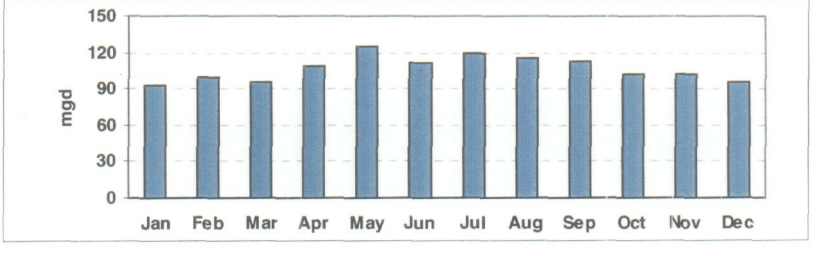

Figure A13. Monthly public supply water use in Duval County, 1996

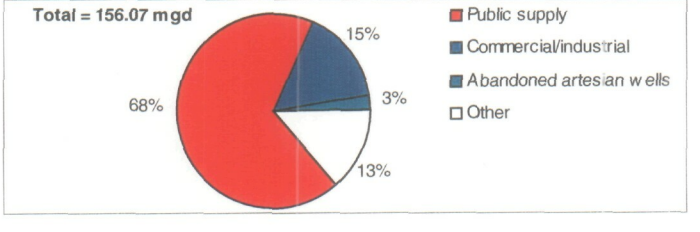

Figure A14. Duval County—percentages, by category, of freshwater use, 1996. *The "other" category includes domestic self-supply, agricultural water use, recreation and landscape irrigation, and thermoelectric power generation.*

1996 Water Users in Duval County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Atlantic Beach, City of	Public supply	16,055	2.17	Floridan aquifer	0.00	
Azalea MHP	Public supply	330	0.04	Floridan aquifer	0.00	
Baldwin, City of	Public supply	1,560	0.21	Floridan aquifer	0.00	
Baptist Home for Children	Public supply	80	0.02	Floridan aquifer	0.00	
Buccaneer Trailer Park	Public supply	254	0.05	Floridan aquifer	0.00	
Buccaneer WTP	Public supply	6,845	1.09	Floridan aquifer	0.00	
Colonial Village Apartments	Public supply	231	0.01	Floridan aquifer	0.00	
Country Roads MHP	Public supply	451	0.08	Floridan aquifer	0.00	
Jacksonville Beach, City of	Public supply	20,417	3.00	Floridan aquifer	0.00	
Jacksonville, City of	Public supply	488,377	80.84	Floridan aquifer	0.00	
Lamplighter MHP	Public supply	753	0.06	Floridan aquifer	0.00	
Malibu Gardens Apartments	Public supply	264	0.02	Floridan aquifer	0.00	
Neighborhood Utilities	Public supply	627	0.05	Floridan aquifer	0.00	
Neptune Beach, City of	Public supply	7,503	1.07	Floridan aquifer	0.00	
Normandy Village Utilities	Public supply	4,332	0.39	Floridan aquifer	0.00	
Oaks of Atlantic Beach	Public supply	648	0.08	Floridan aquifer	0.00	
Ortega Utilities	Public supply	9,191	0.97	Floridan aquifer	0.00	
Regency Utilities	Public supply	5,089	0.97	Floridan aquifer	0.00	
Southern States Utilities	Public supply	15,330	2.18	Floridan aquifer	0.00	
United Water Florida	Public supply	79,091	13.51	Floridan aquifer	0.00	
Total Public Supply		657,428	106.81		0.00	
Building Products (Celotex)	Industrial		0.12	Floridan aquifer	0.00	
Bush Boake Allen, Inc.	Industrial		1.90	Floridan aquifer	0.00	
Castleton Beverages Company	Industrial		0.10	Floridan aquifer	0.00	
Gate Maritime	Industrial		0.04	Floridan aquifer	0.00	
Jefferson Smurfit, Jacksonville	Industrial*		7.41	Floridan aquifer	0.00	
JPA, Blount Island	Industrial		0.08	Floridan aquifer	0.00	
Reichold Chemicals, Inc.	Industrial		0.15	Floridan aquifer	0.00	
Millennium Specialty Chemicals	Industrial		1.24	Floridan aquifer	0.00	
Simplex Products	Industrial		0.67	Floridan aquifer	0.00	
Stone Container Corporation[1]	Industrial*		7.37	Floridan aquifer	0.00	
Swisher & Son Manufacturing Company	Industrial		0.13	Floridan aquifer	0.00	
U.S. Gypsum	Industrial		0.60	Floridan aquifer	0.00	
Bolles School	Institutional		0.07	Floridan aquifer	0.00	
Cecil Field NAS	Institutional		0.64	Floridan aquifer	0.00	
Dinsmore Correctional Facility	Institutional		0.02	Floridan aquifer	0.00	
Jacksonville NAS	Institutional		1.40	Floridan aquifer	0.00	
Jacksonville International Airport	Institutional		0.16	Floridan aquifer	0.00	
Jacksonville University	Institutional		0.40	Floridan aquifer	0.00	
Mayport NAS	Institutional		1.59	Floridan aquifer	0.00	
Montgomery Correctional	Institutional		0.06	Floridan aquifer	0.00	
Total Commercial/Industrial			24.15		0.00	

1996 Water Users in Duval County—*Continued*

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Cedar Bay Generating Facility‡	Power generation		0.00	Floridan aquifer	0.00	
JEA-Eastport Power Plant	Power generation		0.64	Floridan aquifer	447.58	St. Johns River§
SJR Power Park	Power generation		3.90	Floridan aquifer	50.40	St. Johns River§
Total Power Generation			4.54		497.98	

Note: FDOT = Florida Department of Transportation
JEA = Jacksonville Electric Authority
JPA = Jacksonville Port Authority
MHP = mobile home park
NAS = Naval Air Station
SJR = St. Johns River
WTP = water treatment plant

*Pulp and paper industry
†Stone Container Corporation supplies 0.81 mgd of groundwater to Cedar Bay Generating Facility. The 7.37 mgd includes the water supplied to the Cedar Bay facility.
‡ Cedar Bay Generating Facility purchases its groundwater from Stone Container Corporation. The water usage of 0.81 mgd is reported as part of the 7.37 mgd reported for Stone Container.
§ Saline water

1996 Agricultural, Recreational, and Landscape Water Use, Duval County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	150	10	10	0	0	0.01	0.00	0.01
Fruit Crops								
Blueberries	18	13	6	0	7	0.01	0.00	0.01
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	10	7	7	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	200	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	200	200	200	0	0	0.07	0.00	0.07
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	12	12	0	0	12	0.03	0.00	0.03
Ornamentals (container grown)	60	60	45	0	15	0.15	0.00	0.15
Improved pasture	12,000	500	460	40	0	0.34	0.00	0.34
Sod	600	600	600	0	0	0.46	0.08	0.54
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.02	0.00	0.02
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	2,992	1,413	1,413	0	0	2.70	0.65	3.35
Turf grass (lawn)	150	150	150	0	0	0.27	0.00	0.27
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	13,250	1,402	1,328	40	34	1.07	0.08	1.15
Agricultural nonirrigation	0	0	0	0	0	0.02	0.00	0.02
Recreational/landscape	3,142	1,563	1,563	0	0	2.97	0.65	3.62
Grand Total	16,392	2,965	2,891	40	34	4.06	0.73	4.79

FLAGLER COUNTY

Total population	39,052
Total area	485 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	39,052	Total area	310,400 (485 mi^2)
Public supply	27,756	Farmed	23,717
Self-supplied	11,296	*Irrigated*	6,252
Per capita (gallons per day)	162		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	4.50	0.00	4.50	0.00
Domestic self-supply	1.83	0.00	1.83	0.00
Commercial/industrial use	0.07	0.00	0.07	0.00
Agriculture	6.66	0.00	6.66	0.00
Recreational/landscape irrigation	0.18	1.42	1.60	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.07	0.00	0.07	0.00
Total	13.31	1.42	14.73	0.00

Total ground	13.31
Total surface	1.42
County total	14.73

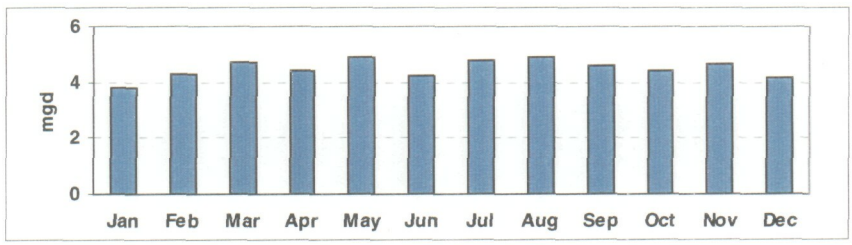

Figure A15. Monthly public supply water use in Flagler County, 1996

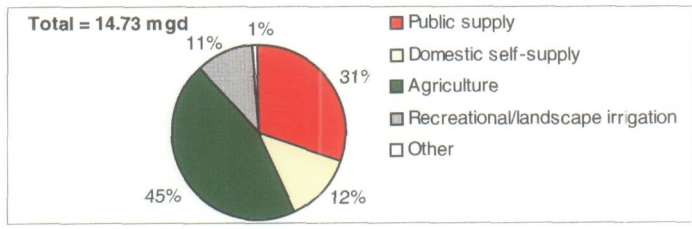

Figure A16. Flagler County—percentages, by category, of freshwater use, 1996. *The "other" category includes commercial and industrial water use and abandoned artesian wells.*

1996 Water Users in Flagler County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Bulow Village	Public supply	430	0.11	Floridan aquifer	0.00	
Bunnell, City of	Public supply	2,048	0.25	Floridan aquifer	0.00	
Flagler Beach, City of	Public supply	4,225	0.54	Floridan aquifer	0.00	
Ocean City Utilities	Public supply	324	0.06	Floridan aquifer	0.00	
Palm Coast Utilities	Public supply	19,908	3.47	Floridan and surficial aquifers	0.00	
Plantation Bay	Public supply	821	0.07	Floridan aquifer	0.00	
Total Public Supply		27,756	4.50		0.00	
Holiday Travel Park	Institutional		0.02	Floridan aquifer	0.00	
Marineland	Institutional		0.05	Floridan aquifer	0.00	
Total Commercial/Industrial			0.07		0.00	

1996 Agricultural, Recreational, and Landscape Water Use, Flagler County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	2,000	2,000	200	1,800	0	1.44	0.00	1.44
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	1,500	1,500	0	1,500	0	1.55	0.00	1.55
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	1,000	1,000	500	500	0	1.34	0.00	1.34
Fruit Crops								
Blueberries	20	20	20	0	0	0.02	0.00	0.02
Citrus	100	100	100	0	0	0.25	0.00	0.25
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	750	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	750	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	100	100	0	0	100	0.42	0.00	0.42
Ornamentals (container grown)	105	105	5	0	100	0.44	0.00	0.44
Improved pasture	16,580	695	95	600	0	0.93	0.00	0.93
Sod	300	220	220	0	0	0.27	0.00	0.27
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	362	362	362	0	0	0.15	1.03	1.18
Turf grass (lawn)	150	150	150	0	0	0.03	0.39	0.42
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	23,205	5,740	1,140	4,400	200	6.66	0.00	6.66
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	512	512	512	0	0	0.18	1.42	1.60
Grand Total	23,717	6,252	1,652	4,400	200	6.84	1.42	8.26

INDIAN RIVER COUNTY

Total population	102,211
Total area	503 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	102,211	Total area	321,920 (503 mi^2)
Public supply	61,932	Farmed	136,180
Self-supplied	40,279	Irrigated	96,308
Per capita (gallons per day)	183		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
*Public supply**	11.36	0.00	11.36	0.00
Domestic self-supply	7.37	0.00	7.37	0.00
Commercial/industrial use	0.14	0.00	0.14	0.00
Agriculture	49.80	128.56	178.36	0.00
Recreational/landscape irrigation	2.42	1.30	3.72	0.00
Thermoelectric power generation	0.00	0.00	0.00	49.77
Abandoned artesian wells	16.75	0.00	16.75	0.00
Total	87.84	129.86	217.70	49.77

Total ground	87.84
Total surface	179.63
County total	267.47

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with freshwater.

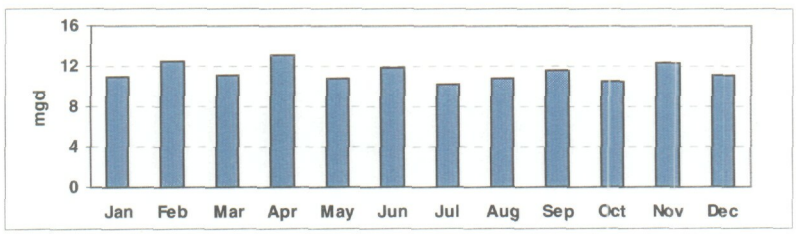

Figure A17. Monthly public supply water use in Indian River County, 1996

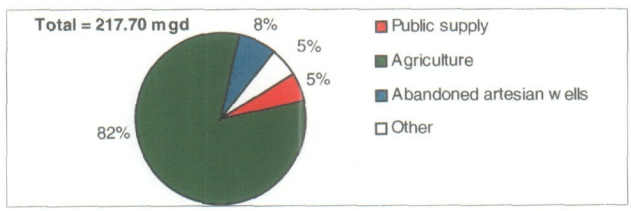

Figure A18. Indian River County—percentages, by category, of freshwater use, 1996. *The "other" category includes domestic self-supply, commercial and industrial use, recreational and landscape irrigation, and thermoelectric power generation.*

1996 Water Users in Indian River County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Aspen Whispering Palms	Public supply	300	0.02	Floridan aquifer and R/O	0.00	
Countryside North MHP	Public supply	1,200	0.06	Surficial aquifer	0.00	
Fellsmere, City of	Public supply	2,412	0.27	Floridan aquifer	0.00	
Indian River County Utilities	Public supply	22,105	4.19	Floridan aquifer	0.00	
Lakewood Village	Public supply	876	0.03	Floridan aquifer and R/O	0.00	
Oyster Pointe	Public supply	200	0.03	Floridan aquifer	0.00	
Vero Beach, City of	Public supply	34,839	6.76	Floridan and surficial aquifers	0.00	
Total Public Supply		61,932	11.36		0.00	
Ocean Spray processing plant	Industrial		0.10	Floridan and surficial aquifers	0.00	
Sun-Ag/Fellsmere packing house	Industrial		0.01	Surficial aquifer	0.00	
Indian River Correctional Facility	Institutional		0.03	Surficial aquifer	0.00	
Total Commercial/Industrial			0.14		0.00	
Vero Beach Municipal Power Plant	Power generation		0.00		49.77	Indian River*
Total Power Generation			0.00		49.77	

Note: MHP = mobile home park
R/O = reverse osmosis

*Saline water

1996 Agricultural, Recreational, and Landscape Water Use, Indian River County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	150	150	0	150	0	0.11	0.00	0.11
Carrots	50	50	0	50	0	0.07	0.00	0.07
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	100	100	0	100	0	0.10	0.00	0.10
Tomatoes	10	10	0	5	5	0.01	0.00	0.01
Sweet corn	700	700	0	700	0	0.23	0.23	0.46
Miscellaneous	2,170	2,170	0	2,170	0	1.00	1.00	2.00
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	65,446	65,446	200	38,613	26,633	39.39	118.16	157.55
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	20	20	10	10	0	0.02	0.00	0.02
Watermelons	100	50	0	50	0	0.03	0.00	0.03
Miscellaneous	100	100	0	100	0	0.32	0.00	0.32
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	2,000	2,000	0	2,000	0	0.00	1.62	1.62
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	50	50	0	50	0	0.18	0.00	0.18
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	300	300	0	300	0	0.10	0.10	0.20
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	25	25	0	0	25	0.08	0.00	0.08
Ornamentals (container grown)	60	60	0	0	60	0.18	0.00	0.18
Improved pasture	62,208	22,747	0	22,747	0	6.90	6.90	13.80
Sod	1,000	1,000	500	500	0	0.36	0.55	0.91
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.72	0.00	0.72
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,637	1,276	1,276	0	0	2.42	1.19	3.61
Turf grass (lawn)	54	54	54	0	0	0.00	0.11	0.11
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	134,489	94,978	710	67,545	26,723	49.08	128.56	177.64
Agricultural nonirrigation	0	0	0	0	0	0.72	0.00	0.72
Recreational/landscape	1,691	1,330	1,330	0	0	2.42	1.30	3.72
Grand Total	136,180	96,308	2,040	67,545	26,723	52.22	129.86	182.08

LAKE COUNTY

Total population	182,309
Total area	953 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	180,486	Total area	555,637 (868 mi^2)
Public supply	168,973	Farmed	79,588
Self-supplied	11,513	Irrigated	25,289
Per capita (gallons per day)	174		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	29.35	0.00	29.35	0.00
Domestic self-supply	2.00	0.00	2.00	0.00
Commercial/industrial use	8.51	0.73	9.24	0.00
Agriculture	37.21	6.48	43.69	0.00
Recreational/landscape irrigation	1.48	1.04	2.52	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.76	0.00	0.76	0.00
Total	79.31	8.25	87.56	0.00

Total ground	79.31
Total surface	8.25
County total	87.56

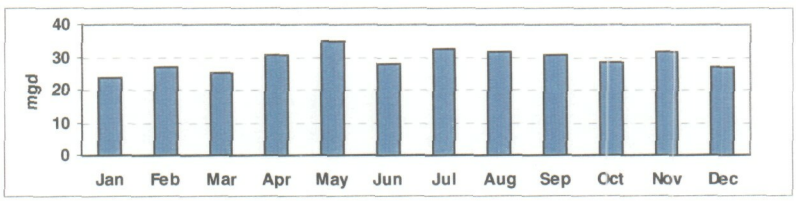

Figure A19. Monthly public supply water use in Lake County, 1996

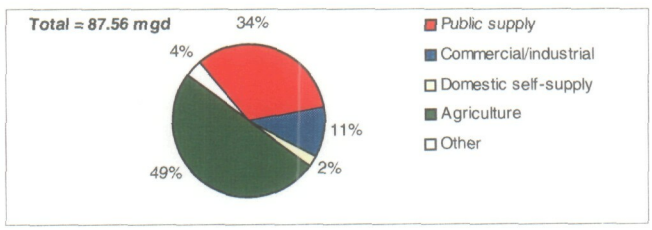

Figure A20. Lake County—percentage, by category, of freshwater use, 1996. *The "other" category includes recreational and landscape irrigation and abandoned artesian wells.*

1996 Water Users in Lake County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Astor Park Water Association	Public supply	2,600	0.27	Floridan aquifer	0.00	
B's RV Resort	Public supply	618	0.02	Floridan aquifer	0.00	
Bonfire MHP	Public supply	321	0.05	Floridan aquifer	0.00	
Brendenwood Water System	Public supply	159	0.04	Floridan aquifer	0.00	
Brittany Estates	Public supply	463	0.06	Floridan aquifer	0.00	
Century Estates	Public supply	250	0.03	Floridan aquifer	0.00	
Chain O'Lakes MHP	Public supply	703	0.07	Floridan aquifer	0.00	
Chateau-Orange Lake MHP	Public supply	450	0.14	Floridan aquifer	0.00	
Citrus Cove subdivision	Public supply	87	0.06	Floridan aquifer	0.00	
Clerbrook RV Resorts	Public supply	2,954	0.13	Floridan aquifer	0.00	
Clermont, City of	Public supply	7,291	1.38	Floridan aquifer	0.00	
Clermont East	Public supply	2,699	0.54	Floridan aquifer	0.00	
Corley Island MHP	Public supply	500	0.04	Floridan aquifer	0.00	
Country Life Family Park	Public supply	235	0.09	Floridan aquifer	0.00	
Country Squire MHP	Public supply	289	0.03	Floridan aquifer	0.00	
Crescent West subdivision	Public supply	249	0.11	Floridan aquifer	0.00	
Cypress Creek	Public supply	341	0.06	Floridan aquifer	0.00	
Dora Pines MHP	Public supply	376	0.22	Floridan aquifer	0.00	
Eagle Nest MHP	Public supply	340	0.06	Floridan aquifer	0.00	
Eustis, City of	Public supply	25,500	2.48	Floridan aquifer	0.00	
Forester Haven II	Public supply	120	0.02	Floridan aquifer	0.00	
Forty-Eight Estates	Public supply	220	0.02	Floridan aquifer	0.00	
Fruitland Park, City of	Public supply	2,981	0.62	Floridan aquifer	0.00	
Grand Terrace subdivision	Public supply	263	0.03	Floridan aquifer	0.00	
Greater Groves	Public supply	1,180	0.21	Floridan aquifer	0.00	
Groveland, City of	Public supply	2,487	0.34	Floridan aquifer	0.00	
Harbor Hills	Public supply	277	0.30	Floridan aquifer	0.00	
Harbor Oaks MHP	Public supply	421	0.10	Floridan aquifer	0.00	
Haselton Mobile Villas	Public supply	730	0.05	Floridan aquifer	0.00	
Hawthorne at Leesburg	Public supply	2,759	0.44	Floridan aquifer	0.00	
Hill Water System	Public supply	108	0.09	Floridan aquifer	0.00	
Howey-in-the-Hills, Town of	Public supply	1,295	0.24	Floridan aquifer	0.00	
King's Cove subdivision	Public supply	440	0.10	Floridan aquifer	0.00	
Lady Lake Central	Public supply	3,102	0.30	Floridan aquifer	0.00	
Lady Lake MHP	Public supply	286	0.03	Floridan aquifer	0.00	
Lake Beauclaire subdivision	Public supply	56	0.02	Floridan aquifer	0.00	
Lake Crescent Hills	Public supply	315	0.15	Floridan aquifer	0.00	
Lake Griffin Isles MHP	Public supply	928	0.10	Floridan aquifer	0.00	
Lake Ridge Club	Public supply	273	0.12	Floridan aquifer	0.00	
Lake Utility Company	Public supply	3,067	0.59	Floridan aquifer	0.00	
Lake Yale Estates	Public supply	40	0.02	Floridan aquifer	0.00	
Lakeside Village	Public supply	278	0.02	Floridan aquifer	0.00	
Lakeview Terrace Center	Public supply	271	0.04	Floridan aquifer	0.00	
Leesburg, City of	Public supply	23,352	5.09	Floridan aquifer	0.00	
Leisure Meadows MH Ranch	Public supply	237	0.03	Floridan aquifer	0.00	
Little Lake Harris Shores	Public supply	317	0.03	Floridan aquifer	0.00	
Mascotte, Town of	Public supply	2,376	0.25	Floridan aquifer	0.00	
Mid-Florida Lakes MHP	Public supply	2,296	0.38	Floridan aquifer	0.00	
Minneola, City of	Public supply	2,463	0.49	Floridan aquifer	0.00	
Molokai Park Water System	Public supply	606	0.03	Floridan aquifer	0.00	

1996 Water Users in Lake County—*Continued*

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Monteverde MHP	Public supply	600	0.04	Floridan aquifer	0.00	
Monteverde, Town of	Public supply	1,111	0.16	Floridan aquifer	0.00	
Mount Dora, City of	Public supply	18,939	2.83	Floridan aquifer	0.00	
Oak Springs MHP	Public supply	1,029	0.20	Floridan aquifer	0.00	
Palm Shores RV Resort	Public supply	776	0.05	Floridan aquifer	0.00	
Pennbrooke Fairways	Public supply	425	0.14	Floridan aquifer	0.00	
Raintree Harbor	Public supply	61	0.03	Floridan aquifer	0.00	
Ridge Crest MHP	Public supply	476	0.05	Floridan aquifer	0.00	
Shangri-La by the Sea	Public supply	395	0.06	Floridan aquifer	0.00	
Silver Oaks subdivision	Public supply	109	0.04	Floridan aquifer	0.00	
South Umatilla Water Association	Public supply	344	0.05	Floridan aquifer	0.00	
Southern States Utilities	Public supply	8,368	1.63	Floridan aquifer	0.00	
Southlake Utilities	Public supply	650	0.14	Floridan aquifer	0.00	
Springs Park Area	Public supply	317	0.10	Floridan aquifer	0.00	
Summit Chase Villas	Public supply	474	0.04	Floridan aquifer	0.00	
Sunlake Estates	Public supply	703	0.32	Floridan aquifer	0.00	
Tavares, City of	Public supply	11,564	1.57	Floridan aquifer	0.00	
Treasure Cove	Public supply	70	0.02	Floridan aquifer	0.00	
Umatilla, City of	Public supply	2,432	0.43	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	1,011	0.35	Floridan aquifer	0.00	
Villages of Lake-Sumter	Public supply	16,673	4.36	Floridan aquifer	0.00	
Water Oak Estates	Public supply	1,607	0.34	Floridan aquifer	0.00	
Waterwood subdivision	Public supply	295	0.07	Floridan aquifer	0.00	
Wedgewood subdivision	Public supply	423	0.15	Floridan aquifer	0.00	
Woodland Heritage MHP	Public supply	152	0.05	Floridan aquifer	0.00	
Total Public Supply		168,973	29.35		0.00	
SSU, Sunshine Parkway	Commercial		0.11	Floridan aquifer	0.00	
Classic Manufacturing	Industrial		0.02	Floridan aquifer	0.00	
Coca Cola, Leesburg plant	Industrial		0.48	Floridan aquifer	0.00	
Eustis Sand Company	Industrial*		0.28	Floridan aquifer	0.73	Mine pit
FRI, Astatula Mine	Industrial*		0.47	Floridan aquifer	0.00	
Florida Select Citrus (B&W Canning)	Industrial		0.12	Floridan aquifer	0.00	
Golden Gem	Industrial		0.70	Floridan aquifer	0.00	
FRI, Lake Sand Plant	Industrial*		0.01	Floridan aquifer	0.00	
Service Ice Company	Industrial		0.08	Floridan aquifer	0.00	
Silver Sand Company (Tarmac)	Industrial*		5.25	Floridan aquifer	0.00	
Southridge Industrial	Industrial		0.04	Floridan aquifer	0.00	
All Seasons Resort	Institutional		0.03	Floridan aquifer	0.00	
Blue Parrot RV Park	Institutional		0.06	Floridan aquifer	0.00	
Camp La-no-che, BSA	Institutional		0.02	Floridan aquifer	0.00	
Camp Ocala	Institutional		0.01	Floridan aquifer	0.00	
Citrus Valley Campground	Institutional		0.07	Floridan aquifer	0.00	
Fisherman's Cove	Institutional		0.03	Floridan aquifer	0.00	
Florida United Methodist	Institutional		0.04	Floridan aquifer	0.00	
Holiday Travel Resort	Institutional		0.14	Floridan aquifer	0.00	
Lake Correctional Facility	Institutional		0.16	Floridan aquifer	0.00	
Lake County Inn	Institutional		0.03	Floridan aquifer	0.00	

1996 Water Users in Lake County—*Continued*

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Lake Yale Baptist Assembly	Institutional		0.04	Floridan aquifer	0.00	
Mission Inn	Institutional		0.11	Floridan aquifer	0.00	
Orlando Resort	Institutional		0.01	Floridan aquifer	0.00	
Pine Lake Retreat	Institutional		0.01	Floridan aquifer	0.00	
Thousand Trails Campground	Institutional		0.09	Floridan aquifer	0.00	
Vacation Village Condominiums	Institutional		0.07	Floridan aquifer	0.00	
Wekiva Falls Resort	Institutional		0.03	Floridan aquifer	0.00	
Total Commercial/Industrial			8.51		0.73	

Note: BSA = Boy Scouts of America
FRI = Florida Rock Industries
MH = mobile home
MHP = mobile home park
RV = recreational vehicle
SSU = Southern States Utilities

*Mining industry

1996 Agricultural, Recreational, and Landscape Water Use, Lake County

	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	150	150	0	150	0	0.07	0.07	0.14
Carrots	500	500	0	500	0	0.24	0.24	0.48
Cucumbers	370	370	0	370	0	0.16	0.16	0.32
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	750	750	0	750	0	0.63	0.42	1.05
Miscellaneous	850	850	0	850	0	0.60	0.39	0.99
Fruit Crops								
Blueberries	61	61	46	0	15	0.04	0.00	0.04
Citrus	20,555	16,842	3,158	0	13,684	28.70	4.29	32.99
Grapes	54	54	0	0	54	0.06	0.00	0.06
Peaches	7	7	0	0	7	0.00	0.00	0.00
Pecans	80	80	0	0	80	0.13	0.00	0.13
Strawberries	5	5	0	0	5	0.00	0.00	0.00
Watermelons	320	320	320	0	0	0.11	0.00	0.11
Miscellaneous	25	25	15	0	10	0.05	0.02	0.07
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	2,000	500	300	200	0	0.18	0.18	0.36
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	300	150	150	0	0	0.04	0.04	0.08
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	550	550	550	0	0	1.83	0.20	2.03
Ornamentals (field grown)	100	100	0	0	100	0.33	0.00	0.33
Ornamentals (container grown)	950	950	450	0	500	2.98	0.16	3.14
Improved pasture	50,000	1,886	1,886	0	0	1.00	0.04	1.04
Sod	250	250	50	200	0	0.05	0.27	0.32
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.01	0.00	0.01
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,591	769	769	0	0	1.23	1.00	2.23
Turf grass (lawn)	120	120	120	0	0	0.25	0.04	0.29
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	77,877	24,400	6,925	3,020	14,455	37.20	6.48	43.68
Agricultural nonirrigation	0	0	0	0	0	0.01	0.00	0.01
Recreational/landscape	1,711	889	889	0	0	1.48	1.04	2.52
Grand Total	79,588	25,289	7,814	3,020	14,455	38.69	7.52	46.21

MARION COUNTY

Total population	229,260
Total area	1,579 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	179,511	Total area	730,635 (1,142 mi^2)
Public supply	83,414	Farmed	72,849
Self-supplied	96,097	Irrigated	5,673
Per capita (gallons per day)	182		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	Surface	Total Fresh	Surface
Public supply	15.15	0.00	15.15	0.00
Domestic self-supply	17.49	0.00	17.49	0.00
Commercial/industrial use	1.76	0.00	1.76	0.00
Agriculture	4.27	0.46	4.73	0.00
Recreational/landscape irrigation	0.96	0.56	1.52	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	2.83	0.00	2.83	0.00
Total	42.46	1.02	43.48	0.00

Total ground	42.46
Total surface	1.02
County total	43.48

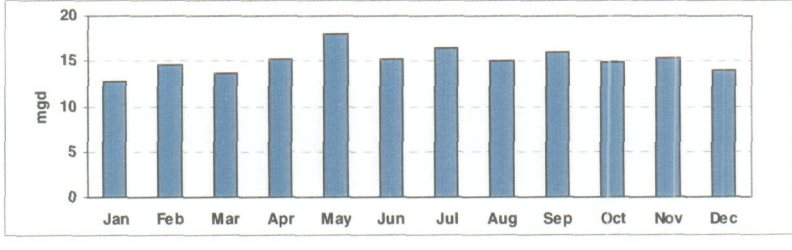

Figure A21. Monthly public supply water use in Marion County, 1996

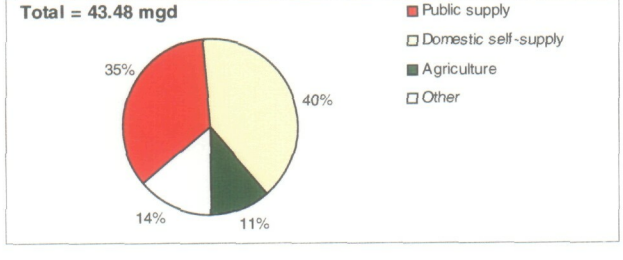

Figure A22. Marion County—percentages, by category, of freshwater use, 1996. *The "other" category includes commercial and industrial water use, recreational and landscape irrigation, and abandoned artesian wells*

1996 Water Users in Marion County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Belleview, City of	Public supply	3,307	0.57	Floridan aquifer	0.00	
Community Water Cooperative	Public supply	454	0.03	Floridan aquifer	0.00	
Eagle Springs Utilities	Public supply	478	0.05	Floridan aquifer	0.00	
Fort King Forest	Public supply	280	0.06	Floridan aquifer	0.00	
GDU, Silver Springs Shores	Public supply	8,967	1.00	Floridan aquifer	0.00	
Greenfields subdivision	Public supply	849	0.10	Floridan aquifer	0.00	
Hawks Point subdivision	Public supply	200	0.03	Floridan aquifer	0.00	
Hideaway MHP	Public supply	250	0.03	Floridan aquifer	0.00	
Hilltop Estates MHP	Public supply	83	0.03	Floridan aquifer	0.00	
J & J MHP	Public supply	350	0.03	Floridan aquifer	0.00	
Linadale MHP	Public supply	450	0.08	Floridan aquifer	0.00	
Maco/South Oaks subdivision	Public supply	886	0.16	Floridan aquifer	0.00	
Marion Utilities	Public supply	3,582	0.44	Floridan aquifer	0.00	
McIntosh, City of	Public supply	537	0.26	Floridan aquifer	0.00	
Oak Bend MHP	Public supply	250	0.05	Floridan aquifer	0.00	
Oak Haven Quadruplexes	Public supply	78	0.03	Floridan aquifer	0.00	
Oak Park MHP	Public supply	93	0.02	Floridan aquifer	0.00	
Oakmuir Village	Public supply	175	0.05	Floridan aquifer	0.00	
Ocala, City of	Public supply	43,332	8.94	Floridan aquifer	0.00	
Ocala East Villas	Public supply	500	0.11	Floridan aquifer	0.00	
Ocala Oaks Utilities	Public supply	2,547	0.32	Floridan aquifer	0.00	
Paddock Park South MHP	Public supply	284	0.03	Floridan aquifer	0.00	
Peppertree Village	Public supply	400	0.09	Floridan aquifer	0.00	
Quadvilla Estates	Public supply	476	0.04	Floridan aquifer	0.00	
Raven Hills subdivision	Public supply	710	0.13	Floridan aquifer	0.00	
Residential Water System	Public supply	1,249	0.19	Floridan aquifer	0.00	
Shady Road Villas Trailer Park	Public supply	190	0.03	Floridan aquifer	0.00	
Smith Lake Shores MHP	Public supply	385	0.07	Floridan aquifer	0.00	
Southern States Utilities	Public supply	1,580	0.20	Floridan aquifer	0.00	
Spruce Creek South Utilities	Public supply	3,965	0.95	Floridan aquifer	0.00	
Stonecrest subdivision	Public supply	354	0.22	Floridan aquifer	0.00	
Sunshine Utilities	Public supply	4,259	0.57	Floridan aquifer	0.00	
Tradewinds Village Utilities	Public supply	732	0.09	Floridan aquifer	0.00	
Windgate Estates	Public supply	293	0.04	Floridan aquifer	0.00	
Winding Waters	Public supply	339	0.03	Floridan aquifer	0.00	
Windstream subdivision	Public supply	235	0.04	Floridan aquifer	0.00	
Woods & Lakes subdivision	Public supply	315	0.04	Floridan aquifer	0.00	
Total Public Supply		83,414	15.15		0.00	
American Panel Corporation	Industrial		0.03	Floridan aquifer	0.00	
Certified Grocers	Industrial		0.03	Floridan aquifer	0.00	
FRI, Marion mine	Industrial*		0.79	Floridan aquifer	0.00	
FRI, Weirsdale sand plant[1]	Industrial*		0.00	Floridan aquifer	0.00	
Golden Flake Inc., Ocala plant	Industrial		0.10	Floridan aquifer	0.00	
Days Inn[1]	Institutional		0.00	Floridan aquifer	0.00	
Daytop Village	Institutional		0.02	Floridan aquifer	0.00	
Florida Elks Youth Camp	Institutional		0.02	Floridan aquifer	0.00	

1996 Water Users in Marion County—*Continued*

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Harbour View Elementary	Institutional		0.01	Floridan aquifer	0.00	
Holiday Inn West	Institutional		0.10	Floridan aquifer	0.00	
Juniper Springs	Institutional		0.02	Floridan aquifer	0.00	
Lake Weir Middle School	Institutional		0.05	Floridan aquifer	0.00	
Marion Correctional Facility	Institutional		0.24	Floridan aquifer	0.00	
Market of Marion	Institutional		0.02	Floridan aquifer	0.00	
Ocala Quality Inn	Institutional		0.02	Floridan aquifer	0.00	
Silver Springs, Inc.	Institutional		0.29	Floridan aquifer	0.00	
Springs RV Park	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			1.76		0.00	

Note: FRI = Florida Rock Industries
GDU = General Development Utilities
MHP = mobile home park
RV = recreational vehicle

*Mining industry
†Pumpage less than 0.01 mgd

1996 Agricultural, Recreational, and Landscape Water Use, Marion County

	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	10	10	10	0	0	0.01	0.00	0.01
Sweet corn	40	40	40	0	0	0.03	0.00	0.03
Miscellaneous	1,700	940	940	0	0	0.84	0.00	0.84
Fruit Crops								
Blueberries	100	100	100	0	0	0.06	0.00	0.06
Citrus	1,200	700	0	0	700	1.09	0.07	1.16
Grapes	20	20	20	0	0	0.02	0.00	0.02
Peaches	10	10	10	0	0	0.02	0.00	0.02
Pecans	10	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	1,300	1,000	1,000	0	0	0.44	0.00	0.44
Miscellaneous	200	100	100	0	0	0.20	0.00	0.20
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	3,000	350	350	0	0	0.14	0.10	0.24
Peanuts	2,000	134	134	0	0	0.08	0.00	0.08
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	200	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	1,500	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	20	20	20	0	0	0.07	0.00	0.07
Ornamentals (field grown)	14	14	14	0	0	0.04	0.00	0.04
Ornamentals (container grown)	52	52	52	0	0	0.12	0.03	0.15
Improved pasture	59,230	940	940	0	0	0.40	0.26	0.66
Sod	660	660	660	0	0	0.68	0.00	0.68
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.03	0.00	0.03
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,500	500	500	0	0	0.78	0.56	1.34
Turf grass (lawn)	83	83	83	0	0	0.18	0.00	0.18
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	71,266	5,090	4,390	0	700	4.24	0.46	4.70
Agricultural nonirrigation	0	0	0	0	0	0.03	0.00	0.03
Recreational/landscape	1,583	583	583	0	0	0.96	0.56	1.52
Grand Total	72,849	5,673	4,973	0	700	5.23	1.02	6.25

NASSAU COUNTY

Total population	51,097
Total area	652 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	51,097	Total area	417,280 (652 mi^2)
Public supply	26,715	Farmed	7,406
Self-supplied	24,382	Irrigated	770
Per capita (gallons per day)	188		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	5.01	0.00	5.01	0.00
Domestic self-supply	4.58	0.00	4.58	0.00
Commercial/industrial use	35.73	0.00	35.73	2.25
Agriculture	0.18	0.00	0.18	0.00
Recreational/landscape irrigation	1.29	0.19	1.48	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.40	0.00	0.40	0.00
Total	47.19	0.19	47.38	2.25

Total ground	47.19
Total surface	2.44
County total	49.63

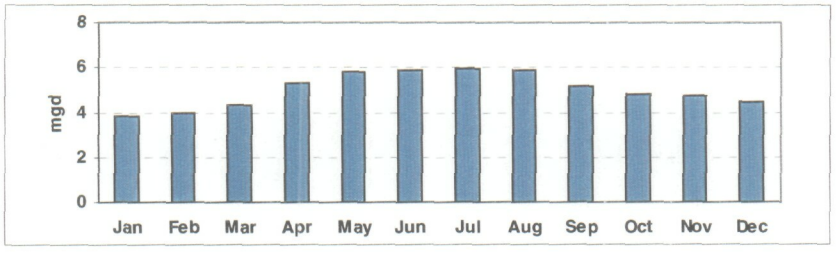

Figure A23. Monthly public supply water use in Nassau County, 1996

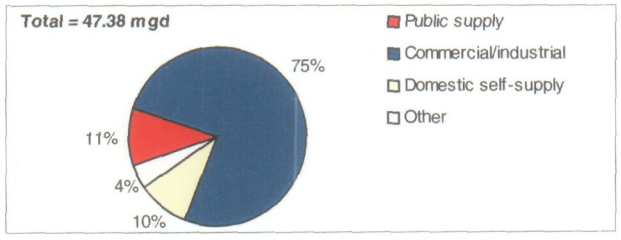

Figure A24. Nassau County—percentages, by category, of freshwater use, 1996. *The "other" category includes agricultural water use, recreational and landscape irrigation, and abandoned artesian wells.*

1996 Water Users in Nassau County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Callahan, Town of	Public supply	1,400	0.18	Floridan aquifer	0.00	
Eastwood Oaks Apartments	Public supply	279	0.03	Floridan aquifer	0.00	
Fernandina Beach, City of	Public supply	14,960	3.34	Floridan aquifer	0.00	
Hillard, Town of	Public supply	2,400	0.24	Floridan aquifer	0.00	
Marsh Cove Apartments	Public supply	350	0.04	Floridan aquifer	0.00	
Otter Run	Public supply	581	0.09	Floridan aquifer	0.00	
SSU, Amelia Island	Public supply	6,600	1.08	Floridan aquifer	0.00	
Yulee Villas Apartments	Public supply	145	0.01	Floridan aquifer	0.00	
Total Public Supply		26,715	5.01		0.00	
Jefferson Smurfit, Fernandina Beach	Industrial*		20.48	Floridan aquifer	0.00	
Rayonier Paper Mill	Industrial*		15.23	Floridan aquifer	2.25	Amelia River†
FDOT I-95 Welcome Center	Institutional		0.01	Floridan aquifer	0.00	
Nassau Correctional Facility	Institutional		0.01	Floridan aquifer	0.00	
Total Commercial/Industrial			35.73		2.25	

Note: FDOT = Florida Department of Transportation
SSU = Southern States Utilities

*Pulp and paper industry
†Saline Water

1996 Agricultural, Recreational, and Landscape Water Use, Nassau County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	100	50	50	0	0	0.05	0.00	0.05
Fruit Crops								
Blueberries	30	15	15	0	0	0.01	0.00	0.01
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	500	50	50	0	0	0.04	0.00	0.04
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	1,000	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	40	40	40	0	0	0.03	0.00	0.03
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	20	20	20	0	0	0.05	0.00	0.05
Ornamentals (container grown)	3	0	0	0	0	0.00	0.00	0.00
Improved pasture	5,000	0	0	0	0	0.00	0.00	0.00
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	645	565	565	0	0	1.23	0.19	1.42
Turf grass (lawn)	68	30	30	0	0	0.06	0.00	0.06
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	6,693	175	175	0	0	0.18	0.00	0.18
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	713	595	595	0	0	1.29	0.19	1.48
Grand Total	7,406	770	770	0	0	1.47	0.19	1.66

OKEECHOBEE COUNTY

Total population	33,643
Total area	774 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	505	Total area	65,388 (102 mi^2)
Public supply	0	Farmed	34,785
Self-supplied	505	Irrigated	7,785
Per capita* (gallons per day)	159		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	0.00	0.00	0.00	0.00
Domestic self-supply	0.08	0.00	0.08	0.00
Commercial/industrial use	0.03	0.00	0.03	0.00
Agriculture	10.18	0.00	10.18	0.00
Recreational/landscape irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	10.29	0.00	10.29	0.00

Total ground	10.29
Total surface	0.00
County total	10.29

*Used St. Johns River Water Management District average per capita.

1996 Water Users in Okeechobee County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Florida Department of Transportation, Fort Drum Plaza*	Institutional		0.03	Floridan aquifer	0.00	
Total Commercial/Industrial			0.03		0.00	

*1995 figure

1996 Agricultural, Recreational, and Landscape Water Use, Okeechobee County

	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Fruit Crops								
Blueberries	17	17	0	17	0	0.02	0.00	0.02
Citrus	4,668	4,668	0	0	4,668	8.30	0.00	8.30
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	100	100	100	0	0	0.04	0.00	0.04
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	0	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	0	0	0	0	0	0.00	0.00	0.00
Improved pasture	30,000	3,000	0	3,000	0	1.82	0.00	1.82
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation		0	0	0	0	0.00	0.00	0.00
Turf grass (golf)	0	0	0	0	0	0.00	0.00	0.00
Turf grass (lawn)	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	34,785	7,785	100	3,017	4,668	10.18	0.00	10.18
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	0	0	0	0	0	0.00	0.00	0.00
Grand Total	34,785	7,785	100	3,017	4,668	10.18	0.00	10.18

ORANGE COUNTY

Total population	777,556
Total area	908 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	614,269	Total area	431,191 (674 mi^2)
Public supply	565,261	Farmed	69,991
Self-supplied	49,008	Irrigated	31,150
Per capita (gallons per day)	192		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply*	108.66	0.00	108.66	0.00
Domestic self-supply	9.41	0.00	9.41	0.00
Commercial/industrial use	3.15	0.00	3.15	0.00
Agriculture	14.64	29.14	43.78	0.00
Recreational/landscape irrigation	2.91	0.56	3.47	0.00
Thermoelectric power generation	0.72	0.00	0.72	0.00
Abandoned artesian wells	1.92	0.00	1.92	0.00
Total	141.41	29.70	171.11	0.00

Total ground	141.41
Total surface	29.70
County total	171.11

*Does not include 25.34 mgd of water withdrawn in Orange County for public supply use in Brevard County.

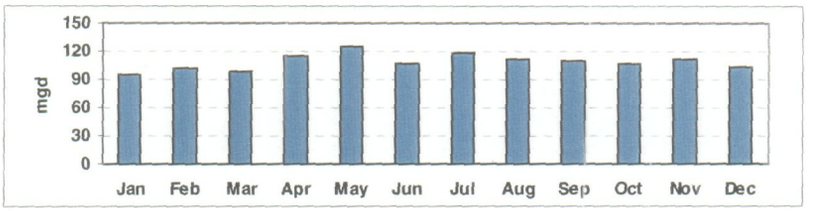

Figure A25. Monthly public supply water use in Orange County, 1996

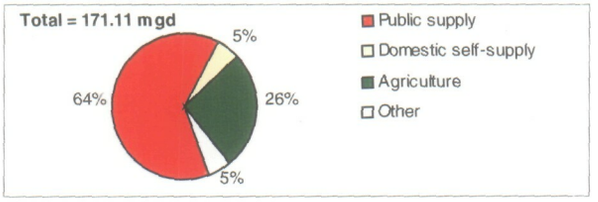

Figure A26. Orange County—percentages, by category, of freshwater use, 1996. *The "other" category includes commercial and industrial water use, recreation and landscape irrigation, thermoelectric power*

1996 Water Users in Orange County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Apopka, City of	Public supply	38,244	6.37	Floridan aquifer	0.00	
Brightwood Manor MHP	Public supply	594	0.10	Floridan aquifer	0.00	
Eatonville, Town of	Public supply	2,278	0.60	Floridan aquifer	0.00	
Econ Utilities, Wedgefield	Public supply	1,930	0.21	Floridan aquifer	0.00	
Hidden Valley MHP	Public supply	776	0.08	Floridan aquifer	0.00	
Lake Downey MHP	Public supply	159	0.04	Floridan aquifer	0.00	
Maitland, City of	Public supply	14,992	3.00	Floridan aquifer	0.00	
Oakland, Town of	Public supply	788	0.12	Floridan aquifer	0.00	
Ocoee, City of	Public supply	17,920	3.84	Floridan aquifer	0.00	
Ola Beach Improvement	Public supply	269	0.02	Floridan aquifer	0.00	
Orange County Utilities*	Public supply	81,703	23.95	Floridan aquifer	0.00	
Orlando Utilities Commission*	Public supply	288,020	53.49	Floridan aquifer	0.00	
Park Manor Estates	Public supply	3,328	0.39	Floridan aquifer	0.00	
Rock Springs MHP	Public supply	1,280	0.19	Floridan aquifer	0.00	
Shadow Hills MHP	Public supply	1,715	0.13	Floridan aquifer	0.00	
Southern States Utilities	Public supply	9,787	1.09	Floridan aquifer	0.00	
Starlight Ranch MHP	Public supply	2,004	0.18	Floridan aquifer	0.00	
Tangerine, Town of	Public supply	548	0.14	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	950	0.10	Floridan aquifer	0.00	
Valencia Estates MHP	Public supply	307	0.05	Floridan aquifer	0.00	
Winter Garden, City of	Public supply	14,976	2.07	Floridan aquifer	0.00	
Winter Park, City of	Public supply	79,268	11.79	Floridan aquifer	0.00	
Zellwood Station Utilities	Public supply	2,552	0.59	Floridan aquifer	0.00	
Zellwood Water Association	Public supply	873	0.12	Floridan aquifer	0.00	
Total Public Supply		565,261	108.66[†]		0.00	
Central Florida Research Park	Industrial		0.12	Floridan aquifer	0.00	
Consolidated Minerals, Inc.[‡]	Industrial[§]		0.00	Floridan aquifer	0.00	
Finfrock Industries	Industrial		0.01	Floridan aquifer	0.00	
Lust & Long Precool Co.	Industrial		0.07	Floridan aquifer	0.00	
Ralston Purina, Terry Farms	Industrial		0.15	Floridan aquifer	0.00	
The Minute Maid Company**	Industrial		0.23	Floridan aquifer	0.00	
Twyford Plant Lab	Industrial		0.05	Floridan aquifer	0.00	
Winter Garden Citrus, Inc.	Industrial		1.38	Floridan aquifer	0.00	
Outdoor World	Institutional		0.01	Floridan aquifer	0.00	
Sun Resort, Inc.	Institutional		0.22	Floridan aquifer	0.00	
University of Central Florida	Institutional		0.85	Floridan aquifer	0.00	
Yogi Bear's Jellystone Park	Institutional		0.06	Floridan aquifer	0.00	
Total Commercial/Industrial			3.15		0.00	

1996 Water Users in Orange County—*Continued*

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Orlando Utilities Commission, Stanton Power Plant	Power generation		0.72	Floridan aquifer	0.00	
Total Power Generation			0.72		0.00	

Note: MHP = mobile home park

*Does not include water used in the South Florida Water Management District (SFWMD). Total public supply population served by Orange County Utilities was 152,141; total amount of groundwater used was 33.36 mgd. Total public supply population served by Orlando Utilities Commission was 390,700; total amount of groundwater used was 81.89 mgd. Total public supply water use for all Orange County, including 37.81 mgd consumed in SFWMD, was 115.25 mgd.

†Does not include water withdrawn (25.34 mgd) for public supply use in Brevard County by the City of Cocoa.

‡Pumpage less than 0.01 mgd

§Mining industry

**Formally Coca-Cola Foods

1996 Agricultural, Recreational, and Landscape Water Use, Orange County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	1,200	880	0	880	0	0.66	0.00	0.66
Carrots	13,500	6,875	0	6,875	0	0.93	8.33	9.26
Cucumbers	1,020	745	0	745	0	0.71	0.00	0.71
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	75	75	75	0	0	0.09	0.00	0.09
Sweet corn	13,600	6,960	0	6,960	0	1.01	9.13	10.14
Miscellaneous	14,100	8,276	0	8,276	0	1.14	10.24	11.38
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	3,596	3,596	1,798	0	1,798	5.90	0.66	6.56
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	150	150	150	0	0	0.08	0.00	0.08
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	200	200	200	0	0	0.16	0.00	0.16
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	200	200	200	0	0	0.04	0.04	0.08
Soybeans	200	200	200	0	0	0.04	0.04	0.08
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	40	40	40	0	0	0.15	0.00	0.15
Ornamentals (field grown)	581	581	523	0	58	1.37	0.34	1.71
Ornamentals (container grown)	852	852	724	0	128	2.26	0.25	2.51
Improved pasture	18,562	0	0	0	0	0.00	0.00	0.00
Sod	200	200	200	0	0	0.10	0.11	0.21
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,534	939	939	0	0	2.20	0.43	2.63
Turf grass (lawn)	381	381	381	0	0	0.71	0.13	0.84
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	68,076	29,830	4,110	23,736	1,984	14.64	29.14	43.78
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	1,915	1,320	1,320	0	0	2.91	0.56	3.47
Grand Total	69,991	31,150	5,430	23,736	1,984	17.55	29.70	47.25

OSCEOLA COUNTY

Total population	139,724
Total area	1,322 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	3,214	Total area	312,204 (488 mi^2)
Public supply	0	Farmed	126,974
Self-supplied	3,214	Irrigated	12,354
Per capita* (gallons per day)	159		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	0.00	0.00	0.00	0.00
Domestic self-supply	0.51	0.00	0.51	0.00
Commercial/industrial use	0.00	0.00	0.00	0.00
Agriculture	5.19	8.25	13.44	0.00
Recreational/landscape irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	5.70	8.25	13.95	0.00

Total ground	5.70
Total surface	8.25
County total	13.95

*Used St. Johns River Water Management District average per capita.

1996 Agricultural, Recreational, and Landscape Water Use, Osceola County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	1,174	1,174	274	720	180	2.86	0.00	2.86
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	0	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	0	0	0	0	0	0.00	0.00	0.00
Improved pasture	125,800	11,180	0	11,180	0	2.33	8.25	10.58
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	0	0	0	0	0	0.00	0.00	0.00
Turf grass (lawn)	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	126,974	12,354	274	11,900	180	5.19	8.25	13.44
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	0	0	0	0	0	0.00	0.00	0.00
Grand Total	126,974	12,354	274	11,900	180	5.19	8.25	13.44

POLK COUNTY

Total population	452,707
Total area	1,875 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	4,527	Total area	37,200 (58 mi^2)
Public supply	1,679	Farmed	1,060
Self-supplied	2,848	Irrigated	1,060
Per capita (gallons per day)	155		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	0.26	0.00	0.26	0.00
Domestic self-supply	0.44	0.00	0.44	0.00
Commercial/industrial use	0.02	0.00	0.02	0.00
Agriculture	1.74	0.17	1.91	0.00
Recreational/landscape irrigation	0.00	0.00	0.00	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	0.00	0.00	0.00	0.00
Total	2.46	0.17	2.63	0.00

Total ground	2.46
Total surface	0.17
County total	2.63

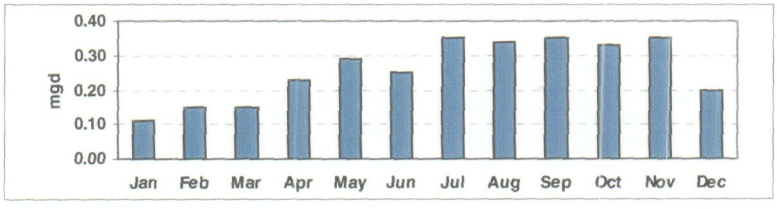

Figure A27. Monthly public supply water use in Polk County, 1996

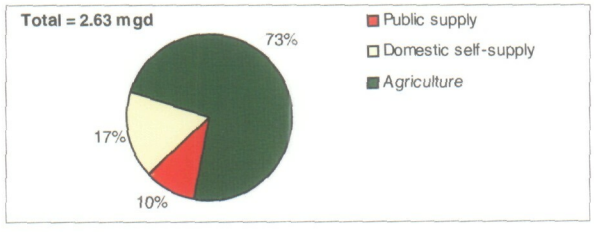

Figure A28. Polk County—percentages, by category, of freshwater use, 1996. *Commercial and industrial water use was less than 1%.*

1996 Water Users in Polk County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Emerald Acres	*Public supply*	*216*	*0.03*	*Floridan aquifer*	*0.00*	
Polk County Utilities, Davenport	Public supply	1,463	0.23	Floridan aquifer	0.00	
Total Public Supply		**1,679**	**0.26**		**0.00**	
Oak Harbor Campground	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			**0.02**		**0.00**	

1996 Agricultural, Recreational, and Landscape Water Use, Polk County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	0	0	0	0	0	0.00	0.00	0.00
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Fruit Crops								
Blueberries	0	0	0	0	0	0.00	0.00	0.00
Citrus	1,000	1,000	500	0	500	1.56	0.17	1.73
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	0	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (container grown)	60	60	30	0	30	0.18	0.00	0.18
Improved pasture	0	0	0	0	0	0.00	0.00	0.00
Sod	0	0	0	0	0	0.00	0.00	0.00
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	0	0	0	0	0	0.00	0.00	0.00
Turf grass (lawn)	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	1,060	1,060	530	0	530	1.74	0.17	1.91
Agricultural nonirrigation	0	0	0	0	0	0.00	0.00	0.00
Recreational/landscape	0	0	0	0	0	0.00	0.00	0.00
Grand Total	1,060	1,060	530	0	530	1.74	0.17	1.91

PUTNAM COUNTY

Total population	70,188
Total area	722 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	70,188	Total area	462,080 (722 mi^2)
Public supply	21,986	Farmed	51,961
Self-supplied	48,202	Irrigated	9,691
Per capita (gallons per day)	178		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	3.91	0.00	3.91	0.00
Domestic self-supply	8.60	0.00	8.60	0.00
Commercial/industrial use	20.36	17.26	37.62	0.00
Agriculture	16.14	1.12	17.26	0.00
Recreational/landscape irrigation	0.32	0.00	0.32	0.00
Thermoelectric power generation	0.55	15.91	16.46	0.00
Abandoned artesian wells	1.45	0.00	1.45	0.00
Total	51.33	34.29	85.62	0.00

Total ground	51.33
Total surface	34.29
County total	85.62

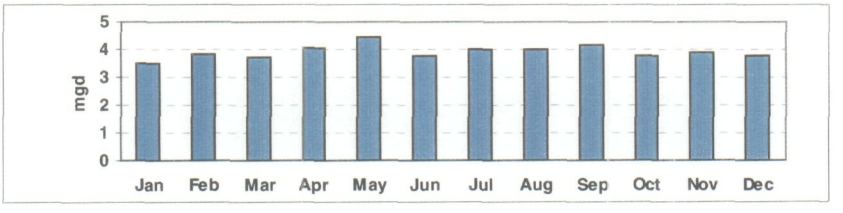

Figure A29. Monthly public supply water use in Putnam County, 1996

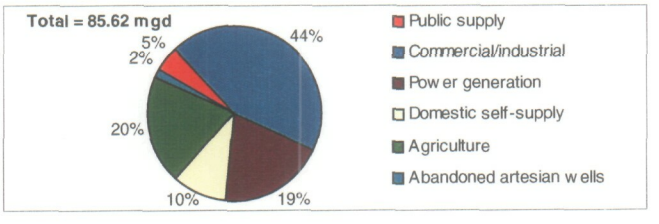

Figure A30. Putnam County—percentages, by category, of freshwater use, 1996. *Recreational and landscape irrigation was less than 1%.*

1996 Water Users in Putnam County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Crescent City, City of	Public supply	2,657	0.30	Floridan aquifer	0.00	
Interlachen, Town of	Public supply	1,390	0.10	Floridan aquifer	0.00	
Lake Como Water Association	Public supply	357	0.02	Floridan aquifer	0.00	
Melrose, Town of	Public supply	1,352	0.11	Floridan aquifer	0.00	
Palatka, City of (RC Willis)	Public supply	11,013	3.02	Floridan aquifer	0.00	
St. Johns Harbor WTP	Public supply	280	0.04	Floridan aquifer	0.00	
Southern States Utilities	Public supply	3,137	0.17	Floridan aquifer	0.00	
Welaka, Town of	Public supply	1,800	0.15	Floridan aquifer	0.00	
Total Public Supply		21,986	3.91		0.00	
Feldspar Corp., Edgar plant	Industrial*		0.23	Floridan aquifer	1.76	Retention pond
FRI, Grandin Sand	Industrial*		1.66	Floridan aquifer	0.00	
FRI, Keuka Industrial Sand	Industrial*		0.47	Floridan aquifer	0.00	
FRI, Keuka Sand	Industrial*		0.29	Floridan aquifer	0.00	
Georgia-Pacific, Hawthorne plant	Industrial†		0.14	Floridan aquifer	0.00	
Georgia-Pacific, Palatka plant	Industrial†		17.47	Floridan aquifer	15.50	Simms/Etonia creeks
Crescent City Junior/Senior High	Institutional		0.01	Floridan aquifer	0.00	
Putnam Correctional Facility	Institutional		0.09	Floridan aquifer	0.00	
Total Commercial/Industrial			20.36		17.26	
Florida Power & Light	Power generation		0.11	Floridan aquifer	1.70	St. Johns River
Seminole Electric	Power generation		0.44	Floridan aquifer	14.21	St. Johns River
Total Power Generation			0.55		15.91	

Note: FRI = Florida Rock Industries
WTP = water treatment plant

* Mining industry
† Pulp and paper industry

1996 Agricultural, Recreational, and Landscape Water Use, Putnam County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	500	500	0	500	0	0.37	0.00	0.37
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	5,500	5,500	0	5,500	0	5.69	0.00	5.69
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	200	200	0	200	0	0.32	0.00	0.32
Fruit Crops								
Blueberries	80	80	0	0	80	0.08	0.00	0.08
Citrus	200	200	50	0	150	0.48	0.00	0.48
Grapes	10	10	10	0	0	0.02	0.00	0.02
Peaches	30	30	30	0	0	0.07	0.00	0.07
Pecans	150	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	200	200	200	0	0	0.13	0.00	0.13
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	300	300	0	300	0	0.69	0.00	0.69
Field corn	1,500	500	0	500	0	0.65	0.02	0.67
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	4,000	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	1,500	1,500	1,500	0	0	4.44	1.10	5.54
Ornamentals (field grown)	250	250	0	250	0	1.05	0.00	1.05
Ornamentals (container grown)	100	100	100	0	0	0.42	0.00	0.42
Improved pasture	37,000	0	0	0	0	0.00	0.00	0.00
Sod	220	220	220	0	0	0.27	0.00	0.27
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.00	0.00	0.00
Fish farming	0	0	0	0	0	1.46	0.00	1.46
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	196	76	76	0	0	0.25	0.00	0.25
Turf grass (lawn)	25	25	25	0	0	0.07	0.00	0.07
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	51,740	9,590	2,110	7,250	230	14.68	1.12	15.80
Agricultural nonirrigation	0	0	0	0	0	1.46	0.00	1.46
Recreational/landscape	221	101	101	0	0	0.32	0.00	0.32
Grand Total	51,961	9,691	2,211	7,250	230	16.46	1.12	17.58

St. Johns County

Total population	101,729
Total area	609 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	101,729	Total area	389,760 (609 mi^2)
Public supply	82,525	Farmed	32,992
Self-supplied	19,204	Irrigated	28,311
Per capita (gallons per day)	140		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply	11.53	0.00	11.53	0.00
Domestic self-supply	2.69	0.00	2.69	0.00
Commercial/industrial use	0.05	0.00	0.05	0.00
Agriculture	28.24	0.00	28.24	0.00
Recreational/landscape irrigation	1.65	0.93	2.58	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	7.54	0.00	7.54	0.00
Total	51.70	0.93	52.63	0.00

Total ground	51.70
Total surface	0.93
County total	52.63

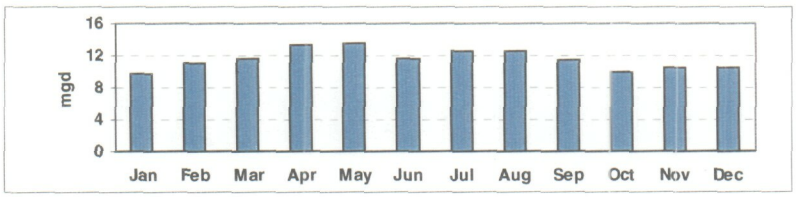

Figure A31. Monthly public supply water use in St. Johns County, 1996

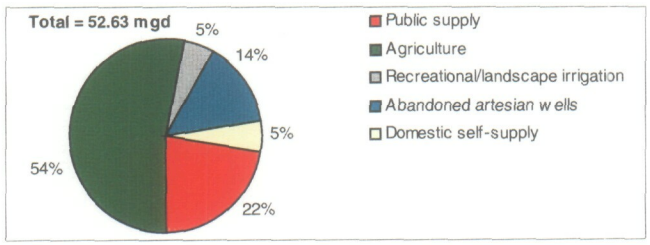

Figure A32. St. Johns County—percentages, by category, of freshwater use, 1996. *Domestic self-supply and commercial and industrial water use each were less than 1%.*

1996 Water Users in St. Johns County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Bayside Estates	Public supply	215	0.06	Floridan aquifer	0.00	
Fruit Cove Oaks subdivision	Public supply	511	0.05	Floridan aquifer	0.00	
GDU, Julington Creek subdivision	Public supply	1,891	0.41	Floridan and surficial aquifers	0.00	
Hastings, City of	Public supply	820	0.08	Floridan and surficial aquifers	0.00	
Intercoastal Utilities	Public supply	6,954	1.30	Floridan aquifer	0.00	
North Beach Water System	Public supply	1,854	0.20	Floridan aquifer	0.00	
Oakridge Apartments	Public supply	149	0.03	Floridan aquifer	0.00	
Ponce de Leon Utilities	Public supply	1,235	0.18	Floridan aquifer	0.00	
Ponte Vedra Utilities	Public supply	5,241	1.36	Floridan aquifer	0.00	
Porpoise Point	Public supply	280	0.09	Floridan and surficial aquifers	0.00	
SSU, Remington Forest	Public supply	231	0.04	Floridan aquifer	0.00	
St. Augustine, City of	Public supply	16,436	1.74	Floridan and surficial aquifers	0.00	
St. Johns County Utilities	Public supply	28,704	3.34	Floridan and surficial aquifers	0.00	
St. Johns Forest	Public supply	91	0.05	Floridan aquifer	0.00	
St. Johns North Utilities	Public supply	1,159	0.37	Floridan aquifer	0.00	
St. Johns Service Company	Public supply	15,504	2.10	Floridan aquifer	0.00	
Wesley Manor Water System	Public supply	494	0.06	Floridan aquifer	0.00	
Wildwood Water System	Public supply	756	0.07	Floridan aquifer	0.00	
Total Public Supply		82,525	11.53		0.00	
G&M Truck Stop	Commercial		0.01	Floridan aquifer	0.00	
Allen Nease Junior/Senior High	Institutional		0.01	Floridan aquifer	0.00	
FDOT I-95 (SR 207) rest facility	Institutional		0.01	Floridan aquifer	0.00	
FDOT I-95 (SR 210) rest facility	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			0.05		0.00	

Note: GDU = General Development Utilities
FDOT = Florida Department of Transportation
SR = State Road
SSU = Southern States Utilities

1996 Agricultural, Recreational, and Landscape Water Use, St. Johns County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	1,500	1,500	0	1,500	0	0.62	0.00	0.62
Carrots	100	100	0	100	0	0.12	0.00	0.12
Cucumbers	0	0	0	0	0	0.00	0.00	0.00
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	21,000	21,000	0	21,000	0	21.72	0.00	21.72
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	500	500	0	500	0	0.61	0.00	0.61
Fruit Crops								
Blueberries	10	10	0	0	10	0.01	0.00	0.01
Citrus	0	0	0	0	0	0.00	0.00	0.00
Grapes	10	10	0	0	10	0.01	0.00	0.01
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	1,000	1,000	0	1,000	0	1.75	0.00	1.75
Field corn	2,000	2,000	0	2,000	0	2.12	0.00	2.12
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	0	0	0	0	0	0.00	0.00	0.00
Ornamentals (field grown)	25	25	0	0	25	0.07	0.00	0.07
Ornamentals (container grown)	75	75	75	0	0	0.21	0.00	0.21
Improved pasture	5,500	1,000	0	1,000	0	0.93	0.00	0.93
Sod	60	60	60	0	0	0.06	0.00	0.06
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.01	0.00	0.01
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	1,192	1,011	1,011	0	0	1.61	0.93	2.54
Turf grass (lawn)	20	20	20	0	0	0.04	0.00	0.04
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	31,780	27,280	135	27,100	45	28.23	0.00	28.23
Agricultural nonirrigation	0	0	0	0	0	0.01	0.00	0.01
Recreational/landscape	1,212	1,031	1,031	0	0	1.65	0.93	2.58
Grand Total	32,992	28,311	1,166	27,100	45	29.89	0.93	30.82

SEMINOLE COUNTY

Total population	329,031
Total area	308 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	329,031	Total area	197,120 (308 mi^2)
Public supply	296,074	Farmed	13,575
Self-supplied	32,957	Irrigated	5,825
Per capita (gallons per day)	171		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	Surface	Total Fresh	Surface
Public supply	50.76	0.00	50.76	0.00
Domestic self-supply	5.64	0.00	5.64	0.00
Commercial/industrial use	0.15	0.00	0.15	0.00
Agriculture	6.25	0.21	6.46	0.00
Recreational/landscape irrigation	3.74	0.89	4.63	0.00
Thermoelectric power generation	0.00	0.00	0.00	0.00
Abandoned artesian wells	14.52	0.00	14.52	0.00
Total	81.06	1.10	82.16	0.00

Total ground	81.06
Total surface	1.10
County total	82.16

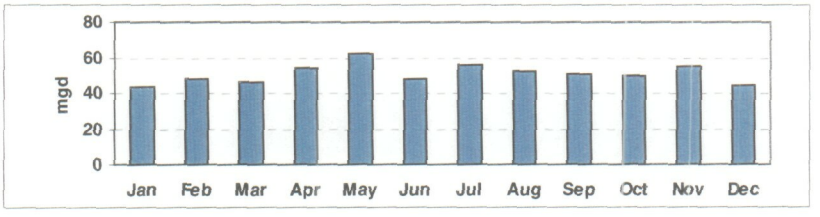

Figure A33. Monthly public supply water use in Seminole County, 1996

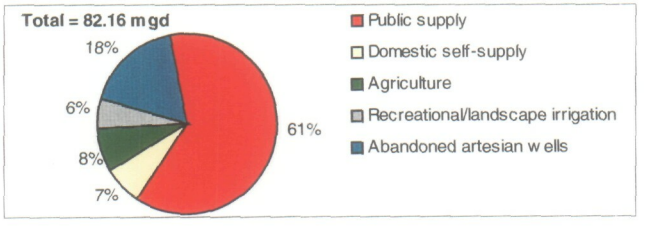

Figure A34. Seminole County—percentages, by category, of freshwater use, 1996. *Commercial and industrial water use was less than 1%.*

1996 Water Users in Seminole County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Altamonte Springs, City of	Public supply	38,200	6.40	Floridan aquifer	0.00	
Bretton Woods	Public supply	886	0.13	Floridan aquifer	0.00	
Casselberry, City of	Public supply	38,597	5.68	Floridan aquifer	0.00	
Lake Harney Water Association	Public supply	464	0.03	Floridan aquifer	0.00	
Lake Mary, City of	Public supply	7,470	2.08	Floridan aquifer	0.00	
Longwood, City of	Public supply	13,598	2.07	Floridan aquifer	0.00	
Mullet Lake Water Association	Public supply	694	0.05	Floridan aquifer	0.00	
Oviedo, City of	Public supply	19,247	3.21	Floridan aquifer	0.00	
Palm Valley MHP	Public supply	1,674	0.23	Floridan aquifer	0.00	
Sanford, City of	Public supply	38,850	5.31	Floridan aquifer	0.00	
Sanlando Utilities	Public supply	28,500	9.02	Floridan aquifer	0.00	
Seminole County Utilities	Public supply	64,411	10.87	Floridan aquifer	0.00	
Seminole Pines	Public supply	318	0.04	Floridan aquifer	0.00	
Seminole Woods Community	Public supply	345	0.05	Floridan aquifer	0.00	
Southern States Utilities	Public supply	8,819	1.22	Floridan aquifer	0.00	
Town & Country RV	Public supply	100	0.02	Floridan aquifer	0.00	
Twelve Oaks RV	Public supply	500	0.03	Floridan aquifer	0.00	
Utilities Inc. of Florida	Public supply	6,927	0.81	Floridan aquifer	0.00	
Winter Springs, City of	Public supply	26,474	3.51	Floridan aquifer	0.00	
Total Public Supply		296,074	50.76		0.00	
Iron Bridge RWPCF	Industrial		0.07	Floridan aquifer	0.00	
Siemens Stromberg	Industrial		0.03	Floridan aquifer	0.00	
Lake Brantley High	Institutional		0.03	Floridan aquifer	0.00	
Teague Middle	Institutional		0.02	Floridan aquifer	0.00	
Total Commercial/Industrial			0.15		0.00	

Note: MHP = mobile home park
RV = recreational vehicle
RWPCF = regional water pollution control facility

1996 Agricultural, Recreational, and Landscape Water Use, Seminole County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	175	175	0	175	0	0.11	0.00	0.11
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	30	30	0	30	0	0.02	0.00	0.02
Peppers	0	0	0	0	0	0.00	0.00	0.00
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	10	10	0	10	0	0.01	0.00	0.01
Miscellaneous	425	425	0	425	0	0.45	0.00	0.45
Fruit Crops								
Blueberries	5	5	0	5	0	0.00	0.00	0.00
Citrus	1,816	1,816	1,400	0	416	3.37	0.00	3.37
Grapes	0	0	0	0	0	0.00	0.00	0.00
Peaches	0	0	0	0	0	0.00	0.00	0.00
Pecans	0	0	0	0	0	0.00	0.00	0.00
Strawberries	20	20	0	0	20	0.01	0.00	0.01
Watermelons	50	50	0	50	0	0.03	0.00	0.03
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	40	40	0	40	0	0.04	0.00	0.04
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	10	10	10	0	0	0.01	0.00	0.01
Ornamentals and Grasses								
Ferns	20	20	20	0	0	0.07	0.00	0.07
Ornamentals (field grown)	200	200	25	150	25	0.61	0.00	0.61
Ornamentals (container grown)	443	400	320	40	40	1.00	0.21	1.21
Improved pasture	7,000	490	490	0	0	0.26	0.00	0.26
Sod	320	320	320	0	0	0.24	0.00	0.24
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.02	0.00	0.02
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	2,875	1,678	1,678	0	0	3.46	0.87	4.33
Turf grass (lawn)	136	136	136	0	0	0.28	0.02	0.30
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	10,564	4,011	2,585	925	501	6.23	0.21	6.44
Agricultural nonirrigation	0	0	0	0	0	0.02	0.00	0.02
Recreational/landscape	3,011	1,814	1,814	0	0	3.74	0.89	4.63
Grand Total	13,575	5,825	4,399	925	501	9.99	1.10	11.09

VOLUSIA COUNTY

Total population	407,199
Total area	1,106 mi^2

St. Johns River Water Management District

Population		Land Area (acres)	
Total	407,199	Total area	707,840 (1,106 mi^2)
Public supply	388,698	Farmed	16,683
Self-supplied	18,501	Irrigated	14,201
Per capita (gallons per day)	128		

1996 Water Withdrawals (in mgd) by Category

	Freshwater			Saline Water
	Ground	**Surface**	**Total Fresh**	**Surface**
Public supply*	49.59	0.00	49.59	0.00
Domestic self-supply	2.37	0.00	2.37	0.00
Commercial/industrial use	5.20	0.00	5.20	0.00
Agriculture	27.69	4.49	32.18	0.00
Recreational/landscape irrigation	4.28	1.50	5.78	0.00
Thermoelectric power generation	12.74	1.80	14.54	0.00
Abandoned artesian wells	1.19	0.00	1.19	0.00
Total	103.06	7.79	110.85	0.00

Total ground	103.06
Total surface	7.79
County total	110.85

*Includes slightly saline water (250 to 1,000 mg/L chlorides) treated through reverse osmosis and diluted with freshwater.

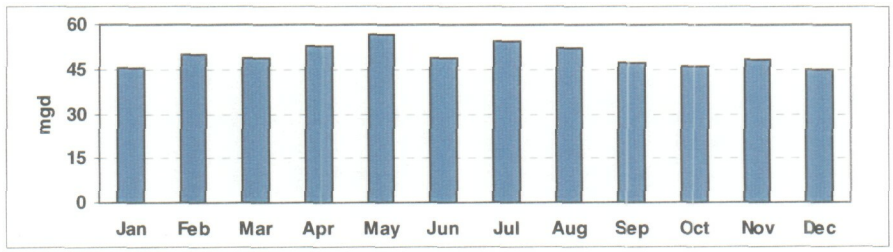

Figure A35. Monthly public supply water use in Volusia County, 1996

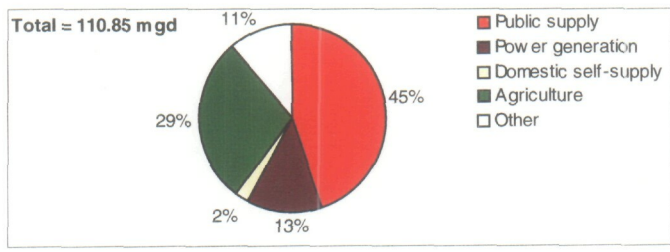

Figure A36. Volusia County—percentages, by category, of freshwater use, 1996. *The "other" category includes commercial and industrial water use, recreational and landscape irrigation, and abandoned artesian wells.*

1996 Water Users in Volusia County

User Utility/Facility	Category	Population Served	Ground-water (mgd)	Withdrawal Source	Surface Water (mgd)	Withdrawal Source
Colony in the Woods	Public supply	890	0.04	Floridan aquifer	0.00	
Daytona Beach, City of	Public supply	83,137	12.54	Floridan aquifer	0.00	
De Land, City of	Public supply	36,000	5.18	Floridan aquifer	0.00	
Edgewater, City of	Public supply	17,761	1.50	Floridan aquifer	0.00	
Eldorado Estates	Public supply	305	0.03	Floridan aquifer	0.00	
Elmwood Trailer Park	Public supply	240	0.01	Floridan aquifer	0.00	
Hidden Valley Park	Public supply	463	0.02	Floridan aquifer	0.00	
Holly Hill, City of	Public supply	11,370	1.18	Floridan aquifer	0.00	
John Knox Village	Public supply	918	0.21	Floridan aquifer	0.00	
Kingston Shores Water Association	Public supply	253	0.02	Floridan aquifer and R/O	0.00	
Kove Estates Association	Public supply	715	0.03	Floridan aquifer	0.00	
Lake Beresford Water Association	Public supply	1,074	0.16	Floridan aquifer	0.00	
Lake Helen, City of	Public supply	2,435	0.24	Floridan aquifer	0.00	
Lemon Bluff Water Association	Public supply	186	0.01	Floridan aquifer	0.00	
Lingering Lane MHP	Public supply	203	0.02	Floridan aquifer	0.00	
Magnolias	Public supply	457	0.07	Floridan aquifer	0.00	
Meadowlea Estates	Public supply	431	0.03	Floridan aquifer	0.00	
Meadowlea on the River	Public supply	562	0.03	Floridan aquifer	0.00	
New Smyrna Beach, City of	Public supply	27,468	4.45	Floridan aquifer	0.00	
Orange City, City of	Public supply	6,137	1.12	Floridan aquifer	0.00	
Ormond Beach, City of	Public supply	47,700	5.10	Floridan aquifer	0.00	
Pierson, Town of	Public supply	1,240	0.12	Floridan aquifer	0.00	
Port Orange, City of	Public supply	48,991	5.22	Floridan aquifer	0.00	
Southern States Utilities (Deltona)	Public supply	73,654	9.58	Floridan aquifer	0.00	
Strawn Water Plant	Public supply	42	0.01	Floridan aquifer	0.00	
Sunny Sands Resort, Inc.	Public supply	198	0.01	Floridan aquifer	0.00	
Terra Mar Village Water & Sewer	Public supply	769	0.01	Floridan aquifer	0.00	
Tomoka View Water Works	Public supply	438	0.04	Floridan aquifer	0.00	
Twin Rivers Estates	Public supply	205	0.03	Floridan aquifer	0.00	
Tymber Creek Utilities	Public supply	1,149	0.10	Floridan aquifer	0.00	
Village of Pine Run	Public supply	261	0.03	Floridan aquifer	0.00	
Volusia County Utilities	Public supply	23,046	2.45	Floridan aquifer and R/O	0.00	
Total Public Supply		**388,698**	**49.59**		**0.00**	
Ardmore Farms	Industrial		0.15	Floridan aquifer	0.00	
Sherwood Medical Manufacturing Co.	Industrial		4.60	Floridan aquifer	0.00	
Sparton Electronics	Industrial		0.20	Floridan aquifer	0.00	
T.G. Lee, Orange City*	Industrial		0.00	Floridan aquifer	0.00	
FDOC, Tomoka state park	Institutional		0.10	Floridan aquifer	0.00	
FDOT I-95 rest facility	Institutional		0.04	Floridan aquifer	0.00	
Holiday Inn	Institutional		0.01	Floridan aquifer	0.00	
Sunshine Holiday Campground	Institutional		0.04	Floridan aquifer	0.00	

1996 Water Users in Volusia County—*Continued*

User Utility/Facility	Category	Population	Ground-water	Withdrawal	Surface Water	Withdrawal
Duvall Home for Retarded Children	Institutional		0.04	Floridan aquifer	0.00	
Florida United Meth. Children's Hospital	Institutional		0.02	Floridan aquifer	0.00	
VC government complex*	Institutional		0.00	Floridan aquifer	0.00	
Total Commercial/Industrial			5.20		0.00	
FPC, Debary	Power generation		12.32	Floridan aquifer	0.00	
FPL, Sanford	Power generation		0.42	Floridan aquifer	1.80	St. Johns River
Total Power Generation			12.74		1.80	

Note: FDOC = Florida Department of Corrections
FDOT = Florida Department of Transportation
FPC = Florida Power Corporation
FPL = Florida Power & Light
MHP = mobile home park
R/O = reverse osmosis
VC = Volusia County

*Pumpage less than 0.01 mgd

1996 Agricultural, Recreational, and Landscape Water Use, Volusia County

	Total Acres		Irrigation System Type (in acres)			Water Use (mgd)		
	Farmed	Irrigated	Sprinkler	Flood	Low Vol	Ground	Surface	Total
Agricultural Irrigation								
Cabbage	295	295	0	295	0	0.15	0.00	0.15
Carrots	0	0	0	0	0	0.00	0.00	0.00
Cucumbers	300	300	0	300	0	0.22	0.00	0.22
Peppers	80	80	0	80	0	0.11	0.00	0.11
Potatoes	0	0	0	0	0	0.00	0.00	0.00
Tomatoes	0	0	0	0	0	0.00	0.00	0.00
Sweet corn	15	0	0	0	0	0.00	0.00	0.00
Miscellaneous	630	630	0	630	0	0.72	0.00	0.72
Fruit Crops								
Blueberries	20	20	0	0	20	0.01	0.00	0.01
Citrus	2,747	1,500	0	0	1,500	2.55	0.20	2.75
Grapes	3	3	3	0	0	0.00	0.00	0.00
Peaches	10	10	0	0	10	0.02	0.00	0.02
Pecans	25	10	10	0	0	0.02	0.00	0.02
Strawberries	0	0	0	0	0	0.00	0.00	0.00
Watermelons	5	0	0	0	0	0.00	0.00	0.00
Miscellaneous	15	15	0	0	15	0.03	0.00	0.03
Field Crops								
Cotton	0	0	0	0	0	0.00	0.00	0.00
Field corn	0	0	0	0	0	0.00	0.00	0.00
Peanuts	0	0	0	0	0	0.00	0.00	0.00
Rice	0	0	0	0	0	0.00	0.00	0.00
Sorghum	0	0	0	0	0	0.00	0.00	0.00
Soybeans	0	0	0	0	0	0.00	0.00	0.00
Sugar cane	0	0	0	0	0	0.00	0.00	0.00
Tobacco	0	0	0	0	0	0.00	0.00	0.00
Wheat	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Ornamentals and Grasses								
Ferns	6,726	6,726	6,726	0	0	20.62	4.22	24.84
Ornamentals (field grown)	320	320	320	0	0	1.03	0.00	1.03
Ornamentals (container grown)	160	160	160	0	0	0.45	0.07	0.52
Improved pasture	50	50	50	0	0	0.03	0.00	0.03
Sod	1,837	1,837	1,837	0	0	1.62	0.00	1.62
Agricultural Nonirrigation								
Livestock	0	0	0	0	0	0.11	0.00	0.11
Fish farming	0	0	0	0	0	0.00	0.00	0.00
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Recreational and Landscape Irrigation								
Turf grass (golf)	3,200	2,000	2,000	0	0	3.97	1.27	5.24
Turf grass (lawn)	245	245	245	0	0	0.31	0.23	0.54
Miscellaneous	0	0	0	0	0	0.00	0.00	0.00
Totals								
Agricultural irrigation	13,238	11,956	9,106	1,305	1,545	27.58	4.49	32.07
Agricultural nonirrigation	0	0	0	0	0	0.11	0.00	0.11
Recreational/landscape	3,445	2,245	2,245	0	0	4.28	1.50	5.78
Grand Total	16,683	14,201	11,351	1,305	1,545	31.97	5.99	37.96

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