

Technical Fact Sheet SJ2013-FS1

2012 Survey of Estimated Annual Water Use  
for St. Johns River Water Management District





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**Introduction**

St. Johns River Water Management District (SJRWMD) has published estimates of annual water use data since 1978. These “annual water use surveys” assess estimated total water use, with data arranged by source, category of use, and county. Estimated amounts are based on best available data at the time of publication. Published reports can be found on the SJRWMD website, *floridaswater.com*. In publishing the annual data, SJRWMD cooperates with U.S. Geological Survey (USGS) that compiles national estimates of water use on 5-year intervals.

**Geographic Survey Area**

SJRWMD includes all or part of 18 counties, encompassing 12,300 square miles in northeast and east-central Florida and representing over 4.7 million people, or approximately 25% of the state’s population. The following water basins are located within SJRWMD: the entire St. Johns River and Nassau River basins, the Indian River Lagoon and Northern Coastal basins, and Florida’s portion of the St. Marys River Basin.

**Area Rainfall Statistics**

Average annual rainfall within SJRWMD for the 10-year period January 2003–December 2012 was 49.13 inches. Annual rainfall within SJRWMD for 2012 was 51.01 inches. The driest year of the 10-year period was 2006, with 36.23 inches, 26% below normal. The wettest year of the 10-year period was 2005, with 59.82 inches, 22% above normal.

From 2008 to 2012, average annual rainfall within SJRWMD varied by nearly 11 inches (from 41.51 to 52.80 inches). Above-average annual rainfall occurred in 2008 (52.80 inches), 2009 (52.57 inches) and 2012 (51.01 inches), while below-average rainfall occurred in 2010 (41.51 inches) and 2011 (44.93 inches).

Through evapotranspiration, nearly 70% of rainfall within SJRWMD is returned to the atmosphere, while the remaining 30% becomes runoff to surface waters or recharge to aquifers (Fernald and Purdum 1998).

**Data Sources and Methodology**

SJRWMD is not the only source of water use data for the reporting of 2012 Survey of Estimated Annual Water Use. Water use data were obtained from the following sources: raw water withdrawal data submitted to SJRWMD on or before April 30, 2013, (via EN-50 forms) and treated water data from Florida Department of Environmental Protection (DEP) monthly operating reports (MORs). Reuse water data were derived from the 2012 Reuse Inventory Report (DEP 2013). Rainfall by county was obtained from SJRWMD’s radar rainfall data via the SJRWMD Oracle database. In this 2012 survey, the estimated amounts are based on best available data at the time of publication. SJRWMD attempts to compile the best available data, but it cannot guarantee that contributors use consistent measurement techniques or quality control standards. In most cases, very limited quality assurance of the data is conducted by SJRWMD and the information is reported as received. If water use information is not available from any other source, SJRWMD uses professional analyses of historical data and trends to

estimate values. Water use statistics are subject to change as updated information becomes available. Changes in methodologies may make year-to-year data comparisons inappropriate.



### **Data Collection Terminology**

**Freshwater.** Water with concentration of total dissolved solids (TDS) less than 1,000 milligrams per liter (mg/L) is considered freshwater and may be withdrawn from either groundwater or surface water sources. This definition is based on the one provided by USGS, in Water Supply Paper 2254 (Hem 1985), and has been used for reporting consistency with USGS. This definition differs from that used by SJRWMD in determining if a source is “brackish” when identifying an alternative water supply source. Source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids are generally identified by SJRWMD as “brackish” waters. SJRWMD may list brackish waters as alternative water supply sources in some areas.

**Saline water.** Water with more than 1,000 mg/L TDS is considered saline. All water reported as saline is withdrawn from surface water or surficial aquifer sources.

**Reuse.** Reclaimed water is treated wastewater that has received at least secondary treatment and basic disinfection. It may be distributed for nonpotable uses that achieve a water resource benefit (SJRWMD 2006).

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Data Source/Methodology: SJRWMD's methodology is based on quantities of reuse water reported by DEP in *2012 Reuse Inventory* (DEP 2013). DEP regards several applications of reclaimed water as reuse that SJRWMD does not. Therefore, it is common for SJRWMD to report beneficial reuse quantities lower than that reported by DEP. SJRWMD requires that water be applied in such a way as to achieve a water resource benefit before qualifying as reuse. In particular, SJRWMD requires that reuse must take the place of an existing or potential use of higher-quality water or be used to grow useful crops; restore or maintain adopted minimum flows and/or levels of a river, lake, or wetland; or effectively recharge a useable aquifer. If the water applied does not meet one of these requirements, it is considered by SJRWMD as disposal. Types of reclaimed water considered as reuse by DEP but disposal by SJRWMD are as follows: underground injection; absorption fields and rapid infiltration basins located in discharge areas; surface water augmentation where not required; spray fields; artificial wetlands.

**Florida population.** This is the estimated number of permanent residents living within Florida.

Data Source/Methodology: The source for population is *Estimates of Population by County and City in Florida: April 1, 2012* (BEBR 2013).

**SJRWMD population.** This is the estimated number of permanent residents living within SJRWMD's 18-county region.

Data Source/Methodology: Population estimates are intended for planning purposes only; 2012 county population estimates are from *Estimates of Population by County and City in Florida: April 1, 2012* (BEBR 2013). For counties located within more than one water management district, the amount of the 2012 estimates within SJRWMD is derived by estimating SJRWMD's portion of the 2000 U.S. Census population at the block level.

**Water use category.** Classification of water use is based on one of the following six categories: (1) public supply, (2) domestic self-supply and small public supply systems, (3) agricultural irrigation self-supply, (4) commercial/industrial/institutional self-supply, (5) recreational self-supply, (6) thermoelectric power generation self-supply.

**Public supply.** Water withdrawn, treated, and delivered to service areas within SJRWMD by privately and publicly owned water supply utilities (or systems) is defined as public supply. This encompasses both residential and nonresidential uses by utilities that are permitted to withdraw equal to or more than 0.10 million gallons per day (mgd) from groundwater or surface water sources.

Data Source/Methodology: Water use data in this category were obtained from SJRWMD EN-50 forms. In cases where SJRWMD EN-50 forms were missing, MORs submitted to DEP were used. Of note, MORs are submitted to DEP by approximately 98% of the public supply utilities for which SJRWMD had consumptive use permits (CUPs) in effect during 2012 for quantities greater than 0.10 mgd. (Note: Water for use by the city of Cocoa, Brevard County, is withdrawn from Orange County.)

**Domestic self-supply and small public supply systems.** Domestic self-supply water use refers primarily to water use by individuals not served by a public supply water utility (e.g., a residence with a private well). The population associated with small public supply utility systems (average

daily flow under 0.10 mgd) is also included in this category. In most cases, small public supply utility systems need not report water use data to SJRWMD.

Data Source/Methodology: Water use statistics in this category are estimated from residential population and residential public supply per capita water use rates at the county level. Residential water use for each public supply utility is calculated by multiplying the total public supply water use by the percent of the total water use allocated to residential use, as authorized in the SJRWMD-issued CUP. The resulting water use values for each public supply utility are then summed to the county level and divided by the total county permanent/residential public supply population to obtain the county-level residential per capita value. The residential per capita value is multiplied by the domestic self-supply population, resulting in the estimated amount of water use for this category. The domestic self-supply population for each county is obtained by subtracting the total number of people served by public supply utilities in a county from the total number of permanent residents living in the county. For counties with a population of less than 5% within the jurisdiction of SJRWMD or that have no public supply water use, SJRWMD's average residential public supply per capita figure of 103 gallons per day (gpd) was used as a best estimate. For the purpose of reporting, all domestic self-supply water is assumed to be groundwater.

**Commercial/industrial/institutional self-supply.** This is water use for commercial, industrial, or institutional purposes not provided by public supply systems. It includes businesses, government facilities, military installations, schools, prisons, hospitals, and industrial uses such as mining, processing, and manufacturing. (Note: For this report, surface water use by mining operations in the commercial/industrial/institutional self-supply category represents 5% of surface water use, to account for the loss of water in mining products. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered nonconsumptive. Nonconsumptive is defined by SJRWMD as any use of water that does not reduce the water supply from which it is withdrawn or diverted.)

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by consumptive use permittees via EN-50 forms.

**Thermoelectric power generation self-supply.** This is water withdrawn from groundwater and surface water sources and used by power plants not supplied by public supply systems. (Note: This does not include water used for once-through cooling, which is considered nonconsumptive.)

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by power plant operators via EN-50 forms or through SJRWMD survey.

**Agricultural irrigation self-supply.** This is water withdrawn from groundwater and surface water sources for use in supplemental crop irrigation.

Data Source/Methodology: Water use for irrigation is assessed by crop type due to crop-specific consumption requirements. Monthly water use estimates are based on a modified Blaney-Criddle model (for calculating evapotranspiration). Climate data for running a modified Blaney-Criddle model is obtained from the National Oceanic and Atmospheric Administration (NOAA) and the Florida Climate Center. In places where climate data are missing, substitute data are obtained

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from historical (or average values) or data from the next closest weather station. Crop type and acreage data are provided through SJRWMD surveys and geographic information system (GIS)-based crop layers or through data from the University of Florida–Institute of Food and Agricultural Sciences (IFAS), county agricultural extension agents, and U.S. Department of Agriculture surveys.

**Recreational self-supply.** This is water withdrawn from groundwater and surface water sources for use in golf course irrigation, irrigation of urban landscapes or athletic fields, water-based recreational areas, and ornamental or decorative purposes not supplied by public supply systems.

Data Source/Methodology: Data in this category reflect water use information reported to SJRWMD by consumptive use permittees via EN-50 forms.

### **2012 Estimated Water Use by Category**

Water use is estimated for water withdrawals from fresh, saline, and reuse water sources, expressed in average million gallons per day unless otherwise noted. In this 2012 survey, the estimated amounts are based on best available data as of Sept. 9, 2013. Water withdrawal information is reported for six categories of use: (1) public supply, (2) domestic self-supply and small public supply systems, (3) commercial/industrial/institutional self-supply, (4) agricultural irrigation self-supply, (5) recreational irrigation self-supply, and (6) thermoelectric power generation self-supply. A reporting threshold of 0.10 mgd of permitted average daily flow by individual water users was used for all water use categories, excluding agricultural irrigation, in the reporting of consumptive use for 2012. Consumptive use is defined by SJRWMD as any use of water that reduces the supply from which it is withdrawn or diverted.

Rainfall and water use totals within SJRWMD are shown in Table 1, with figures tabulated by county. Table 2 shows total water use by category, and Table 3 shows water use by county and category. The estimated total consumptive use in SJRWMD for 2012, including fresh, saline, and reuse (reclaimed) water, was 1,284.13 mgd. Of the estimated total consumptive amount, 1,129.60 mgd was freshwater and 3.06 mgd was saline water (Tables 1–3). In 2012, the largest consumptive use of freshwater within SJRWMD was public supply, which totaled 540.07 mgd, or 48%, of total consumptive freshwater use (Table 3, Figure 1). Next was agricultural irrigation, which used 372.34 mgd, or 33%, of total consumptive freshwater within SJRWMD (Figure 1). Reuse water accounted for 151.47 mgd and was reported under the commercial/industrial/institutional, agricultural irrigation, and recreational categories of water use (Table 2).

### **Public Supply**

The public supply water use category consists of water supplied to homes and industries by both privately and publicly owned water supply utilities. It includes both residential and nonresidential uses. Utilities that are permitted to withdraw 0.10 mgd or more from groundwater or surface water sources are included in this category.

In 2012, 175 public supply utilities (or systems) served an estimated 4,125,514 people, or 87%, of the SJRWMD total population (see Table 4 note). Total water use, from both groundwater and surface water sources, was 540.07 mgd (Table 2, Figure 2), nearly 6% below the average annual use of 573.64 mgd for the 10-year period. Average gross per capita use, based on the population served by public supply, was 131 gallons per capita per day (gpcd). Public supply water use

typically fluctuates during the year in response to seasonal rainfall and temperature variations. Water use tends to increase during the warm season (April–October), when outdoor use is highest. The monthly average gross per capita also fluctuates throughout the year in response to these variations. In 2012, water use ranged from a low of 490.07 mgd (119 gpcd) in December to a high of 605.45 mgd (147 gpcd) in April (Figure 2).

Of the total water withdrawn for public supply use, 97% was groundwater, of which 89% was withdrawn from the Floridan aquifer system; the remaining 11% was withdrawn from the intermediate and surficial aquifers.

Counties with the largest public supply water use during 2012 were Orange County (115.44 mgd, serving 795,348 people; 145 gpcd) and Duval County (114.70 mgd, serving 826,243 people; 139 gpcd) (Table 3, Figures 3 and 4). These counties combined represented 43% of total public supply water use for 39% of the public supply population. (Note: There is no public supply water use in the portions of Okeechobee and Osceola counties within SJRWMD.)

### **Domestic Self-Supply**

The domestic self-supply category includes water withdrawn from individual domestic wells. Water use for domestic self-supply was not inventoried, so water use is estimated at a county level based on population not served by public supply and residential per capita rates for the public supply utilities within the county. For the purpose of reporting, all domestic self-supply water was assumed to be groundwater.

In 2012, an estimated 627,300 people used 64.72 mgd of domestic self-supply water, or 6%, of total freshwater used in SJRWMD (Figure 1). Marion County had the largest self-supplied population, with 90,607 people. Orange County had the second-largest population, 88,372, followed by Putnam County, 59,990 (Table 4).

Domestic self-supply water use has fluctuated over the 10-year period, reaching a low of 64.40 mgd in 2009 to a high of 72.91 mgd in both 2004 and 2006. The average for the 10-year period was 69.29 mgd; water use in 2012 was about 7% below average. Fluctuations in water use are attributed to changes in methodologies over the years. For each county, the residential public supply per capita was calculated by multiplying the percent of the total public supply water use allocated to residential use by the total public supply water use. In 2012, average residential public supply per capita within SJRWMD was 103 gpcd. This average gpcd was used to estimate the total for domestic self-supplied water in Bradford, Okeechobee, and Osceola counties.

### **Commercial/Industrial/Institutional Self-Supply**

The commercial/industrial/institutional self-supply use category consists of larger commercial, industrial, and institutional users not served by public supply utilities that are permitted to withdraw 0.10 mgd or more. The commercial and institutional categories include 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. Surface water use by mining operations in the commercial/industrial/institutional self-supply category represents 5% of surface water use, to account for the loss of water in mining products. The remaining surface water is assumed to be recirculated in the mining process and, therefore, is considered



nonconsumptive. There were 189 commercial, industrial, and institutional users reported in 2012.

Total freshwater use in the commercial/industrial/institutional category was 84.91 mgd, or 7%, of total freshwater use (Table 2, Figure 1). Of this freshwater total, 68.78 mgd was groundwater and 16.13 mgd was surface water. Saline surface water accounted for 3.06 mgd, and reuse was 24.24 mgd (Table 2).

Most of the freshwater withdrawn for commercial/industrial/institutional purposes supplied the pulp and paper industries in Duval, Nassau, and Putnam counties. Water use for pulp and paper production in 2012 included 42.90 mgd of fresh groundwater, 14.16 mgd of fresh surface water, and 1.09 mgd of saline surface water. The second-largest water user in this category was the mining industry, which accounted for 4.77 mgd of fresh groundwater and 0.91 mgd of fresh surface water. Pulp and paper production and mining accounted for a combined total of 62.74 mgd of freshwater, or 74%, of the commercial/industrial/institutional freshwater use.

Commercial/industrial/institutional self-supply water use was highest in 2004 (154.83 mgd) and lowest in 2012 (84.91 mgd). The average for the 10-year period was 115.16 mgd; water use in 2012 was about 26% below the average. Commercial/industrial/institutional freshwater use in 2012 varied from a low of 77.53 mgd in February to a high of 100.62 mgd in July (Figure 5).

### **Agricultural Irrigation Self-Supply**

The agricultural irrigation self-supply category consists of estimated water withdrawals from freshwater sources for supplemental crop irrigation. Estimates of the acreage planted in various crops are multiplied by estimates of the quantity of water per acre necessary to irrigate those crops. Water use for irrigation is assessed by crop, because crops have specific consumptive use requirements and suitable water quality.

Total consumptive use of freshwater for agricultural irrigation was estimated at 372.34 mgd, which is 33% of total freshwater use in SJRWMD during 2012 (Table 2, Figure 1). Reuse water accounted for 9.83 mgd of agricultural irrigation use. Although both groundwater and surface water were used for agricultural irrigation, use by water source has not been defined for this report. Agricultural irrigation allocations with SJRWMD permits in effect during 2012 indicated that 66% of agricultural irrigation use was groundwater and 34% was surface water. For the purpose of reporting, it was assumed that groundwater for agricultural irrigation originated from the Floridan aquifer system, because of available quantities.

It is estimated that of the total 189,280 acres irrigated, 73,571 acres were irrigated by low-pressure/low-volume systems; 74,974 acres were irrigated by flood systems; 40,295 acres were irrigated by sprinkler systems. Agricultural irrigation water use in 2012 had the largest seasonal fluctuation than any other water use category, reaching a low of 91.37 mgd in August to a high of 726.88 mgd in April (Figure 6). These fluctuations are typical of irrigation water use and inversely correlated to rainfall.

By county, the largest water use for agricultural irrigation occurred in Indian River County, with 129.95 mgd of freshwater, accounting for 35% of total SJRWMD agricultural irrigation water use (Table 3). Based on agricultural irrigation allocations with permits in effect during 2012, Indian River County is permitted to use 66% of its agricultural irrigation from surface water

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sources and 34% from groundwater sources. This would imply a surface water use of 85.77 mgd and an estimated groundwater use of 44.18 mgd.

Districtwide, the largest estimated water use for a single crop was for citrus, which accounted for 145.53 mgd, or 39%, of total agricultural irrigation water use. Improved pasture irrigation accounted for 105.49 mgd, or 28%, of total agricultural irrigation water use (Figure 7).



### **Recreational Irrigation Self-Supply**

The recreational irrigation self-supply category includes water used to irrigate turf grass for golf courses, urban landscapes, athletic fields, water-based recreational areas, or for ornamental or decorative purposes. Use of freshwater in the recreational irrigation category totaled 60.33 mgd, about 5% of total freshwater use in 2012. Reuse water accounted for 117.40 mgd of recreational irrigation use (Table 2). By county (Table 3), the largest freshwater use for recreational irrigation occurred in Lake County (13.97 mgd), followed by Indian River County (12.05 mgd), and Duval County (6.29 mgd).

During the 10-year period (January 2003–December 2012), recreational irrigation freshwater use was highest in 2011 (73.09 mgd) and lowest in 2009 (43.14 mgd), with 2009 as one of the wettest years (Figure 10). Average water use for the 10-year period was 57.03 mgd. Recreational irrigation water use in 2012 was 6% above the 10-year average. Recreational irrigation freshwater use in 2012 varied from a low of 40.74 mgd in December to a high of 85.60 mgd in April (Figure 8).

### **Thermoelectric Power Generation Self-Supply**

The thermoelectric power generation self-supply category consists of water withdrawn from groundwater and surface water sources by power plants, excluding reuse water or water used for once-through cooling, which is considered nonconsumptive use. Estimates for 2012 reflect consumptive use data for 15 self-supplied thermoelectric power plants, totaling 7.23 mgd (Figure 1). The largest amount of freshwater use within this category (Table 3) occurred in Duval County (4.84 mgd).

Thermoelectric power generation freshwater use in 2012 fluctuated from a low of 6.14 mgd in April to a high of 7.96 mgd in September (Figure 9). Fluctuations in water use are related to power plant shutdowns for maintenance or increased power demands during periods of extremely high or low temperatures.

**Summary of 2012 Estimated Water Use**

Since 1978, when SJRWMD published its first annual survey, there has been a gradual increase in freshwater use (Figures 10 and 11). Total public supply water use has increased by nearly 131% (from 233.84 mgd to 540.70 mgd) during this 34-year period, while total population served by public supply has increased by 182% (from 1,460,900 to 4,125,514). However, between 2008 and 2012, public supply water use decreased by 5% (from 569.28 mgd to 540.07 mgd), while population served by public supply increased from 4,119,163 to 4,125,514; the small increase in population during this time frame can be attributed to economic conditions and housing foreclosures. Decreases in public supply water use are attributed to fluctuations in rainfall and conservation. For example, during the 5-year period extending January 2008–December 2012, average annual rainfall throughout SJRWMD varied by nearly 11 inches (from 52.80 inches in 2008 to 41.51 inches in 2010). Above-average annual rainfall occurred in 2008 (52.80 inches), 2009 (52.57 inches) and 2012 (51.01 inches), while below-average rainfall occurred in 2010 (41.51 inches) and 2011 (44.93 inches). Meanwhile, in addition to hydrologic conditions, improved irrigation management by growers has brought a decrease in agricultural irrigation self-supply water use. In general, the trend in agricultural irrigation is static, if not declining, within SJRWMD. Water use amounts reported in this 2012 survey are estimated based on best available data through Sept. 9, 2013. For additional information, please visit [floridaswater.com](http://floridaswater.com) or contact:

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Table 1. Total water use (mgd) and rainfall by county in SJRWMD, 2012

County	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)	Rainfall (inches)
Alachua	26.32	0.00	3.97	30.29	51.67
Baker	9.39	0.00	0.00	9.39	53.20
Bradford	1.43	0.00	0.00	1.43	49.58
Brevard	130.76	0.00	23.07	153.83	50.24
Clay	19.75	0.00	4.49	24.24	48.32
Duval	147.99	0.00	14.39	162.38	50.57
Flagler	21.08	1.97	5.13	28.18	52.04
Indian River	158.19	0.00	4.57	162.76	53.63
Lake	113.66	0.00	10.15	123.81	50.49
Marion	36.34	0.00	4.01	40.35	52.10
Nassau	52.91	1.09	1.17	55.17	51.27
Okeechobee	10.48	0.00	0.00	10.48	48.82
Orange	147.24	0.00	30.08	177.32	51.72
Osceola	14.84	0.00	0.00	14.84	49.19
Putnam	45.56	0.00	1.07	46.63	50.64
St. Johns	49.11	0.00	2.95	52.06	51.24
Seminole	61.92	0.00	23.37	85.29	51.90
Volusia	82.63	0.00	23.05	105.68	51.06
<b>Total</b>	<b>1,129.60</b>	<b>3.06</b>	<b>151.47</b>	<b>1,284.13</b>	<b>51.01*</b>

Note: Total water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

\* Districtwide rainfall average.

Table 2. Total water use (mgd) by category in SJRWMD, 2012

Category	Freshwater (mgd)	Saline Water (mgd)	Reuse (mgd)	Total Water Use (mgd)
Public supply	540.07	0.00	0.00	540.07
Domestic self-supply and small public supply systems	64.72	0.00	0.00	64.72
Commercial/industrial/institutional self-supply	84.91	3.06	24.24	112.21
Agricultural irrigation self-supply	372.34	0.00	9.83	382.17
Recreational self-supply	60.33	0.00	117.40	177.73
Thermoelectric power generation self-supply	7.23	0.00	0.00	7.23
<b>Total</b>	<b>1,129.60</b>	<b>3.06</b>	<b>151.47</b>	<b>1,284.13</b>

Note: Water use is in million gallons per day (mgd).

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

Estimated amounts are based on best available data as of Sept. 9, 2013.

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Table 3. Total water use (mgd) by county and category in SJRWMD, 2012

County	Freshwater							Saline Water	Reuse	All Water Use
	Public Supply	Domestic Self-Supply	Commercial/Industrial/Institutional Fresh Water	Agricultural Irrigation Self-Supply	Recreational Self-Supply	Thermoelectric Power Generation Self-Supply	Total Freshwater	Commercial/Industrial/Institutional Saline Water		
Alachua	23.40	0.73	0.36	0.90	0.36	0.57	26.32	0.00	3.97	30.29
Baker	1.05	3.45	0.39	4.50	0.00	0.00	9.39	0.00	0.00	9.39
Bradford	0.45	0.09	0.21	0.68	0.00	0.00	1.43	0.00	0.00	1.43
Brevard	53.33	1.83	5.78	64.72	5.08	0.02	130.76	0.00	23.07	153.83
Clay	12.97	4.85	0.17	1.35	0.41	0.00	19.75	0.00	4.49	24.24
Duval	114.70	3.96	17.39	0.81	6.29	4.84	147.99	0.00	14.39	162.38
Flagler	8.99	1.30	0.00	8.69	2.10	0.00	21.08	1.97	5.13	28.18
Indian River	15.25	0.83	0.11	129.95	12.05	0.00	158.19	0.00	4.57	162.76
Lake	43.60	7.55	3.22	44.64	13.97	0.68	113.66	0.00	10.15	123.81
Marion	18.79	7.70	1.59	4.82	3.44	0.00	36.34	0.00	4.01	40.35
Nassau	8.62	7.97	33.26	0.74	2.32	0.00	52.91	1.09	1.17	55.17
Okeechobee	0.00	0.08	0.00	10.40	0.00	0.00	10.48	0.00	0.00	10.48
Orange	115.44	9.63	2.25	17.41	2.12	0.39	147.24	0.00	30.08	177.32
Osceola	0.00	0.10	0.00	14.73	0.00	0.01	14.84	0.00	0.00	14.84
Putnam	2.53	6.42	19.13	16.72	0.27	0.49	45.56	0.00	1.07	46.63
St. Johns	16.17	2.82	0.15	25.35	4.62	0.00	49.11	0.00	2.95	52.06
Seminole	51.60	1.59	0.00	6.04	2.69	0.00	61.92	0.00	23.37	85.29
Volusia	53.18	3.82	0.90	19.89	4.61	0.23	82.63	0.00	23.05	105.68
<b>Total</b>	<b>540.07</b>	<b>64.72</b>	<b>84.91</b>	<b>372.34</b>	<b>60.33</b>	<b>7.23</b>	<b>1,129.60</b>	<b>3.06</b>	<b>151.47</b>	<b>1,284.13</b>

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

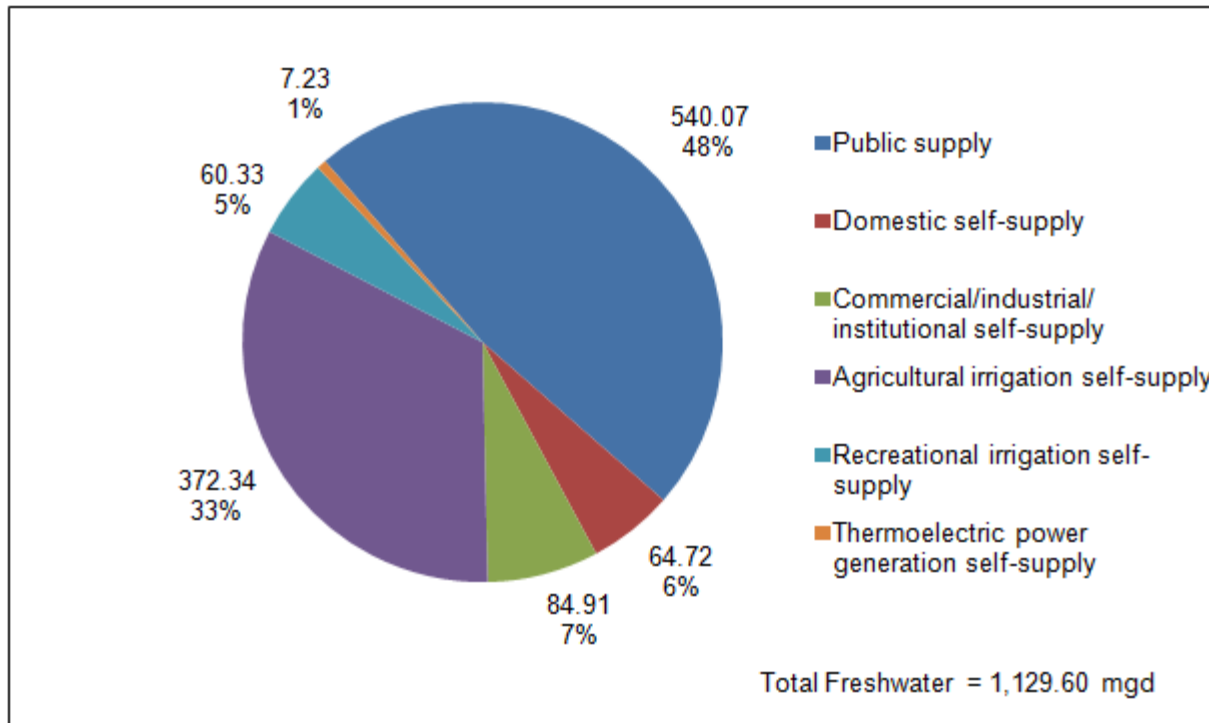


Figure 1. Total freshwater use (mgd), 2012

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

Table 4. Population by county, 2012

County	County Population	Percentage of County Population in SJRWMD	SJRWMD Population	Public Supply Population	Domestic Self-Supply and Small Public Supply Systems Population
Alachua	246,770	79.5%	196,281	186,467	9,814
Baker	26,938	98.1%	26,423	5,020	21,403
Bradford	27,239	4.2%	1,155	312	843
Brevard	545,625	100.0%	545,625	518,344	27,281
Clay	192,071	100.0%	192,071	136,370	55,701
Duval	869,729	100.0%	869,729	826,243	43,486
Flagler	97,160	100.0%	97,160	77,728	19,432
Indian River	139,446	100.0%	139,446	121,318	18,128
Lake	299,677	99.8%	298,928	242,132	56,796
Marion	332,989	69.8%	232,326	141,719	90,607
Nassau	73,745	100.0%	73,745	36,135	37,610
Okeechobee	39,805	1.9%	744	0	744
Orange	1,175,941	75.2%	883,720	795,348	88,372
Osceola	280,866	0.4%	983	0	983
Putnam	73,158	100.0%	73,158	13,168	59,990
St. Johns	196,071	100.0%	196,071	156,857	39,214
Seminole	428,104	100.0%	428,104	410,980	17,124
Volusia	497,145	100.0%	497,145	457,373	39,772
<b>Total</b>	<b>5,542,479</b>		<b>4,752,814</b>	<b>4,125,514</b>	<b>627,300</b>

Note: Population estimates: *Estimates of Population by County and City in Florida: April 1, 2012* (BEBR 2013)  
 Total Florida population in 2012 = 19,074,434  
 Percent of total Florida population within SJRWMD in 2011 = 25%  
 Percent of SJRWMD population served by public supply in 2012 = 87%

SJRWMD population is derived from the county population multiplied by the percentage of county population in SJRWMD. The percentage of county population, as presented, is rounded to the nearest tenth. Thus, in some cases, the presented SJRWMD population is slightly different from the product of the county population multiplied by the percentage of county population within SJRWMD.

The domestic self-supply category includes water withdrawn from individual domestic wells. Water use for domestic self-supply was not inventoried, so water use is estimated at a county level based on population not served by public supply and residential per capita rates for the public supply utilities within the county. Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.



2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

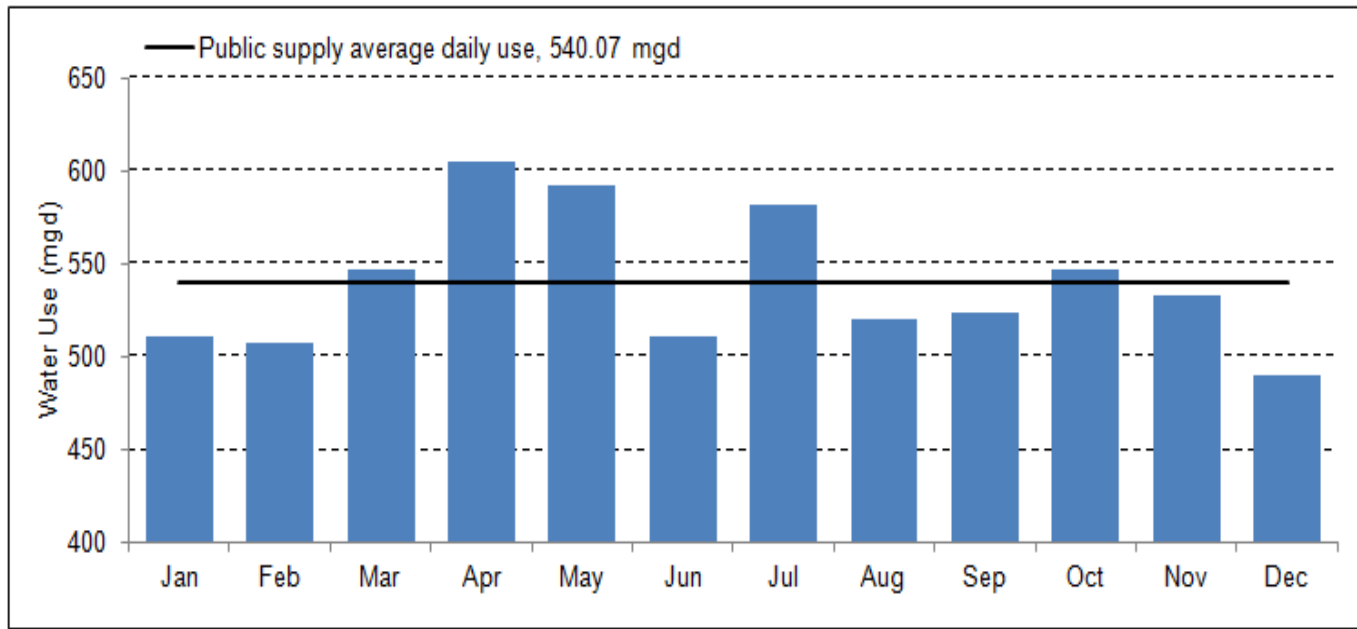


Figure 2. Average daily public supply water use (mgd) by month, 2012

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

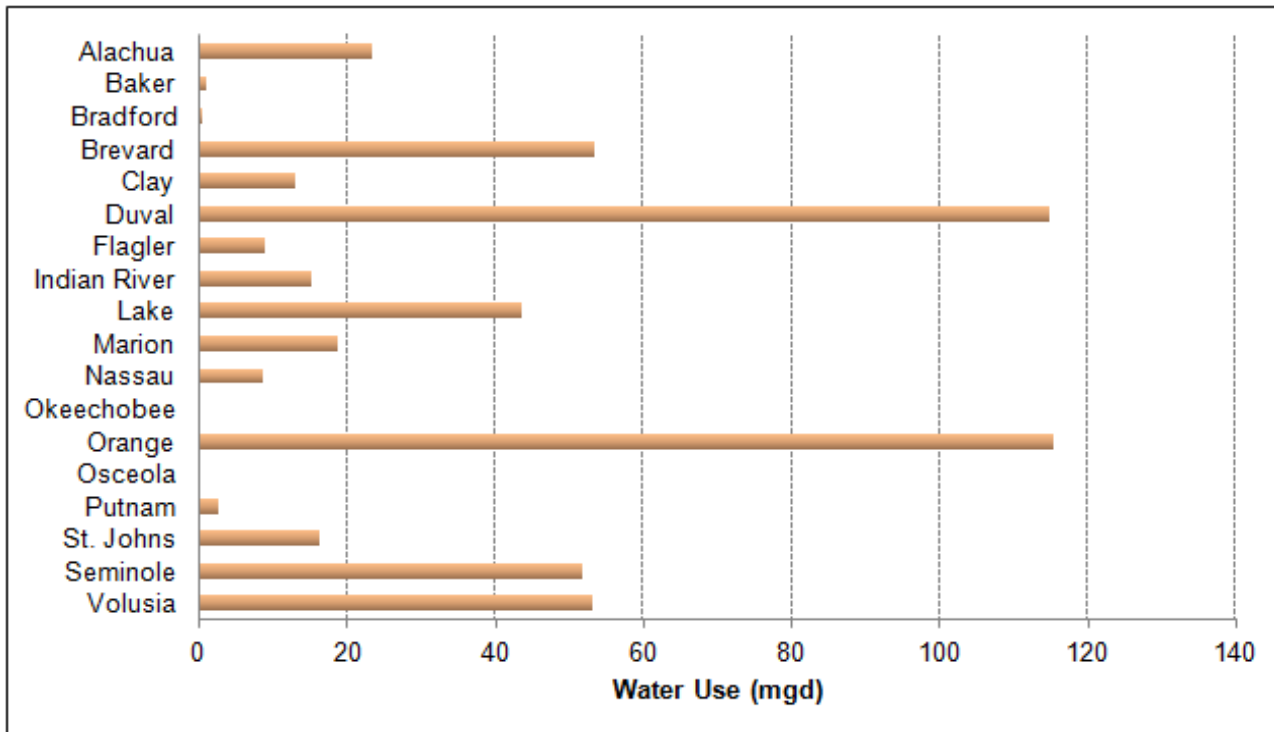


Figure 3. Freshwater use (mgd) for public supply in SJRWMD, 2012

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

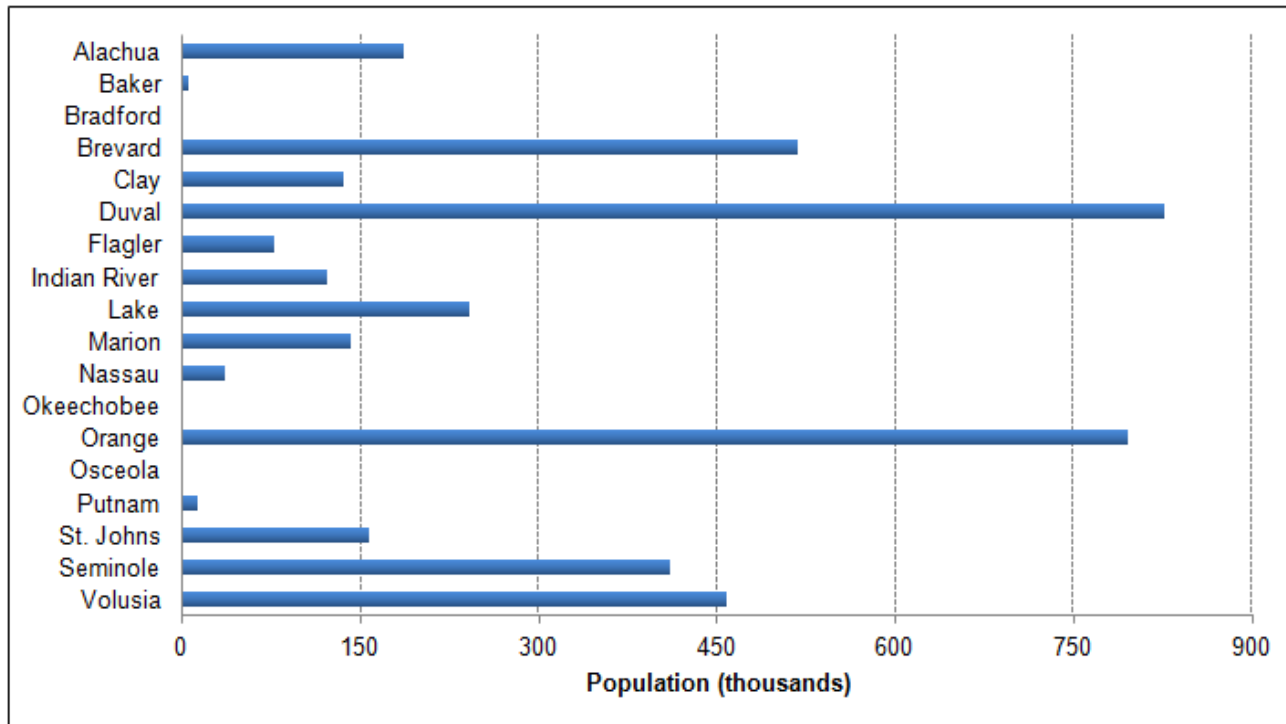


Figure 4. Population served by public supply in SJRWMD, 2012

Note: Estimated amounts are based on best available data as of Sept. 9, 2013.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

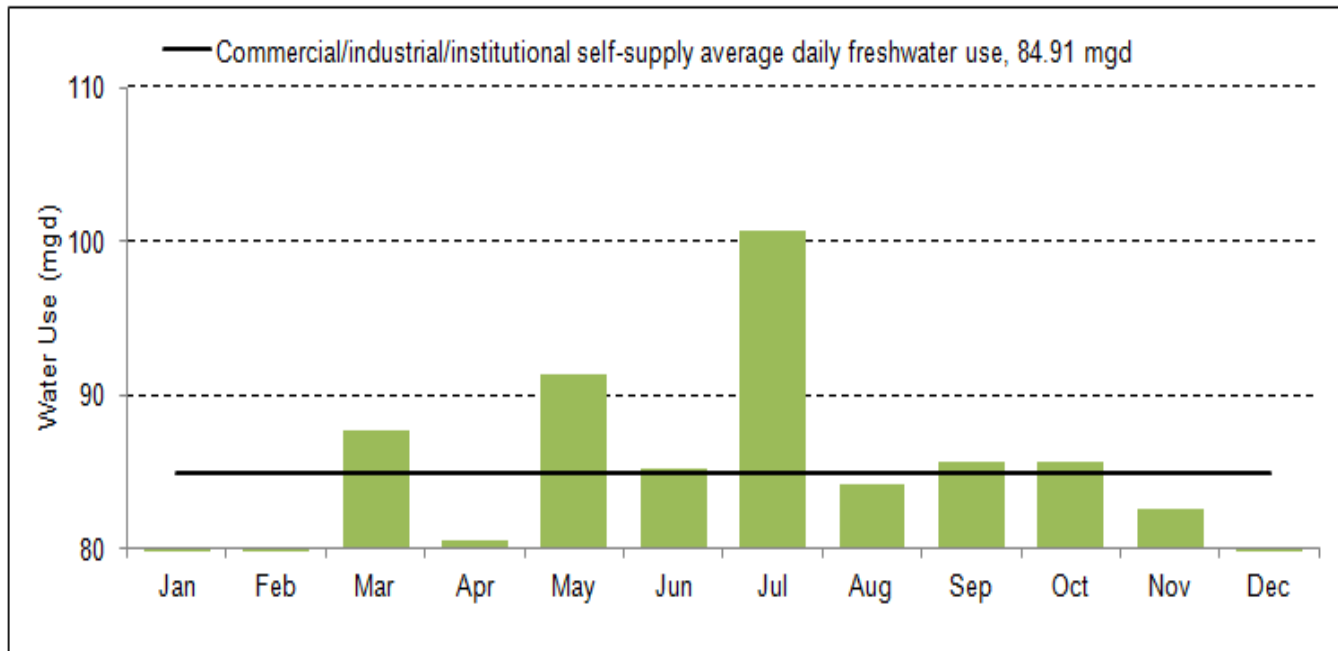


Figure 5. Average daily commercial/industrial/institutional self-supply freshwater use (mgd) by month, 2012

Note: Water use is in million gallons per day (mgd).  
Estimated amounts are based on best available data as of Sept. 9, 2013.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

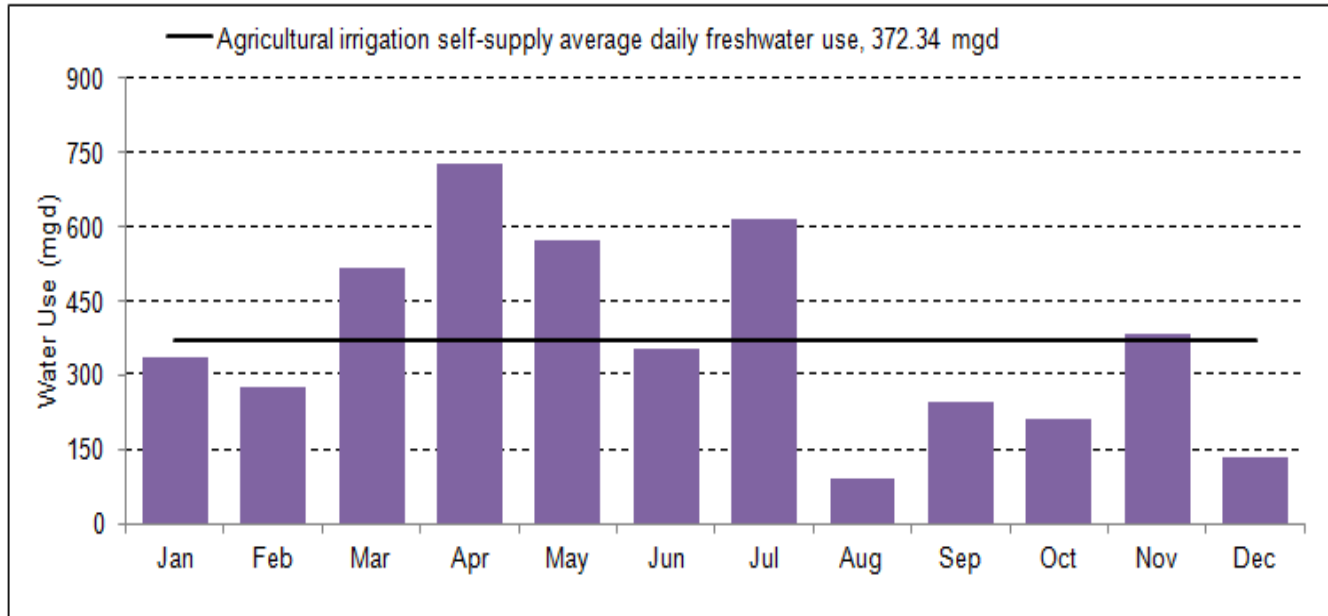


Figure 6. Average daily agricultural irrigation self-supply freshwater use (mgd) by month, 2012

Note: Water use is in million gallons per day (mgd).  
Withdrawal amounts are estimated.  
All estimates are based on best available data as of Sept. 9, 2013.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

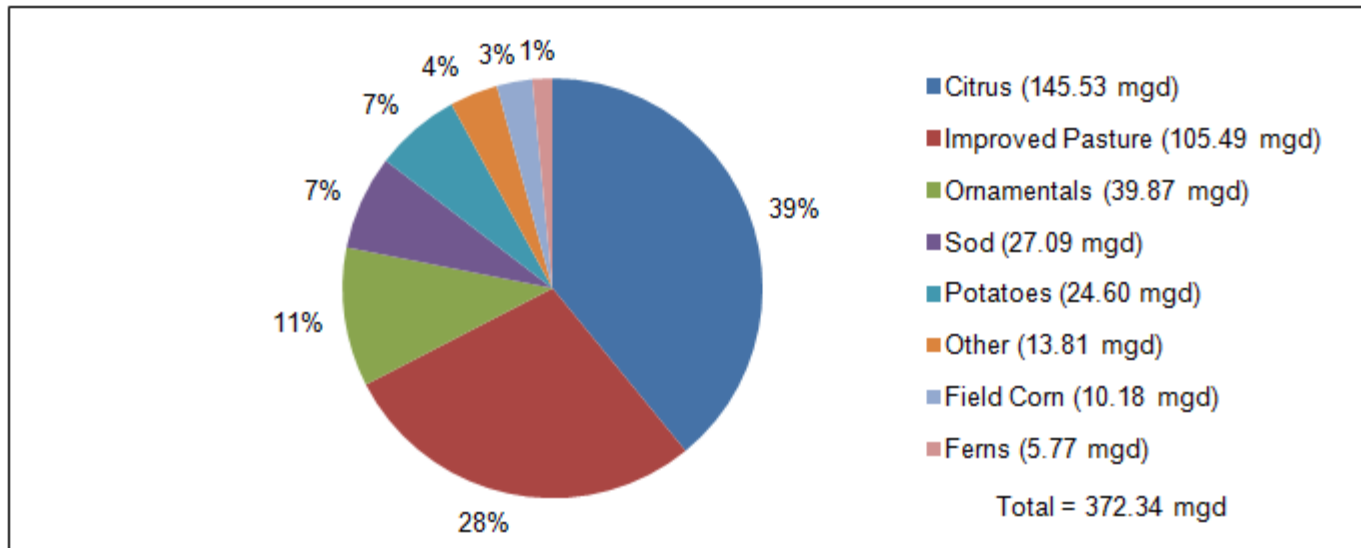


Figure 7. Agricultural irrigation by crop, 2012

Note: Water use is in million gallons per day (mgd).  
Estimated amounts are based on best available data as of Sept. 9, 2013.  
Calculation anomalies due to rounding account for nominal discrepancies.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

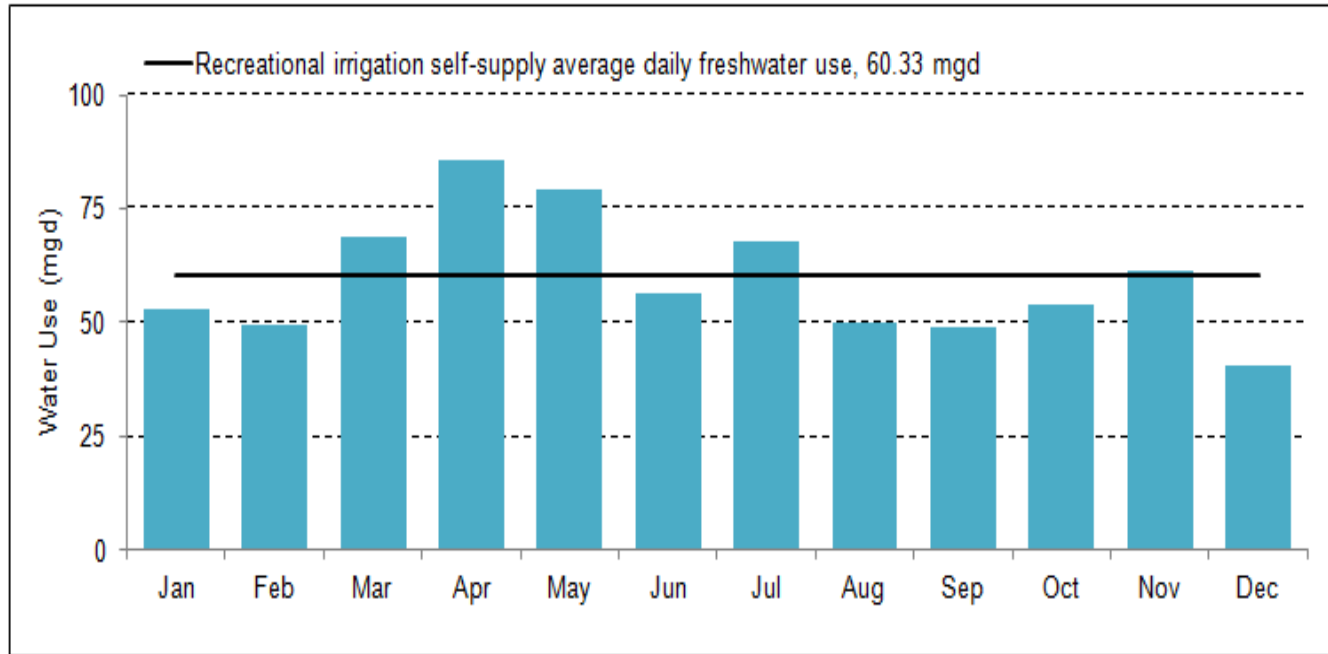


Figure 8. Average daily recreational irrigation self-supply freshwater use by month, 2012

Note: Water use is in million gallons per day (mgd).

Estimated amounts are based on best available data as of Sept. 9, 2013.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

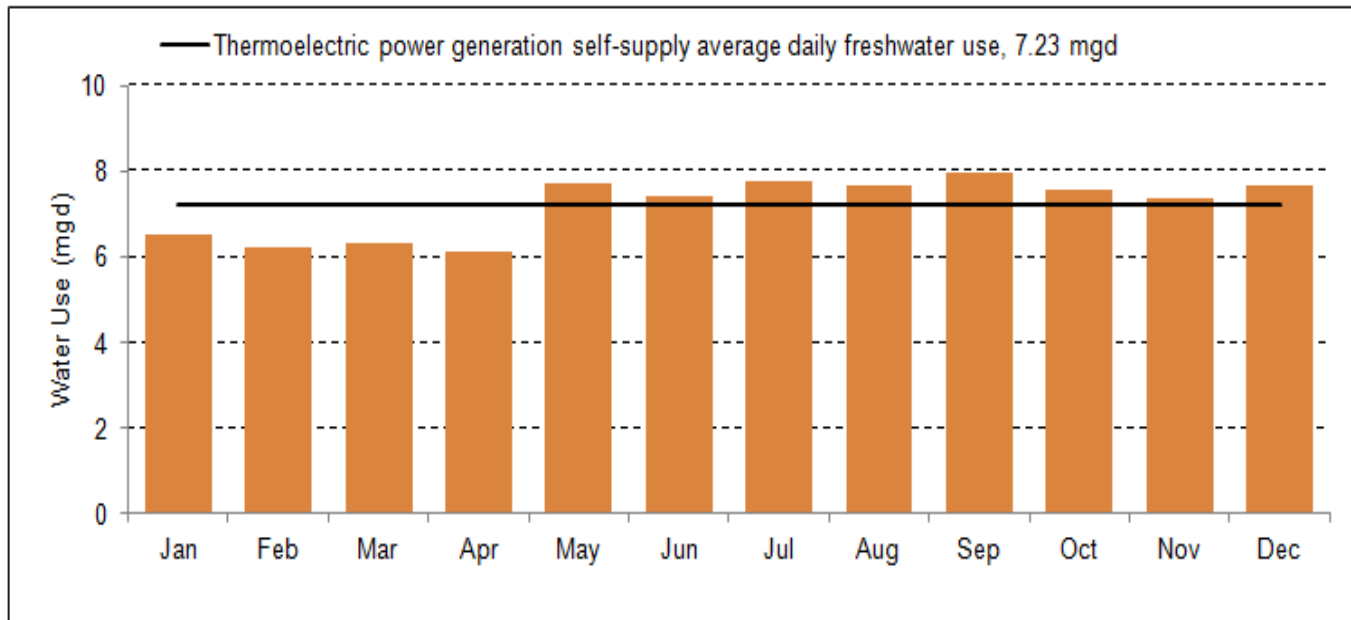


Figure 9. Average daily thermoelectric power generation self-supply freshwater use by month, 2012

Note: Water use is in million gallons per day (mgd).  
Estimated amounts are based on best available data as of Sept. 9, 2013.



2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

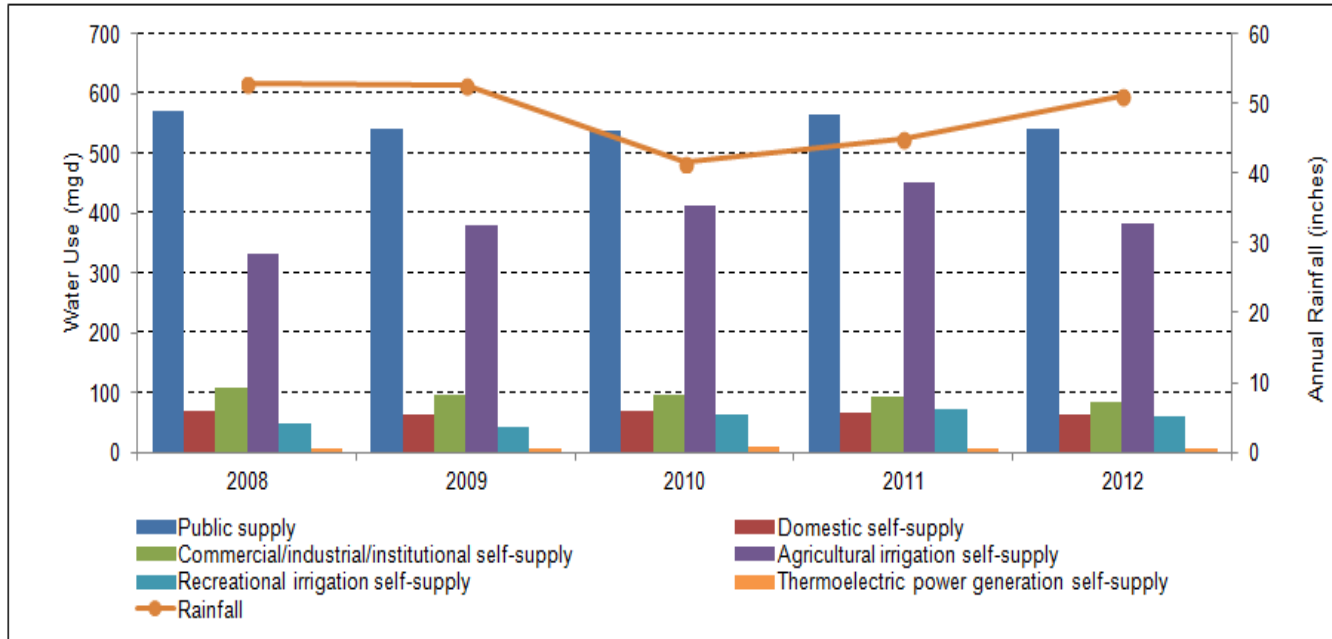


Figure 10. Annual rainfall and freshwater use by category, 2008–2012

Note: Water use is in million gallons per day (mgd); rainfall is measured in inches.

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.

2012 Survey of Estimated Annual Water Use for St. Johns River Water Management District

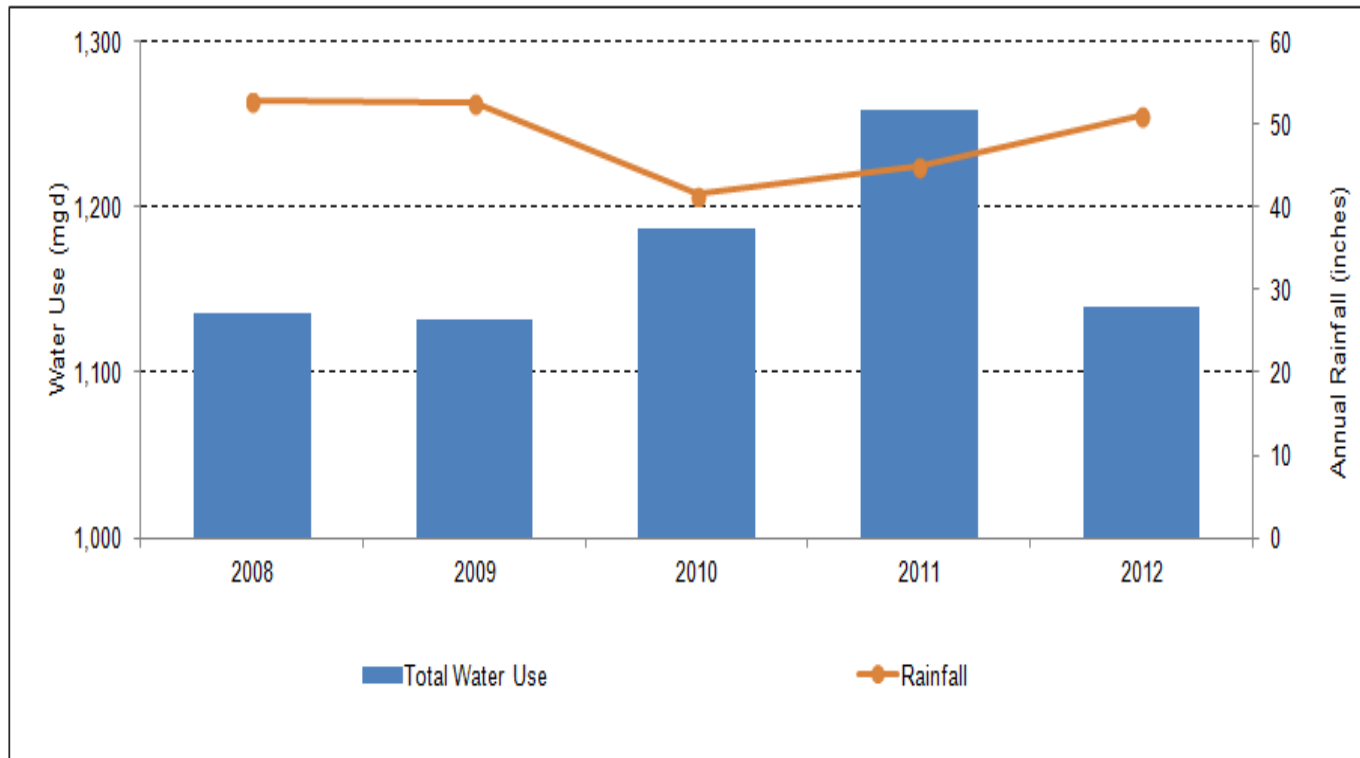


Figure 11. Annual rainfall and total freshwater, 2008–2012

Note: Water use is in million gallons per day (mgd); rainfall is measured in inches.

Estimated amounts are based on best available data as of Sept. 9, 2013.

Source of domestic self-supply is assumed to be groundwater, and domestic self-supply is an estimate.