South Florida Water Management District
2022 Estimated Water Use Report

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This report was produced by the Water Supply Bureau of the South Florida Water Management District. For further information about this document, please contact:

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EXECUTIVE SUMMARY

This report compiles estimated water use information by use category within the South Florida Water Management District for calendar year 2022, based primarily on water pumpage records reported pursuant to water use permit requirements. Water use is defined as any consumptive use of water that reduces the supply from which it is withdrawn or diverted. This report is not intended to comprehensively account for all water used or conveyed within the District (e.g., for flood control, natural systems, water quality treatment). In 2022, approximately 2,720 million gallons per day (mgd) of surface water and groundwater were used in the following categories (**Figure ES-1**):

- Public Supply (1,175 mgd)
- Domestic Self-Supply (41 mgd)
- Commercial/Industrial/Institutional (145 mgd)
- Agriculture (945 mgd)
- Landscape/Recreational (405 mgd)
- Power Generation (9 mgd)

Of the 2,720 mgd, approximately 1,743 mgd were derived from groundwater sources, and 977 mgd were derived from surface water sources, with 2,485 mgd being fresh water and 235 mgd considered saline water. Additionally, approximately 254 mgd of reclaimed water were used, primarily for landscape irrigation and, to a lesser extent, industrial and power generation uses.

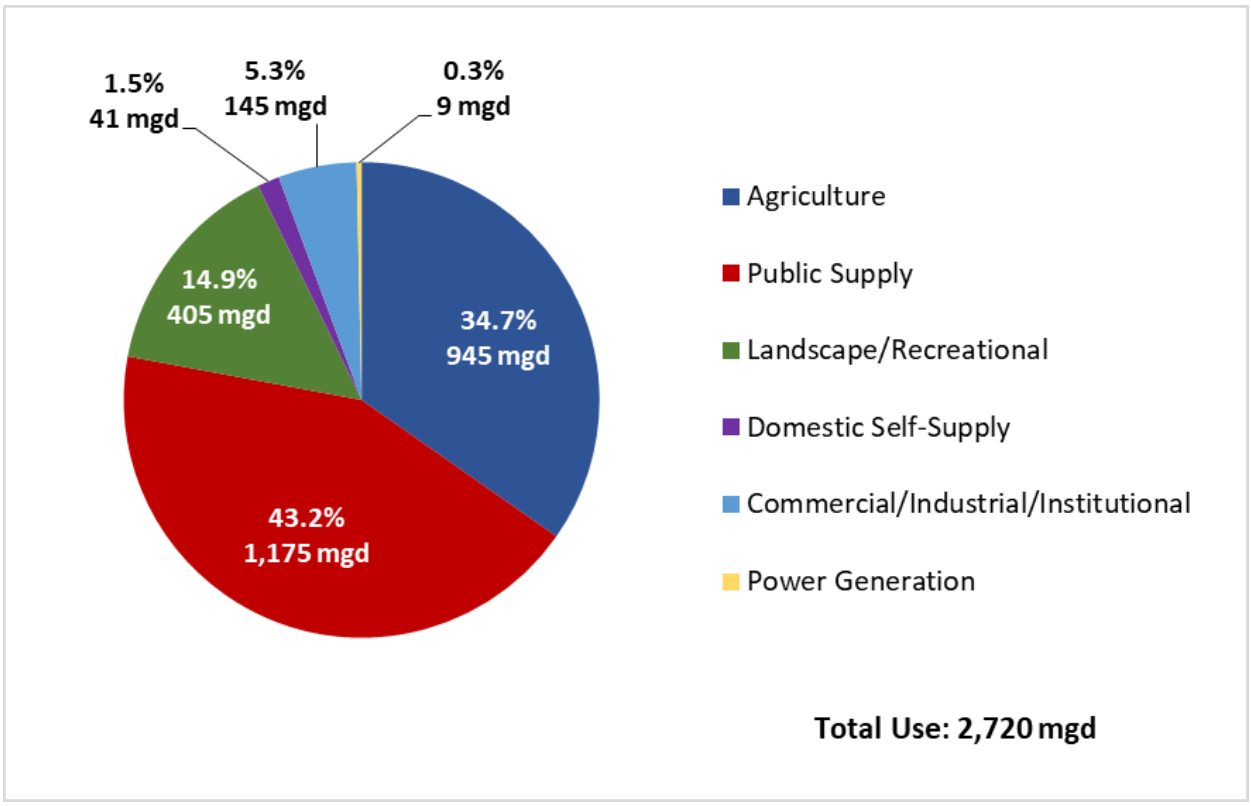

Figure ES-1. Percent water use by category.

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ACRONYMS AND ABBREVIATIONS

AG	Agriculture
CII	Commercial/Industrial/Institutional
D&I	Diversion and Impoundment
District	South Florida Water Management District
DSS	Domestic Self-Supply
EAA	Everglades Agricultural Area
FDEP	Florida Department of Environmental Protection
L/R	Landscape/Recreational
mgd	million gallons per day
mg/L	milligrams per liter
PCUR	per capita use rate
PG	Power Generation
PS	Public Supply
SFWMD	South Florida Water Management District

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INTRODUCTION

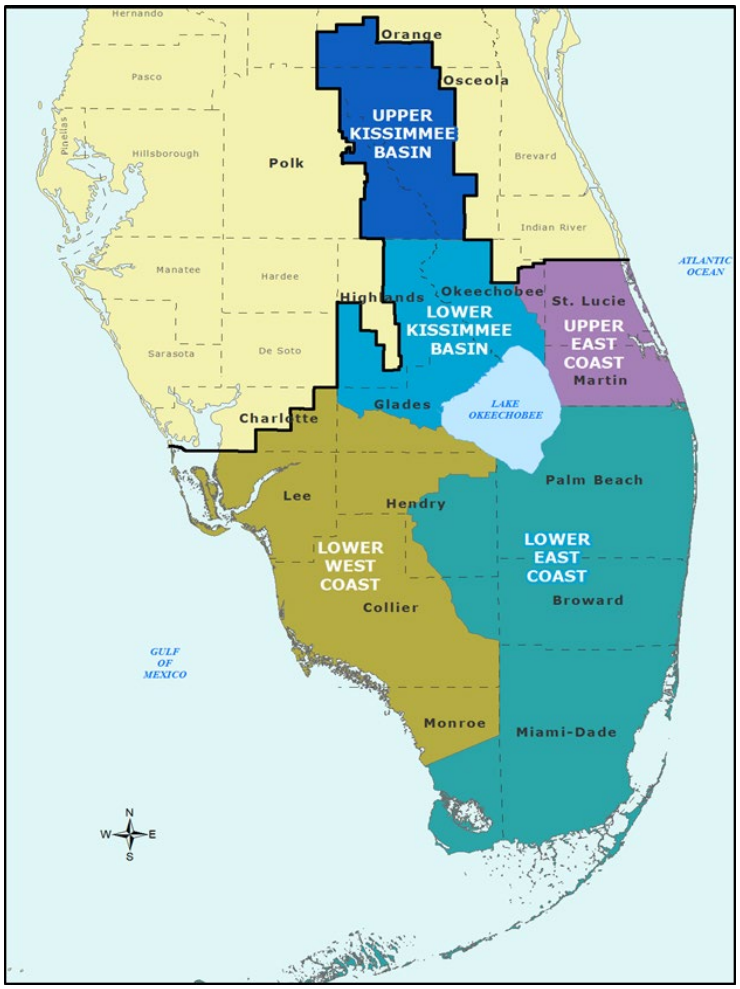
The South Florida Water Management District (SFWMD or District) is a regional government agency responsible for managing and protecting the water resources of South Florida by balancing and improving water quality, flood control, natural systems, and water supply. The District encompasses all or part of 16 counties from Orlando to the Florida Keys and serves a population of approximately 9 million residents. Created in 1949, it is the oldest and largest of the state's five water management districts. Among other duties, water management districts are responsible for water use permitting and water supply planning within their jurisdictional areas.

This report compiles estimated water use within the District for calendar year 2022. Water use is defined as any consumptive use of water that reduces the supply from which it is withdrawn or diverted. This report is a complement to the SFWMD's regional water supply plans (available at https://www.sfwmd.gov/our-work/water-supply), which capture current and projected water use, and to periodic water use reports prepared by the United States Geological Survey (Marella 2020; Marella and Dixon 2018). This report is based primarily on water pumpage records reported pursuant to water use permit requirements. However, because a moderate portion (18%) of the overall volume was estimated, rather than reported, this report is called the *Estimated Water Use Report*. This report is an important source of data and information to support the SFWMD's water resource programs and initiatives, including water supply planning, water use permitting, and water conservation.

This report documents the SFWMD's assessment of total water use. Estimated amounts are based on best available data at the time of publication. The document is not intended to comprehensively account for all water used or conveyed within the District (e.g., for flood control, natural systems, water quality treatment).

GEOGRAPHIC DESCRIPTION

The District encompasses more than 18,000 square miles in all or part of 16 counties of central and southern Florida. To manage water supply and plan for current and future water uses, the District is geographically divided into five planning areas (**Figure 1**). These regions are home to many permanent and seasonal residents in addition to a large tourist industry, a significant agricultural industry, and a growing industrial and commercial sector. Several major natural systems are located within the District, including the Upper Chain of Lakes, Kissimmee River and floodplain, Lake Okeechobee, Caloosahatchee River and Estuary, St. Lucie River and Estuary, Big Cypress National Preserve, Everglades water conservation areas, Everglades National Park/Florida Bay, and Biscayne National Park.



Upper Kissimmee Basin: Portions of Osceola, Orange, and Polk counties

Lower Kissimmee Basin: Portions of Okeechobee, Highlands, and Glades counties

Upper East Coast: Martin and St. Lucie counties and a portion of eastern Okeechobee County

Lower East Coast: Palm Beach, Broward, and Miami-Dade counties and portions of Monroe, Collier, and Hendry counties

Lower West Coast: Lee County, most of Collier County, and portions of Glades, Hendry, Monroe, and Charlotte counties

Figure 1. Water supply planning areas.

WATER USE PERMITTING AND REPORTING

Ensuring an adequate supply of water to protect, enhance, and restore natural systems and to meet all other existing and projected needs is a fundamental element of the SFWMD's mission. The District has adopted rules for regulating the consumptive use of water pursuant to Chapter 40E-2, Florida Administrative Code. The *Applicant's Handbook for Water Use Permit Applications* (Applicant's Handbook; SFWMD 2022) further specifies the general procedures and criteria used by District staff for review of water use permit applications to ensure water uses permitted by the District are reasonable-beneficial, do not interfere with existing legal users, and are in the public interest. Uses exempt from permitting include indoor domestic use at a single-family or duplex dwelling, water used for firefighting purposes, the use of seawater, and the use of reclaimed water.

The SFWMD issues two types of permits based primarily on the quantity of water required: Individual and General. General permits include permits by rule and noticed general permits. Individual permits normally are those allocating at least 0.10 million gallons per day (mgd) of water (averaged annually). Regional exceptions exist, such as the South Dade Agricultural Area, where Individual permits are issued for allocations of at least 0.30 mgd, and the Lower West Coast Planning Area, where Individual permits are issued for groundwater allocations of at

least 0.01 mgd. General permits by rule include landscape irrigation at a single-family dwelling or duplex, on-site short-term dewatering, and closed-loop systems. Noticed General permits typically are for water users consuming less than 0.10 mgd that meet certain other requirements. Users with General permits (whether by rule or noticed) are not required to account for or report their water use.

Users with Individual permits typically are required to account for their water use and report the monthly volume used to the SFWMD. They are required to have a reliable, repeatable water use accounting system to record water use from all withdrawal facilities. For pumped systems, acceptable water use accounting systems include calibrated flowmeters or clocks that totalize pump operation. For gravity flow systems, acceptable accounting methods include the use of rated water control structures in conjunction with certified structure rating curves. Water use accounting and calibration methods must be submitted as part of the permit application. Prior to using any authorized facility, the approved water use accounting method must be operating, and the initial calibration must be submitted to the SFWMD. Recalibration results for the water use accounting method are required every 5 years (from the date of last calibration).

For this report, water use under 20,629 permits was evaluated for 2022. In addition, there are 1,673 active permits for dewatering and 349 active permits for heating/cooling pools and air conditioning units. These 349 permittees recirculate water in such a way that there is no net consumption (closed-loop system); therefore, these permits were not included in the total use estimates. Another 108 permits for surface water within the boundaries of the Everglades Agricultural Area (EAA) were evaluated holistically and are discussed separately. Finally, 11 permits classified as "other" that cumulatively contribute a negligible volume (less than 0.36 mgd) were disregarded.

WATER USE ESTIMATION METHODOLOGY

The most accurate way to determine the amount of water used each year would be to total the annual water use of every user. However, as noted previously, not all water users are required to account for and report their annual use, and some users had not reported their water use at the time of this report. Recognizing these data deficiencies, this report utilized water use information from water users that reported in 2022 and estimated the amount of water used by those that did not or do not report.

The specific water demands of each permittee are evaluated at the time of permit application, and each permittee has a calculated maximum volume of water allowed for use (i.e., a permit allocation). Water use permits typically are issued for a 20-year duration, and account for projected increases in population or irrigated acreages over that period. The annual permit allocation is determined by calculating the quantity of water to be withdrawn over a 12-month period under 1-in-10-year drought conditions for the associated use category. For Agriculture and Landscape/Recreational users, it is the amount of water a crop or the landscape needs to supplement the rainfall received during 1-in-10-year drought conditions. For other use categories, it is the quantity of water required by each component of demand for the particular use, which may include factors such as treatment losses; other sources of water; conservation practices; and water purchased, sold, or transferred. It is important to understand that the allocated permit volume for most use categories is the water volume required by those users during 1-in-10-year drought

conditions over the duration of the permit. Therefore, during 1-in-10-year drought conditions Districtwide, the total water use for the District should be approximately the sum of all permit allocations (assumes all acreage is planted, projected population is being served, and drought conditions persist for the entire year). Water use in 2022 was less than the amount allocated in permits.

The ratio of reported use to the permit allocation (referred to herein as the allocation utilization ratio) was used as an analogue to obtain an estimate of use for permittees that did not report or were not required to report. The estimation process used in this 2022 report remains the same as the 2018 through 2021 report process. Each permit's allocation utilization ratio (of those that reported) was calculated. For each water use category, outlier ratios less than the 10^{th} percentile and greater than the 90^{th} percentile were removed, and the remainder were averaged to calculate the allocation utilization ratios for each water use category. Using a combination of reported and estimated water use for each permittee, the total amount of water used for each use category was estimated. Further information on specific methods by use category is provided later in this document.

WATER SOURCES

This report estimates the volume of water withdrawn or diverted from surface water and groundwater sources. Reported pumpage data were ascribed to specific water sources (i.e., surface water or groundwater). All estimated data were assigned a source based on their related facility types. Permittees exclusively using pumps to extract water were assigned as surface water users, and those exclusively using wells were designated as groundwater users. If a permittee has both pumps and wells, the estimated volume was ascribed to surface water and groundwater sources based on the percent of the total that is surface water and the percent of the total that is groundwater for those permits that reported in each use class. If only a small number of permittees with both types of facilities in a particular use class reported, then the average ratio for all reported permits was used. Some permits employ "recharge" facilities (almost exclusively groundwater sources), which provide recharge water to surface water bodies to be repumped, mostly for irrigation use. In those cases, to avoid double counting, the volume from the groundwater source was subtracted from the volume delivered for irrigation to obtain an adjusted volume attributed to the surface water body.

As stated earlier, the use of reclaimed water is not regulated by water management districts. However, reclaimed water use is a key component of water resource management. The beneficial use of reclaimed water for irrigation and other uses has partially reduced the need for surface water and groundwater sources. Reclaimed water data are compiled separately in this report based on the individual reuse inventory reports submitted by utilities to the Florida Department of Environmental Protection (FDEP) for the year 2021 (FDEP 2022). Some permits contain supply sources that are used for blending with reclaimed water or as a backup supply should reclaimed water become unavailable. Permittees with these permit types that did not report water withdrawals were assumed to have met all their water demands with reclaimed water and were not estimated individually. When reclaimed water was partially used (reported) by a permittee, only the volume from the surface water or groundwater source was counted (in the estimation report) to avoid double counting the reclaimed water volumes. Additional information on sources is provided under individual use categories later in this report.

WATER QUALITY

Water use estimates contained in this report are also divided into fresh water and saline water. For the purposes of this report, the following terms and definitions from the Applicant's Handbook (SFWMD 2022) are used to define different water qualities:

- ***Fresh water*** is water with a chloride concentration ≤250 milligrams per liter (mg/L)
- ***Saline water*** is water with a chloride concentration between 250 and 19,000 mg/L
- ***Seawater*** or ***salt water*** is water with a chloride concentration ≥19,000 mg/L

In general, freshwater sources in the District include the Upper Floridan aquifer in the Upper and Lower Kissimmee Basin planning areas; the surficial aquifer system in the Upper East Coast Planning Area; the Biscayne aquifer in the Lower East Coast Planning Area; the Lower Tamiami, Water Table, Mid-Hawthorn, and Sandstone aquifers in the Lower West Coast Planning Area; and surface water upstream of coastal salinity water control structures. Saline water sources in the District include the Floridan aquifer system in the Upper East Coast, Lower East Coast, and Lower West Coast planning areas, while seawater sources include the Atlantic Ocean and Gulf of Mexico as well as connected tidal water bodies. Saline water and saltwater sources require blending with freshwater sources or desalination treatment prior to use as potable water or for irrigation. Only a small fraction of permits require water quality testing to determine salinity. Therefore, the volumes reported as saline water are mostly for permits known to require treatment or blending from known saline sources, primarily in the Public Supply water use category and to a lesser extent the Landscape/Recreational and Agriculture water use categories. If the salinity of the source water and treatment/blending requirements are unknown, then the water quantities are classified as fresh.

WATER USE CATEGORIES

Water use estimates in this report were developed for the following six water use categories established by the FDEP in collaboration with the state's five water management districts for use in water supply planning:

- Public Supply (PS)
- Domestic Self-Supply (DSS)
- Commercial/Industrial/Institutional (CII)
- Agriculture (AG)
- Landscape/Recreational (L/R)
- Power Generation (PG)

PS includes treated potable water provided to some of the other use categories within a utility's service area boundaries. The other categories include self-supplied users that are separately permitted and do not receive water from a utility but rather have their own water supply withdrawal facilities (e.g., wells, pumps, structures). These water supply categories are not identical to the use classes utilized in permitting. As a result, permitting use classes were combined in some cases to develop the water use estimate for the water supply categories used in this report.

Dewatering activities are not included in this report. Dewatering involves pumping water from an area to produce a dry working condition and includes withdrawals of water for construction activities, some mining operations, and minor uses such as exploratory testing, short-term remedial action plans, and aquifer performance tests. Water from dewatering activities normally is required to be retained on-site such that losses are limited to evaporation, which are considered minimal compared to the volumes pumped. Furthermore, permits for dewatering are not given allocations (although General permits must comply with daily and annual withdrawal limits), and permittees generally are not required to report water use to the SFWMD.

Additionally, there are 349 permits classified as industrial that use wells for their geothermal properties and are not included in this report. These "closed-loop" applications include air conditioning and swimming pool temperature regulation, which extract groundwater, pass it through a heat exchange unit, and then reinject the warm or cool water back into the ground. The result of the closed-loop system operation effectively is a zero-balance withdrawal. Recent changes to water use rules have made these types of systems a "no notice" permit such that they are no longer issued a permit number or tracked.

Diversion and Impoundment (D&I) permits usually are for large parcels of land that contain smaller users within their boundaries. These permittees divert surface water through pumps or control structures or divert a combination of surface water and groundwater into a conveyance canal network to provide for the demands of secondary users as well as consumptive and nonconsumptive uses. Within the District, there are 48 D&I permits. There are 27 D&I permits outside of the EAA that exclusively serve agriculture, and 2 permits that partially serve agriculture. The estimated volumes for these permits are included in the AG category. In addition, there are 9 D&I permits within the EAA whose water use is accounted for in the EAA estimate described later in this report. Finally, 10 D&I permits are primarily for recharging aquifer and canal networks, hydrating wetlands, maintaining salinity barriers along the coast, or providing fire protection and are not included in the water use estimates of this report.

2022 WEATHER

During 2022, the District received 54.35 inches of rainfall. Average historical (1915 to 2022) annual rainfall within the District is 52.20 inches. **Figure 2** presents the annual deviation from average rainfall over the past century. From 2012 to 2022, average annual rainfall within the District varied by 16.83 inches: the driest year was 2021 with 46.85 inches, and the wettest year was 2017 with 63.68 inches. However, a Districtwide average number does not tell the whole story as rainfall varies not only by year but also by month and location. The District typically receives two-thirds of its annual rainfall between May and October (**Figure 3**). **Figure 4** presents the rainfall amounts received in each basin within the District during 2022. Note that **Figure 4** uses a 30-year annual rainfall average (not the historical average) of 53.22 inches related to percent and inches deviation from "average."

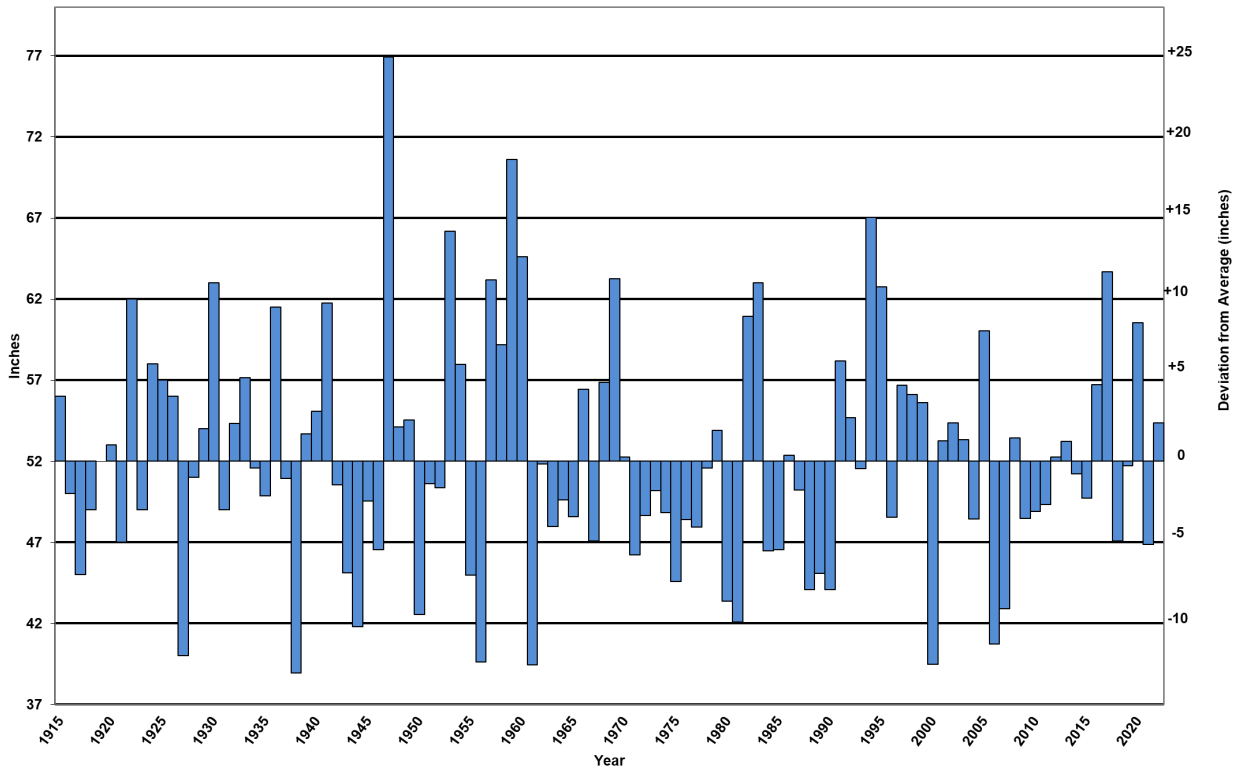


Figure 2. SFWMD annual difference from average rainfall (1915–2022).

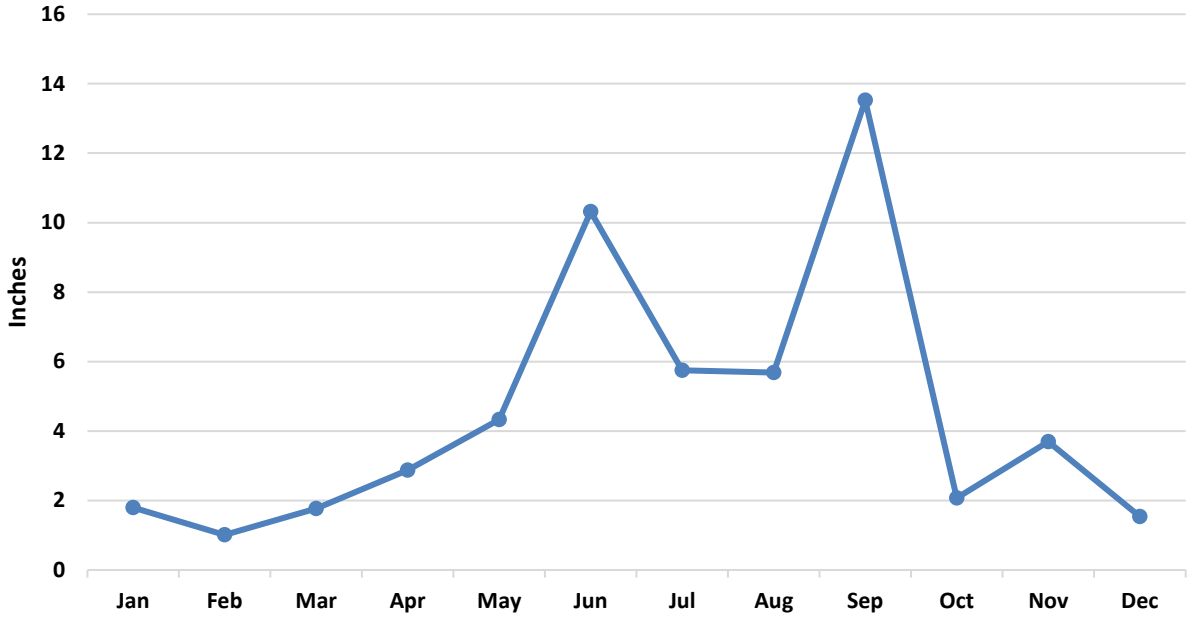


Figure 3. 2022 average District monthly rainfall distribution.

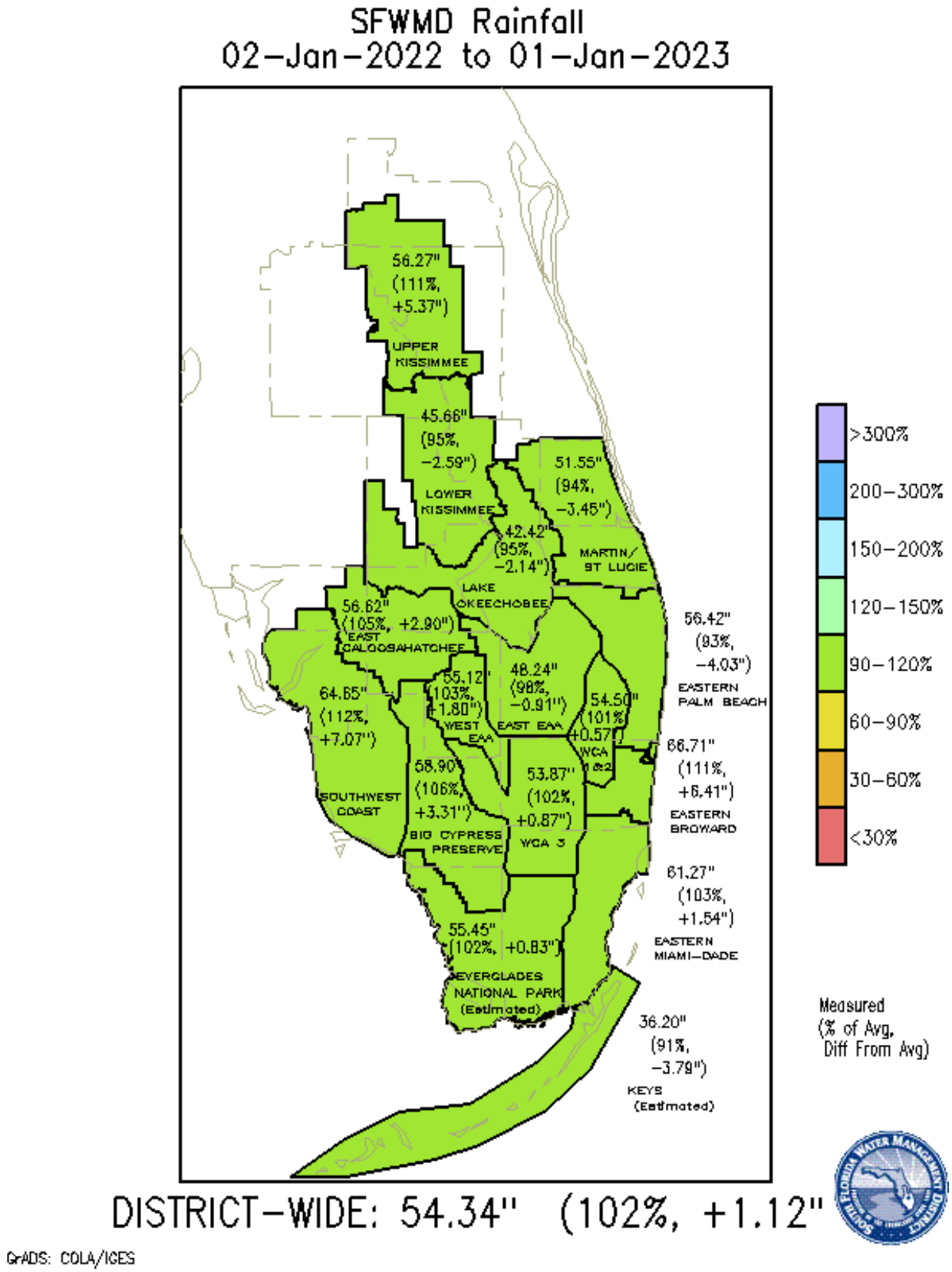


Figure 4. SFWMD 2022 rainfall distribution map compared to 30-year historical average.

DATA SOURCES

The primary sources of data for this report are permittee-reported monthly pumpage volumes recorded in the District's Water Use Permit database. Quarterly or semiannual reporting of monthly data generally is required for all permittees with permit allocations of 0.10 mgd or greater. Monthly pumpage data are collected using calibrated flowmeters or other approved water use accounting methods as discussed earlier. Water use was estimated for permittees that had not reported based on the assumptions described in the *Water Use Estimation Methodology* section earlier and in the specific use category sections that follow. Rainfall data were provided by the SFWMD's Operations Section.

For this report, data for all use categories were obtained for active permits from January 1, 2022 through December 31, 2022. Analyses of reported water use was performed by specialists within the SFWMD's Water Supply Bureau to compile the best available data. Work on this report typically cannot begin before September, which allows time for the SFWMD's Water Use Bureau to receive semiannual data (June reporting of December data) and to contact permittees regarding absent and outlier data. For this report, the SFWMD's Water Supply Bureau must do additional manipulation and validation of the data to determine the surface water to groundwater and saline to freshwater source ratios. Water use estimates in this report are based on a final Water Use Permit database query performed on December 18, 2023. The SFWMD cannot guarantee the validity of the reported data or that permittees have used consistent measurement techniques or quality control standards in their data collection and reporting. Additionally, data sources used for this report may be updated after publication.

2022 ESTIMATED WATER USE BY CATEGORY

Water use was estimated by category from fresh, saline, and reclaimed water sources and reported as an average (in mgd, unless noted otherwise).

Public Supply

Water withdrawn, treated, and delivered to service areas within the SFWMD by privately and publicly owned water supply utilities (or systems) is defined as Public Supply (PS). This encompasses water supplied by water treatment facilities for potable use (i.e., drinking quality) with projected average pumpage rates of 0.10 mgd or greater. The reported volumes represent gross (raw) water withdrawn before treatment and distribution losses. In 2022, there were 116 active PS permits (0.10 mgd or greater) serving an estimated 8.6 million people (95% of the total District population). PS utilities and individuals using less than 0.10 mgd are included in the Domestic Self-Supply category described later. PS demand often fluctuates during the year in response to seasonal rainfall and variations in temperature as well as seasonal and tourist populations. For 2022, the total water use for PS was 1,175 mgd, with 84% coming from freshwater sources and 16% coming from saline water sources. Groundwater sources contributed 96% of the water, and surface water sources accounted for the remaining 4%. **Table 1** presents total PS category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources.

Table 1. Public Supply water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits
Broward	221.56	13.90	0.00	235.46	235.46	26
Charlotte	0.40	0.00	0.00	0.40	0.40	3
Collier	35.93	17.82	0.00	53.75	53.75	8
Glades	0.48	0.00	0.00	0.48	0.48	2
Hendry	0.82	3.07	0.00	3.89	3.89	3
Highlands	0.31	0.00	0.00	0.31	0.31	2
Lee	32.88	69.00	1.78	100.10	101.88	13
Martin	9.54	13.41	0.00	22.95	22.95	8
Miami-Dade	346.56	15.97	0.00	362.52	362.52	6
Monroe[b]	0.00	0.00	0.00	0.00	0.00	0
Okeechobee	3.19	0.00	2.92	0.27	3.19	2
Orange	39.19	0.00	0.00	39.19	39.19	4
Osceola	50.18	0.00	0.00	50.18	50.18	6
Palm Beach	231.34	28.41	38.80	220.95	259.75	19
Polk	2.88	0.00	0.00	2.88	2.88	5
St. Lucie	7.23	31.28	0.00	38.51	38.51	9
Total	**982.51**	**192.85**	**40.50**	**1,131.86**	**1,175.36**	**116**

[a] Values are only for the portions of the counties located within the SFWMD.

[b] The Florida Keys Aqueduct Authority (FKAA) serves the Florida Keys in Monroe County. Because the FKAA's wellfields are located in Miami-Dade County, the volume delivered to Monroe County (20.56 mgd of groundwater [17.68 mgd fresh and 2.88 mgd saline]) is included in the Miami-Dade County totals.

Domestic Self-Supply

Domestic Self-Supply (DSS) is primarily for individual residences in rural areas without access to a PS system and often is provided by small, shallow private wells. Domestic consumption at single-family and duplex residences is exempt from water use permitting and reporting. Landscape irrigation at a single-family dwelling or duplex is granted a General permit by rule. For reporting purposes, the DSS category includes small PS utilities and users providing potable water withdrawing less than 0.10 mgd. These typically serve a limited number of households (e.g., a small subdivision or mobile home park). Other small self-supply permits classified as PS that are included in the DSS category are for domestic indoor use (and possibly landscape irrigation) at a single structure, such as a sales trailer, small office, or convenience store. In 2022, there were 1,105 permits for PS with an allocation of less than 0.10 mgd.

Because DSS residential users are not required to report their use, estimations for the DSS category are based on county population data and the PS per capita use within each county. The DSS demand estimate was calculated by multiplying the 2022 DSS estimated county populations by the 2022 PS Districtwide uniform residential per capita use rate (PCUR), which was derived from water use reported by utilities to the SFWMD as part of the annual reporting required pursuant to Section 373.709(6), Florida Statutes. **Appendix A** contains further information regarding population, PCURs, and DSS use calculations.

The 2022 total water use for DSS was estimated to be 40.74 mgd, with 100% coming from fresh groundwater sources. **Table 2** presents total DSS category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources.

Table 2. Domestic Self-Supply water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits[b]
Broward	0.64	0.00	0.00	0.64	0.64	26
Charlotte	0.16	0.00	0.00	0.16	0.16	14
Collier	6.31	0.00	0.00	6.31	6.31	64
Glades	0.40	0.00	0.00	0.40	0.40	34
Hendry	1.03	0.00	0.00	1.03	1.03	77
Highlands	0.53	0.00	0.00	0.53	0.53	26
Lee	9.67	0.00	0.00	9.67	9.67	140
Martin	0.62	0.00	0.00	0.62	0.62	101
Miami-Dade	0.79	0.00	0.00	0.79	0.79	138
Monroe	0.00	0.00	0.00	0.00	0.00	0
Okeechobee	1.32	0.00	0.00	1.32	1.32	79
Orange	0.81	0.00	0.00	0.81	0.81	10
Osceola	8.71	0.00	0.00	8.71	8.71	93
Palm Beach	4.28	0.00	0.00	4.28	4.28	137
Polk	1.85	0.00	0.00	1.85	1.85	22
St. Lucie	3.61	0.00	0.00	3.61	3.61	144
Total	**40.74**	**0.00**	**0.00**	**40.74**	**40.74**	**1,105**

[a] Values are only for the portions of the counties located within the SFWMD.
[b] Public Supply permits less than 0.10 mgd.

Commercial/Industrial/Institutional

The Commercial/Industrial/Institutional (CII) category consists of self-supplied water consumed by business operations. Commercial facilities under the CII category include office complexes, hotels, restaurants, gas stations, car washes, laundromats, theme parks, and zoos, among others. Industrial uses include processing and manufacturing, dust control, maintenance, cleaning, and washing. Groundwater remediation projects also are classified as an industrial use. However, remediation projects that reinject treated water back into the same aquifer are not included in this report. Some larger institutions such as schools, hospitals, and prisons also are included in the CII category primarily for heating, ventilation, and air conditioning (HVAC) system operations. Water use for CII facilities receiving water from PS utilities (i.e., not self-supplied) are included in the PS category. CII does not include water used for power generation.

Mining is also included in the CII use category. The mining uses reported herein include dust suppression, nonrecycled water use as part of on-site mining processes, water entrained within commercial products, and minor volumes for potable/sanitary use by on-site employees. The volumes reported do not include recycled surface water or dewatering volumes, which are separately permitted under the dewatering use class and not included in this report.

The average allocation utilization ratio of reporting CII permits was 30% after removing permits below the 10^{th} percentile and above the 90^{th} percentile. Water use for CII permits that did not report

in 2022 was estimated by multiplying the average allocation utilization ratio of 30% by the permit allocations.

The CII category includes 20 mining and 44 industrial permits that have an allocation of 0.10 mgd or greater, and 600 permits with an allocation of less than 0.10 mgd. The total 2022 water use for CII was 145 mgd, with 99.9% coming from freshwater sources and 0.1% coming from saline water sources. Groundwater sources contributed 57% of the water, and surface water sources accounted for the remaining 43%. Industrial use accounted for 54.26 mgd (37%), and mining use accounted for 90.72 mgd (63%) of the total CII use. **Table 3** presents total CII category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources. Further detail is provided in **Appendix B**.

Table 3. Commercial/Industrial/Institutional water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits
Broward	3.44	0.00	0.11	3.33	3.44	87
Charlotte	0.03	0.00	0.01	0.01	0.03	7
Collier	7.65	0.11	7.17	0.59	7.76	55
Glades	10.33	0.00	10.06	0.26	10.33	13
Hendry	5.41	0.00	0.77	4.64	5.41	50
Highlands	1.59	0.00	0.00	1.59	1.59	14
Lee	13.89	0.00	13.29	0.60	13.89	93
Martin	0.26	0.00	0.01	0.25	0.26	41
Miami-Dade	88.87	0.00	25.66	63.21	88.87	90
Monroe	0.00	0.00	0.00	0.00	0.00	1
Okeechobee	3.58	0.00	0.02	3.56	3.58	27
Orange	2.02	0.00	0.00	2.02	2.02	12
Osceola	0.11	0.00	0.00	0.11	0.11	22
Palm Beach	5.73	0.00	3.13	2.59	5.73	113
Polk	0.00	0.00	0.00	0.00	0.00	1
St. Lucie	1.95	0.00	1.71	0.24	1.95	38
Total	**144.86**	**0.11**	**61.96**	**83.01**	**144.97**	**664**

[a] Values are only for the portions of the counties located within the SFWMD.

Agriculture

The Agriculture (AG) category includes water used for commercial crop irrigation, pasture, nurseries, livestock watering, and aquaculture. AG estimates were based on the methodology described in the *Water Use Estimation Methodology* section earlier in this report, with the following exceptions:

- For the agriculture permitting use class, 669 users in all 5 planning areas of the SFWMD reported. The reported water use to permitted allocation utilization ratios were determined by water supply planning area to take regional weather effects into account. Statistical analysis (the Mann-Whitney *U* test) supported using unique allocation utilization ratios for each planning area rather than a single ratio for the entire use category. The AG allocation utilization ratios for each planning area are as follows:

    - Upper Kissimmee Basin – 15.4%
    - Lower Kissimmee Basin – 17.6%
    - Upper East Coast – 13.5%
    - Lower East Coast – 20.5%
    - Lower West Coast – 19.8%

- For the nursery permitting use class, 42 out of 904 permittees in all 5 planning areas reported. Water use for those permittees that did not report was estimated using an allocation utilization ratio of 46.8%.
- For the livestock permitting use class, 7 out of 687 permittees in 3 of the 5 planning areas reported. Water use for those permittees that did not report was estimated using an allocation utilization ratio of 61.8%.
- For the aquaculture permitting use class, 5 out of 81 permittees in 2 of the 5 planning areas reported. Water use for those permittees that did not report was estimated using an allocation utilization ratio of 16.6%.

The AG category is made up of 4,132 permits, including 2,323 for agriculture, 904 for nursery, 687 for livestock, 81 for aquaculture, 29 D&I permits that serve agricultural operations, and the EAA represented by 1 "permit" (which includes 108 permitted AG and other users).

Everglades Agricultural Area (EAA)

The EAA is located south of Lake Okeechobee and was created from drainage of the northern Everglades. The EAA is composed primarily of highly productive agricultural land and land used by the SFWMD for water storage and treatment (e.g., stormwater treatment areas). The agricultural land is mostly sugarcane interspersed with vegetables, sod, and rice. The EAA extends south from Lake Okeechobee to the northern levee/boundary of Water Conservation Area 3A, from its eastern boundary at the L-8 Canal to the western boundary along the L-1, L-2, and L-3 levees. Four major canals (West Palm Beach, Hillsboro, North New River, and Miami) pass through the EAA and supply agricultural irrigation water, mainly through gravity release from Lake Okeechobee. The primary irrigation method in the EAA is seepage irrigation. Farmers use secondary and tertiary canals to distribute surface water from gated culverts and pumps to their respective fields. Daily records of the water volumes from Lake Okeechobee into and out through primary canals are kept such that a surface water demand volume for the area can be estimated using a water balance method. The SFWMD's Project Operations and Assessment Section produces flow volume data sets for this area (used to calculate the annual total phosphorus load compliance assessment required by Chapter 40E-63, Florida Administrative Code), from which the irrigation water volume can be calculated. In 2022, 236 mgd of water were used by 473,776 acres of the EAA. This acreage excludes lands that were part of the historical EAA acreage and are currently used by the District for water storage and treatment (**Figure 5**). For more information regarding water flow volumes through the EAA, please refer to Volume I, Chapter 4, Appendix 4-1 of the South Florida Environmental Report, which is published annually and available on the SFWMD's website.

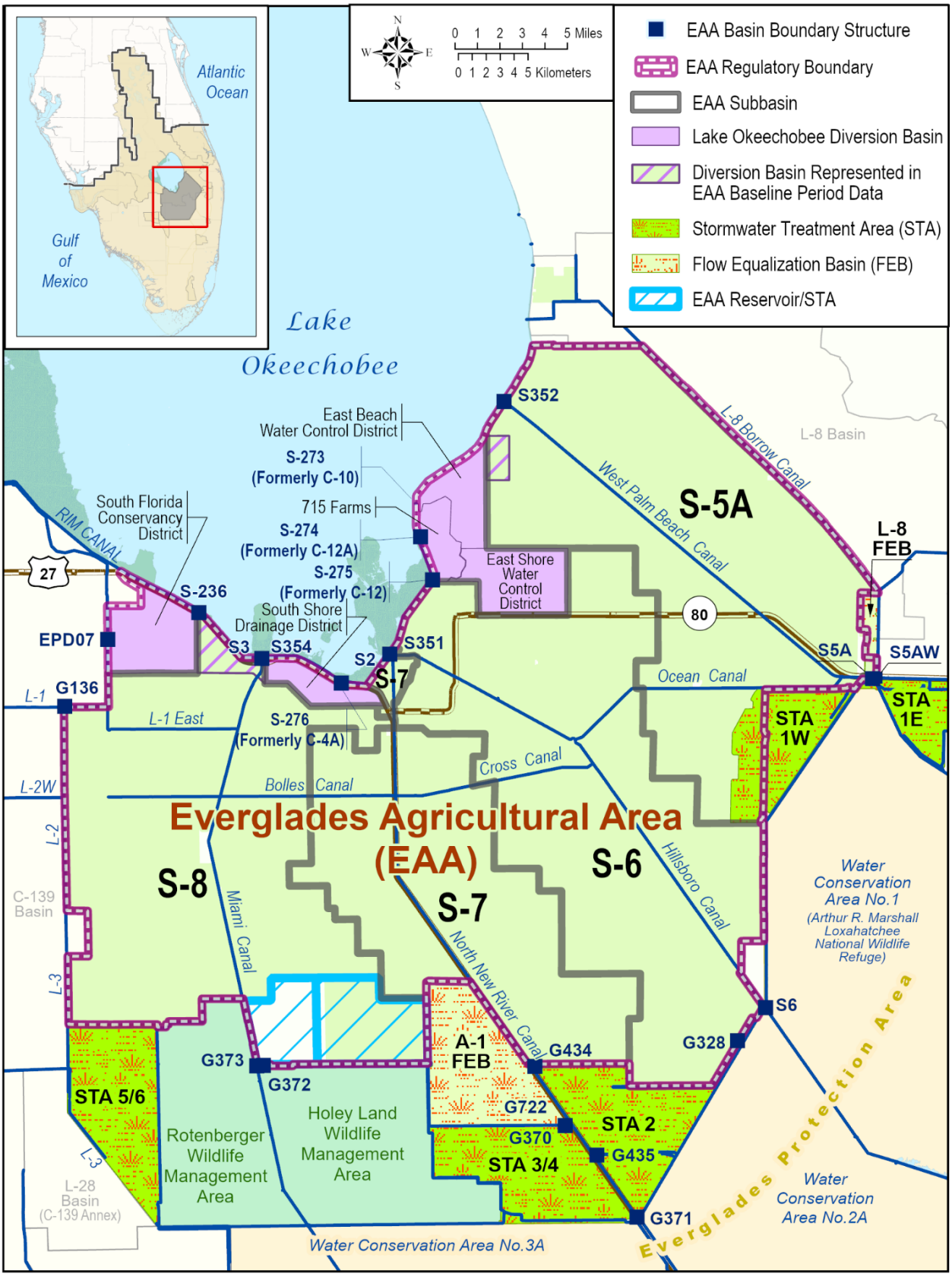


Figure 5. Map of the Everglades Agricultural Area.

Within the EAA Regulatory Boundary there are 3 agricultural permits in Hendry County and 81 permits in Palm Beach County using surface water sources. There is 1 D&I permit in Hendry County and 8 D&I permits in Palm Beach County. The D&I permits are primarily for agricultural land, but 3 permits also include residential and commercial areas (e.g., the cities of Belle Glade, Pahokee, and South Bay as well as the unincorporated community of Canal Point). Also included in this surface water delivery volume are 13 permits for industrial operations, 8 permits for landscape irrigation, 1 for nursery irrigation, and 1 for livestock water use. Agricultural permits within the EAA that only draw from groundwater sources are not included in this estimated volume but are included in the overall AG water use estimates. For simplification, the irrigation water volume for permittees located within the EAA Regulatory Boundary are reported as being in Palm Beach County.

Agriculture Summary

In 2022, the total water use for AG, including the EAA, was 944.68 mgd. Of this total volume, agriculture (crop irrigation) outside the EAA accounted for 521.42 mgd (55%); agriculture within the EAA was 236.29 mgd (25%); agriculture within D&I areas was 152.57 mgd (16.2%); and nursery, livestock, and aquaculture combined were 34.41 mgd (3.6%). Water was derived from 97% fresh water and 3% saline water sources and from 65% surface water and 35% groundwater sources. **Table 4** presents total AG category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources. Further detail is provided in **Appendix B**.

Table 4. Agriculture water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits
Broward	1.34	0.00	0.93	0.41	1.34	109
Charlotte	4.72	0.37	2.23	2.86	5.08	25
Collier	80.58	0.00	1.86	78.73	80.58	180
Glades	79.03	13.34	69.45	22.92	92.37	166
Hendry	234.99	0.00	157.28	77.71	234.99	312
Highlands	67.55	0.00	15.66	51.89	67.55	217
Lee	13.32	0.00	3.15	10.17	13.32	354
Martin	84.05	0.45	80.47	4.03	84.50	248
Miami-Dade	22.16	4.32	1.01	25.47	26.48	1,084
Monroe	0.00	0.00	0.00	0.00	0.00	1
Okeechobee	16.70	0.00	4.03	12.67	16.70	312
Orange	0.17	0.00	0.03	0.15	0.17	24
Osceola	18.65	0.00	0.58	18.07	18.65	138
Palm Beach	255.60	0.13	252.01	3.71	255.72	538
Polk	10.75	0.00	0.90	9.86	10.75	33
St. Lucie	29.88	6.58	25.34	11.12	36.46	391
Total	**919.50**	**25.18**	**614.92**	**329.76**	**944.68**	**4,132**

[a] Values are only for the portions of the counties located within the SFWMD.

Landscape/Recreational

Landscape/Recreational (L/R) is water used for irrigation of golf courses, parks, cemeteries, large common areas (such as homeowners' associations and commercial developments), and other self-supplied irrigation uses with demands of 0.10 mgd or greater. The total volume reflects volumes used by permittees that reported plus an estimated volume for permittees that did not report. The average allocation utilization ratios (after removing permits below the 10th percentile and above the 90th percentile) of reporting L/R permits were 56.5% for landscape and 57.2% for golf. Water use for L/R permits that did not report in 2022 was estimated by multiplying the average allocation utilization ratios by the permit allocations. Use of reclaimed water for L/R is described later in this report.

There were 14,218 permits for landscape irrigation and 372 permits for golf courses in 2022. An additional 9 permits, classified as PS, were used for augmentation of reclaimed water (or other water sources) for landscape irrigation use and are included in the L/R category. Total water use for L/R was 405.43 mgd in 2022. Of this, landscape irrigation accounted for 265.96 mgd (65.6%), golf course irrigation was 135.02 mgd (33.3%), and reclaimed water supplementation for irrigation was 4.46 mgd (1.1%). Surface water was used for 63% of the total water use, and groundwater accounted for the remaining 37%. There were 23 golf and 25 landscape permits, using a total of 10.04 mgd of saline water. **Table 5** presents total L/R category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources. Further detail is provided in **Appendix B**.

Table 5. Landscape/Recreational water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits
Broward	40.84	0.39	31.00	10.23	41.22	2,826
Charlotte	2.53	0.00	1.59	0.94	2.53	9
Collier	84.53	0.23	57.95	26.81	84.76	971
Glades	0.21	0.00	0.10	0.11	0.21	17
Hendry	0.81	0.00	0.32	0.49	0.81	122
Highlands	0.33	0.00	0.03	0.31	0.33	15
Lee	87.28	3.94	60.43	30.79	91.22	2,918
Martin	14.59	1.82	6.48	9.92	16.40	747
Miami-Dade	16.44	0.00	5.74	10.70	16.44	1,302
Monroe	0.83	1.70	0.44	2.09	2.53	3
Okeechobee	1.36	0.00	0.24	1.12	1.36	353
Orange	10.20	0.00	4.19	6.02	10.20	214
Osceola	8.23	0.00	3.47	4.77	8.23	192
Palm Beach	110.12	1.85	75.12	36.85	111.97	3,896
Polk	2.85	0.00	0.00	2.85	2.85	17
St. Lucie	14.23	0.12	9.72	4.62	14.35	997
Total	**395.39**	**10.04**	**256.82**	**148.62**	**405.43**	**14,599**

[a] Values are only for the portions of the counties located within the SFWMD.

Power Generation

Power Generation (PG) is water consumed by power plants for use in the production of electricity. The volume reported is for a variety of on-site uses and does not include once-through cooling water. It can include both fresh and saline water but excludes the use of seawater and reclaimed water sources. In 2022, the total water use for PG was 9.11 mgd, with 25% coming from fresh groundwater and 75% coming from saline groundwater sources. **Table 6** presents total PG category water use Districtwide and by county for fresh and saline water from surface water and groundwater sources.

Table 6. Power Generation water use by county (in mgd).

County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Number of Permits[b]
Lee	0.47	0.00	0.00	0.00	0.47	2
Martin	0.01	0.00	0.00	0.00	0.01	1
Miami-Dade	0.00	6.82	0.00	0.00	6.82	3
Osceola	0.18	0.00	0.00	0.00	0.18	1
Palm Beach	0.00	0.02	0.00	0.00	0.02	4
St. Lucie	1.61	0.00	0.00	0.00	1.61	2
Total	**2.27**	**6.84**	**0.00**	**0.00**	**9.11**	**13**

[a] Values are only for the portions of the counties located within the SFWMD.
[b] Power generation facilities are permitted by the FDEP under the Florida Electrical Power Plant Siting Act, Sections 403.501-403.518, Florida Statutes.

A substantial volume of saline/ocean water is used for once-through cooling at power plants, primarily in coastal areas of the District. The once-through cooling volumes are considered nonconsumptive and are provided herein for informational purposes only. In 2022, the total water use reported to the SFWMD for once-through cooling in PG was 3,366 mgd. Of this volume, 3,341 mgd were saline water, and 25 mgd were fresh water. Only 15 mgd of the total water were derived from groundwater, while 3,351 mgd were from surface water sources. The FDEP reported 18.44 mgd of reclaimed water were delivered to power generation facilities as described in the following section.

RECLAIMED WATER

Reclaimed water is water flowing out of a domestic wastewater treatment facility that has received at least secondary treatment as well as basic disinfection and is reused for some beneficial purpose. The SFWMD requires all applicants for water use permits proposing to irrigate with more than 0.10 mgd of water and applicants within a municipal mandatory reuse zone to use reclaimed water if feasible. However, reclaimed water is not a regulated source for consumptive use. Annual wastewater and reclaimed water volumes are compiled by the FDEP and are reported here for informational purposes. In 2022, 297.16 mgd of reclaimed water were used in the District. Of this, 254.18 mgd were reused for four of the six water supply categories, and 42.98 mgd were reused for groundwater recharge and other nonconsumptive water use purposes. **Tables 7** to **9** as well as **Figures 6** and **7** present reclaimed water use by county and use category.

Table 7. Reclaimed water use (in mgd) by county and use type.

County	Reclaimed Water Flow[a]	Commercial/ Industrial/ Institutional[b]	Agriculture[c]	Landscape/ Recreational[d]	Power Generation
Broward	18.03	9.99	0.00	8.04	0.00
Charlotte[e]	1.64	0.17	0.00	1.47	0.00
Collier	24.44	0.00	0.17	24.27	0.00
Glades	0.00	0.00	0.00	0.00	0.00
Hendry	1.03	0.00	1.03	0.00	0.00
Highlands[e]	0.03	0.00	0.03	0.00	0.00
Lee	52.95	0.41	0.00	51.56	0.98
Martin	4.41	0.11	0.29	4.00	0.00
Miami-Dade	14.01	14.01	0.00	0.00	0.00
Monroe	0.38	0.03	0.00	0.35	0.00
Okeechobee	0.74	0.32	0.42	0.00	0.00
Orange[e]	42.99	2.53	0.49	39.97	0.00
Osceola[e]	26.43	2.17	0.72	23.54	0.00
Palm Beach	62.57	4.34	0.00	40.77	17.46
Polk[e]	0.10	0.00	0.10	0.00	0.00
St. Lucie	4.45	0.06	0.00	4.39	0.00
Total	**254.18**	**34.13**	**3.25**	**198.36**	**18.44**

Note: Reclaimed water was not used for Public Supply or Domestic Self-Supply.

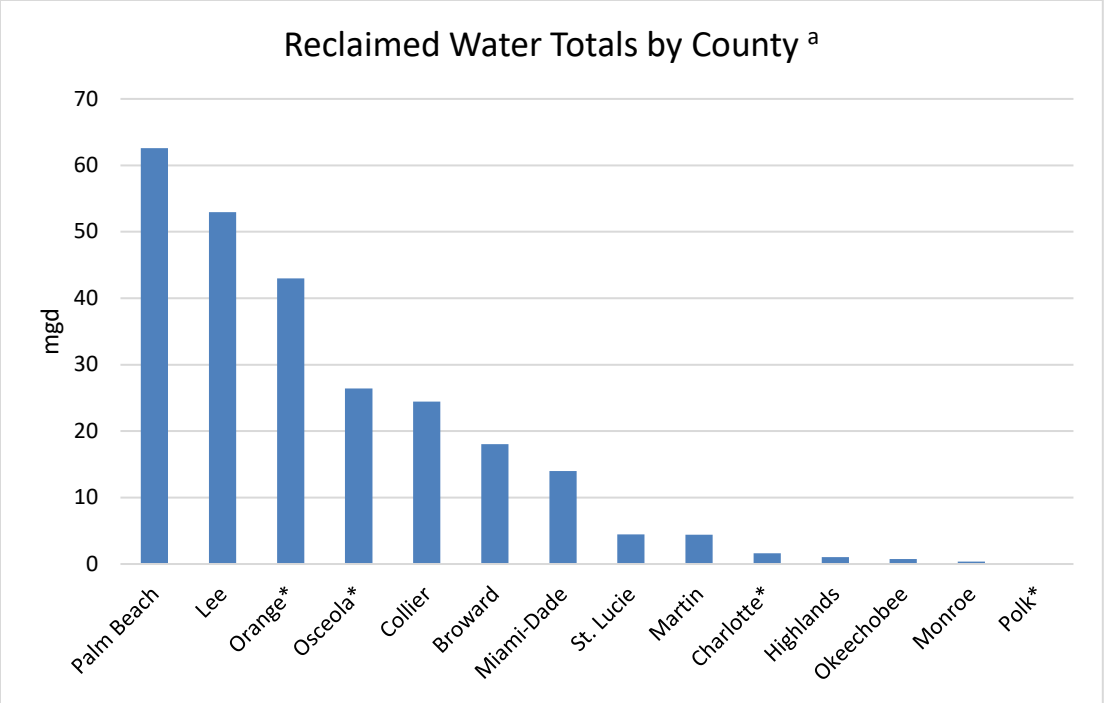
[a] Annual average reclaimed water flows for October 1, 2021 through September 30, 2022 as obtained from the individual reuse inventory reports for the year 2021 filed by each reuse facility to the FDEP (2022), with modifications, and not including 42.98 mgd for groundwater recharge and for other purposes not related to water use.

[b] Industrial reuse (excluding power generation).

[c] Edible and other crops.

[d] All public access areas and landscape irrigation.

[e] Includes only facilities within the SFWMD.



[a] Counties with 0.0 flow not shown.

* Shows flow for only the portion of the county located within the SFWMD.

Figure 6. Reclaimed water use by county.

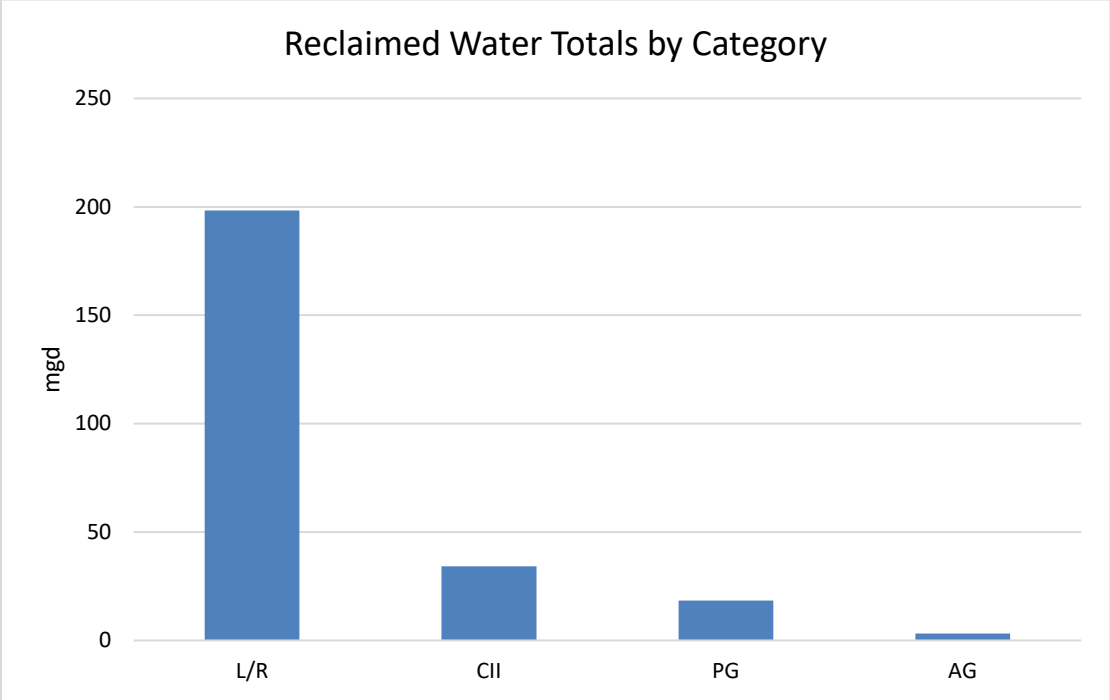


Figure 7. Reclaimed water use by category.

SUMMARY OF 2022 ESTIMATED WATER USE

The total amount of water withdrawn from surface water and groundwater resources in 2022 within the District was approximately 2,720 mgd (**Table 8**). The two largest water use categories were PS and AG, using 1,175 mgd and 945 mgd, respectively. These two categories constitute 78% of the total water use. Additionally, of the total water use, 977 mgd (36%) came from surface water sources, and 1,743 mgd (64%) came from groundwater sources. Approximately 2,485 mgd (91%) were withdrawn from freshwater sources, and 235 mgd (9%) were derived from saline water sources. Reclaimed water use totaled 254 mgd in 2022. Of the total 2,720 mgd, 18% (493 mgd) was estimated, and 82% (2,227 mgd) was derived from reported pumpage (**Appendix C**). PS is the largest use category in Miami-Dade County, while Palm Beach County has the largest estimated AG volume. Palm Beach County also has the greatest use of reclaimed water by volume. A summary of the data presented by water supply planning area is contained in **Appendix D**.

Figure 8 depicts the distribution of total water use (including reclaimed water) by source and category. **Figure 9** depicts the distribution of total water use by category (excluding reclaimed water). **Table 9** presents the breakdown of water use by county and source. **Figure 10** depicts fresh water versus saline water use by county. **Figure 11** depicts surface water versus groundwater use by county. **Table 10** presents water use by county and by use category (excluding reclaimed water).

Table 8. Total water use by category and source, including reclaimed water (in mgd).

Water Use Category	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Reclaimed Water	**Total Use with Reclaimed Water**
Public Supply	982.51	192.85	43.50	1,131.86	1,175.35	0.00	1,175.36
Domestic Self-Supply	40.74	0.00	0.00	40.74	40.74	0.00	40.74
Commercial/Industrial/ Institutional	144.86	0.11	61.96	83.01	144.97	34.13	179.10
Agriculture	919.50	25.18	614.92	329.76	944.68	3.25	947.93
Landscape/Recreational	395.39	10.04	256.82	148.62	405.43	198.36	603.79
Power Generation	2.27	6.84	0.00	9.11	9.11	18.44	27.55
Total	**2,485.26**	**235.03**	**977.20**	**1,743.09**	**2,720.28**	**254.18**	**2,974.47**

Note: Minor discrepancies in table totals are due to rounding.

Figure 8. Water use by source and category.

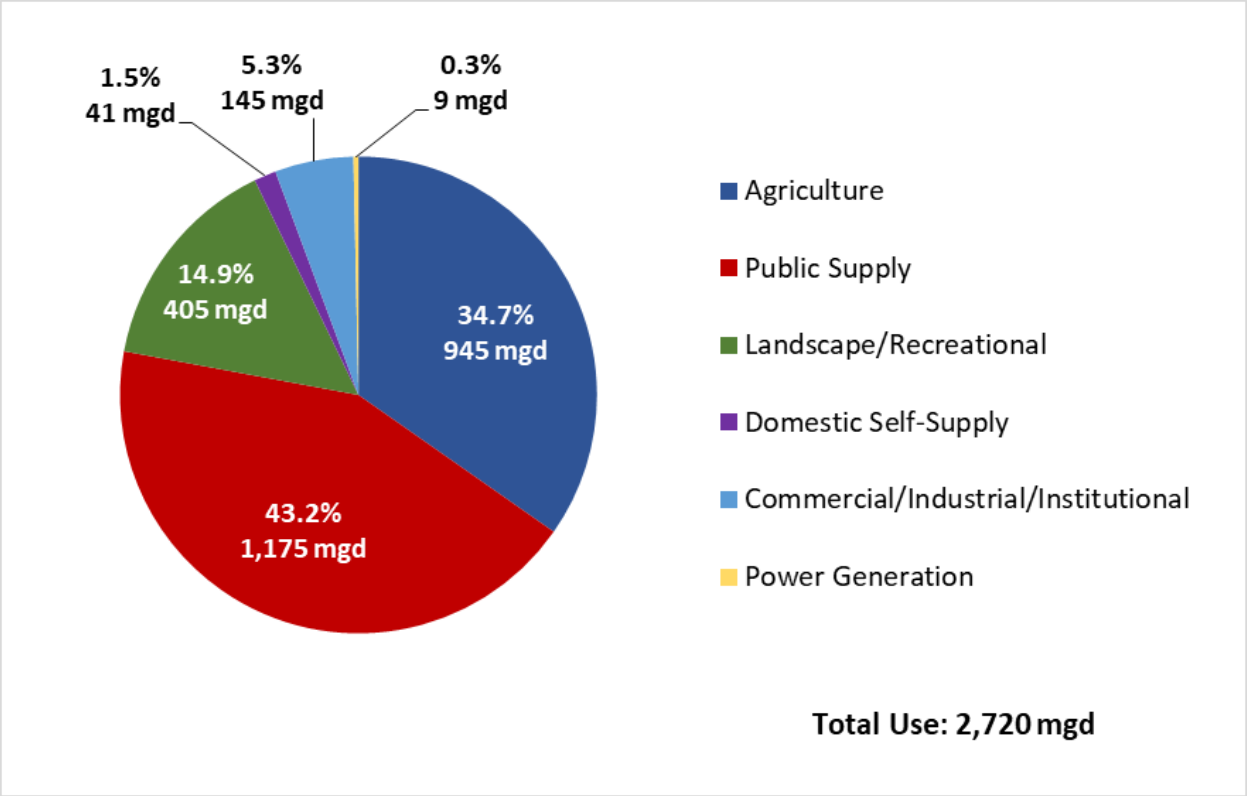
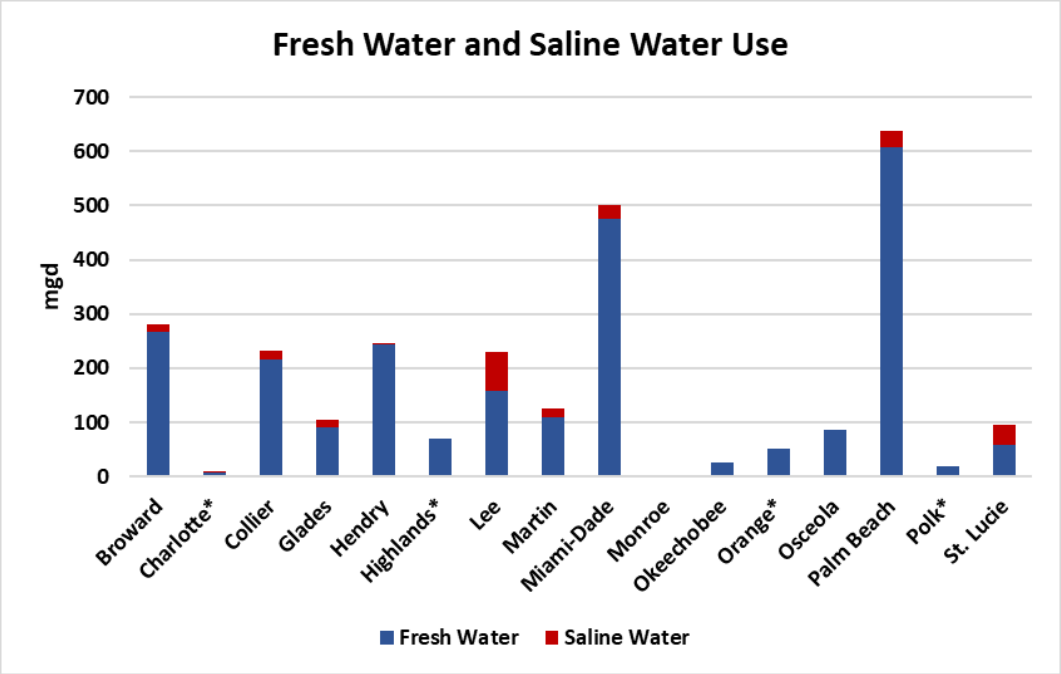


Figure 9. Percent water use by category (excluding reclaimed water).

Table 9. Total water use by county and source (in mgd).

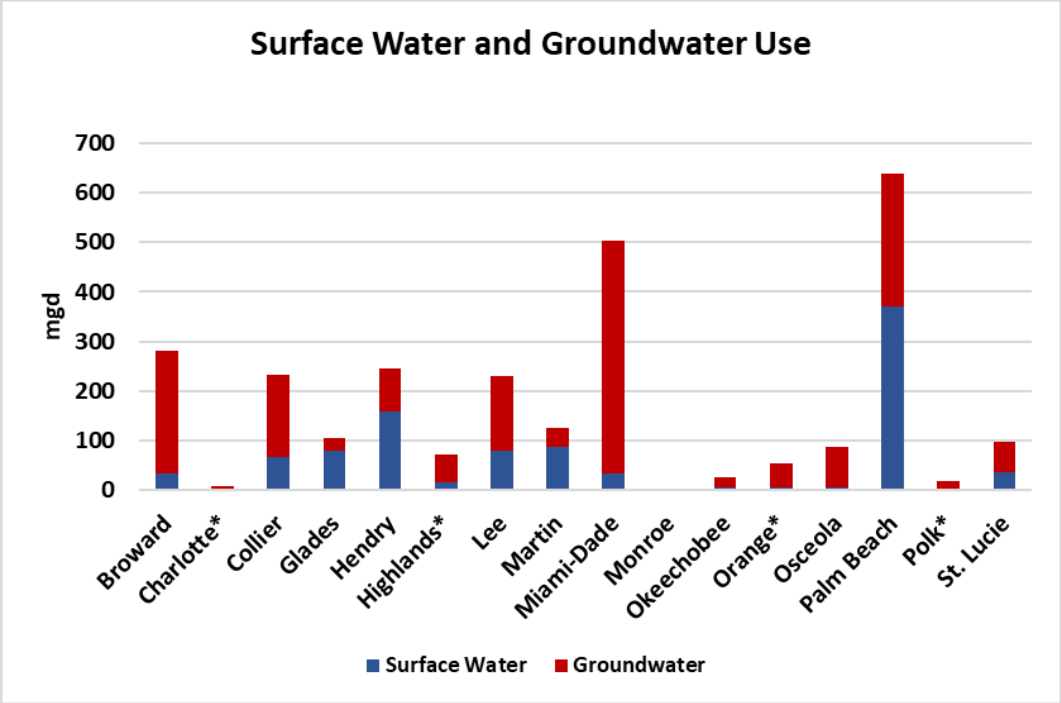
County[a]	Fresh Water	Saline Water	Surface Water	Groundwater	**Total Use**	Reclaimed Water	**Total Use with Reclaimed Water**
Broward	267.82	14.29	32.04	250.06	282.10	18.03	300.13
Charlotte	7.83	0.37	3.83	4.36	8.19	1.64	9.83
Collier	215.00	18.17	66.98	166.19	233.17	24.44	257.61
Glades	90.45	13.34	79.62	24.17	103.79	0.00	103.79
Hendry	243.07	3.07	158.37	87.77	246.14	1.03	247.17
Highlands	70.32	0.00	15.69	54.63	70.32	0.03	70.35
Lee	157.52	72.94	78.65	151.80	230.45	52.95	283.41
Martin	109.07	15.67	86.96	37.78	124.75	4.41	129.15
Miami-Dade	474.81	27.11	32.41	469.51	501.92	14.01	515.93
Monroe	0.84	1.70	0.44	2.09	2.53	0.38	2.91
Okeechobee	26.15	0.00	7.22	18.93	26.15	0.74	26.89
Orange	52.40	0.00	4.21	48.19	52.40	42.99	95.39
Osceola	86.08	0.00	4.05	82.02	86.08	26.43	112.51
Palm Beach	607.06	30.41	369.06	268.41	637.47	62.57	700.04
Polk	18.34	0.00	0.90	17.44	18.34	0.10	18.43
St. Lucie	58.51	37.97	36.77	59.71	96.48	4.45	100.93
Total	**2,485.26**	**235.03**	**977.20**	**1,743.09**	**2,720.29**	**254.18**	**2,974.47**

Note: Minor discrepancies in table totals are due to rounding.
[a] Values are only for the portions of the counties located within the SFWMD.



* Only the portion of the county located within the SFWMD.

Figure 10. Fresh water and saline water use by county for all use categories.



* Only the portion of the county located within the SFWMD.

Figure 11. Surface water and groundwater use by county for all use categories.

Table 10. Total water use by county and category, excluding reclaimed water (in mgd).

County[a]	Agriculture	Commercial/ Industrial/ Institutional	Domestic Self-Supply	Landscape/ Recreational	Power Generation	Public Supply	**Total**
Broward	1.34	3.44	0.64	41.22	0.00	235.46	**282.10**
Charlotte	5.08	0.03	0.16	2.53	0.00	0.40	**8.19**
Collier	80.58	7.76	6.31	84.76	0.00	53.75	**233.17**
Glades	92.37	10.33	0.40	0.21	0.00	0.48	**103.79**
Hendry	234.99	5.41	1.03	0.81	0.00	3.89	**246.14**
Highlands	67.55	1.59	0.53	0.33	0.00	0.31	**70.32**
Lee	13.32	13.89	9.67	91.22	0.47	101.88	**230.45**
Martin	84.50	0.26	0.62	16.40	0.01	22.95	**124.75**
Miami-Dade	26.48	88.87	0.79	16.44	6.82	362.52	**501.92**
Monroe	0.00	0.00	0.00	2.53	0.00	0.00	**2.53**
Okeechobee	16.70	3.58	1.32	1.36	0.00	3.19	**26.15**
Orange	0.17	2.02	0.81	10.20	0.00	39.19	**52.40**
Osceola	18.65	0.11	8.71	8.23	0.18	50.18	**86.08**
Palm Beach	255.72	5.73	4.28	111.97	0.02	259.75	**637.47**
Polk	10.75	0.00	1.85	2.85	0.00	2.88	**18.34**
St. Lucie	36.46	1.95	3.61	14.35	1.61	38.51	**96.48**
Total	**944.68**	**144.97**	**40.74**	**405.43**	**9.11**	**1,175.35**	**2,720.28**

Note: Minor discrepancies in table totals are due to rounding.

[a] Values are only for the portions of the counties located within the SFWMD.

DISCUSSION OF RESULTS

This is the ninth year that the SFWMD has compiled an estimated water use report. Caution should be exercised when comparing water use estimates between this report and its predecessors as adjustments have been made to the water use estimation method from year to year. There were no significant changes to the overall methodology since the last (2021) report. Refinements in the methodology could occur for future reports to improve the accuracy of water use estimates.

When considering water use estimates and changes between years, it is important to recognize that the quantity and quality of reported water use data can vary over time and between water use categories. The PS and PG use categories are unique in that nearly 100% of permittees submit water use reports; estimates for other categories are calculated based on a much smaller proportion of permittees. Relying on a small and potentially nonrepresentative portion of users inhibits the ability to make some conclusions with a high degree of confidence. This is particularly notable for the nursery, livestock, and aquaculture portions of the AG use category. The impacts of nonuniversal reporting are further complicated by inconsistent reporting from year to year. Errors in data, inaccurate measurements, and the complexity of some permitted water systems introduce inaccuracies and biases that often are undetected (or extremely difficult to measure), hindering better analyses.

Water use within the District decreased 6% (from 2,879 to 2,720 mgd) between 2021 and 2022. A comparison of changes in water use between 2021 and 2022 is provided in **Figure 12**. More detailed analyses of interannual changes for use categories, water sources, and/or geographical areas are not provided due to the reasons listed above. The District received approximately 7.50 inches more rain in 2022 than in 2021 with the months of January, March, May, June, September, and December each receiving more rain in 2022 than in 2021.

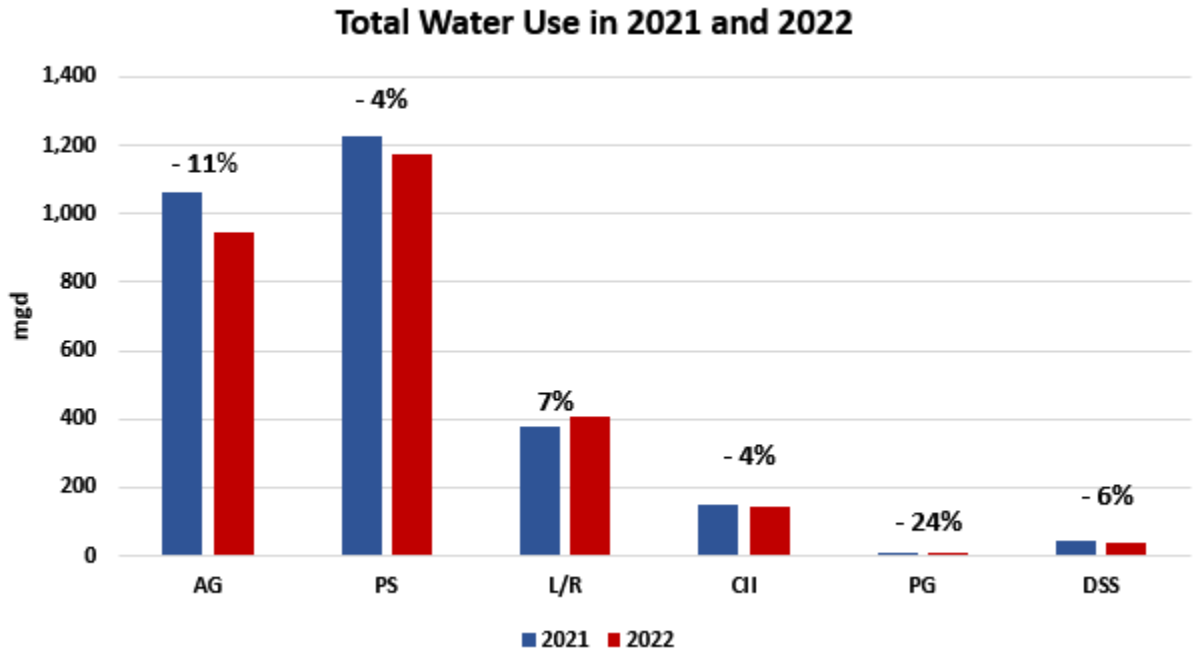


Figure 12. Comparison of 2021 to 2022 total estimated water use by use category.

CONCLUSIONS

For 2022, 2,720 mgd of water were estimated to have been used throughout the District, distributed among the six water use categories. Approximately 1,743 mgd were derived from groundwater sources, and 977 mgd were derived from surface water sources, with 2,485 mgd being fresh water and 235 mgd considered saline water. This is 159 mgd less than was used in 2021.

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APPENDIX A: DOMESTIC SELF-SUPPLY POPULATION AND DEMAND METHODOLOGY

Population

Population estimates are intended for planning purposes only. The 2022 county population census-based estimates of permanent residents are from the University of Florida's Bureau of Economic and Business Research (BEBR; Rayer 2023). For counties located within more than one water management district, the proportion of a county's residents within the SFWMD was calculated using the population reported in the applicable water supply plan update (available at https://www.sfwmd.gov/our-work/water-supply) and the full county population published in the corresponding year's BEBR report. The percentage of population within the District for the water supply plans was then multiplied by the 2022 BEBR county population to get an estimate of the 2022 District population for that county. The Domestic Self-Supply (DSS) population was estimated by multiplying the county population by the percentage of the population self-supplied (from the latest water supply plan updates). The reader is advised against utilizing the populations estimated in this report for other purposes as they likely will not be consistent with populations reported elsewhere or obtained by other estimation methods.

Demand Estimates

The DSS water use estimates were calculated by multiplying the 2022 DSS population by the 2022 Public Supply (PS) Districtwide uniform residential per capita use rate (PCUR), which was derived from uniform residential PCURs (treated water) voluntarily reported by utilities to the SFWMD as part of their annual reporting, required pursuant to Section 373.709(6), Florida Statutes. Based on the reported values, the SFWMD calculated a 2022 Districtwide, population-weighted residential PCUR of 85.87 gallons per day (treated water). Minimal treatment and distribution losses are anticipated in DSS and smaller scale utility systems such that the uniform residential PCUR and DSS PCUR are comparable. **Table A-1** provides the PS and DSS populations and demand estimates.

Table A-1. Public Supply and Domestic Self-Supply population and demand by county.

County	Water Supply Plan Base Year for PS and DSS Estimates[a]	PS Total Population	DSS Total Population	Total Population	% DSS/ Total	2022 County Total Population BEBR[g]	2021 PS Population for Report (% x County BEBR)	2021 DSS Population for Report (% × County BEBR)	DSS Demand[h] (mgd)
Broward[b]	2021	1,944,306	7,331	1,951,637	0.00	1,969,099	1,961,702	7,397	0.64
Charlotte	2020	3,891	1,746	5,637	0.31	5,918	4,085	1,833	0.16
Collier	2020	314,633	72,817	387,450	0.19	390,912	317,444	73,468	6.31
Glades[c]	2020	8,390	5,062	13,452	0.38	12,273	7,655	4,618	0.40
Hendry[b,d]	2020	28,499	12,011	40,510	0.30	40,633	28,585	12,048	1.03
Highlands	2017	2,705	6,140	8,845	0.69	8,931	2,731	6,200	0.53
Lee	2020	645,114	105,379	750,493	0.14	802,178	689,542	112,636	9.67
Martin	2019	151,506	7,092	158,598	0.04	161,655	154,426	7,229	0.62
Miami-Dade[b]	2021	2,693,688	9,052	2,702,740	0.00	2,757,592	2,748,356	9,236	0.79
Monroe[b]	2021	78,267	-	78,267	0.00	83,961	83,961	-	-
Okeechobee[e]	2019	24,046	16,087	40,133	0.40	38,366	22,987	15,379	1.32
Orange[f]	2021	446,415	9,111	455,526	0.02	471,949	462,509	9,439	0.81
Osceola[f]	2021	307,931	97,241	405,172	0.24	422,786	321,317	101,468	8.71
Palm Beach[b]	2021	1,436,386	48,797	1,485,183	0.03	1,518,152	1,468,272	49,880	4.28
Polk[f]	2021	23,861	23,861	47,722	0.50	43,127	21,564	21,564	1.85
St. Lucie	2019	272,297	37,060	309,357	0.12	350,518	308,527	41,991	3.61
Total		**8,381,935**	**458,787**	**8,840,722**	**0.21**	**9,078,049**	**8,603,664**	**474,385**	**40.74**

BEBR = Bureau of Economic and Business Research; DSS = Domestic Self-Supply; LEC = *Lower East Coast Water Supply Plan Update*; LKB = *Lower Kissimmee Basin Water Supply Plan Update*; LWC = *Lower West Coast Water Supply Plan Update*; mgd = million gallons per day; PS = Public Supply; UEC = *Upper East Coast Water Supply Plan Update*.

[a] The base year population used in the SFWMD water supply plans.

[b] Draft LEC population (2021).

[c] The Glades County Planning Area is split between two water supply plans: LWC (2020): 4,906 PS and 4,484 DSS; LKB (2017) 3,484 PS and 578 DSS.

[d] The Hendry County Planning Area is split between two water supply plans: LWC (2020): 27,551 PS and 8,078 DSS; LEC (2021): 948 PS and 3,933 DSS.

[e] The Okeechobee County Planning Area is split between two water supply plans: LKB (2017): 24,046 PS and 15,543 DSS; UEC (2019): 0 PS and 544 DSS.

[f] From Central Florida Water Initiative (CFWI) Small Area Estimates and Projections. BEBR (2022).

[g] Values are BEBR "medium" 2022 county totals (Estimates 2022). BEBR publishes low, medium, and high population projections to account for uncertainty in population growth.

[h] The Districtwide population-weighted uniform residential per capita use rate for 2022 (85.87 gallons per person per day) multiplied by the population to calculate demand.

References

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APPENDIX B: WATER USE CATEGORY BREAKDOWN BY PERMIT USE CLASS

Table B-1. Agriculture by use class quantity (in mgd).

County[a]	Agriculture		Aquaculture		Livestock		Nursery		Agriculture D&I		Agriculture-EAA		**Total**
	SW	GW	SW	GW	SW	GW	SW	GW	SW	GW	SW	GW	
Broward	0.63	0.08	0.00	0.03	0.02	0.03	0.28	0.27	0.00	0.00	0.00	0.00	**1.34**
Charlotte	2.23	2.83	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	**5.08**
Collier	1.68	78.12	0.00	0.02	0.00	0.02	0.18	0.57	0.00	0.00	0.00	0.00	**80.58**
Glades	57.19	14.40	0.00	0.00	0.01	0.63	0.00	0.03	12.25	7.86	0.00	0.00	**92.37**
Hendry	55.51	76.86	0.00	0.20	0.02	0.28	0.19	0.37	101.56	0.00	0.00	0.00	**234.99**
Highlands	15.57	50.04	0.01	0.04	0.01	0.70	0.07	1.11	0.00	0.00	0.00	0.00	**67.55**
Lee	0.42	9.48	0.00	0.04	0.00	0.11	0.75	0.55	1.97	0.00	0.00	0.00	**13.32**
Martin	64.57	3.18	0.00	0.02	0.00	0.12	0.49	0.71	15.40	0.00	0.00	0.00	**84.50**
Miami-Dade	0.80	7.62	0.00	5.04	0.00	0.01	0.20	12.80	0.00	0.00	0.00	0.00	**26.48**
Monroe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Okeechobee	4.00	9.52	0.00	0.03	0.04	2.77	0.00	0.35	0.00	0.00	0.00	0.00	**16.70**
Orange	0.03	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.17**
Osceola	0.58	17.65	0.00	0.00	0.00	0.17	0.00	0.25	0.00	0.00	0.00	0.00	**18.65**
Palm Beach	3.45	1.40	0.00	0.02	0.02	0.05	1.51	2.24	10.73	0.00	236.29	0.00	**255.72**
Polk	0.90	9.79	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	**10.75**
St. Lucie	22.32	10.43	0.00	0.01	0.02	0.37	0.22	0.31	2.78	0.00	0.00	0.00	**36.46**
Total	**229.87**	**291.55**	**0.01**	**5.45**	**0.15**	**5.30**	**3.90**	**19.59**	**144.70**	**7.87**	**236.29**	**0.00**	**944.68**
% of Total	**24.3%**	**30.9%**	**0.0%**	**0.6%**	**0.0%**	**0.6%**	**0.4%**	**2.1%**	**15.3%**	**0.8%**	**25.0%**	**0.0%**	**100.0%**

D&I = Diversion and Impoundment; EAA = Everglades Agricultural Area; GW = groundwater; mgd = million gallons per day; SW = surface water.

[a] Values are only for the portions of the counties located within the SFWMD.

Table B-2. Agriculture by use class quality (in mgd).

County[a]	Agriculture		Aquaculture		Livestock		Nursery		Agriculture D&I		Agriculture-EAA		**Total**
	Fresh	Saline	Fresh	Saline	Fresh	Saline	Fresh	Saline	Fresh	Saline	Fresh	Saline	
Broward	0.71	0.00	0.03	0.00	0.06	0.00	0.55	0.00	0.00	0.00	0.00	0.00	**1.34**
Charlotte	4.69	0.37	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	**5.08**
Collier	79.80	0.00	0.02	0.00	0.02	0.00	0.75	0.00	0.00	0.00	0.00	0.00	**80.58**
Glades	58.24	13.34	0.00	0.00	0.64	0.00	0.03	0.00	20.12	0.00	0.00	0.00	**92.37**
Hendry	132.37	0.00	0.20	0.00	0.30	0.00	0.56	0.00	101.56	0.00	0.00	0.00	**234.99**
Highlands	65.61	0.00	0.05	0.00	0.72	0.00	1.17	0.00	0.00	0.00	0.00	0.00	**67.55**
Lee	9.90	0.00	0.04	0.00	0.11	0.00	1.30	0.00	1.97	0.00	0.00	0.00	**13.32**
Martin	67.30	0.45	0.02	0.00	0.12	0.00	1.20	0.00	15.41	0.00	0.00	0.00	**84.50**
Miami-Dade	8.43	0.00	0.72	4.32	0.01	0.00	13.00	0.00	0.00	0.00	0.00	0.00	**26.48**
Monroe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Okeechobee	13.52	0.00	0.03	0.00	2.80	0.00	0.35	0.00	0.00	0.00	0.00	0.00	**16.70**
Orange	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.17**
Osceola	18.23	0.00	0.00	0.00	0.17	0.00	0.25	0.00	0.00	0.00	0.00	0.00	**18.65**
Palm Beach	4.85	0.00	0.02	0.00	0.07	0.00	3.63	0.13	10.73	0.00	236.29	0.00	**255.72**
Polk	10.69	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	**10.75**
St. Lucie	26.17	6.58	0.01	0.00	0.39	0.00	0.53	0.00	2.78	0.00	0.00	0.00	**36.46**
Total	**500.68**	**20.74**	**1.14**	**4.32**	**5.45**	**0.00**	**23.37**	**0.13**	**152.57**	**0.00**	**236.29**	**0.00**	**944.68**
% of Total	**53.0%**	**2.2%**	**0.1%**	**0.5%**	**0.6%**	**0.0%**	**2.5%**	**0.0%**	**16.2%**	**0.0%**	**25.0%**	**0.0%**	**100.0%**

D&I = Diversion and Impoundment; EAA = Everglades Agricultural Area; mgd = million gallons per day.

[a] Values are only for the portions of the counties located within the SFWMD.

Table B-3. Commercial/Industrial/Institutional by use class quantity (in mgd).

County[a]	Industrial		Mining		Total
	Surface Water	Groundwater	Surface Water	Groundwater	
Broward	0.11	3.33	0.00	0.00	**3.44**
Charlotte	0.00	0.01	0.01	0.00	**0.03**
Collier	4.74	0.59	2.43	0.00	**7.76**
Glades	0.06	0.05	10.00	0.21	**10.33**
Hendry	0.77	4.64	0.00	0.00	**5.41**
Highlands	0.00	1.59	0.00	0.00	**1.59**
Lee	0.15	0.42	13.14	0.18	**13.89**
Martin	0.01	0.25	0.00	0.00	**0.26**
Miami-Dade	0.03	24.09	25.63	39.11	**88.87**
Monroe	0.00	0.00	0.00	0.00	**0.00**
Okeechobee	0.02	3.56	0.00	0.00	**3.58**
Orange	0.00	2.02	0.00	0.00	**2.02**
Osceola	0.00	0.11	0.00	0.00	**0.11**
Palm Beach	3.13	2.59	0.00	0.00	**5.73**
Polk	0.00	0.00	0.00	0.00	**0.00**
St. Lucie	1.71	0.24	0.00	0.00	**1.95**
Total	**10.75**	**43.51**	**51.21**	**39.50**	**144.97**
% of Total	**7%**	**30%**	**35%**	**27%**	**100%**

mgd = million gallons per day.

[a] Values are only for the portions of the counties located within the SFWMD.

Table B-4. Commercial/Industrial/Institutional by use class quality (in mgd).

County[a]	Industrial		Mining		**Total**
	Fresh	Saline	Fresh	Saline	
Broward	3.44	0.00	0.00	0.00	**3.44**
Charlotte	0.01	0.00	0.01	0.00	**0.03**
Collier	5.22	0.11	2.43	0.00	**7.76**
Glades	0.11	0.00	10.21	0.00	**10.33**
Hendry	5.41	0.00	0.00	0.00	**5.41**
Highlands	1.59	0.00	0.00	0.00	**1.59**
Lee	0.58	0.00	13.32	0.00	**13.89**
Martin	0.26	0.00	0.00	0.00	**0.26**
Miami-Dade	24.12	0.00	64.75	0.00	**88.87**
Monroe	0.00	0.00	0.00	0.00	**0.00**
Okeechobee	3.58	0.00	0.00	0.00	**3.58**
Orange	2.02	0.00	0.00	0.00	**2.02**
Osceola	0.11	0.00	0.00	0.00	**0.11**
Palm Beach	5.73	0.00	0.00	0.00	**5.73**
Polk	0.00	0.00	0.00	0.00	**0.00**
St. Lucie	1.95	0.00	0.00	0.00	**1.95**
Total	**54.14**	**0.11**	**90.72**	**0.00**	**144.97**
% of Total	**37%**	**0%**	**63%**	**0%**	**100%**

mgd = million gallons per day.

[a] Values are only for the portions of the counties located within the SFWMD.

Table B-5. Landscape/Recreational by use class quantity (in mgd).

County[a]	Golf Course		Landscape		PS-Irrigation Supplement		Total
	Surface Water	Groundwater	Surface Water	Groundwater	Surface Water	Groundwater	
Broward	7.34	1.78	23.66	8.45	0.00	0.00	**41.22**
Charlotte	1.58	0.93	0.01	0.02	0.00	0.00	**2.53**
Collier	23.42	15.84	33.33	10.32	1.21	0.64	**84.76**
Glades	0.03	0.02	0.08	0.08	0.00	0.00	**0.21**
Hendry	0.00	0.00	0.32	0.49	0.00	0.00	**0.81**
Highlands	0.03	0.24	0.00	0.07	0.00	0.00	**0.33**
Lee	9.81	7.25	50.62	23.34	0.00	0.20	**91.22**
Martin	3.58	3.30	2.90	6.63	0.00	0.00	**16.40**
Miami-Dade	2.45	1.69	3.28	9.02	0.00	0.00	**16.44**
Monroe	0.44	2.07	0.00	0.02	0.00	0.00	**2.53**
Okeechobee	0.05	0.02	0.20	1.10	0.00	0.00	**1.36**
Orange	3.14	2.54	1.05	1.36	0.00	2.12	**10.20**
Osceola	2.49	3.17	0.89	1.55	0.09	0.05	**8.23**
Palm Beach	21.02	17.14	54.09	19.56	0.00	0.15	**111.97**
Polk	0.00	0.24	0.00	2.61	0.00	0.00	**2.85**
St. Lucie	2.51	0.91	7.21	3.72	0.00	0.00	**14.35**
Total	**77.88**	**57.13**	**177.64**	**88.32**	**1.30**	**3.16**	**405.43**
% of Total	**19.2%**	**14.1%**	**43.8%**	**21.8%**	**0.3%**	**0.8%**	**100.0%**

mgd = million gallons per day; PS = Public Supply.

[a] Values are only for the portions of the counties located within the SFWMD.

Table B-6. Landscape/Recreational by use class quality (in mgd).

County[a]	Golf Course		Landscape		PS-Irrigation Supplement		**Total**
	Fresh	Saline	Fresh	Saline	Fresh	Saline	
Broward	9.12	0.00	31.72	0.39	0.00	0.00	**41.22**
Charlotte	2.51	0.00	0.02	0.00	0.00	0.00	**2.53**
Collier	39.22	0.04	43.46	0.19	1.85	0.00	**84.76**
Glades	0.05	0.00	0.16	0.00	0.00	0.00	**0.21**
Hendry	0.00	0.00	0.81	0.00	0.00	0.00	**0.81**
Highlands	0.26	0.00	0.07	0.00	0.00	0.00	**0.33**
Lee	15.12	1.94	71.96	2.00	0.20	0.00	**91.22**
Martin	5.81	1.07	8.78	0.75	0.00	0.00	**16.40**
Miami-Dade	4.14	0.00	12.30	0.00	0.00	0.00	**16.44**
Monroe	0.81	1.70	0.02	0.00	0.00	0.00	**2.53**
Okeechobee	0.06	0.00	1.30	0.00	0.00	0.00	**1.36**
Orange	5.68	0.00	2.40	0.00	2.12	0.00	**10.20**
Osceola	5.66	0.00	2.44	0.00	0.14	0.00	**8.23**
Palm Beach	37.11	1.06	72.86	0.79	0.15	0.00	**111.97**
Polk	0.24	0.00	2.61	0.00	0.00	0.00	**2.85**
St. Lucie	3.42	0.00	10.81	0.12	0.00	0.00	**14.35**
Total	**129.21**	**5.81**	**261.73**	**4.23**	**4.46**	**0.00**	**405.43**
% of Total	**31.9%**	**1.4%**	**64.6%**	**1.0%**	**1.1%**	**0.0%**	**100.0%**

Note: Minor discrepancies in or between table totals are due to rounding.
mgd = million gallons per day; PS = Public Supply.
[a] Values are only for the portions of the counties located within the SFWMD.

APPENDIX C: METADATA TABLES

Table C-1. Reported versus estimated use by county (in mgd).

County[a]	Reported	Estimated	% Estimated	**Total**
Broward	255.45	26.65	9%	**282.10**
Charlotte	6.28	1.92	23%	**8.19**
Collier	207.40	25.77	12%	**233.17**
Glades	97.93	5.86	6%	**103.79**
Hendry	227.94	18.20	7%	**246.14**
Highlands	66.47	3.85	5%	**70.32**
Lee	198.31	32.14	14%	**230.45**
Martin	116.26	8.49	7%	**124.75**
Miami-Dade	466.91	35.01	7%	**501.92**
Monroe	1.70	0.84	33%	**2.53**
Okeechobee	18.37	7.78	30%	**26.14**
Orange	48.16	4.24	8%	**52.40**
Osceola	72.77	13.31	15%	**86.08**
Palm Beach[b]	353.67	283.80	45%	**637.47**
Polk	16.05	2.29	12%	**18.34**
St. Lucie	73.65	22.83	24%	**96.48**
Total	**2,227.31**	**492.97**	**18%**	**2,720.28**

mgd = million gallons per day.
[a] Values are only for the portions of the counties located within the SFWMD.
[b] 236 mgd is estimated EAA volume.

Table C-2. Reported versus estimated use by water use category (in mgd).

Water Use Category	Reported	Estimated	% Estimated	**Total[a]**
Public Supply	1,175.35	0.00	0%	**1,175.35**
Domestic Self-Supply	0.00	40.74	100%	**40.74**
Commercial/Industrial/Institutional	127.20	17.77	12%	**144.97**
Agriculture	626.75	317.93	34%	**944.68**
Landscape/Recreational	288.90	116.53	29%	**405.43**
Power Generation	9.11	0.00	0%	**9.11**
Total	**2,227.31**	**492.97**	**18%**	**2,720.28**

mgd = million gallons per day.
[a] Values are only for the portions of the counties located within the SFWMD.

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APPENDIX D: TOTAL WATER USE BY SFWMD PLANNING REGION

Table D-1. Total water use by category and source (in mgd) excluding reclaimed water.

Water Use Category	Surface Water	Groundwater	Fresh Water	Saline Water	**Total**	Number of Permits
Lower East Coast						
Agriculture	89.09	269.31	353.95	4.45	**358.39**	1,804
Domestic Self-Supply	69.21	29.63	98.84	0.00	**98.84**	297
Commercial/Industrial/Institutional	5.84	0.00	5.84	0.00	**5.84**	318
Landscape/Recreational	59.87	112.29	168.23	3.93	**172.16**	8,029
Power Generation	6.84	0.00	0.00	6.84	**6.84**	10
Public Supply	818.94	38.80	799.46	58.28	**857.74**	51
Lower East Coast Total	**1,049.79**	**450.02**	**1,426.31**	**73.50**	**1,499.81**	**10,509**
Lower Kissimmee Basin						
Agriculture	75.35	42.19	105.42	12.12	**117.54**	569
Domestic Self-Supply	1.95	0.00	1.95	0.00	**1.95**	104
Commercial/Industrial/Institutional	5.37	6.45	11.81	0.00	**11.81**	47
Landscape/Recreational	1.40	0.21	1.61	0.00	**1.61**	364
Power Generation	0.00	0.00	0.00	0.00	**0.00**	0
Public Supply	0.32	2.92	3.24	0.00	**3.24**	3
Lower Kissimmee Basin Total	**84.39**	**51.76**	**124.03**	**12.12**	**136.15**	**1,087**
Lower West Coast						
Agriculture	120.56	194.98	313.95	1.59	**315.54**	890
Domestic Self-Supply	17.32	0.00	17.32	0.00	**17.32**	302
Commercial/Industrial/Institutional	5.77	24.15	29.81	0.11	**29.93**	204
Landscape/Recreational	59.11	120.40	175.34	4.17	**179.51**	4,030
Power Generation	0.47	0.00	0.47	0.00	**0.47**	2
Public Supply	158.62	1.78	70.51	89.89	**160.40**	29
Lower West Coast Total	**361.86**	**341.32**	**607.41**	**95.76**	**703.17**	**5,457**
Upper East Coast						
Agriculture	16.68	106.94	116.60	7.03	**123.62**	674
Domestic Self-Supply	4.25	0.00	4.25	0.00	**4.25**	256
Commercial/Industrial/Institutional	0.53	1.73	2.26	0.00	**2.26**	81
Landscape/Recreational	14.60	16.26	28.93	1.93	**30.87**	1,753
Power Generation	1.62	0.00	1.62	0.00	**1.62**	3
Public Supply	61.72	0.00	17.04	44.69	**61.72**	18
Upper East Coast Total	**99.40**	**124.94**	**170.69**	**53.65**	**224.34**	**2,785**
Upper Kissimmee Basin						
Agriculture	28.08	1.51	29.58	0.00	**29.58**	195
Domestic Self-Supply	11.38	0.00	11.38	0.00	**11.38**	125
Commercial/Industrial/Institutional	2.13	0.00	2.13	0.00	**2.13**	35
Landscape/Recreational	13.63	7.65	21.29	0.00	**21.29**	423
Power Generation	0.18	0.00	0.18	0.00	**0.18**	1
Public Supply	92.26	0.00	92.26	0.00	**92.26**	15
Upper Kissimmee Basin Total	**147.65**	**9.16**	**156.81**	**0.00**	**156.81**	**794**
Districtwide Total	**1,743.09**	**977.20**	**2,485.26**	**235.03**	**2,720.29**	**20,632**

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