Central Florida Water Initiative

PLANNING DOCUMENT FINAL

REGIONAL WATER SUPPLY PLAN

2025

A comprehensive plan for all of Orange, Osceola, Seminole, and Polk counties and southern Lake County

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This document is the Final 2025 Central Florida Water Initiative (CFWI) Regional Water Supply Plan (RWSP), Planning Document. The St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), and Southwest Florida Water Management District (SWFWMD) (collectively referred to as the Districts) staff worked together and in conjunction with various CFWI technical staff and other stakeholders to generate this 2025 CFWI RWSP. Section 373.709, Florida Statutes, details the components of RWSPs.

These documents are available at cfwiwater.com.

The 2025 CFWI RWSP claims compliance with the American Disabilities Act. If you require assistance, contact the following agencies or www.cfwiwater.com:

- SJRWMD, 386-329-4500 or 800-451-7106
- SFWMD, 561-686-8800 or 800-432-2045
- SWFWMD, 352-796-7211 or 800-423-1476

If you require accessibility assistance, contact the following agencies:

- SJRWMD, 386-329-4586 or 800-451-7106 or via email at clerk@sjrwmd.com
- SFWMD, 561-682-2839 or via email at webmaster@sfwmd.gov
- SWFWMD, ADACoordinator@WaterMatters.org

If you are hearing or speech impaired, please contact the agencies using the Florida Relay Service, at 1(800) 955-8771 (TDD) or 1(800) 955-8770 (Voice).

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Acknowledgments

The Central Florida Water Initiative (CFWI) recognizes and thanks the utilities, state agencies, and other stakeholders for their contributions, comments, advice, information, and assistance throughout the development of this 2025 CFWI Regional Water Supply Plan.

Furthermore, the St. Johns River Water Management District, the South Florida Water Management District, and the Southwest Florida Water Management District express their appreciation to all who contributed to the development and production of this collaborative regional plan.

For further information about this document, please visit cfwiwater.com.

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Executive Summary

In Florida, the state's five water management districts develop Regional Water Supply Plans (RWSPs) to identify sustainable water supply for all water uses while protecting water resources and related natural systems. This 2025 Central Florida Water Initiative (CFWI) RWSP was jointly developed by the St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), and the Southwest Florida Water Management District (SWFWMD) (collectively referred to as the Districts) in coordination with the Florida Department of Environmental Protection (FDEP), the Florida Department of Agriculture and Consumer Services (FDACS), representatives from utilities, agriculture (AG), environmental, industry, and other stakeholders; and with input from the public. The CFWI Planning Area consists of all Orange, Osceola, Seminole, and Polk counties and southern Lake County, covering approximately 5,300 square miles.

This 2025 CFWI RWSP, based on a planning horizon through 2045, is consistent with the water supply planning requirements of Chapter 373, Florida Statutes (F.S.), and is an update to the 2020 CFWI RWSP and its respective appendices. Similar to the 2020 CFWI RWSP, this 2025 CFWI RWSP concludes that traditional water resources alone cannot meet future water demands or currently permitted allocations without resulting in unacceptable impacts to water resources and related natural systems. To meet current and future water demands while protecting the environment and water resources, this 2025 CFWI RWSP identifies water conservation efforts, water supply, and water resource development project options, as well as recognizes prevention or recovery strategies for targeted minimum flows and minimum water levels (MFL) water bodies.

Since 2020, the Districts, FDEP, FDACS, utilities, and other stakeholders have collaboratively implemented numerous water supply initiatives to meet regional goals (**Chapter 2**). These initiatives contributed to the knowledge, analytical abilities, and data available to develop this 2025 CFWI RWSP.

Several alternative water supply (AWS) projects were completed, increasing the volume of reclaimed water used and stormwater captured in the area. From fiscal year (FY) 2020-FY2024, the Districts provided approximately $397.5 million for 36 AWS projects that have been completed or are under construction, making available 88.84 million gallons per day (mgd) of AWS. Lower Floridan aquifer (LFA) investigations in Polk County and installation and testing of 14 LFA wells throughout the CFWI Planning Area as part of the Data, Monitoring, and Investigations Team's (DMIT) activities have been completed and are ongoing.

Water users in the CFWI Planning Area continue to implement water conservation measures and programs. From FY2020-FY2024, the Districts provided approximately $2.85 million for 30 water conservation projects that were completed or are being implemented that are estimated to save 1.08 mgd.

Regional cooperation has continued to assist in efficiently and effectively meeting the projected water needs of the CFWI Planning Area. For example, the Polk Regional Water Cooperative (PRWC), formed in 2016 among Polk County and 15 municipal member governments, provides for regional development of AWS projects to meet future water demands within Polk County.

Water Demand Projections

The CFWI Planning Area, home to approximately 3.4 million people, supports a large tourism industry, a significant agriculture (AG) industry, and a growing industrial and commercial sector. Population is projected to reach 4.7 million by 2045, which is a 40 percent increase from the 2020 estimate. Total average surface and groundwater use in the CFWI Planning Area is projected to increase 41 percent from 639 mgd in 2020 to 903 mgd in 2045. Of these amounts, groundwater use represents 603 mgd and 856 mgd, respectively. Public supply (PS) constitutes the largest water use, followed by AG, and commercial/ industrial/institutional (CII). Total PS water demands are projected to increase from 407 mgd in 2020 to 642 mgd in 2045 (**Table 1**). Public supply represents 71 percent of the 2045 projected water demand and 89 percent of the total increase in water demand. Agriculture represents the second largest water use with irrigated acreage projected to decrease from 121,686 acres in 2020 to 115,183 acres in 2045. Total AG water demand is projected to decrease 3 percent from 135 mgd in 2020 to 131 mgd in 2045. Total CII water demands are projected to increase 56 percent from 42 mgd in 2020 to 66 mgd in 2045 (**Chapter 3**).

Table 1. Summary 2020 total water use and 2045 total water demand projections by water use category in the Central Florida Water Initiative Planning Area.

Water Use Category	Water Use and Demand Projections – Average Rainfall Conditions (mgd)			
	2020	2045	Change	Percent Change
Public Supply	406.83	642.19	235.36	58%
Domestic Self-supply	19.96	14.80	-5.16	-26%
Agriculture	134.70	131.02	-3.68	-3%
Landscape/Recreational	30.27	38.72	8.45	28%
Commercial/ Industrial/ Institutional	42.39	66.19	23.80	56%
Power Generation	5.00	9.58	4.58	92%
Total	**639.15**	**902.50**	**263.35**	**41%**

Note: mgd = million gallons per day

Water Conservation

Water conservation by all water use categories will continue to help meet the CFWI Planning Area's future water demands. Historical gross per capita water use, as described in **Chapter 3,** has decreased from 182 gallons per capita per day (gpcd) in 1995 to 127 gpcd in 2020. While water conservation measures have already been implemented in the CFWI Planning Area, additional water conservation has an important role in meeting future water demands. It is projected that 45 to 52 mgd of water conservation savings could be achieved by 2045 for all water use categories (**Chapter 5, Table 16**). By 2045, projected PS water conservation efforts could achieve a savings of 37 to 38 mgd, AG water conservation savings could be between 4 to 7 mgd, and all other projected water conservation savings could be an additional 4 to 7 mgd. These water conservation measures are influenced by several factors including, but not limited to, voluntary user actions, degree of program promotion and financial incentives, passive savings, and participation rates. Conclusions and Recommendations (**Chapter 9**) of this 2025 CFWI RWSP focus on evaluating options to accelerate and increase the implementation of water conservation measures.

Water Resources and Related Natural Systems

The CFWI Planning Area contains extensive natural systems such as Econlockhatchee Swamp, Wekiva Wild and Scenic River System, Green Swamp, Reedy Creek Swamp, Davenport Creek Swamp, Big Bend Swamp, Cat Island Swamp, Boggy Creek Swamp, Shingle Creek Swamp, the Kissimmee River and Chain of Lakes (KCOL) (the headwaters to the Kissimmee River), the headwaters of the Peace River, 13 springs (including 2 Outstanding Florida Springs [OFS], Rock and Wekiwa), and over 1 million acres of wetlands.

In 2016, the Florida Legislature identified 30 OFSs statewide, including Rock and Wekiwa, that require additional protection to ensure their conservation and restoration for future generations. Known as the Florida Springs and Aquifer Protection Act, it affords special status and protection to these historic springs (Sections 373 801-373.813, F.S.). Notably, the Act addresses both the water quantity and water quality in springs. Regarding water quantity, it directs the water management districts or FDEP to adopt a prevention or recovery strategy if a spring is below or is projected to fall below its MFL criteria within 20 years.

The SJRWMD and SWFWMD have established MFLs for 55 water bodies that are within or extend into the CFWI Planning Area (**Appendix C, Table C-2,** and **Figure C-1**). Of these 55 water bodies, 38 were used as environmental constraints for the 2025 CFWI RWSP. Sixteen of the 38 systems assessed are not meeting their MFLs compared to the 2016-2020 Reference Condition (RC). During the planning horizon, one additional system (Sylvan Lake in SJRWMD) is projected to fall below its MFLs by 2045 if projected water demands are met with traditional fresh groundwater sources alone. Adverse impacts to wetlands from withdrawals are currently occurring in several areas; examination of modeled water levels in wetlands typically without MFLs indicates that the occurrence of stress to wetlands is predicted to increase if projected water demands are met with traditional fresh groundwater sources. The existence of adverse impacts to wetlands has been documented through extensive field work. Some wetland impacts may be the result of multiple factors, including groundwater withdrawals, construction of drainage ditches, and other alterations to drainage basins. In instances where the cause has been determined, mitigation measures have been implemented.

Groundwater Assessment

Planning-level groundwater availability assessment results from the 2020 CFWI RWSP were determined based on the Withdrawals Conditions scenarios using the East Central Florida Transient Expanded (ECFTX or ECFTXv1.0) groundwater model. The number, location, and magnitude of impact on MFLs and MFL-related criteria, wetlands without MFLs, and groundwater quality, along with the quantities and spatial distribution of potential acres of stressed wetlands, were used to determine the potential extent of groundwater withdrawal impacts within the model domain. Updated modeling results using the ECFTX version 2.0 (ECFTXv2.0) (current model version used for this document) model continue to indicate that, as groundwater withdrawals increase, there is a corresponding predicted increase in hydrologic stress on environmental systems (**Chapter 4**). Note that surface water withdrawals are not included in the model simulations.

It was concluded that fresh groundwater availability of up to 760 mgd as identified in the 2020 CFWI RWSP is still valid based on the water resource evaluations of this 2025 CFWI RWSP. Based on the 2045 groundwater demand projections (856 mgd) (**Appendix A, Table A-2**), the resulting groundwater shortfall is approximately 96 mgd (**Chapters 3** and **4**). Therefore, local management strategies will continue to be needed (e.g., wellfield optimization, aquifer recharge, natural system

enhancement) to address unacceptable impacts. The estimated groundwater availability is used by the Districts for planning purposes only and should not be viewed as regulatory constraints for specific Consumptive Use Permits/Water Use Permits (CUPs/WUPs). Decisions regarding CUPs/WUPs are made with additional information that is more site-specific and may consider opportunities for water resource development, management strategies, and mitigation of impacts.

Water Supply Project Options

Current water sources in the CFWI Planning Area include groundwater (fresh and brackish), reclaimed water, surface water, and stormwater. Fresh groundwater sources (i.e., surficial, intermediate, and Floridan aquifer systems [FAS]) are considered traditional water sources; whereas, nontraditional or AWS sources include brackish/nontraditional groundwater, surface water, stormwater, seawater, reclaimed water, and water stored in aquifer storage and recovery (ASR) wells and reservoirs. The CFWI Planning Area has historically relied on traditional groundwater from the FAS as a primary water source for PS, AG, and industrial uses. In addition, 228 mgd of treated wastewater (reclaimed water) is reused for irrigation, industrial uses, groundwater recharge, and environmental enhancement (**Chapter 6**).

Several sources of water and storage options were identified to address future water demands. **Appendix E** identifies 140 potential water supply and water resource development project options, including 17 brackish/nontraditional groundwater, 92 reclaimed water, 17 surface water, 4 stormwater, and 10 management strategies. These project options have the potential to treat, store, or produce up to 596 mgd (approximately 514 mgd net water) of additional water supply or water resource benefit, exceeding the 2045 projected groundwater shortfall of 96 mgd. Most of the 17 surface water project options are associated with the St. Johns River (SJR) and upper Peace River. Brackish/nontraditional groundwater project options target the LFA, and management strategies include wellfield optimization, aquifer recharge, and natural system enhancement (e.g., improving the ecological value of wetlands, other surface waters, or uplands in comparison to their current situation). **Appendix E** also includes 27 water conservation project options which serve to reduce demands that are not included in this total.

Water supply plans are not self-implementing. Projects included in this 2025 CFWI RWSP are options from which local governments, utilities, and other water users may choose per Section 373.709(7), F.S. Funding for the development of AWS projects is primarily the responsibility of water suppliers and users with potential funding assistance from the state of Florida and the Districts. This 2025 CFWI RWSP identifies funding mechanisms and sources to improve the economic feasibility of projects (**Chapter 8**).

Conclusion and Summary of Key Findings

In some areas of the CFWI Planning Area, fresh groundwater is near or has exceeded the limits of groundwater availability. AWS will need to be developed along with additional water conservation efforts and local management strategies to meet the 2045 projected water demands or currently permitted allocations while not adversely impacting water resources and related natural systems (**Chapter 4**).

- Fresh groundwater availability of up to 760 mgd as identified in the 2020 CFWI RWSP is still valid based on the water resource evaluations of this 2025 CFWI RWSP. Based on the 2045 groundwater demand projections (856 mgd), the resulting groundwater shortfall is

approximately 96 mgd (**Chapters 3** and **4**). Therefore, local management strategies will continue to be needed (e.g., wellfield optimization, aquifer recharge, natural systems enhancement) to address unacceptable impacts.

- Evaluations indicate that increased withdrawals from traditional groundwater sources associated with projected water demands through 2045 would increase the existing areas of water resource stress within portions of the CFWI Planning Area (**Chapter 4**).
- Water conservation is an important and cost-effective element in meeting water demands. Potential water savings through the implementation of PS, AG, and other self-supply water conservation measures are 45 to 52 mgd (**Chapter 5**). Additional savings could be possible through higher participation rates and implementation of other water conservation measures not factored into the existing estimates (e.g., educational and outreach programs).
- Implementation of strategies identified during the CFWI planning effort is critical to the long-term sustainability of the CFWI Planning Area's water supplies (**Chapter 7**).
- There are sufficient project options for water supply and water resource development to meet projected water demands through 2045. A total of 140 project options could potentially provide 514 mgd of additional net water supply or water resource benefit, exceeding the 2045 projected shortfall of 96 mgd (**Appendix E**). **Appendix E** also includes 27 water conservation project options that are not included in this total.
- Stakeholder engagement with regional and local governments, utilities, and other water users will continue to be critical with this 2025 CFWI RWSP and future updates.

This 2025 CFWI RWSP concludes that the future demands of the CFWI Planning Area can be met through the 2045 planning horizon, while sustaining the water resources and related natural systems, with appropriate management, continued diversification of water supply sources, water conservation, and implementation of identified water supply and water resource development projects.

Recommendations

This 2025 CFWI RWSP identifies recommendations that are critical to achieving water resource sustainability, while protecting water resources and related natural systems. The successful implementation of these recommendations will require continued commitment and collaboration by the Districts and stakeholders to initiate and achieve the key findings and recommendations of this 2025 CFWI RWSP (**Chapter 9**).

Recommended actions based on the results of the 2025 CFWI RWSP include the following:

- Expand Implementation of Water Conservation Programs
  - Effective water conservation programs rely on the participation of local governments, residents, the AG community, and other users. Water conservation programs should be expanded to include data analysis and targeting programs to maximize opportunities, voluntary and incentive-based initiatives, research, collaborative education and outreach initiatives, and increased enforcement of regulatory initiatives to meet or exceed the 2025 CFWI RWSP water conservation savings estimates.
  - These water conservation programs should support participation at the project, local and CFWI Planning Area levels, identify funding, and continue to implement education and outreach programs. Other water conservation initiatives that could be expanded include

programs to implement year-round irrigation rules, use of smart irrigation controllers, support irrigation evaluations, and expand cost-share programs for AG water conservation. As Florida grows, many residential irrigation systems may be within deed-restricted communities, so water use management strategies (e.g., high-efficiency irrigation systems, Florida-Friendly Landscaping [FFL], irrigation restrictions) could be built into new communities and adopted by homeowner associations.

- Develop Specific Prevention or Recovery Strategies
  - Prevention or recovery strategies for MFLs water bodies are critical for their protection and recovery per Section 373.0421, F.S. The Districts are currently developing MFLs prevention or recovery strategies and will continue to monitor, study, and evaluate water bodies without MFLs. As evaluations of wetland systems are completed, management strategies and projects could be identified and implemented to mitigate the impacts to these natural systems. The Districts should consider using CFWI-identified water supply and water resource development project options and management strategies and support continued coordination among all appropriate stakeholders to achieve resource recovery and protection.
- Support Development and Implementation of Water Supply and Water Resource Development Projects
  - Regional projects should maximize sustainable yields, while minimizing impacts. Proposed groundwater sustainability actions should include monitoring, studying, and evaluating the Upper Floridan aquifer (UFA) and LFA for determining maximum sustainable yields. Regional analysis should continue to explore appropriate uses and users for reclaimed water, including the use of reclaimed water for natural system enhancement, groundwater recharge, and indirect and direct potable reuse where appropriate.
  - Opportunities for additional surface water storage should continue to be explored while ensuring that the environmental needs of surface water bodies are met. Stormwater projects should continue to be investigated for opportunities to provide natural systems enhancement, groundwater recharge, and beneficial use of stormwater. Stormwater projects should be developed in coordination with watershed planning, water supply, water quality, natural systems restoration, and flood protection initiatives. Pilot projects could be developed to demonstrate their feasibility and effectiveness.
- Support Additional Alternative Water Supply Projects
  - This 2025 CFWI RWSP identified 140 water supply and water resource development projects and 27 water conservation project options. These options have the potential to generate significant water to meet future needs and could be supported through financial and regulatory incentives.
- Improve Water Resource Assessment Tools and Supporting Data
  - The ECFTXv2.0 model was used to simulate the hydrologic response to current and future groundwater withdrawals. It is recommended that this model be updated in the future with additional hydrogeologic data from new well installations and wetland monitoring sites. Monitoring of groundwater and wetland sites should be continued. Investigations should continue to determine if additional UFA and LFA wells are needed.

- Continue Communication and Outreach
  - The CFWI is a collaborative process that depends on active engagement and participation of stakeholders. The Communications Working Group will continue their efforts to keep all stakeholders informed and engaged as programs and projects develop.
- Identify Options for Future CFWI Framework to Support Implementation Strategies
  - Implementation of this 2025 CFWI RWSP relies on continued collaboration among the responsible entities and appropriate agencies, including conducting a 5-year assessment and update.

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Acronyms and Abbreviations

AG	agriculture
ASR	aquifer storage and recovery
AWE Tool	Alliance for Water Efficiency's Water Conservation Tracking Tool
AWS	alternative water supply/source
BEBR	University of Florida's Bureau of Economic and Business Research
BMPs	best management practices
CFI	Cooperative Funding Initiative
CFP	Cooperative Funding Program
cfs	cubic feet per second
CFWI	Central Florida Water Initiative
CII	commercial/industrial/institutional
CPA	Comprehensive Plan Amendment
CUP/WUP	Consumptive Use Permit/Water Use Permit
Districts	Water Management Districts
DMIT	Data, Monitoring, and Investigations Team
DPR	direct potable reuse
DSS	domestic self-supply and small public supply systems
ECFS	East Central Florida Services, Inc.
ECFT	East Central Florida Transient Groundwater Model
ECFTX	East Central Florida Transient Groundwater Expanded Model
EDR	electrodialysis reversal
EQIP	Environmental Quality Incentive Program
ET	evapotranspiration
F.A.C.	Florida Administrative Code

FARMS	Facilitating Agricultural Resource Management Systems
FAS	Floridan aquifer system
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FDEP	Florida Department of Environmental Protection
FFL	Florida-Friendly Landscaping™
FPRC	Florida Potable Reuse Commission
F.S.	Florida Statutes
FSAID IX	FDACS Florida Statewide Agricultural Irrigation Demand version 9
FTMR	Focus Telescopic Mesh Refinemen
FY	fiscal year
GLRSTA	Grove Land Reservoir and Stormwater Treatment Area
gpcd	gallons per capita per day
gpd	gallons per day
H2O SAV	water, savings, analytics, and verification
I-4	Interstate 4
IAS	intermediate aquifer system
ICU`	intermediate confining unit
IFAS	Institute of Food and Agricultural Sciences
IPR	indirect potable reuse
KCOL	Kissimmee River and Chain of Lakes
Lake Toho	Lake Tohopekaliga
LANS	Lake Apopka North Shore
LFA	Lower Floridan aquifer
LR	landscape/recreational
MCU	middle confining unit

MFL(s)	minimum flow(s) and minimum water level(s)
mg	million gallons
mgd	million gallons per day
mg/L	milligrams per liter
MODFLOW	modular groundwater flow model
N/A	not applicable
NRCS	Natural Resources Conservation Service
NRSP	North Ranch Sector Plan
NSFAC	no significant Floridan aquifer connection
OAWP	Office of Agricultural Water Policy
OCU	Orange County Utilities
OFS	Outstanding Florida Spring
OUC	Orlando Utilities Commission
PG	power generation
PRMRWSA	Peace River Manasota Regional Water Supply Authority
PRWC	Polk Regional Water Cooperative
PS	public supply
PWR	Pennywash/Wolf Creek Reservoir
RC	Reference Condition
RIBs	Rapid Infiltration Basins
RO	reverse osmosis
RWSP	Regional Water Supply Plan
SAS	surficial aquifer system
SFWMD	South Florida Water Management District
SJR	St. Johns River
SJRWMD	St. Johns River Water Management District

SR	State Road
STA	stormwater treatment area
STAR	Florida Statewide Annual Report
SWFWMD	Southwest Florida Water Management District
SWIMAL	Saltwater Intrusion Minimum Aquifer Level
SWUCA	Southern Water Use Caution Area
TBW	Tampa Bay Water
TCR	Taylor Creek Reservoir
TDS	total dissolved solids
TECO	Tampa Electric Company
TWA	Tohopekaliga Water Authority
U.S.	United States
UF	University of Florida
UFA	Upper Floridan aquifer
UKB	Upper Kissimmee Basin
USGS	United States Geological Survey
WCCF	Water Cooperative of Central Florida
WEP	Water and Environmental Program
WIFIA	Water Infrastructure Finance and Innovation Act
WISE	Water Incentives Supporting Efficiency
WPSP	Water Protection and Sustainability Program
Work Program	5-year Water Resource Development Work Program
WSIS	Water Supply Impact Study
WTP	water treatment plant
WWTF/WWTP	wastewater treatment facility/plant

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Introduction

The St. Johns River Water Management District (SJRWMD), South Florida Water Management District (SFWMD), and Southwest Florida Water Management District (SWFWMD) (collectively referred to as the Districts) developed Regional Water Supply Plans (RWSPs) to identify water sources and projects to meet current and future reasonable-beneficial uses while sustaining water resources and related natural systems. This 2025 Central Florida Water Initiative (CFWI) RWSP serves as a 5-year update to the 2020 CFWI RWSP and quantifies existing and projected water demands, and projects required to meet the projected water demands through 2045. The CFWI Planning Area is home to an extensive agricultural (AG) industry, large urban communities, an active tourism industry, and valued ecosystems.

TOPICS

- Statutory Requirements
- Goals
- Description of the CFWI Planning Area
- Water Supply Sources
- Preparation and Coordination with Partners
- Regional and Local Planning
- Resiliency

Regional Water Supply Plans are required to provide the following information:

- Water use estimates and demand projections for all water use categories for at least a 20-year planning horizon
- Quantification of potential water conservation savings
- An evaluation of existing water sources
- Identification of regional water supply-related issues
- Water supply and water resource development project options, including funding strategies
- Future guidance for meeting projected water demands

This 2025 CFWI RWSP update also includes a discussion of minimum flows and minimum water levels (MFLs) and water reservations that have been established or are proposed to be established, including MFLs recovery or prevention strategies.

STATUTORY REQUIREMENTS

The legal authority and requirements for water supply plans are primarily found in Chapter 373, Florida Statutes (F.S.). Additional directions about water supply plans are provided in Chapters 163, 187, 403, and 570, F.S.

As identified in the 2015 CFWI RWSP and verified by both the 2020 CFWI RWSP and this 2025 CFWI effort, the CFWI Planning Area remains a Water Resource Caution Area for the purposes of Section 403.064, F.S., and affected parties may challenge the designation pursuant to Section 120.569, F.S.

In 2016, legislation was passed and codified in Section 373.0465, F.S., that addresses water supply planning in the CFWI. The statute directs continuation of the collaborative process among state and regional agencies, regional public supply (PS) utilities, and other stakeholders. Key requirements include:

LAW/CODE

The governing board of each water management district shall conduct water supply planning for any water supply planning region within the district identified in the appropriate district water supply plan under Section 373.036, F.S., where it determines that existing sources of water are not adequate to supply water for all existing and future reasonable-beneficial uses and to sustain the water resources and related natural systems for the planning period. (Section 373.709(1), F.S.)

- Develop and implement a single multidistrict RWSP, including any needed MFL recovery or prevention strategies
- Develop a list of water supply or resource development projects
- Provide a single hydrologic planning model to assess the availability of groundwater
- Consider limitations on groundwater use together with opportunities for new, increased, or redistributed groundwater uses
- Establish a coordinated process for the identification of water resources requiring new or revised conditions
- Consider existing MFL recovery or prevention strategies
- Include a list of water supply options sufficient to meet the water needs of all existing and future reasonable-beneficial uses
- Identify preferred water supply sources
- The statute directed the Florida Department of Environmental Protection (FDEP), in consultation with the Districts and Florida Department of Agriculture and Consumer Services (FDACS), to adopt certain uniform rules regarding Consumptive Use Permits or Water Use Permits (CUP/WUPs) and MFLs

In 2016, the Florida Springs and Aquifer Protection Act was enacted and provides for the protection and restoration of Outstanding Florida Springs (OFS) (Section 373.801, F.S.). Minimum requirements for OFS recovery or prevention strategies include:

- A list of all specific projects identified for implementation of the plan
- A priority listing of each project
- The estimated cost and date of completion for each project
- The source and amount of financial assistance from the water management districts for each project, which may not be less than 25 per cent of the total cost unless there are funding sources that provide more than 75 percent of the total cost of the project
- An estimate of each project's benefit to an OFS
- An implementation plan designed with a target to achieve the adopted MFLs within 20 years or less after the adoption of a recovery or prevention strategy

In 2021, Chapter 62-41, Regulation of Consumptive Uses of Water, became effective, incorporating Rules 62-41.300 through 62-41.305, Florida Administrative Code (F.A.C.), and the *Central Florida Water Initiative Planning Area Supplemental Applicant's Handbook* effective January 5, 2022. These rules apply to CUP/WUP applicants in the CFWI Planning Area and supersede portions of Chapters

40C-2, 40D-2, and 40E-2, F.A.C., regulating the consumptive use of water in the CFWI Planning Area explicitly identified in the chapter.

GOALS

The goal for this 2025 CFWI RWSP is to ensure sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses through 2045 (including a 1-in-10 year drought condition) while sustaining water resources and related natural systems. This goal will be accomplished by:

- Ensuring sustainable quantities of fresh groundwater sources available for water supplies are used without causing unacceptable impacts to the water resources and related natural systems
- Identifying water conservation savings which may be achievable by water users during the planning horizon
- Identifying water supply and water resource development project options to meet reasonable and beneficial water demands that exceed the sustainable yield of fresh groundwater sources
- Protecting, monitoring, and enhancing the environment, including the natural resource areas and systems
- Providing information to support local government comprehensive plans
- Achieving compatibility and integration with other state and federal regional resource initiatives

DESCRIPTION OF THE CENTRAL FLORIDA WATER INITIATIVE PLANNING AREA

History

Addressing both the short-term and long-term development of water supplies in the central Florida area has been a focus of the Districts, since 2006.

The CFWI was created in 2011 and is a collaborative effort among the Districts, FDEP, FDACS, water supply authorities, local government utilities, AG and industrial communities, environmental organizations, and other interested parties. The intent of the CFWI is to implement effective and consistent water resource planning, development, and management throughout the CFWI Planning Area. The first CFWI RWSP was approved by the Districts' Governing Boards in November 2015 and had a planning horizon of 2035. The 2020 CFWI RWSP update was approved by the Districts' Governing Boards in November 2020 with a planning horizon of 2040. The 2020 CFWI RWSP estimated total water demands would increase 220 million gallons per day (mgd) by 2040 and concluded that fresh groundwater resources alone could not meet future water demands or currently permitted allocations without resulting in additional impacts to the water resources and related natural systems. Based on the 2040 groundwater demand projections, the resulting groundwater shortfall was approximately 95 mgd. Multiple water conservation, management strategies, and alternative water supply (AWS) options were identified which exceeded the estimated future water demand shortfall.

Planning Area Description

The CFWI Planning Area consists of all Orange, Osceola, Seminole, and Polk counties and southern Lake County (**Figure 1**), covering approximately 5,300 square miles. The area is characterized by 50 local and county governments with a growing population and substantial urban sector. The City of Orlando has the largest municipal population in the CFWI Planning Area. However, the residential areas with the largest growth rates are north and south of Orlando along the Interstate 4 (I-4) corridor and other major transportation routes. This area supports a large tourism industry and growing industrial and commercial sectors. Agriculture is a significant industry in the CFWI Planning Area, with citrus and cattle as major commodities.

Population and Water Demands

Total population in the CFWI Planning Area is projected to increase by 40 percent from 3.4 million in 2020 to 4.7 million in 2045. Irrigated AG acreage is expected to decrease from 121,686 acres in 2020 to 115,183 acres in 2045. Overall, total water demand is expected to increase by 41 percent from 639 mgd in 2020 to 903 mgd in 2045 for average rainfall conditions. Additional information regarding these water demands is provided in **Chapter 3**.

Natural Features

The CFWI Planning Area contains the headwaters for 7 major river systems (Alafia, Hillsborough, Kissimmee, Ocklawaha, Peace, St. Johns, and Withlacoochee rivers). There are four distinct groundwater basins and over 1 million acres of wetlands. Regional wetland systems include Econlockhatchee Swamp, Wekiva Wild and Scenic River System, Green Swamp, Reedy Creek Swamp, Davenport Creek Swamp, Big Bend Swamp, Cat Island Swamp, Boggy Creek Swamp, and Shingle Creek Swamp (**Figure 2**). In addition, there are 13 second and third-magnitude springs (Stamm 2016), including 2 OFS (Rock Springs and Wekiwa Springs).

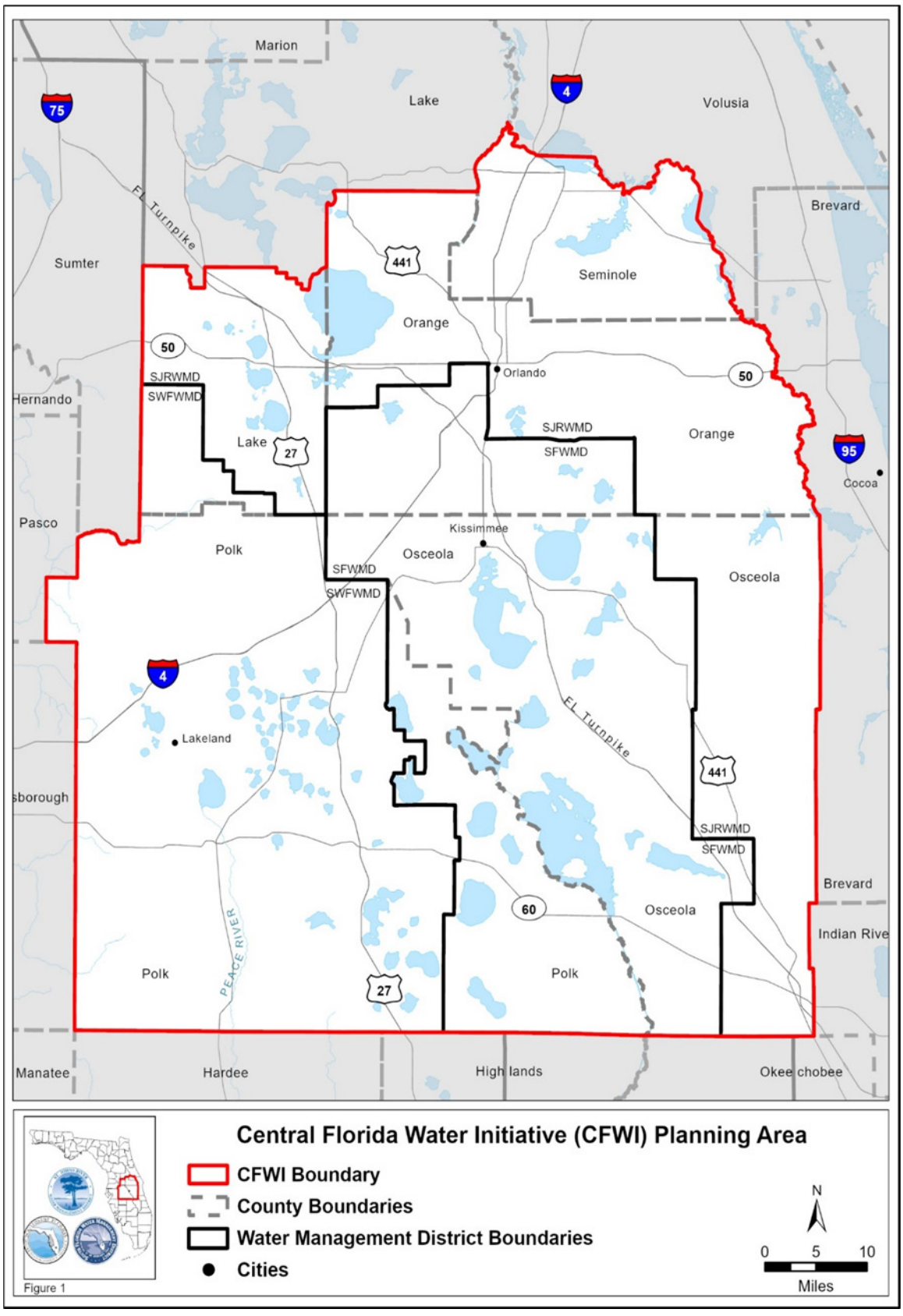

Figure 1. Central Florida Water Initiative Planning Area.

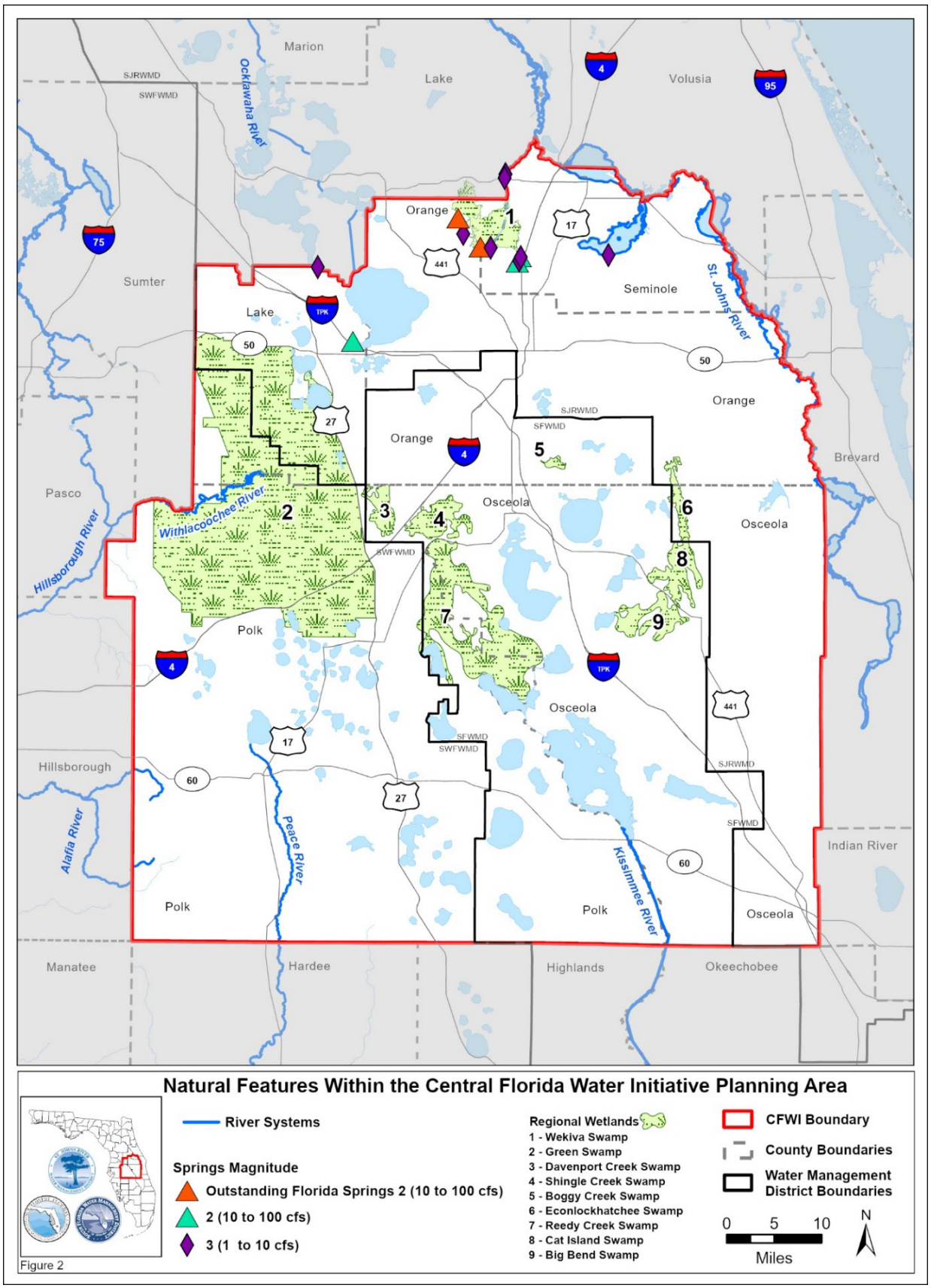

Figure 2. Natural Features in the Central Florida Water Initiative Planning Area.

WATER SUPPLY SOURCES

Water supply sources in the CFWI Planning Area primarily include groundwater (fresh and brackish), surface water, and reclaimed water.

Groundwater

Groundwater is supplied from the surficial, intermediate, and Floridan aquifer systems (SAS, IAS, and FAS). The Upper Floridan aquifer (UFA) has historically been the primary source of water supply throughout the CFWI Planning Area. However, declines in groundwater levels, spring flows, river flows, lake levels, and wetlands quality have occurred as a result of groundwater development. In some areas, groundwater resources have experienced increased groundwater chloride concentrations due to the encroachment of brackish/nontraditional groundwater from adjacent sources. Therefore, additional alternatives to fresh groundwater need to be developed and implemented to meet the projected water demands. Traditional, nontraditional, or AWS sources are presented and described in **Chapter 6**. In many areas, the Lower Floridan aquifer (LFA) is considered an AWS. There are several studies and projects underway to evaluate the water quality and aquifer productivity necessary to develop this AWS.

Surface Water

The CFWI Planning Area has hundreds of lakes, including the interconnected Alligator and Kissimmee River and Chain of Lakes (KCOL), and several major rivers, including the St. Johns, Ocklawaha, Peace, Kissimmee, and Withlacoochee. Despite the abundance of surface water features in the CFWI Planning Area, a relatively small amount is currently withdrawn for PS or other uses. Lakes, rivers, and creeks support significant ecological resources, which must be protected from unacceptable impacts of any proposed withdrawals or capture of flows from these systems. Capturing flows from these surface water bodies for water supply may be effective but can be expected to have varying levels of reliability, depending on climatic conditions. In addition, many of these water bodies have regulatory constraints such as MFLs or water reservations that restrict withdrawals.

Reclaimed Water

Utilities within the CFWI Planning Area are leaders in developing reclaimed water systems, reusing 95 percent of all domestic wastewater flows (**Appendix A, Tables A-13 a** through **f**). In 2020, 228 mgd of treated wastewater (including supplemental sources and imported flows) was reused for beneficial purposes, as described in **Chapter 6**. Reclaimed water plays a critical role in meeting the current water demands and will continue to support water demands through 2045.

PREPARATION AND COORDINATION WITH PARTNERS

This 2025 CFWI RWSP was developed in a dynamic and collaborative public process in coordination and cooperation with the Districts, FDEP, FDACS, water supply authorities, local government utilities, AG and industrial communities, environmental organizations, and other interested parties. Various methods and forums were used to notify and seek input from stakeholders. These included four public workshops held via virtual webinars between January 2022 and April 2025 to garner input on service area boundaries, population and water demand projections, technical methods, results, and the 2025 CFWI RWSP. Participants reviewed and provided input on water supply issues, the condition

of regional water resources, water source options, and other key aspects of the 2025 CFWI RWSP. Water demand projections were coordinated through individual meetings with local government planning departments, utilities, and AG industry representatives.

The CFWI website (www.cfwiwater.com) is used to disseminate information, provide documents, advertise public meetings, and seek comments from interested parties, including the public. Input received from stakeholders and the public was considered for potential incorporation into this 2025 CFWI RWSP and will continue to shape and guide water supply development in the CFWI Planning Area.

REGIONAL AND LOCAL PLANNING COORDINATION

The CFWI RWSP process is closely coordinated with the water supply planning of local governments and utilities. Within 6 months following approval of the water supply plan, water management districts are required to notify each local government of the projects identified in this 2025 CFWI RWSP and that the entity consider and incorporate projects to meet future water demands into its corresponding Water Supply Facilities Work Plan (Section 373.709(8)(a), F.S).

In addition to these utility requirements, local governments are required to adopt water supply facilities work plans, covering at least a 10-year planning period, and related amendments to their comprehensive plans within 18 months following approval of this 2025 CFWI RWSP, pursuant to Section 163.3177, F.S. The water supply facilities work plans contain information to update the comprehensive plan's capital improvements element, which outlines specifics about the need for, and the location of, public facilities, principles for construction, cost estimates, and a schedule of capital improvements (Section 163.3184, F.S.). More detailed information on these requirements is contained in **Chapter 7**.

RESILIENCY

A reliable supply of water to meet future demands is necessary; therefore, climate change and its effects on hydrologic conditions are considered in water supply planning. Climate change has the potential to significantly impact the sustainability of water supplies throughout the state. Resiliency is defined as the ability to recover from climate-related impacts such as floods and droughts. It includes the processes of planning and implementation to mitigate vulnerabilities to climate-related impacts and adapt to a changing climate.

While climate change is occurring, impacts or effects vary, and the degree and rate of change remains uncertain. Recent predictions, from multiple climate models summarized by the Intergovernmental Panel on Climate Change, indicate global mean surface temperatures likely will increase over the next 20 years, leading to longer and more frequent heat waves over land areas (Southeast Florida Regional Climate Change Compact 2022). This could increase evapotranspiration (ET), resulting in lower surface water levels and increased irrigation demand, as well as impacts to stormwater runoff, soil moisture, aquifer recharge, and water quality. More frequent, intense rainfall events with longer interim dry periods could increase total annual rainfall but decrease effective rainfall (i.e., aquifer recharge) as more water may be lost to runoff, prompting the necessity for increased storage alternatives. Increased capture and storage of rainfall and stormwater in the CFWI Planning Area could address water resource constraints and help mitigate the impacts of climate change-related flooding events. Improvements in infrastructure capacity, flexibility, and redundancy (e.g.,

interconnected water supply systems) could assist in mitigating the uncertainty in local and regional climate prediction (e.g., changing drought cycles).

Future water supply and stormwater management analyses require the use of rainfall pattern estimates. The Districts, in coordination with partners in the government and private sectors and academia, are developing future rainfall intensity-duration-frequency scenarios, rainfall probability analyses, and extreme weather event projections that should be considered in future updates of the CFWI RWSP.

Collaboration will be necessary to meet the challenges posed by climate change and provide a reliable water supply. The state of Florida established several programs, initiatives, and research efforts to support collaborations and help communities mitigate climate risk and improve resiliency. The Florida Flood Hub, centered at the University of South Florida, was established to become Florida's scientific center for flood and resilience information and is working to improve flood forecasting and inform science-based policy, planning, and management. The Florida Flood Hub's collaborative nature is designed to bridge the gap between scientists, policymakers, practitioners, and the public.

In May 2021, Governor DeSantis and the Florida Legislature passed Senate Bill 1954 creating the Resilient Florida Program to address statewide flooding and sea level rise. This comprehensive legislation ensures a coordinated approach to Florida's coastal and inland resilience. It is the largest investment in Florida's history to prepare communities for the impacts of sea level rise, intensified storms, and flooding. Funding is available through a grant process to local governments for planning and implementing resiliency projects.

Formed as part of the collaborative effort to address climate and water resource issues, the Florida Water and Climate Alliance is a stakeholder-scientist partnership focused on increasing the relevance of climate science data and tools for water resource planning and supply operations (http://floridawca.org). Local management actions and regional collaborations will help mitigate impacts associated with climate change and enhance the continued reliability of water supply in the CFWI Planning Area. To plan and prepare for regional climate change, the Districts should coordinate with other resource management entities and governments to ensure a common approach to developing effective adaptation strategies for the future.

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Progress Since 2020 Central Florida Water Initiative Regional Water Supply Plan

Since completion of the 2020 CFWI RWSP, numerous efforts have been undertaken to further enhance management of water resources within the CFWI Planning Area. The Districts, FDEP, FDACS, utilities, and other stakeholders have collaboratively implemented many water supply initiatives to meet regional goals. This section describes the water supply and resource planning activities undertaken since approval of the 2020 CFWI RWSP.

TOPICS

- Intergovernmental and Public Coordination
- Alternative Water Supply Development
- Cooperative Funding
- Water Conservation
- Regulatory Protection and Monitoring Efforts
- Planning Coordination
- Water Storage and Restoration Projects

INTERGOVERNMENTAL AND PUBLIC COORDINATION

- **Polk Regional Water Cooperative (PRWC)** – The PRWC consists of Polk County and 15 municipal member governments and was created to provide regional cooperation on the development of water resources to meet future water demands within Polk County. While the entirety of its jurisdiction is located within the CFWI Planning Area, the majority of the PRWC jurisdiction is located within the SWFWMD's Southern Water Use Caution Area (SWUCA). In 2017, the Florida Legislature passed House Bill 573, also known as the Heartland Headwaters Protection and Sustainability Act to recognize the critical importance of Polk County's aquifers to the economic and ecological health of the headwaters for six of Florida's major river systems. The PRWC has since prepared the comprehensive annual report required by this Act (Section 373.463, F.S.), as well as, coordinated with the SWFWMD to provide a status report on projects receiving priority state funding for inclusion in the SWFWMD's Consolidated Annual Report.
- **Taylor Creek Reservoir (TCR)/ St. Johns River (SJR) Water Supply Project Partnership** – This is a proposed regional AWS project to withdraw surface water from the TCR and the SJR. In 2017, the TCR project partners, including the City of Cocoa, East Central Florida Services, Inc. (ECFS), Orange County, Orlando Utilities Commission (OUC), Tohopekaliga Water Authority (TWA), and Farmland Reserve, Inc., entered into a General Implementation Agreement that governs the overall development, implementation, and operation of the TCR project. The SJRWMD and project partners are working to finalize a Memorandum of Understanding that addresses the parties' respective funding commitments for the water resource development and water supply development components. Design on the water resource development

component of the project is in progress and anticipated to be complete in 2027. Construction of this first phase of the project is scheduled to begin in 2028 and to be completed in 2031.

- **CFWI Newsletter** – The CFWI Communications Group continues to produce and distribute a quarterly newsletter to more than 20,000 stakeholders and the public via email. The newsletter features engaging videos, infographics, and articles that highlight efforts of the CFWI Work Groups and inform stakeholders about innovative AWS and water resources projects and water conservation programs taking place within the CFWI Planning Area. The newsletter has a high rate of stakeholder engagement with an average email open rate of 38 percent, which exceeds the average email open rate for government newsletters.

ALTERNATIVE WATER SUPPLY DEVELOPMENT

Source diversification using AWS projects to supplement traditional water sources is critical to meet current and future water demands in the CFWI Planning Area. The Districts encourage development of AWS and implementation of water conservation measures through cooperative funding programs, which help water users develop reclaimed water distribution projects, water reclamation facilities, brackish/nontraditional water wellfields, reverse osmosis (RO) treatment facilities, stormwater capture systems and install high-efficiency water fixtures. The Districts provided cost-share funding for many projects from 2020-2024 as indicated in **Figure 3**.

COOPERATIVE FUNDING

For over 2 decades, the Districts have provided funding to local governments, special districts, utilities, homeowners' associations, and other public and private water users for AWS, water conservation, and stormwater projects that are consistent with each of the District's core missions.

- **AWS** – From fiscal year (FY) 2020-FY2024, the Districts provided approximately $397.5 million for 36 AWS projects that have been completed or are under construction in the CFWI Planning Area that will make available 88.84 mgd of AWS.
- **Water Conservation** – From FY2020-FY2024, the Districts provided approximately $2.9 million for 30 water conservation projects that were completed or are being implemented in the CFWI Planning Area. The projects are estimated to save 1.08 mgd.

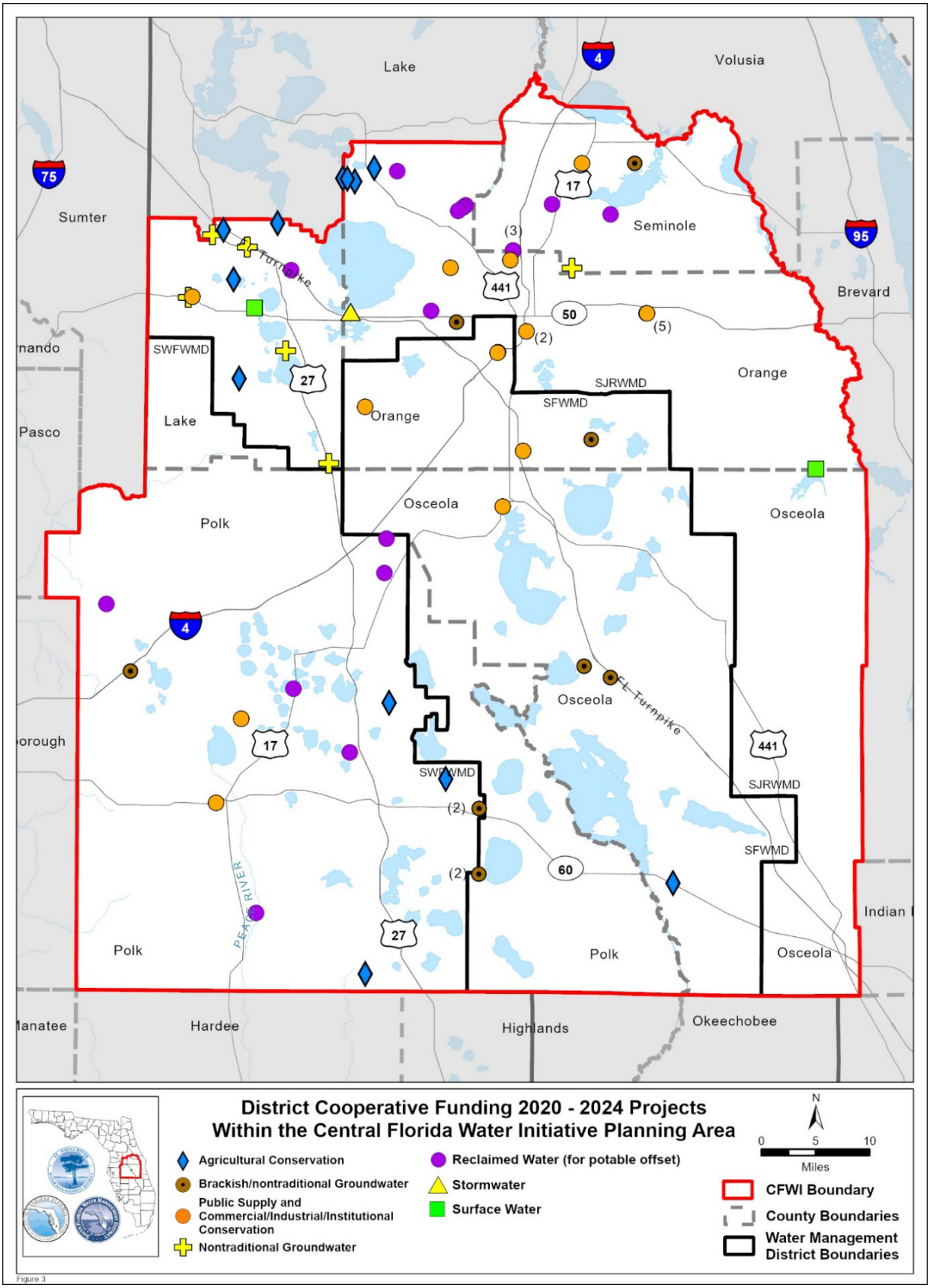

Figure 3. District Cooperative Funding 2020-2024 projects within the Central Florida Water Initiative Planning Area.

Brackish/Nontraditional Groundwater

- **LFA Investigations** – To support development of brackish/nontraditional groundwater in the CFWI Planning Area, the Districts have led or participated in significant hydrogeological investigations of the LFA to better understand its potential for water supply development.
  - Hydrogeologic Investigation of LFA in Polk County – This project involves exploration of the LFA at three sites (Crooked Lake, Frostproof, and Lake Wales [Wailes]) in Polk County to better understand the aquifer characteristics, water quality, and viability as an AWS.
  - Cypress Lake Wellfield Project – Since 2020, Concentrate Disposal Well #2, the associated monitoring well, and three production wells have been installed. The initial raw water main installation and deepening of an existing production well are underway, and the RO Water Treatment Plant (WTP) is currently under design. Additional construction efforts will continue in 2025 and beyond.
  - Southeast Polk and West Polk Wellfields – Preliminary phases of the PRWC's Southeast Polk Wellfield near Lake Wales and West Polk Wellfield in Lakeland included hydrologic investigations of the planned wellfields, with cooperation from the SWFWMD. These investigations included the drilling of monitor and test production wells to better define the LFA for future water supply use and aquifer performance testing to define the aquifer parameters in these areas. The investigations at the planned Southeast Polk and West Polk wellfields concluded in 2019 and 2020, respectively. Since the wellfields will extend several miles, further testing also commenced within each of the planned wellfield locations to confirm productivity and water quality; the Southeast LFA Test Well #3 project evaluated the center of the planned Southeast Polk Wellfield and concluded in 2024, and the West Polk Test Well #2 project is expected to commence drilling in 2025.
  - Data, Monitoring, and Investigations Team (DMIT) – As of 2025, the DMIT installed and tested 14 LFA wells to collect data on geology, aquifer characteristics, and water quality. These efforts provide valuable data to better assess the potential of the LFA for water supply and have contributed directly to the development of potential water supply projects in the CFWI Planning Area.

- **PRWC Projects** – As noted above, the PRWC currently has two LFA brackish groundwater projects underway, the Southeast Polk Wellfield and West Polk Wellfield. These projects are cooperatively funded by the SWFWMD and provide for regional development of AWS. Both projects have been re-evaluated since the 2020 CFWI RWSP to meet participating utility demands within a 20-year planning horizon and manage capital expenses; the Southeast Polk Wellfield project is now being constructed to deliver 7.5 mgd in Phase 1 with a build-out capacity of 30 mgd finished water supply. Similarly, the West Polk Wellfield project is being designed to provide 2.5 mgd in Phase 1 and is anticipated to develop up to 10 mgd of finished water supply at full build-out.

Reclaimed Water

- **Tampa Electric Company (TECO) Lakeland/Mulberry/Polk Reuse Project** – This project is a large regional reclaimed water project and includes 19 miles of reclaimed water transmission mains, 12 mgd of pumping infrastructure, 10 mgd of advanced treatment (filtration and membranes), a storage tank, and a concentrate deep disposal well. This infrastructure allows the TECO Polk Power Station to use reclaimed water from the cities of Lakeland and Mulberry, and Polk County. The project, completed in 2017, is currently using over 5 mgd of reclaimed water with planned expansions through 2045 to progressively increase reclaimed water usage up to 17 mgd.

- **Other Reuse Projects** – Four other reclaimed water projects were cooperatively funded by the SWFWMD. These include one reclaimed transmission project with the City of Winter Haven to provide a total of 0.59 mgd of reuse flow, one reclaimed feasibility project with the City of Ft. Meade, and two direct potable reuse (DPR) feasibility studies, one each with the City of Winter Haven and Polk County. The SJRWMD cooperatively funded numerous reuse projects with local governments, including: the cities of Altamonte Springs, Apopka, Minneola, Winter Springs, and Ocoee, and septic-to-sewer conversions with Orange County and the City of Longwood.
- **Florida Potable Reuse Commission (FPRC)** – The FPRC was established for the development of a consensus-driven policy and regulatory framework for implementation of potable reuse as a water supply option. The FPRC was a partnership among utilities, AG, environmental, public health, and academic professionals. Other stakeholders actively participated in the FPRC initiative, while the FDEP and Districts served as *ex officio* participants. In 2020, the FPRC published its final report titled, *Framework for the Implementation of Potable Reuse in Florida*. Based on recommendations from this report, FDEP adopted the Potable Reuse Rules (Chapter 62-565, F.A.C.) on February 26, 2025.

Stormwater

- **Judge Farms Reservoir and Impoundment** – This project was completed and included construction of a surface/stormwater pond with a storage capacity of approximately 600 million gallons (mg). The reservoir and impoundment is an 8.2 mgd supplemental source that is available to augment reclaimed water supplies to meet irrigation demands in Osceola County and central Florida. The reservoir and impoundment is expected to capture and treat stormwater runoff resulting in an overall nutrient reduction in Lake Tohopekaliga (Lake Toho), the Kissimmee River, and other downstream areas. This project was turned over to TWA and is now known as the Toho Reservoir.

Surface Water

- **PRWC Peace Creek and Peace River Projects** – The PRWC completed draft plans of conceptual water supply project options for the Peace Creek and Peace River in 2021 and 2022, respectively. The Peace Creek project option included a wetland treatment system and aquifer recharge wells located northeast of Bartow. The Peace River project option included a conventional potable water treatment system and intake structure on the Peace River south of Fort Meade. However, the plans were not finalized because concurrent MFLs evaluations for the upper Peace River and its tributaries are expected to result in further constraints of surface water available from the watershed. The constraints are expected to impact feasibility, sizing, and cost estimates of the drafted project options. Adoption of the updated MFLs is scheduled for 2025 and will include new minimum flows for medium and high flow conditions. Provisional analysis of high flow constraints indicates that permittable quantities may not be available in the Peace Creek, and less-than-planned quantities may be available at the proposed Peace River intake. The PRWC may revisit the project options once the MFL is adopted, with consideration to their ongoing brackish groundwater projects.
- **TCR/SJR Water Supply Project** – In 2017, the TCR project partners, including the City of Cocoa, East Central Florida Services, Inc. (ECFS), Orange County, OUC, and Farmland Reserve, Inc., entered into a General Implementation Agreement that governs the overall development, implementation, and operation of the TCR/SJR Water Supply Project. The TCR/SJR Water Supply Project is made up of two project phases: phase 1 is the water resource development component and phase 2 is the water supply development component. Phase 1,

the TCR Improvements Project, consists of dam improvements to TCR. The SJRWMD is currently in design for phase 1 with anticipated completion in 2027. Phase 1 construction is scheduled to begin in 2028 and completed in 2031. Phase 2 will be completed by the water supply partners and may be completed in multiple subphases.

WATER CONSERVATION

Water conservation efforts implemented in the CFWI Planning Area are described in **Chapter 5**. The per capita water use reduction (**Chapter 3, Figure 5**) demonstrates that using a variety of water conservation programs could influence future water demands **(Chapter 5, Figure 16).** Since approval of the 2020 CFWI RWSP, the following actions have occurred:

- Modified the *CFWI Supplemental Applicant's Handbook* to incorporate new provisions in response to the 2020 CFWI RWSP. Section 2.7 of the *CFWI Supplemental Applicant's Handbook* requires permittees to establish an Annual Conservation Goal consistent with the CFWI RWSP (CFWI 2022a). A Public supply permittee with an annual average daily quantity of 100,000 gallons per day (gpd) or greater and whose commercial water use equals or exceeds 30 percent of its total water use shall meet the requirements of the annual conservation goal by developing and implementing an Annual Conservation Goal Implementation Plan. A public supply permittee with an annual average daily quantity of 100,000 gpd or greater and whose commercial water use is less than 30 percent of its total water use shall meet the requirements of the annual conservation goal by demonstrating yearly progress toward a gross per capita daily water use of no greater than 115 gpd or a functional per capita daily water use rate of no greater than 100 gpd.
- Collaborated with the University of Florida Institute of Food and Agricultural Sciences (UF IFAS) staff regarding the H2O SAV (Water Savings, Analytics, and Verification) geospatial analysis providing quantified data for select utilities on effective conservation programs in the CFWI Planning Area.
- Continued hosting quarterly meetings with utility and local government conservation coordinators to share information on conservation programming and receive training on areas of interest to the group.
- Continued coordination with the Florida Golf Course Superintendents Association on water conservation and implementation of golf course best management practices (BMPs). SWFWMD funded a golf course irrigation enhancement in the City of Bartow that yielded a 48 percent reduction in water use.
- Further quantified PS water conservation measures, such as utility-sponsored irrigation enforcement programs.
- Further expanded certification programs, including the Florida Water Star^{SM} Program, Florida Green Building Coalition, Florida-Friendly Landscaping^{TM} (FFL), and the TWA Efficiency Program (e.g., from 2020 to 2024, over 4,000 homes were built and certified under Florida Water Star^{SM}, primarily in Polk County).
- Trained approximately 4,000 builders and developers, inspectors, realtors, landscape and irrigation designers, and irrigation installers through workshops, inspector apprenticeships, realtor training, and Florida Water Star^{SM} Accredited Professional training.
- Developed and launched training (providing continuing education unit credits) on irrigation efficiency for Homeowners' Associations and Community Association Managers.

- Adopted ordinances requiring Florida Water Star[SM] certification in 16 Polk County municipalities, which will result in newly constructed homes using approximately 40 percent less water in these communities.
- The PRWC completed a demand management plan in September 2020. The plan estimated 11.6 mgd of water savings by 2040 resulting in an avoided cost (deferment of AWS development) of approximately $93 million by 2040.

REGULATORY PROTECTION AND MONITORING EFFORTS

Rulemaking Overview

Both the water supply planning and the CUP/WUP programs are tools that the Florida Legislature provided the Districts to protect water resources. In 2016, the Florida Legislature supported regulatory consistency in the CFWI Planning Area and set forth rulemaking requirements for the FDEP (Section 373.0465(2)(d), F.S.). The FDEP held numerous workshops, in coordination with the Districts, FDACS, and other stakeholders, to adopt uniform rules for application within the CFWI Planning Area. Rules 62-41.300 through 62-41.305, F.A.C., were completed in 2021 and are currently being implemented by the Districts as outlined in the *CFWI Supplemental Applicant's Handbook* (CFWI 2022a).

Minimum Flows and Minimum Water Levels and Water Reservations

Since 2020, the following activities have been undertaken:

- The SWFWMD adopted new MFL rules for Charlie Creek in 2024.
- The SWFWMD re-evaluated minimum water levels and adopted revised rules for Lake Parker in 2021.
- The SWFWMD adopted new water reservation rules for Lake Hancock/Lower Saddle Creek, in 2020.
- The SFWMD adopted new water reservation rules for the Kissimmee River and Floodplain, Headwater Revitalization Lakes (Cypress, Hatchineha, Kissimmee, and Tiger), and Upper Chain of Lakes (Alligator, Brick, Coon, East Tohopekaliga, Gentry, Hart, Joel, Lizzie, Mary Jane, Myrtle, Preston, Tohopekaliga, and Trout), in 2021.
- Districts hosted joint public workshops within the CFWI Planning Area providing the annual update of each District's priority list and schedule for establishment of MFLs.
- Status of all adopted MFLs, including those within the CFWI Planning Area, are published annually in the FDEP's Florida Statewide Annual Report (STAR).
- The SWFWMD completed a third, 5-year progress assessment of the SWUCA Recovery Strategy in 2023.
- The SWFWMD continued implementation of the Lake Hancock Lake Level Modification project, and the Lake Hancock/Lower Saddle Creek Reservation contributed to achievement of MFLs established for all three sites on the upper Peace River since 2020.
- Saltwater intrusion minimum aquifer level (SWIMAL) established by the SWFWMD for the most impacted area of the SWUCA was met for the first time in 2023.
- The SJRWMD hosted a public workshop, in 2021 (including a field site visit and technical meeting) and teleconference as part of the peer review of the draft MFLs for Sylvan Lake.

- The SWFWMD, in 2022, facilitated the independent peer review of a wetland-based minimum level criterion for lakes and wetlands in xeric settings. The criterion was based, in part, on data developed in support of CFWI planning efforts. All review meetings were conducted as public workshops.
- The SJRWMD, in 2022, hosted a public workshop, site visit, and teleconference as part of the peer review of the surface water model being developed in support of MFLs for Johns Lake.
- The SJRWMD hosted a public workshop, site visit, and teleconference, in 2023 and 2024, as part of the peer review of the surface water model being developed in support of MFLs for Crystal Lake in Seminole County.
- The SJRWMD, in 2023 and 2024, hosted a public workshop, site visit, and teleconference as part of the peer review of the surface water model being developed in support of MFLs for Lake Prevatt in Orange County.
- The SJRWMD hosted a public workshop, in 2024, (including a field site visit and technical meeting) and one teleconference as part of the peer review of the draft MFLs for Apshawa Lake South.
- The SJRWMD hosted a public workshop, in 2024, (including a field site visit and technical meeting) and two teleconferences as part of the peer review of the draft MFLs for the Wekiva River at State Road (SR) 46, the Little Wekiva River, Wekiwa Springs, Rock Springs, Palm Springs, Starbuck Springs, Sanlando Springs, and Miami Springs.

Water Bodies Without Minimum Flows and Minimum Water Levels

- **Environmental Measures** – The Districts conducted hydrologic stress assessments of over 500 water bodies without MFLs, including lakes and wetlands. Of these water bodies, 51 had long-term water level data of sufficient duration, known wetland edge elevations, and known hydrologic stress conditions; 342 water bodies had known hydrologic stress conditions. These 393 water bodies were selected for inclusion in the wetlands risk assessment. Most of the water bodies analyzed during the 2015 and 2020 CFWI RWSP were included in the dataset, along with new sites added because of the established long-term wetlands monitoring program.

Water Resource Monitoring Programs

Water level and water quality monitoring at existing monitoring wells provide critical information to develop groundwater models, assess groundwater conditions, and manage groundwater resources.

- **FAS Monitoring Network** – The Districts maintain and continue to update an extensive network of FAS monitoring wells. Within the CFWI Planning Area, 246 FAS wells are actively used for data collection. Of those, 75 wells were added through the efforts of DMIT. Water level data from these wells is utilized in the management of the FAS as a water supply source. In addition, water quality sampling and analyses are conducted periodically to observe any trends in groundwater quality.
- **United States Geological Survey (USGS)/District Cooperative Monitoring** – The Districts maintain extensive groundwater monitoring networks and partner with the USGS to provide additional support and funding for new and ongoing monitoring. Data from sites are archived in USGS and District databases for public use.

Modeling

- In 2024, a regulatory tool was developed for the ECFTXv2.0 model, referred to as ECFTXv2.0 7sp Focus Telescopic Mesh Refinement (FTMR) model. The ECFTXv2.0 7sp FTMR model consists of seven steady-state stress periods and is used for water use permitting evaluation within the SJRWMD.

PLANNING COORDINATION

The Districts, FDEP, FDACS, and various stakeholders collaborated on regional and statewide planning efforts.

- **Projection Methodologies** – For this 2025 CFWI RWSP, the Districts implemented consistent water demand projection methodologies for all water use categories (**Appendix A**).
- **DMIT Implementation** – The Districts completed construction of 33 wetland surficial wells, 13 general SAS/IAS wells, 15 UFA wells, and 14 LFA wells and established 85 wetland monitoring sites.
- **East Central Florida Transient Expanded (ECFTX) Model** – The original and recalibrated models are referred to as ECFT and ECFTXv1.0. The ECFTXv2.0 model was used to support the 2025 CFWI RWSP. ECFTX is an area within the model domain that primarily includes the Wekiva River springs groundwater contributing basin and Seminole County were identified for improvements to the original calibration of the ECFTXv1.0 model (CFWI 2022b). This recalibration effort, which was conducted only in this focus area, aimed to improve the model's ability to match observed water levels and spring flows. In addition, the horizontal hydraulic conductivity for the IAS/intermediate confining unit (ICU) in the SWUCA of SWFWMD, which is outside the focus area, was modified to improve the accuracy of model conceptualization, model convergence, and run time. The ECFTXv2.0 model documentation report includes the model updates, recalibration approach and results, and a sensitivity analysis to better understand the influence of recharge on model calibration. No other changes to the model structure (e.g., model domain, grid cell size) were conducted.

WATER STORAGE AND RESTORATION PROJECTS

- **Lake Hancock** – The SWFWMD continued implementation of its Lake Hancock Lake Level Modification and Lake Hancock Outfall Treatment projects that address MFLs and water quality for the upper Peace River. In 2020, SWFWMD adopted a water reservation for water stored in the lake and released to Lower Saddle Creek for upper Peace River recovery.
- **Lake Apopka North Shore (LANS) Restoration Area** – Infrastructure was improved to allow additional water storage on LANS, improving habitat and reducing pumped discharges and nutrient loading to Lake Apopka.
- **Taylor Creek Reservoir** – As described above, the TCR/SJR project partners include the City of Cocoa, ECFS, Orange County, OUC, TWA, and Farmland Reserve, Inc. This is a regional AWS project to withdraw surface water from the TCR and the SJR. Major components include intake structure, reservoir, treatment, storage, and transmission facilities. Design of the TCR Improvements Project to increase the water supply yield from the reservoir without any supplemental diversions from the SJR is currently underway with anticipated completion of construction in 2031. The TCR Improvements Project is the initial phase of the TCR/SJR project which was identified in the 2020 CFWI RWSP.

- **Kissimmee River Restoration Project** – The United States Army Corps of Engineers, in a cost-share partnership with SFWMD, completed construction of the Kissimmee River Restoration Project in 2021 to restore historical water flows to the floodplain ecosystem. This project restored more than 40 square miles of the river floodplain ecosystem, 20,000 acres of wetlands, and 44 miles of historic river channel. The SFWMD is integrating the restoration project with various management strategies for the Kissimmee Basin and Northern Everglades region. The Kissimmee River Restoration Project will culminate with the implementation of a new regulation schedule, the headwaters revitalization schedule, and guide operation of the S-65 Structure.

3

Population and Water Demands

TOPICS

- Population Projections
- Public Supply
- Domestic Self-supply
- Agriculture
- Landscape/Recreational
- Commercial/Industrial/Institutional
- Power Generation
- Summary of Demands
- Comparison to 2020 CFWI RWSP

In a water supply plan, the Districts are tasked to estimate future water demands, identify existing and reasonably anticipated sources of water, identify water resource development options, and identify water conservation potential. Development of water demand projections for this 2025 CFWI RWSP underwent a thorough review by utilities, AG, environmental organizations, and other stakeholders. Water use estimates and water demand projections were distributed to stakeholders in each water use category for review and comment. Changes and comments were incorporated where appropriate. The projected increase in water demand is used in water resource assessments for this 2025 CFWI RWSP. This chapter summarizes the water use estimates and water demand projections for an average year for the CFWI Planning Area for 2020 and 2045. In addition, projections for a 1-in-10 year drought event were developed for 2045. A 1-in-10 year drought event represents a year in which below normal rainfall occurs that would have a 10 percent probability of occurring during any given year. A detailed discussion of data collection, analysis, and projection methods is provided in **Appendix A**, including 5-year incremental projections.

Water use estimates and projected water demand are grouped into six water use categories for water supply planning:

- Public Supply (PS)
- Domestic Self-supply and Small Public Supply Systems (DSS)
- Agricultural (AG)
- Landscape/Recreational (LR)
- Commercial/Industrial/Institutional (CII)
- Power Generation (PG)

Savings projections for water conservation measures and the use of reclaimed water supplies and demands are also estimated. These two options can potentially offset future water demand and are described in **Chapters 5** and **6**, respectively.

Total water demand in the CFWI Planning Area is anticipated to increase 41 percent from 639 mgd in 2020 to 903 mgd in 2045. For 2045, the PS category represents the largest demand (71 percent), followed by AG (15 percent), and CII (7 percent) (**Figure 4**). In the case of a 1-in-10 year drought event, it is estimated that total water demand in 2045 could increase by an additional 10 percent (87 mgd) above the average water demand. Water use and water demand described in this chapter includes

surface and groundwater and does not include reclaimed water use. The use of reclaimed water is described in **Chapters 6** and **7**. Guidance and minimum requirements for developing water demand and population projections are described in Section 373.709, F.S. and Rule 62-40.531, F.A.C.

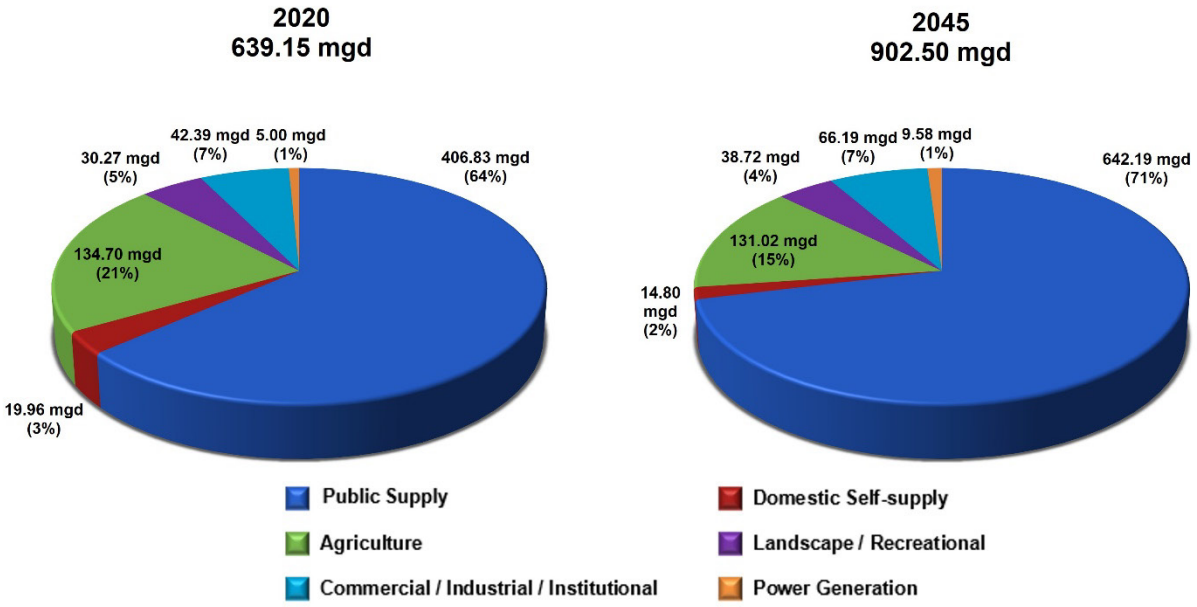

Figure 4. Water use for 2020 and projected 2045 water demand by category of use in the Central Florida Water Initiative Planning Area.

POPULATION PROJECTIONS

The Districts contracted with the University of Florida's Bureau of Economic and Business Research (BEBR) to develop a parcel-level population distribution from 2020 to 2045, as described in **Appendix A** (BEBR 2022).

Total population for the CFWI Planning Area is expected to increase 40 percent from 3.4 million people in 2020 to 4.7 million people by 2045, which includes the population of the City of Cocoa (**Table 2**). Although the City of Cocoa is not located in the CFWI Planning Area, it has groundwater withdrawal facilities in the CFWI Planning Area and is therefore included in the PS population and water demand projections.

In the CFWI Planning Area, it is estimated that 97 percent of the total population will be served by PS, and the remaining 3 percent by DSS (**Table 3**). The population served by PS is expected to increase by 44 percent from 3.2 million people in 2020 to 4.6 million people in 2045. The DSS population is expected to decrease by 21 percent from 182,444 people in 2020 to 144,414 people in 2045. Recent trends and capital improvement projects for the conversion of DSS wells to PS systems support the projected decrease in DSS population.

Table 2. 2020 population and 2045 projected population for public supply and domestic self-supply (includes small public supply systems) by county in the Central Florida Water Initiative Planning Area.

City/County	2020 Population			2045 Projected Population		
	PS	DSS	Total	PS	DSS	Total
City of Cocoa	216,976	N/A	216,976	264,817	N/A	264,817
Southern Lake	147,416	4,567	151,983	232,958	13,938	246,896
Orange	1,318,216	111,692	1,429,908	1,938,811	30,189	1,969,000
Osceola	378,787	9,869	388,656	657,161	16,640	673,801
Polk	682,110	42,936	725,046	957,935	61,565	1,019,500
Seminole	457,476	13,380	470,856	545,218	22,082	567,300
CFWI Planning Area	**3,200,981**	**182,444**	**3,383,425**	**4,596,900**	**144,414**	**4,741,314**

Note: DSS = Domestic Self-supply and Small Public Supply Systems; PS = Public Supply

Table 3. 2020 total population and 2045 projected total population for public supply and domestic self-supply (includes small public supply systems) in the Central Florida Water Initiative Planning Area.

Category	2020	2045	Change	Percent Change
Public Supply	3,200,981	4,596,900	1,395,919	44%
Domestic Self-supply	182,444	144,414	-38,030	-21%
Total CFWI Planning Area Population	**3,383,425**	**4,741,314**	**1,357,889**	**40%**

PUBLIC SUPPLY

The PS category includes water use provided by any municipality, county, regional water supply authority, special district, public or privately owned water utility, or multi-jurisdictional water supply authority for human consumption and other purposes, which have CUPs/WUPs to withdraw an annual average of 0.1 mgd or more. Potable systems permitted for less than 0.1 mgd, small PS systems, are included in the DSS category. Water use estimates and water demand projections for all systems can be found in **Appendix A**.

Total PS water demand for the CFWI Planning Area is expected to increase 58 percent from 407 mgd in 2020 to 642 mgd in 2045 (**Figure 4** and **Table 4**). The PS category represents 71 percent of the 2045 projected water demand and 89 percent of the total increase in water demand. For a 1-in-10 year drought event, PS water demand in 2045 could increase by an additional 6 percent (39 mgd) from average conditions.

Table 4. 2020 estimated water use and 2045 projected water demands for public supply in the Central Florida Water Initiative Planning Area.

Area	PS Demand – Average Rainfall Conditions (mgd)				2045 1-in 10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	406.83	642.19	235.36	58%	680.74

Note: mgd = million gallons per day

One important factor that can impact PS demands is per capita water use trends. As shown in **Figure 5**, gross per capita water use (as defined in **Appendix A**) has decreased from 182 gallons per capita

per day (gpcd) in 1995 to 127 gpcd in 2020, directly reducing PS demands. Reductions in per capita water use are attributable to both passive and active water conservation measures and programs (**Chapter 5**) and the increased use of reclaimed water to offset the use of PS water primarily for irrigation purposes. Additionally, external forces, such as climate and weather patterns, the economy, the installation of private irrigation wells, and other factors can affect PS per capita water use. For this 2025 CFWI RWSP, the 5-year average per capita water use of 2016-2020 for each utility was used to project future water demands.

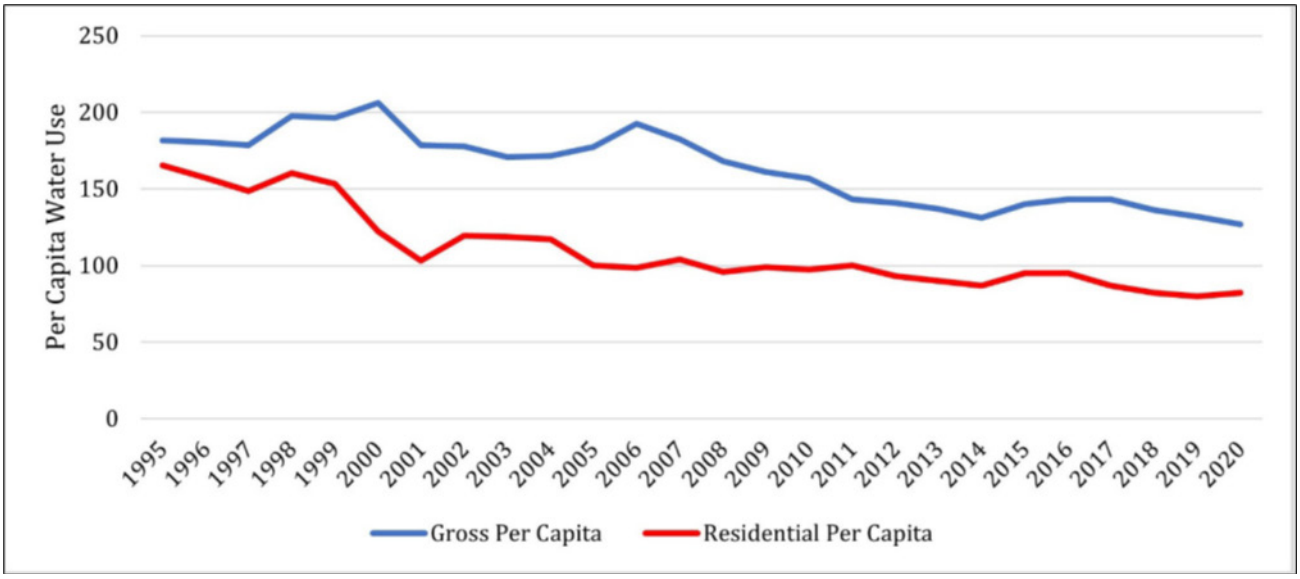

Figure 5. Per capita water use for public supply in the Central Florida Water Initiative Planning Area.

Note: Per Capita Water Use is measured in gallons per capita per day (gpcd).

DOMESTIC SELF-SUPPLY

The DSS category consists of residential dwellings served by small PS systems (annual average permitted withdrawals of less than 0.1 mgd) or self-supplied by private wells. DSS water demand is expected to decrease 26 percent from 20 mgd in 2020 to 15 mgd in 2045 (**Table 5**). For a 1-in-10 year drought event, total DSS water demand in 2045 could increase by an additional 6 percent (1 mgd) from average conditions.

Table 5. 2020 estimated water use and 2045 projected water demands for domestic self-supply in the Central Florida Water Initiative Planning Area.

Area	DSS Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	19.96	14.80	-5.16	-26%	15.55

Note: mgd = million gallons per day

AGRICULTURE

The AG category includes self-supplied water for irrigation of crops and other miscellaneous water uses associated with AG production. Irrigated acreage and projected water demands were determined for a variety of crop categories including citrus, vegetables, melons, berries, field crops,

greenhouse/nursery, sod, and pasture. In addition, projected water demands were estimated for aquaculture, dairy, and livestock.

The FDACS' Florida Statewide Agricultural Irrigation Demand (FSAID IX) (FDACS 2022) Report was used as the basis for irrigated acreage, water use estimates, and water demand projections for this 2025 CFWI RWSP (Section 373.709(2)(a)1.b., F.S.). Osceola County estimates and projections were revised to incorporate the demands identified in the approved North Ranch Sector Plan (NRSP) (**Appendix A**, **Tables A-7-1a** and **A-7-1b**). The NRSP approval and Comprehensive Plan Amendment (CPA) can be found under Ordinance 2015-73, CPA14-0005, Osceola County.

A sector plan contains a long-term master plan that generally identifies water supplies needed and available sources of water, including water resource and water supply development projects, and water conservation measures, to meet the projected water demands of the future land uses in the long-term master plan. The long-term master plan can be based upon a planning period longer than the generally applicable planning period of the local comprehensive plan. Once the long-term master plan becomes legally effective, the water needs, sources, and water development projects identified in the master plan shall be incorporated into the applicable RWSP (Section 163.3245(4)(b), F.S.).

Irrigated AG acreage is expected to decrease 5 percent from 121,686 acres in 2020 to 115,183 acres in 2045. Total AG water demand for the CFWI Planning Area is expected to decrease by 3 percent from 135 mgd in 2020 to 131 mgd in 2045 (**Tables 6** and **7**). For a 1-in-10 year drought event, FSAID IX estimated that total AG water demand in 2045 could increase by an additional 31 percent (40 mgd) from average conditions.

Table 6. Irrigated 2020 agriculture acreage and 2045 acreage projections in the Central Florida Water Initiative Planning Area.

Area	2020	2045	Change	Percent Change
CFWI Planning Area	121,686	115,183	-6,503	-5%

Table 7. 2020 estimated water use and 2045 projected water demand for agriculture in the Central Florida Water Initiative Planning Area.

Area	AG Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	134.70	131.02	-3.68	-3%	171.48

Note: mgd = million gallons per day

LANDSCAPE/RECREATIONAL

The LR category represents self-supplied water use associated with the irrigation, maintenance, and operation of golf courses, athletic fields, cemeteries, parks, medians, attractions, and other large green areas.

- Landscape use includes the outside watering of plants, shrubs, lawns, ground cover, and trees in areas such as the common areas of residential developments and industrial buildings, parks, recreational areas, cemeteries, and public rights-of-way.
- Recreational use includes the irrigation of golf courses, athletic fields, and playgrounds. Water-based recreation use is also included in this category.

The LR water demand is expected to increase 28 percent from 30 mgd in 2020 to 39 mgd in 2045. For a 1-in-10 year drought event, total LR water demand in 2045 could increase by an additional 19 percent (7 mgd) from average conditions, **Table 8**.

Table 8. 2020 estimated water use and 2045 projected water demand for landscape/recreational in the Central Florida Water Initiative Planning Area.

Area	LR Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	30.27	38.72	8.45	28%	46.16

Note: mgd = million gallons per day

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL

The CII category represents self-supplied water use associated with the production of goods or provisions of services by CII establishments.

- Commercial uses include general businesses, office complexes, commercial cooling and heating, and other commercial facilities
- Industrial uses include manufacturing and chemical processing plants and other industrial facilities
- Institutional use includes hospitals, group home/assisted living facilities, churches, prisons, schools, universities, and military bases
- Mining and long-term dewatering uses are included in the CII category

CII water demands are projected to increase 56 percent from 42 mgd in 2020 to 66 mgd in 2045 (**Table 9**). Drought events (1-in-10 year) do not significantly impact CII water use, which is related primarily to processing and production needs; therefore, no additional demand during a 1-in-10 year drought event is projected.

Table 9. 2020 estimated water use and 2045 projected water demand for commercial/industrial /institutional in the Central Florida Water Initiative Planning Area.

Area	CII Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	42.39	66.19	23.80	56%	66.19

Note: mgd = million gallons per day

POWER GENERATION

The PG category represents the self-supplied water use associated with PG facilities, such as for steam generation, cooling, and replenishment of cooling reservoirs. Power generation water demand is projected to increase 92 percent from 5 mgd in 2020 to 10 mgd in 2045 (**Table 10**). This increase is represented by permitted facility growth in Polk County. Drought events (1-in-10 year) do not significantly impact PG water use, which is related primarily to processing and cooling needs; therefore, no additional demand during a 1-in-10 year drought event is projected.

Table 10. 2020 estimated water use and 2045 projected water demand for power generation in the Central Florida Water Initiative Planning Area.

Area	PG Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
CFWI Planning Area	5.00	9.58	4.58	92%	9.58

Note: mgd = million gallons per day

SUMMARY OF DEMANDS

Total water demands under average rainfall conditions in the CFWI Planning Area are projected to be 903 mgd in 2045, a 41 percent increase from 2020 demands (639 mgd) as shown in **Table 11**. For a 1-in-10-year drought event, total water demand in 2045 could increase by an additional 10 percent (87 mgd) from average conditions.

Table 11. Summary of 2020 water use and 2045 water demand projections by water use category in the Central Florida Water Initiative Planning Area.

Water Use Category	Demand – Average Rainfall Conditions (mgd)				2045 1-in-10 Year Demand (mgd)
	2020	2045	Change	Percent Change	
Public Supply	406.83	642.19	235.36	58%	680.74
Domestic Self-supply	19.96	14.80	-5.16	-26%	15.55
Agriculture	134.70	131.02	-3.68	-3%	171.48
Landscape/Recreational	30.27	38.72	8.45	28%	46.16
Commercial/ Industrial/ Institutional	42.39	66.19	23.80	56%	66.19
Power Generation	5.00	9.58	4.58	92%	9.58
Total	**639.15**	**902.50**	**263.35**	**41%**	**989.70**

Note: mgd = million gallons per day

COMPARISON TO 2020 CENTRAL FLORIDA WATER INITIATIVE REGIONAL WATER SUPPLY PLAN

Water demand projections presented in this 2025 CFWI RWSP are based on the best available information at the time it was drafted. The projections reflect growth and population trends and economic circumstances that change over time. **Table 12** shows the 2040 water demands projected in the 2020 CFWI RWSP compared to the 2045 water demands projected in this 2025 CFWI RWSP. Water demand projections in this 2025 CFWI RWSP for 2045 are 5 mgd or 1 percent lower than the 2040 water demand projected in the 2020 CFWI RWSP.

The base year and representative years of data used were updated as follows:

- Base Year and Planning Horizon (2015-2040 versus 2020-2045)
- Per Capita Water Use (2011-2015 average versus 2016-2020 average)

Table 12. Comparison of water demand projections under average rainfall conditions for 2040 in the 2020 Central Florida Water Initiative Regional Water Supply Plan and for 2045 in this 2025 Central Florida Water Initiative Regional Water Supply Plan.

Water Use Category	2020 RWSP 2040 Demands (mgd)	2025 RWSP 2045 Demands (mgd)	Change (mgd)	Percent Change
Public Supply	592.28	642.19	49.91	8%
Domestic Self-supply	24.59	14.80	-9.79	-40%
Agriculture	163.49	131.02	-32.47	-20%
Landscape/Recreational	46.96	38.72	-8.24	-18%
Commercial/Industrial/ Institutional	69.00	66.19	-2.81	-4%
Power Generation	11.27	9.58	-1.69	-15%
Total	**907.59**	**902.50**	**-5.09**	**-1%**

Note: mgd = million gallons per day

4

Water Resource Assessment

INTRODUCTION

A water resource assessment of the effects of future water demands on the groundwater system and natural resources was conducted in support of the 2025 CFWI RWSP and is presented in this chapter.

TOPICS

- Introduction
- Hydrologic Assessment
- Environmental Measures
- Minimum Flows and Minimum Water Levels
- Groundwater Availability

HYDROLOGIC ASSESSMENT

The ECFTXv2.0 model was the primary tool used to evaluate groundwater withdrawal effects on water resources and related natural systems. Using the USGS's finite-difference modular groundwater flow model (MODFLOW), the ECFTXv2.0 model domain is divided into 1,250-foot by 1,250-foot cells using a grid defined by a series of rows and columns. The model simulates transient groundwater flow in the SAS and the FAS and hydrologic features and processes, including recharge, runoff, ET, lakes, rivers, springs, wetlands, recharge wells, rapid infiltration basins (RIBs), return flow, and production wells. The ECFTXv2.0 model generates two principal types of output for each model cell: computed head (groundwater levels) and water budgets. The water budgets characterize the inflows and outflows for each model cell.

The ECFTXv2.0 model was used to predict potential impacts on wetland water levels, lakes, springs, and river flows, and groundwater levels in the SAS and FAS caused by current and projected groundwater withdrawals. The ECFTXv2.0 model represents the performance of a real system through a series of mathematical equations, which describe the physical processes that occur in that system. These equations represent a simplified version of the real world that may be used to predict the behavior of the modeled system under various conditions.

Figure 6 shows the domains of the previous ECFT and current ECFTX models. Improvements to the ECFT model were identified and implemented, including updates to model boundaries and the hydrostratigraphic framework, consistency in water use, and simplification of rainfall-runoff partitioning. An independent scientific Peer Review Panel of groundwater modeling experts was convened at the conceptual model phase and provided comments through calibration and documentation. Detailed information regarding the ECFTX model is provided in the ECFTX Model Documentation Report (CFWI 2020) and **Appendix D.**

An area within the ECFTX model domain that primarily includes the Wekiva River springs groundwater contributing basin and Seminole County were identified for improvements to the original calibration of the ECFTX model. A more thorough review of the local-scale data in this area uncovered opportunities for refinements to the following:

- Spring pool elevations
- Wekiva River stages
- Groundwater level targets near Wekiwa Springs
- Layering of pumping wells

This recalibration effort, which was conducted only in this focus area, aimed to improve the model's ability to match observed water levels and spring flows. In addition, the horizontal hydraulic conductivity for the IAS/ICU (layer 2) in the SWUCA, located within SWFWMD, which is outside the focus area, was modified to improve the accuracy of model conceptualization, model convergence, and model run time. The ECFTXv2.0 model documentation report (CFWI 2022b) includes the model updates, recalibration approach and results, and a sensitivity analysis to better understand the influence of recharge on model calibration. No other structural changes to the model (e.g., model domain, grid cell size) were conducted. The original and recalibrated models are referred to as ECFTXv1.0 (CFWI 2020) and ECFTXv2.0 (CFWI 2022b), respectively. The ECFTXv2.0 model was used to support the 2025 CFWI RWSP.

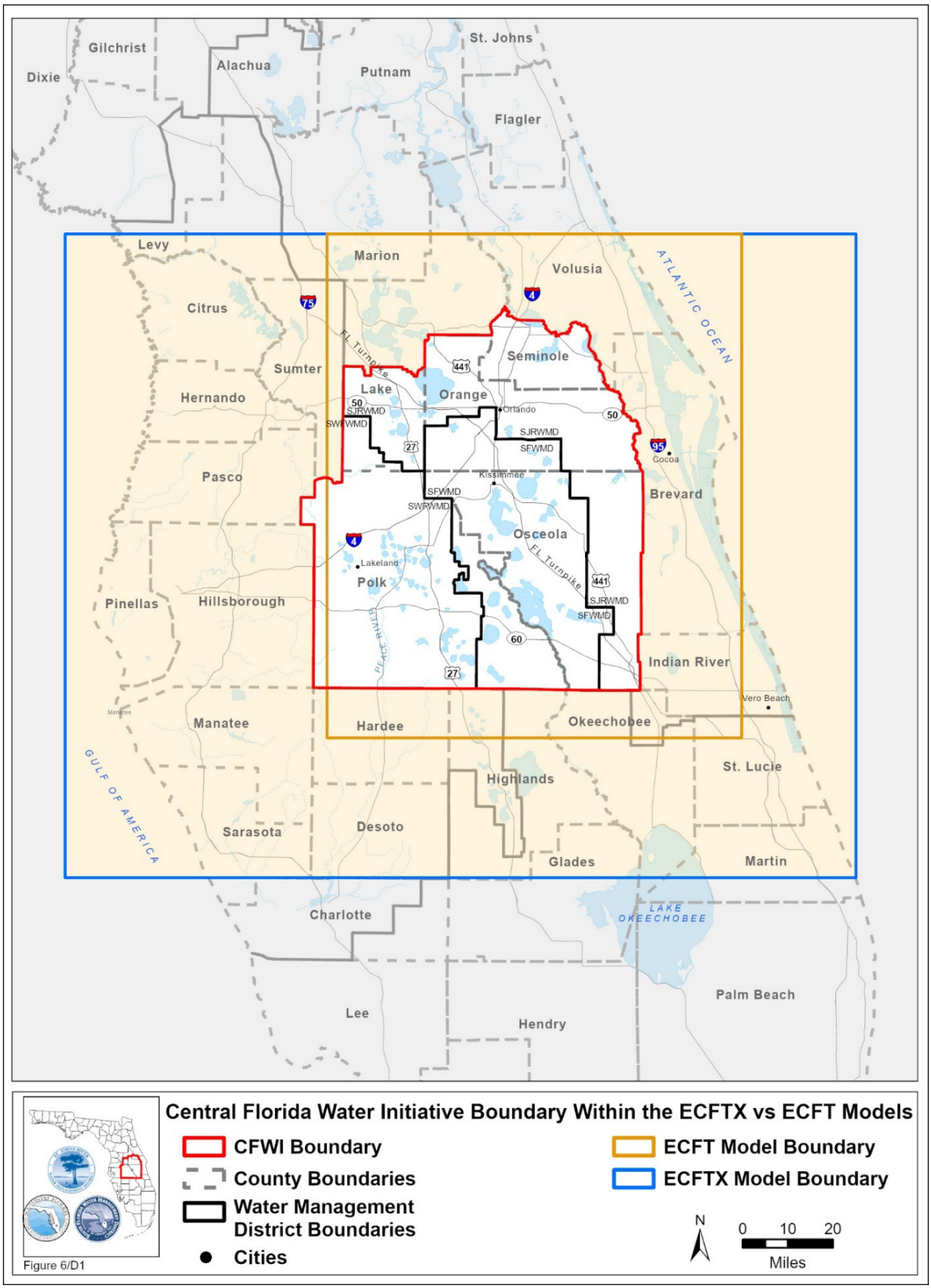

Figure 6. Model boundaries for the expanded ECFTXv2.0 model.

The ECFTXv2.0 model includes 11 hydrostratigraphic units as shown in **Figure 7**. Each of these hydrostratigraphic units is treated as a separate layer in the model.

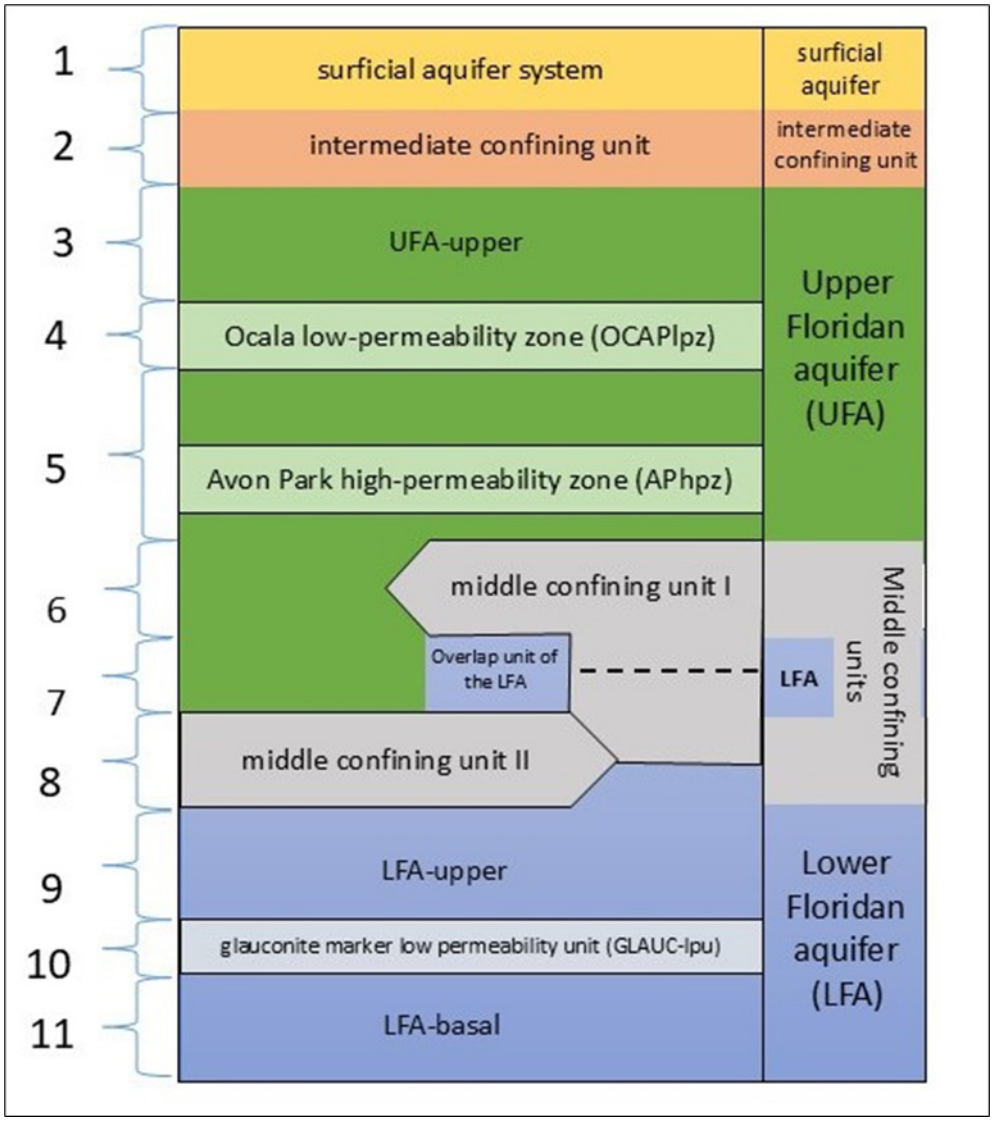

Figure 7. Hydrostratigraphic conceptualization and associated model layers of the ECFTXv2.0 model.

Model Scenarios

The ECFTXv2.0 model was used to calculate changes in water levels and spring flows by comparing the scenario results of various future Withdrawals Conditions to a baseline (i.e., Reference Condition [RC]). To determine the potential effects of projected water demands on the water resources and related natural systems, a series of ECFTXv2.0 model runs were performed and evaluated for different scenarios. The different scenarios included the 2016-2020 RC, 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions (estimated or projected demands) (**Appendix D**).

Each Withdrawals Condition was developed to simulate water levels resulting from groundwater withdrawals needed to serve estimated or projected demands that either existed or were projected to occur in the year identified for that scenario (**Table 13**).

Table 13. Simulated Groundwater Use/Demand within the Central Florida Water Initiative Planning Area of the ECFTXv2.0 model (mgd).

Water Use Category	2016-2020 RC	2025	2030	2035	2040	2045
Public Supply	404.48	495.59	544.18	579.34	611.81	635.86
Domestic Self-supply	17.91	17.38	16.67	15.80	14.62	12.10
Agriculture	118.38	114.63	116.69	116.57	116.43	114.91
Landscape/Recreational	24.69	23.81	25.32	26.53	27.60	28.56
Commercial/Institutional/ Industrial, Power Generation, Mining/Dewatering	48.33	68.16	73.32	72.11	73.16	74.08
Other	0.40	2.02	2.02	2.02	2.03	2.02
TOTAL	**614.19**	**721.60**	**778.20**	**812.37**	**845.65**	**867.55**

Note: mgd = million gallons per day
Numbers may differ due to rounding

The Withdrawals Conditions pumping scenarios were developed by applying a set of monthly seasonality factors to the average pumping for each respective Withdrawals Condition. The seasonality factors were used to incorporate seasonal variation in pumping while preserving the average pumping in the respective year of the simulation period from 2003 through 2014.

The Withdrawals Conditions were run for 12 years using monthly stress periods and observed daily rainfall amounts that occurred between 2003 and 2014. Evapotranspiration and recharge for the Withdrawals Conditions were generated using two land use maps representing 2004/2005 and 2008/2009 conditions. Based on this approach, the principal differences between scenarios were changes in withdrawal volumes and the corresponding irrigation quantities. The differences in model input between the RC and the Withdrawals Conditions are summarized in **Appendix D.** For brevity, only the 2016-2020 RC and the 2045 Withdrawals Condition are discussed below.

2016-2020 Reference Condition

The 2016-2020 RC was developed as the basis to consistently compare the results of other Withdrawals Conditions. The 2016-2020 RC represents aquifer conditions that would be expected if the average 2016-2020 water demands were repeatedly realized over the 12-year simulation period. Modeled groundwater withdrawals for the 2016-2020 RC represent the pumping required to meet average demands for water as they occurred in 2016-2020 given the rainfall that occurred over the period from 2003 through 2014. The use of 2016-2020 as the RC does not imply that these years are considered base years for acceptable environmental conditions. Rather, it is simply a period for which modeled environmental conditions were characterized for a common period with relatively well-known hydrologic conditions.

2045 Withdrawals Condition

The patterns of change between the 2016-2020 RC and the 2045 Withdrawals Condition in the SAS, UFA, and LFA water levels are shown in **Figures 8, 9,** and **10,** respectively. In these figures, the cooler (blue) colors represent increases in groundwater levels and warmer (orange/red) colors indicate decreases in groundwater levels. Although water level changes are mostly related to differences in withdrawal quantities, some changes are due to differences in the locations of withdrawal points between the 2016-2020 RC and the 2045 Withdrawals Condition.

- SAS (Model Layer 1): the vast majority of the CFWI Planning Area indicates water level differences of +/- 1 foot. Differences in SAS water levels for the two scenarios were most

pronounced in the Ridge areas north and south of Lake Apopka, the vicinity of Lakeland, and east of United States (U.S.) Highway 27. The increases in SAS levels are because of return flow to the SAS from the UFA, LFA, and, to a lesser extent, surface water withdrawals.

- UFA (Model Layer 3): differences in the UFA water levels for the two scenarios are most pronounced (-3 to -5 feet) over large areas in north-central Osceola County, south Orange County, and southwest Polk County.
- LFA (Model Layer 9): differences in LFA water levels of 1 to 3 feet are widely dispersed over a large area of the CFWI Planning Area. South-central Orange and north-central Osceola counties have water level differences of 3 to 5 feet. The largest differences are in southeast Lake County and in west central Osceola County.

When comparing results of this modeling effort (using ECFTXv2.0 and simulating 2045 demands) to the previous 2020 CFWI RWSP modeling effort (using ECFTXv1.0 and simulating 2040 demands), the water level differences for each of the primary aquifers are similar in terms of magnitude and location.

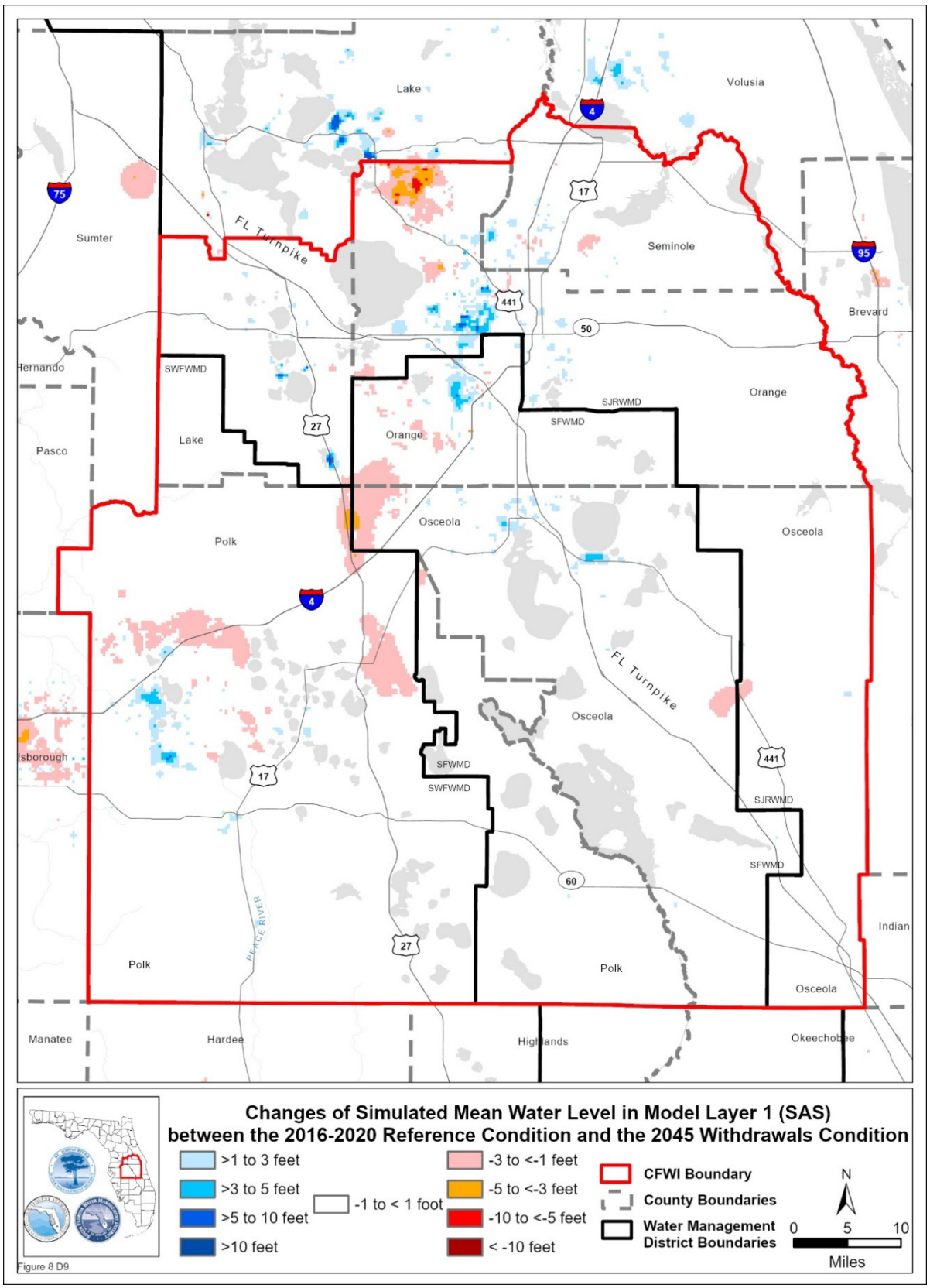

Figure 8. Changes of simulated mean water levels in Model Layer 1 (surficial aquifer system) between the 2016-2020 Reference Condition and the 2045 Withdrawals Condition in the Central Florida Water Initiative Planning Area.

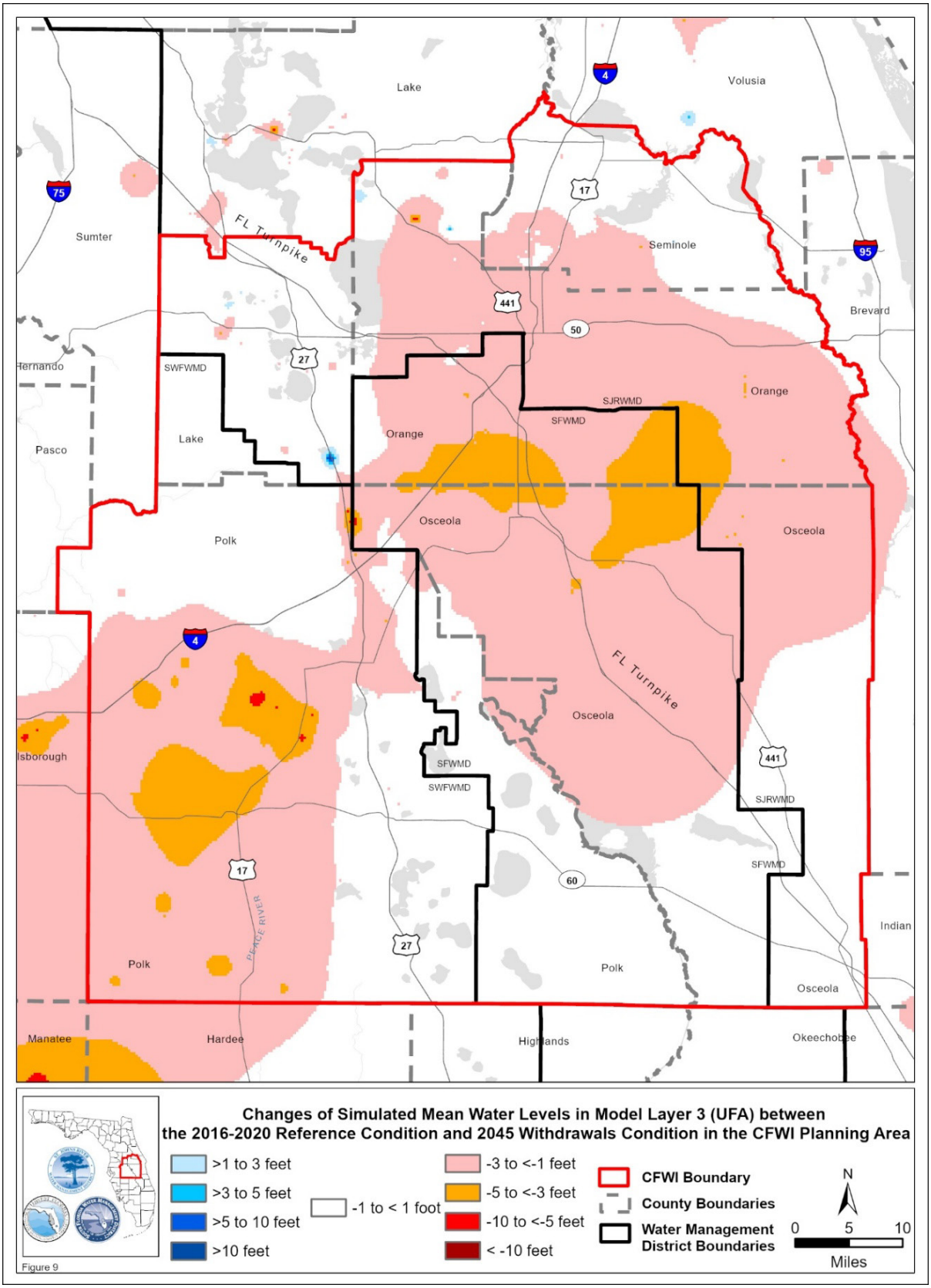

Figure 9. Changes of simulated mean water levels in Model Layer 3 (Upper Floridan aquifer) between the 2016-2020 Reference Condition and 2045 Withdrawals Condition in the Central Florida Water Initiative Planning Area.

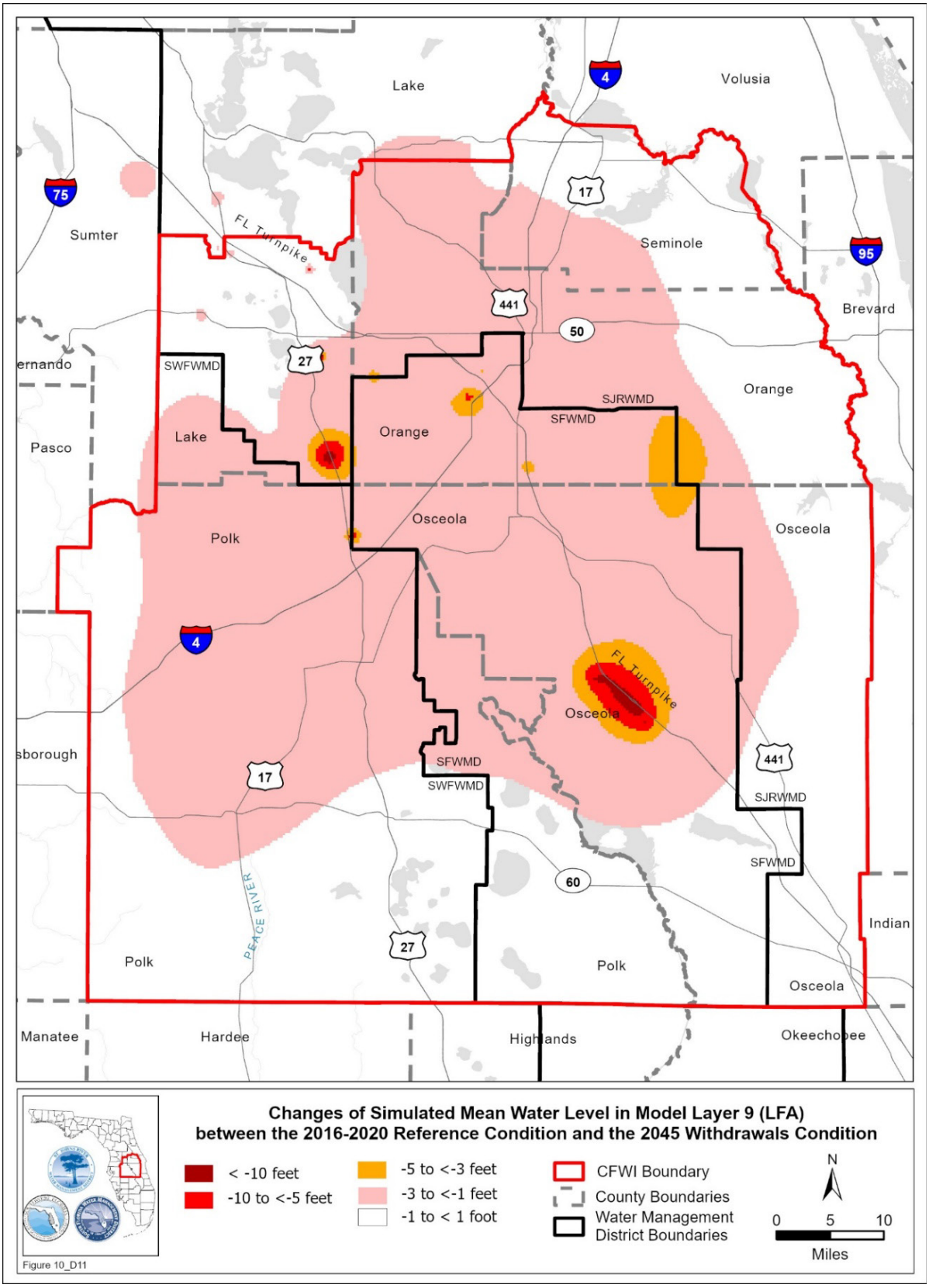

Figure 10. Changes of simulated mean water levels in Model Layer 9 (Lower Floridan aquifer) between the 2016-2020 Reference Condition and the 2045 Withdrawals Condition in the Central Florida Water Initiative Planning Area.

Wellfield Water Quality Criteria

Portions of the UFA within the CFWI Planning Area have brackish water. Wells and wellfields operating near these areas described below are subject to the possible upward, vertical migration of this water. This is due to their proximity to underlying brackish water of the LFA or due to local geologic conditions, like fractures or solution channels that allow brackish water to travel to the wells when pumped.

These conditions are observed in PS wellfields in Seminole County (cities of Winter Springs, Oviedo, and Sanford; Seminole County; and the Town of Chuluota operated by Florida Governmental Utility Authority) (**Figure D-26**) and the cities of Winter Haven and Auburndale in Polk County (**Figure D-27**). These wellfields in Seminole County show a history of at least one or more wells producing water with trends of water quality degradation. As a result, the CUPs issued by the SJRWMD for these wellfields include required monitoring, trend analysis, and reporting of groundwater quality changes that may result from wellfield operations. These CUPs require development and implementation of wellfield management plans to avoid unnecessary water quality degradation of the wellfields.

Given that the ECFTXv2.0 model only simulates groundwater flow (i.e., it does not consider density-dependent flow or fracture flow) and is a regional-scale model, vertical conduits that can lead to potential upward movement of brackish water could not be explicitly simulated. However, the results of the ECFTXv2.0 modeling provide some insight on the potential of water level differences (drawdown) that would cause additional vertical groundwater movement. An aquifer drawdown map between the 2016-2020 RC and the 2045 Withdrawals Condition for the UFA (Model Layer 3) showing the locations of the wellfields with this condition (**Figure 11**) reveals that these wellfields lie in an area that is projected to experience additional drawdown. This relatively small amount of additional drawdown is not expected to result in unacceptable additional water quality degradation given the monitoring and management plans that are implemented through the CUPs associated with the wellfields.

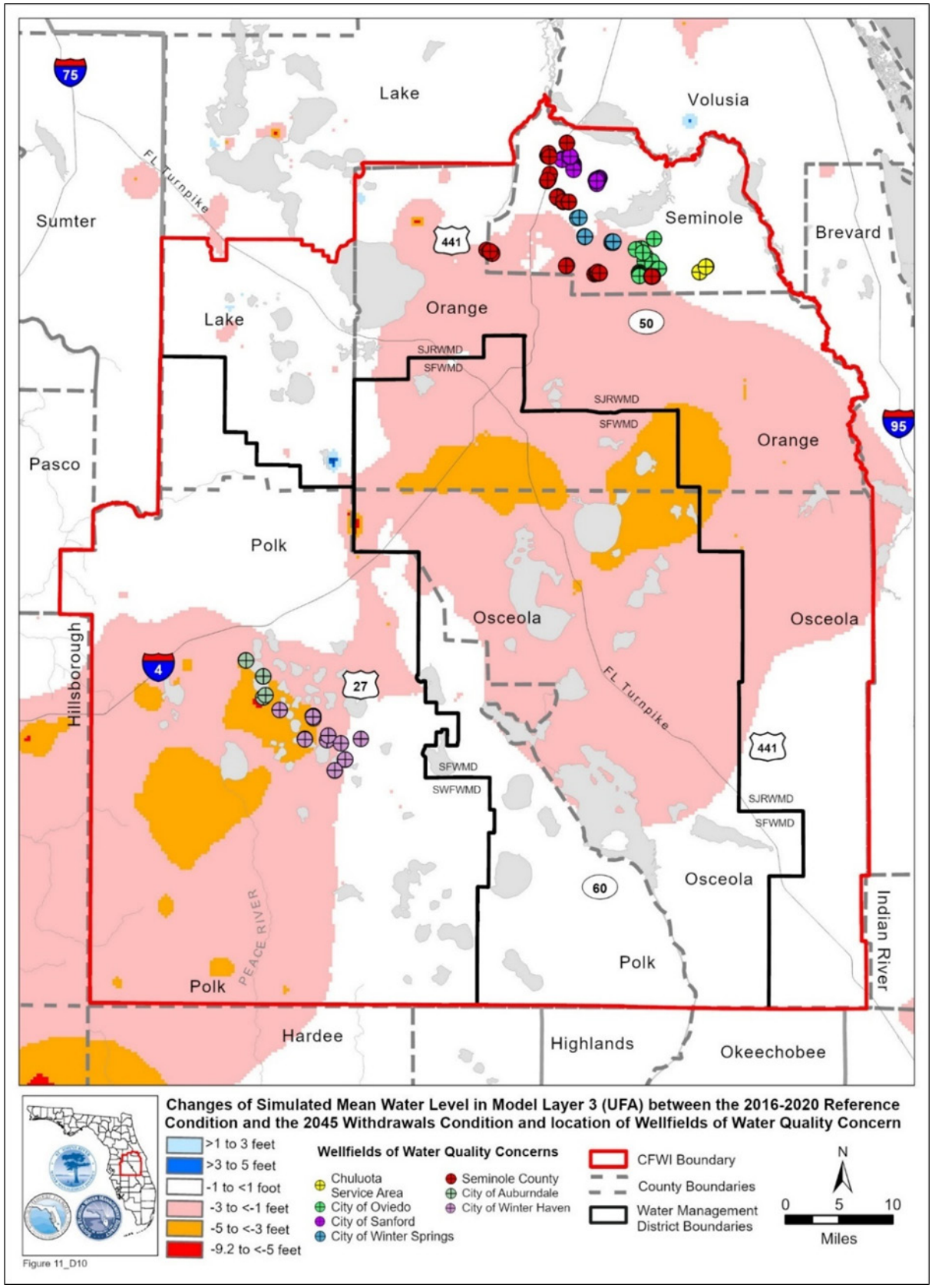

Figure 11. Changes of simulated mean water levels in Model Layer 3 (Upper Floridan aquifer) between the 2016-2020 Reference Condition and the 2045 Withdrawals Condition within the Central Florida Water Initiative Planning Area and location of wellfields of Water Quality Concern.

ENVIRONMENTAL MEASURES

The current state of groundwater-dominated wetlands, typically without MFLs in the CFWI Planning Area was evaluated with methodologies developed to analyze the quantitative relationships between observed wetlands condition and hydrology. Field visits were conducted to collect data and assess the status of more than 500 wetlands, while geospatial and statistical analyses evaluated probable future impacts to wetlands on a regional basis. Detailed methodologies and results of these analyses are provided in the Environmental Measures Technical Report (CFWI 2025).

With more than 1 million acres of wetlands in the CFWI Planning Area, the focus of the wetlands risk assessment was primarily on groundwater-dominated wetlands without significant hydrologic alteration. Groundwater-dominated wetlands are those wetlands whose water budget is largely driven by the exchange (both inflow and outflow) of groundwater due to their connectivity to an aquifer. Groundwater-dominated wetlands make up approximately 30 percent of the total wetland acreage in the CFWI Planning Area. Approximately 442,290 acres of groundwater-dominated wetlands were included in the analysis, of which approximately 382,850 acres were in Plains physiographic provinces and approximately 59,440 acres were in Ridge physiographic provinces (**Figure 12**).

Fifty-one Class 1 wetlands were included in the final statistical analysis dataset. Class 1 wetlands are defined as wetlands with available long-term water level data, known wetland edge elevations, and known hydrologic stress conditions. Analyses completed in support of the 2015 and 2020 CFWI RWSPs demonstrated that these wetlands were representative of primarily groundwater-dominated wetlands within the CFWI Planning Area. Similar to the 2015 and 2020 CFWI RWSPs, other classes of wetlands were defined based on the availability of water level data and hydrological stress condition information, and the same wetlands risk assessment methodology from the 2015 and 2020 CFWI RWSPs was used for those wetlands. An analysis of water level data from 2015 through 2022 for these Class 1 wetlands was used to develop a statistical relationship between observed water level variations and hydrologic stress. This statistical relationship was used to estimate the probability (or risk) of future changes in wetland stress throughout the CFWI Planning Area based on modeled water level changes between the 2016-2020 RC and the 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions.

Primarily groundwater-dominated wetlands in the Plains and Ridge physiographic provinces were evaluated separately due to their differing wetland hydrologic conditions, which result from the underlying soils, geology, physiography, typical depths, and other factors. For the Plains wetlands risk assessment, ECFTXv2.0 model results for Model Layer 1 (SAS) were used to determine the probability for stress since Plains physiographic provinces are typically characterized by regionally consistent confining conditions where there is reduced exchange of water between the SAS and the underlying FAS.

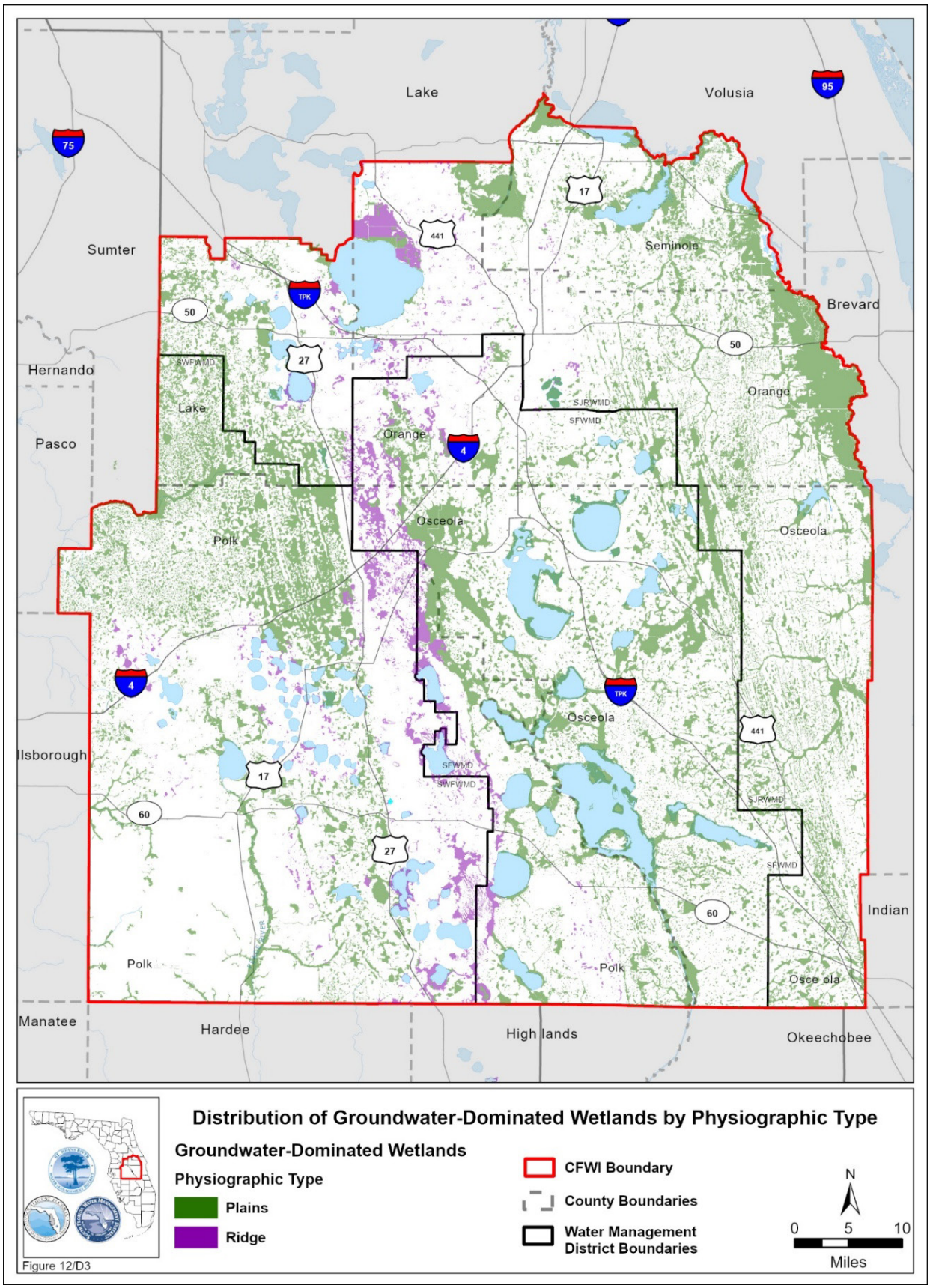

Figure 12. Distribution of Groundwater-Dominated Plains and Ridge wetlands within the Central Florida Water Initiative Planning Area included in the wetlands analysis.

For the Ridge wetlands risk assessment, a range of probable stress was developed using ECFTXv2.0 model results for Model Layer 1 (SAS) and Model Layer 3 (UFA), since most of the Ridge physiographic provinces are typically characterized by less confining conditions that vary considerably. This range provided an estimate of low and high probable future changes in Ridge wetlands water levels from which to estimate corresponding probabilities of changes in wetland stress conditions.

Table 14 provides the probable acres of Stressed Plains and Ridge wetlands for the 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions compared to the 2016-2020 RC. Some existing wetlands impacts and predicted future stress may be the result of multiple factors including groundwater withdrawals, construction of drainage ditches, and other alterations to drainage basins.

Under the 2016-2020 RC, approximately 20 percent of the Plains wetlands are currently stressed. The total probable acres of Stressed Plains wetlands increased 0.4 percent for the 2025 Withdrawals Condition; by 0.6 percent for the 2030 Withdrawals Condition; by 0.8 percent for the 2035 Withdrawals Condition; by 0.9 percent for the 2040 Withdrawals Condition; and by 1.1 percent for the 2045 Withdrawals Condition, compared to the 2016-2020 RC.

Approximately 25 percent of Ridge wetlands are currently stressed under the 2016-2020 RC. The total probable acres of Stressed Ridge wetlands increased between 1 and 3 percent for the 2025 Withdrawals Condition; by 1.5 and 5 percent for the 2030 Withdrawals Condition; by 2 and 6 percent for the 2035 Withdrawals Condition; by 2 and 8 percent for the 2040 Withdrawals Condition; and by 2 to 9 percent for the 2045 Withdrawals Condition, compared to the 2016-2020 RC.

The analysis results are based on the probability of wetland stress occurring at a regional scale and, therefore, should not be applied at the local scale. Potential wetland impacts on the local scale are evaluated during the CUP/ WUP process. Refer to **Appendix D** and the Environmental Measures Technical Report (CFWI 2025) for additional details.

Table 14. Probable Acres of Stressed Plains and Ridge wetlands for the 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions compared to the 2016-2020 Reference Condition.

Wetlands Class	Total Acres	Acres of Stressed Wetlands for the 2016-2020 RC	Probable Increase in Acres of Stressed Wetlands				
			From RC to 2025 Withdrawals Condition	From RC to 2030 Withdrawals Condition	From RC to 2035 Withdrawals Condition	From RC to 2040 Withdrawals Condition	From RC to 2045 Withdrawals Condition
Surficial aquifer system (Model Layer 1)							
Plains	382,850	75,600	1,450	2,210	2,780	3,390	3,870
Ridge	59,440	14,940	590	870	1,060	1,260	1,410
Upper Floridan aquifer (Model Layer 3)							
Ridge	59,440	14,940	1,810	3,010	3,780	4,600	5,230

MINIMUM FLOWS AND MINIMUM WATER LEVELS

The status of MFLs and MFL-related environmental criteria was used to evaluate the effect of existing and proposed groundwater withdrawals on MFL water bodies. A total of 47 existing or currently proposed MFLs and MFL-related regulatory wells within the SWFWMD and SJRWMD in the CFWI

Planning Area and ECFTXv2.0 model domain were identified for use as environmental criteria. For more information on the proposed MFLs, please refer to **Appendix C**.

Thirty-eight of the 47 MFLs and MFL-related environmental criteria were considered most appropriate for estimation of potential impacts associated with groundwater withdrawals. The criteria included: MFLs adopted for 26 lakes and wetlands; proposed, re-evaluated MFLs for two lakes, one river segment, and six springs; new, proposed MFLs for one river segment; and regulatory well targets for the Ridge Lakes and upper Peace River areas that were established to support a recovery strategy for the SWUCA. Of these 38 criteria, the proposed and re-evaluated MFLs for the 10 water bodies (9 with currently adopted MFLs and 1 new MFL), were included as they represent the best available information.

Changes in groundwater levels or surface water flows that could be associated with potential change in the status of the assessed criteria were characterized as freeboard or deficit values. For these analyses, freeboard is defined as the magnitude of UFA drawdown or flow reduction in the vicinity of a MFL or MFL-related site that can occur without violating an adopted MFL or MFL-related environmental criterion. Conversely, a deficit is defined as the magnitude of UFA rebound or increase in flow in the vicinity of a site that would be necessary to recover or meet established MFLs or MFL-related criteria.

For the 2016-2020 RC, 30 of the 38 MFLs and MFL-related environmental criteria evaluated were predicted to be met (i.e., exhibited freeboard values greater than or equal to zero; **Appendix C**, **Tables C-9a** and **C-9b).** However, eight of 30 criteria were characterized as not met for the 2016-2020 RC based on status assessments described in draft reports on proposed minimum flows for the Wekiva River at SR 46, the Little Wekiva River, Wekiwa Springs, Rock Springs, Palm Springs, Sanlando Springs, Starbuck Springs, and Miami Springs (Sutherland et al. 2024).

Based on the amended status classifications for these proposed minimum flows, 22 MFLs and MFL-related environmental criteria were characterized as met and 16 were classified as not met for the 2016-2020 RC (**Table 15, Figure 13**). The 16 criteria that were not met for the 2016-2020 RC included MFLs established for 8 lakes (Aurora, Crooked, Eagle, Easy, Eva, McLeod, Starr, and Wailes) in Polk County, and those proposed for 2 river segments (Little Wekiva River and Wekiva River at SR 46) and 6 springs (Miami, Palm, Rock, Sanlando, Starbuck, and Wekiwa Springs) in Lake, Orange and Seminole counties.

For the 2045 Withdrawals Condition, 21 of the 38 MFLs and MFL-related environmental criteria were predicted to be met (i.e., exhibited freeboard values greater than or equal to zero) (**Table 15, Figure 14**). The 17 criteria not met under the 2045 Withdrawals Condition included the 16 criteria characterized as not met for the 2016-2020 RC and the proposed MFLs for Sylvan Lake. Although status changed for only one criterion between the 2016-2020 RC and the 2045 Withdrawals Condition, many MFLs and MFL-related criteria exhibited a decline in freeboard or an increase in deficit (**Figures 13** and **14**).

The status of each water body with an adopted MFL is determined annually for the STAR prepared by the FDEP in cooperation with the state water management districts. The 2023 STAR (FDEP 2024) and recent assessments indicate that 49 of the 55 adopted MFLs within and extending into the CFWI Planning Area are currently being met (**Appendix C**, **Table C-2,** and **Figure C-2**). The six water bodies where MFLs are not currently met include four lakes (Aurora, Bonnie, Eagle, and Eva) in south-central Polk County within the SWFWMD and two springs (Palm and Starbuck) in southwest Seminole County within the SJRWMD (**Appendix C**, **Figure C-2**). Lakes Aurora, Bonnie, Eagle, and Eva have been prioritized for re-evaluation in 2025 using updated lake-level methods and peer-reviewed wetland

criteria. Locations of these water bodies where MFLs are reported as not met are consistent with the locations of the MFLs and MFL-related environmental criteria characterized as not met for the Withdrawals Conditions scenarios completed with the ECFTXv2.0 model for this 2025 CFWI RWSP (**Figures 13** and **14**). It should be emphasized, however, that annual status reporting for all established MFLs, including newly adopted and re-evaluated MFLs, will continue, and these assessments will be completed using the best information and methods available at the time of the assessments. It should also be noted Withdrawals Conditions from this 2025 CFWI RWSP and recent status assessments were not used for the 2023 STAR.

Table 15. Predicted summary results for minimum flows and minimum water levels and MFL-related environmental criteria identified for the 2016-2020 Reference Condition and 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions assessed with the ECFTXv2.0 model.

MFLs and MFL-Related Environmental Criteria	ECFTXv2.0 Modeled Withdrawals Conditions					
	2016-2020 Reference Condition	2025 Withdrawals Condition	2030 Withdrawals Condition	2035 Withdrawals Condition	2040 Withdrawals Condition	2045 Withdrawals Condition
Number Met	22	22	22	22	22	21
Number Not Met	16*	16*	16	16	16	17

* Some environmental criteria were classified as not met despite being associated with freeboard values of zero or greater derived from ECFTXv2.0 modeling results; status determinations for these criteria were based on assessments included in draft MFLs reports describing proposed minimum flows for these water bodies.

Note: MFLs status may vary from the STAR.

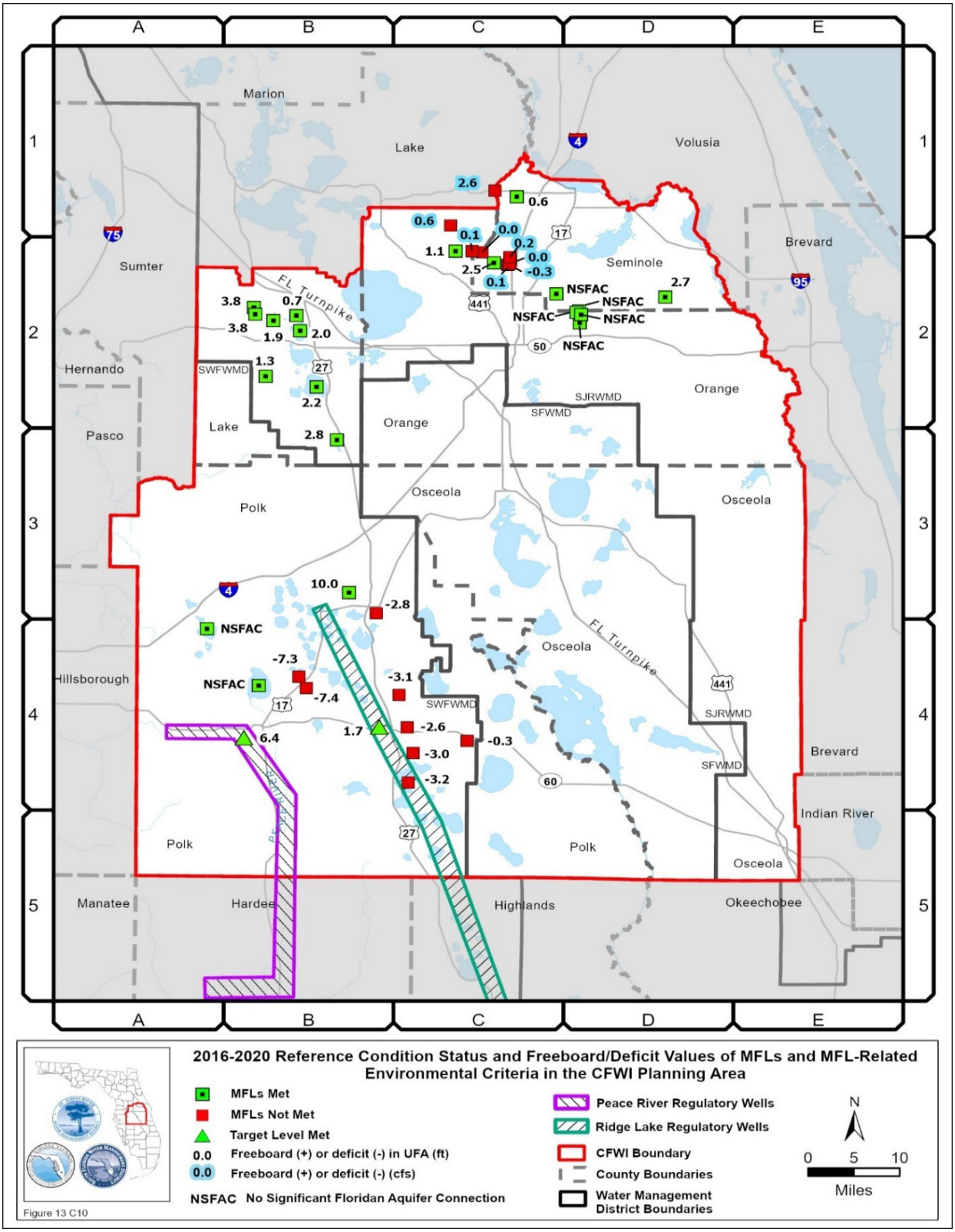

Figure 13. 2016-2020 Reference Condition status (met or not met) and freeboard or deficit values for minimum flows and minimum water levels and MFL-related environmental criteria.

Note: Freeboard and deficit values expressed in feet (non-highlighted values) or cubic feet per second (highlighted values), with no significant Floridan aquifer connection (NSFAC) indicating freeboard or deficit was not established due to NSFAC at the site. Status and freeboard or deficit are shown for adopted MFLs for 26 water bodies, proposed MFLs for ten water bodies, and two regulatory well target levels (average of five wells for each target level). The map grid corresponds to **Table C-9a** in **Appendix C.**

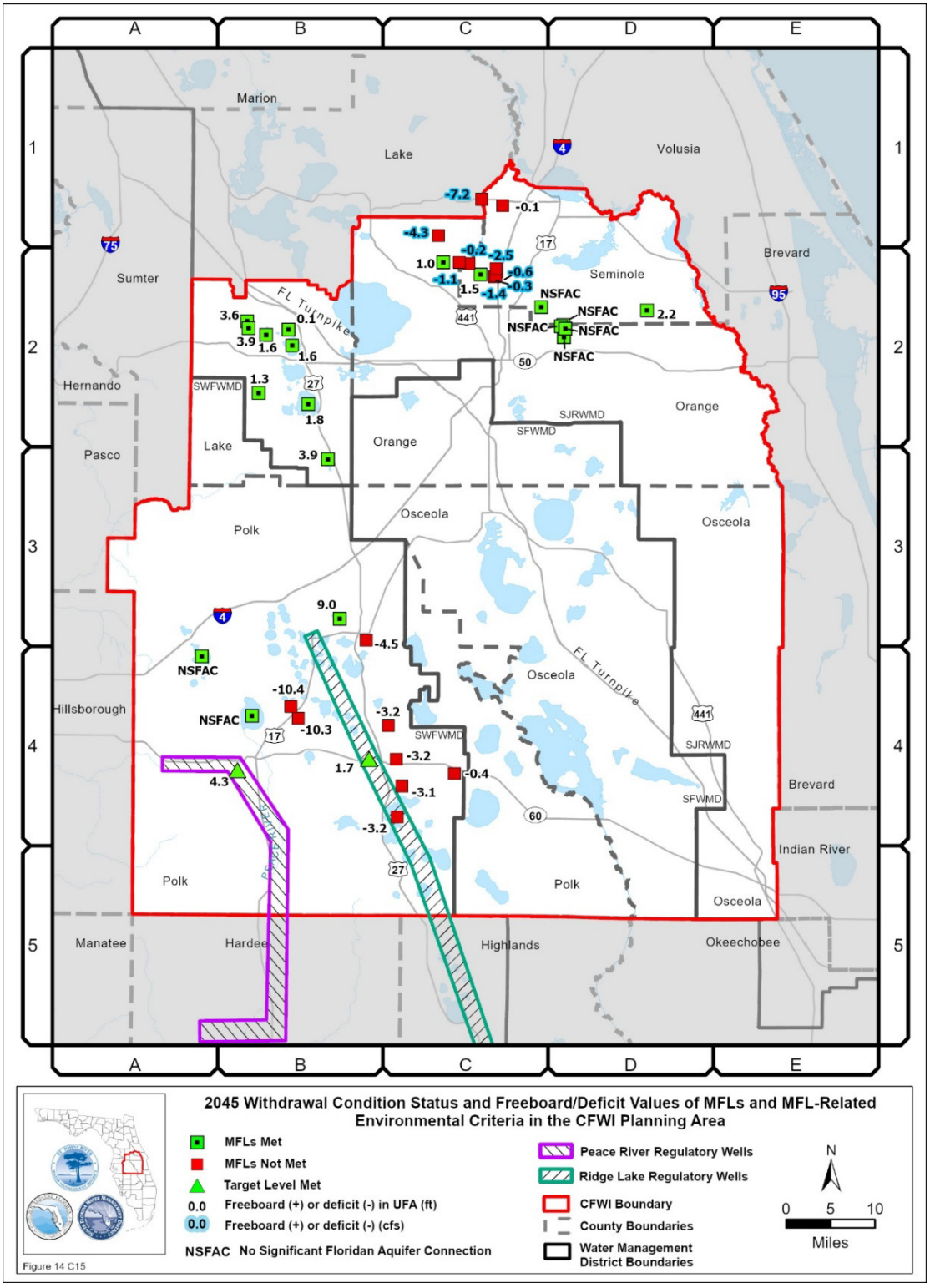

Figure 14. Predicted 2045 Withdrawals Condition status (met or not met) and freeboard or deficit values for minimum flows and minimum water levels and MFL-related environmental criteria in the Central Florida Water Initiative Planning Area.

Note: Freeboard and deficit values expressed in feet (non-highlighted values) or cubic feet per second (highlighted values), with NSFAC indicating freeboard or deficit was not established due to NSFAC at the site. Status and freeboard or deficit are shown for adopted MFLs for 26 water bodies, proposed MFLs for 10 water bodies, and 2 regulatory well target levels (average of 5 wells for each target level). The map grid corresponds to **Table C-9b** in **Appendix C.**

GROUNDWATER AVAILABILITY

Planning-level groundwater availability assessment results from the 2020 CFWI RWSP were determined based on the Withdrawals Conditions scenarios using the ECFTXv1.0 model. The number, location, and magnitude of impact on MFLs and MFL-related criteria, wetlands without MFLs, and groundwater quality, along with the quantities and spatial distribution of potential acres of stressed wetlands, were used to determine the potential extent of groundwater withdrawal impacts within the model domain.

Updated modeling results using the ECFTXv2.0 model continue to indicate that, as groundwater withdrawals increase, there is a corresponding predicted increase in hydrologic stress on environmental systems. Groundwater withdrawal impacts can generally be characterized by the spatial extent and magnitude of the impacts based on areas of environmental sensitivity. Primary areas or features that appear to be more susceptible to the effects of groundwater withdrawals, and thus may limit additional groundwater development, are shown in **Figure 15,** and include:

- Wekiwa Springs/Wekiva River System
- West Seminole County/West Orange County
- South Lake County
- Lake Wales Ridge
- Upper Peace River Basin
- East Osceola County
- Central Polk County (north of I-4)

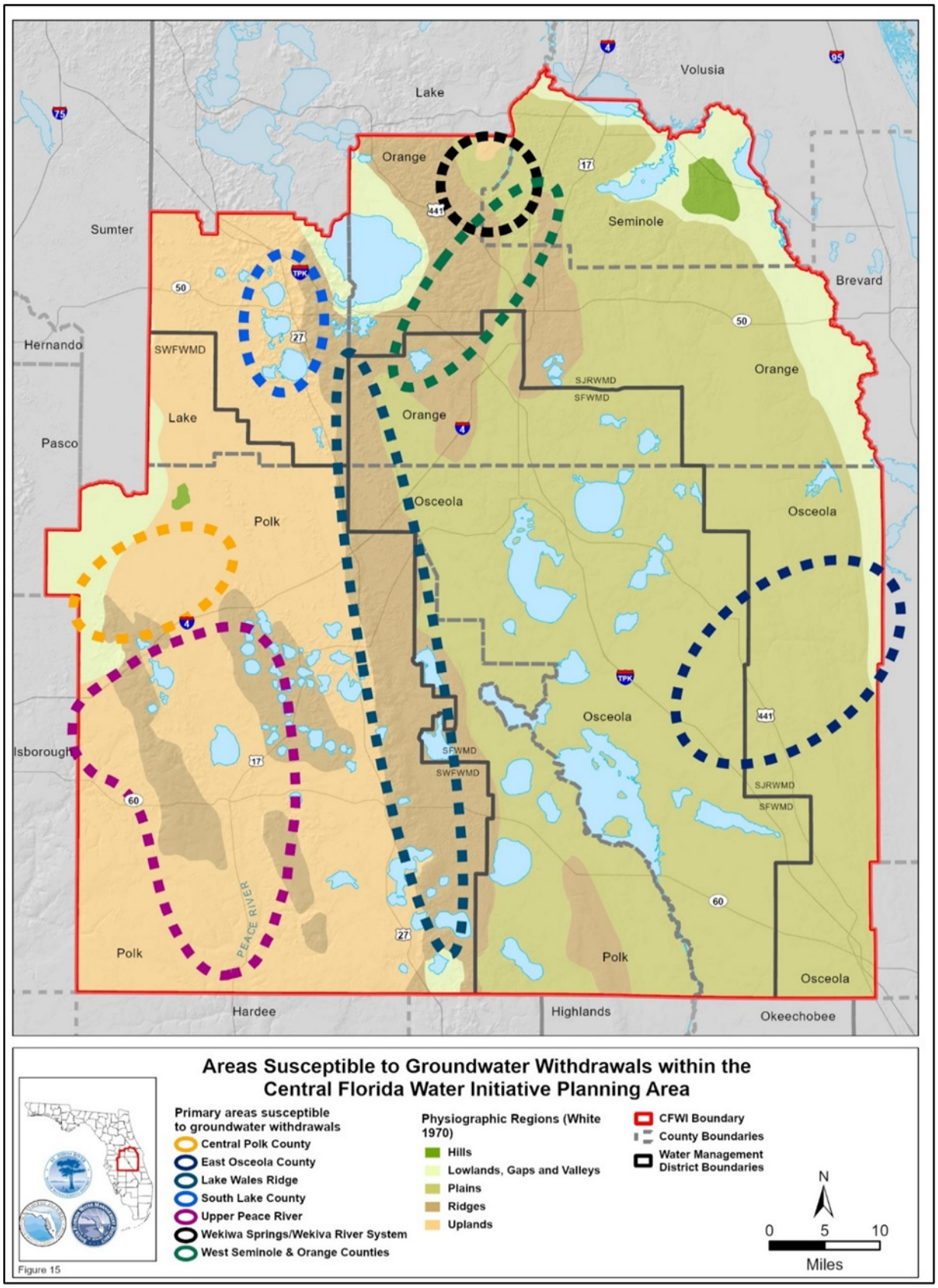

Figure 15. Areas susceptible to groundwater withdrawals within the Central Florida Water Initiative Planning Area.

It was concluded that fresh groundwater availability of up to 760 mgd as identified in the 2020 CFWI RWSP is still valid based on the water resource evaluations of this 2025 CFWI RWSP. Based on the 2045 groundwater demand projections (856 mgd), the resulting groundwater shortfall is approximately 96 mgd (**Chapters 3** and **4**). Therefore, local management strategies will continue to be needed (e.g., wellfield optimization, aquifer recharge, natural system enhancement) to address unacceptable impacts.

Regional and local projects from the 2020 CFWI RWSP have been and continue to be implemented, and new projects have been included in **Appendix E** for this 2025 CFWI RWSP. Rules 62-41.300 through 62-41.305 F.A.C., were adopted in 2021 and the *CFWI Supplemental Applicant's Handbook* (CFWI 2022a) became effective on January 5, 2022. These rule changes are in the process of being implemented, or have already been implemented, with the modification of CUP/WUPs.

Additionally, the MFL water bodies in the Wekiva River Basin, including Wekiwa and Rock Springs and the Wekiva River at SR 46, are currently under re-evaluation and scheduled for adoption in 2026. It is likely a prevention or recovery strategy will be needed following the re-evaluation effort. The development of a Wekiva River Basin prevention or recovery strategy will include the evaluation of specific projects and management strategies to benefit these MFL water bodies. As part of strategy development, detailed modeling of resource benefits to these MFL water bodies will be conducted to evaluate implementation of specific projects and management strategies.

The water resource evaluation results from the 2025 CFWI RWSP support the continued implementation of this comprehensive and integrated effort to address the limited amount of fresh groundwater availability in the CFWI Planning Area.

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Water Conservation

INTRODUCTION

TOPICS

- Introduction
- Water Conservation Projections

Water conservation is an important element of water supply planning and entails reducing the quantity of water required to meet regional demands through efficiency improvements and the prevention or reduction of unnecessary uses or losses of water. Water conservation contributes to the sustainability of water supply sources. Section 373.709(2)(a)2, F.S., requires that water conservation be accounted for when determining if the total capacity of the water supply development project options included in a water supply plan exceeds the increase in projected water demands for the planning horizon.

LAW/CODE

The overall water conservation goal of the state is to prevent and reduce wasteful, uneconomical, impractical, or unreasonable use of water resources (Section 373.227(1), F.S.).

Achieving long-term improvements in water use efficiency will require a combination of advanced technologies, BMPs, and other water conservation measures. Coordinated education, outreach, and public engagement are essential for the promotion of water conservation and the development of a water conservation ethic in the CFWI Planning Area. Continued and increased public education and administration of irrigation restrictions by local governments can provide quantifiable water savings. The 2020 CFWI RWSP identified a range of 50 to 56 mgd of water conservation savings for all water use categories and the estimated costs to achieve these water savings. It also described the tools, resources, and initiatives available to individuals, commercial and AG water users, local governments, utilities, and Districts to foster water conservation and water use efficiency.

Methods and trends identified in the 2020 CFWI RWSP were used to develop water conservation projections for this 2025 CFWI RWSP. These water conservation projections are based on historical levels of funding and participation.

WATER CONSERVATION PROJECTIONS

For this 2025 CFWI RWSP, it is projected that 45 to 52 mgd of water conservation savings could be achieved by 2045 for all water use categories (**Table 16**). Water conservation projection methodologies for each water use category are briefly described in this chapter and in detail in **Appendix B**.

Table 16. Projected 2045 water demand and water conservation savings by water use category in the Central Florida Water Initiative Planning Area.

Category	Projected 2045 Water Demand (mgd)	Projected 2045 Water Conservation Savings (mgd)
Public Supply	642.19	36.95 to 38.21
Domestic Self-supply & Small Public Supply	14.80	0.43
Agriculture	131.02	4.19 to 7.17
Landscape/Recreational	38.72	1.74
Commercial/Industrial/Institutional	66.19	1.49 to 4.50
Power Generation	9.58	
Total	**902.50**	**44.80 to 52.05**

Note: mgd = million gallons per day

Projected water conservation savings may not directly reduce total water demands as many water conservation measures focus on improved efficiency, which may allow such savings to meet increasing water demands; however, water conservation and demand management can reduce, defer, or eliminate the need to develop new water supply sources.

Public Supply

Projected PS water conservation savings were calculated for two types of water conservation: passive and active. It is estimated that the PS water use category could achieve at least 37 mgd of projected water conservation savings by 2045 (**Table 17, Figure 16**).

Table 17. Total Public Supply projected water conservation savings by 2045 in the Central Florida Water Initiative Planning Area.

Type	Low Estimate (mgd)	High Estimate (mgd)
Passive Water Conservation	13.78	13.78
Active Water Conservation	23.17	24.43
Total	**36.95**	**38.21**

Note: mgd = million gallons per day

Outdoor water use typically constitutes the largest component of residential use. Therefore, outdoor water conservation measures may yield the largest water savings and should be implemented throughout the CFWI Planning Area.

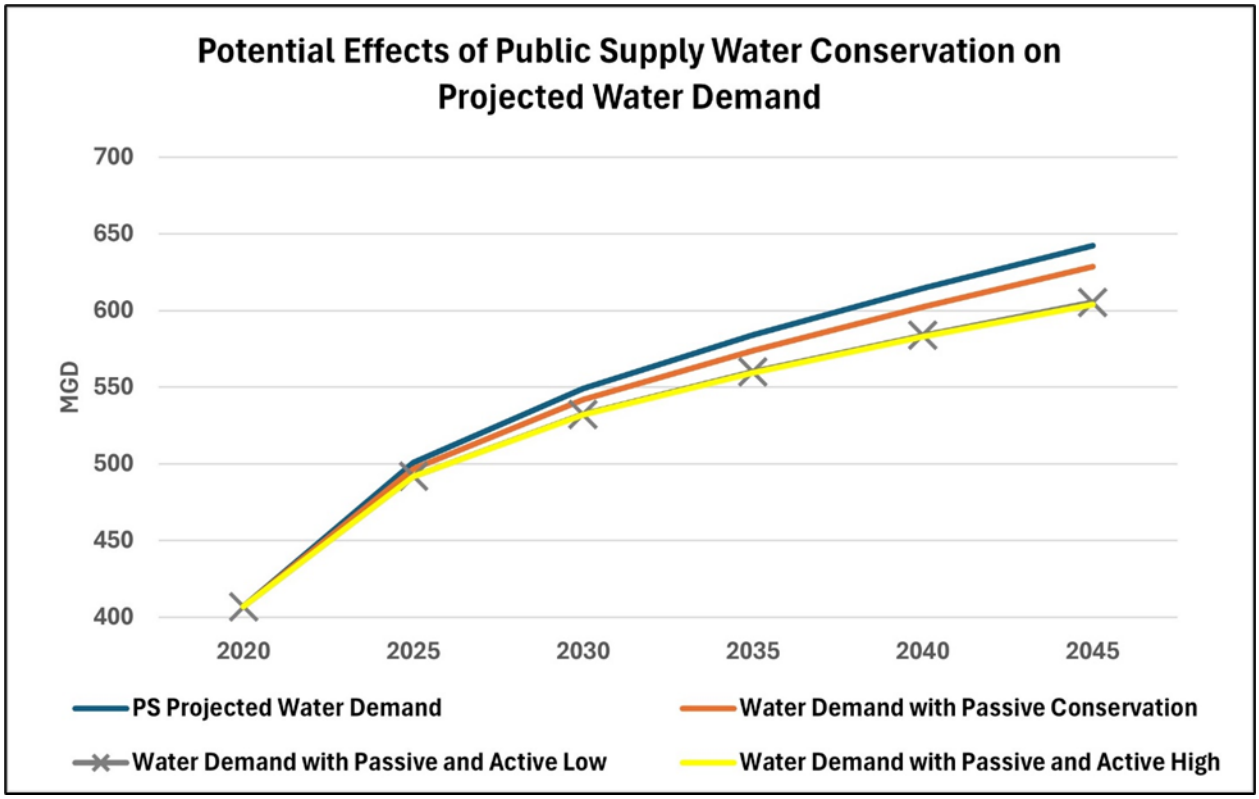

Figure 16. Potential effects of Public Supply water conservation on projected water demand in the Central Florida Water Initiative Planning Area.

Passive Water Conservation

Passive water conservation savings refer to water savings that occur because of users implementing water conservation measures in the absence of PS utility programs. These are typically the result of property renovations, or codes and ordinances that require the installation of high efficiency plumbing fixtures and appliances in new construction and renovations. Passive water conservation savings are a significant contributor to reducing per capita water use. Passive water conservation savings are projected to be 14 mgd by 2045 (**Table B-1**).

Passive water conservation projections were developed using the Alliance for Water Efficiency's Water Conservation Tracking Tool (AWE Tool) and information from property appraiser databases and census data. The AWE Tool calculates passive water conservation savings for toilets, shower heads, clothes washers, and dishwashers. Natural replacement savings (which occurs when devices are replaced by homeowners) and water savings adjustment factors by county (which accounts for newer homes having more efficient fixtures) were used to develop the total passive water conservation projections (**Appendix B**).

Housing stock data, used to calculate passive savings, reveals that PS utilities in Osceola and southern Lake counties have fewer opportunities for active indoor water conservation savings compared to other counties because most homes in these counties were built after 1994, when higher efficiency fixtures were required for new construction. Public supply utilities in Polk, Orange, and Seminole counties, and the City of Cocoa have more opportunities for active indoor water conservation savings, as these areas have a higher percentage of homes built before 1994.

Active Water Conservation

Active water conservation encompasses a variety of measures, practices, and programs sponsored or encouraged by PS utilities, local governments, and the Districts which result in water use reductions. By their nature, active water conservation programs are typically funded and administered by PS utilities or other regional entities. Two methods (discussed in **Appendix B**) were used to assess the range of projected active water conservation savings. For this 2025 CFWI RWSP, the projected active water conservation savings is at least 23 mgd by 2045.

Future Public Supply Water Conservation Opportunities

Many factors can affect future water conservation efforts, such as maintaining water conservation activities to sustain savings rates, funding levels, new technologies, and enforcing current and future regulatory measures. The CFWI PS gross per capita goal of 115 gpcd provides a measurable goal or target for PS to design programming around. The projected water conservation savings for the PS water use category are conservative as they are based on quantified water conservation measures implemented within the CFWI Planning Area. There is potential for increased water conservation savings with increased participation rates and implementation of better program analysis and measures not factored into the existing estimates, including more educational and outreach programs.

Continual evaluation, quantification, and adaptive management of water conservation measures are necessary to maximize water conservation savings. Data should be continually collected and analyzed to ensure targeted, cost-effective water conservation measures are being implemented and to assist in identifying additional water conservation measures that could be implemented. Outdoor water use typically constitutes the largest component of residential use (50 to 70 percent) according to the UF H2O SAV tool (Taylor 2023); therefore, measures targeting outdoor residential irrigation may yield the largest water savings. Public supply utilities and the Districts will continue to work on quantifying and implementing water conservation measures, such as irrigation enforcement, water loss reduction, behavioral change resulting from Advanced Metering Infrastructure/Advanced Metering Analytics customer portal usage, landscape efficiency ordinance adoption, water conservation rate structures, advanced irrigation technology, and education outreach, which will provide a better understanding of the water conservation occurring in the CFWI Planning Area.

Agriculture Self-Supply

Water conservation efforts in the AG water use category are often focused on improving irrigation efficiency. The 2020 CFWI RWSP used an adjusted annual rate of water conservation savings of 0.17 mgd/per year (**Appendix B**) based on the practices listed below:

- Irrigation Conversion refers to the practice of converting a less efficient water delivery system (or system components) to a more efficient one(s).
- Precision Irrigation refers to the practice of using devices such as automated pump control, soil moisture sensors, and weather sensing devices to improve irrigation control and scheduling efficiency. This technology can also be applied to systems that are already operating delivery systems considered highly efficient.
- Mobile Irrigation Labs are staffed by trained specialists who conduct field audits of AG irrigation systems. During these audits, system design, maintenance, efficiency, uniformity,

and/or operation costs are evaluated. Specific recommendations for efficiency improvements to reduce water applications are also given to the user.

For this 2025 CFWI RWSP, the annual rate of water conservation savings (0.17 mgd/per year) derived in the 2020 CFWI RWSP was multiplied by the planning horizon (base year 2020) to yield a potential water conservation savings of 4.19 mgd through 2045. As with projected AG water demands, the Districts considered and used FDACS FSAID IX estimates of water conservation savings of 7.17 mgd.

However, not all water conservation achieved by AG will result in reduced water use. In some cases, producers may implement more efficient practices while expanding or intensifying operations. The projected water conservation savings for the AG water use category are conservative. There is potential for increased water conservation savings beyond the projected water conservation savings with increased participation rates and implementation of other water conservation measures not assessed in this 2025 CFWI RWSP.

Potential for water conservation savings in the SWUCA portion of the CFWI Planning Area may be limited. Previous regulatory constraints and funding programs have achieved increased water use efficiency that limits future water conservation savings potential. For example, in the SWUCA, the SWFWMD adopted a 75 percent irrigation efficiency requirement in its AG WUP program, which has already resulted in considerable water conservation savings among AG operations.

Domestic Self-Supply

The water conservation savings projection for DSS is assumed to be directly proportional to that of the passive water conservation projection calculated for PS. In the development of that passive water conservation projection, the AWE Tool provided county-level data, which was then proportioned out to PS and DSS individually based on the population projections for 2045. Based on this methodology, the projection for DSS water conservation savings is 0.43 mgd by 2045. Additional water conservation savings may be achieved through active water conservation measures, public education, and outreach; however, those potential water conservation savings cannot be calculated at this time.

Landscape/Recreational Self-Supply

Water conservation for landscape and recreation uses is realized due to measures such as use of more efficient sprinkler heads, pressure regulation, and replacement of traditional irrigation controllers with smart irrigation controllers using soil moisture sensors or weather-based equipment. University of Florida research shows that such retrofit activities can yield savings in the range of 10 to 20 percent (Boyer and Dukes 2015). A conservative estimate of 10 percent savings was used for efficient sprinkler head retrofits. For advanced controllers, a range of savings was reported (Davis and Dukes 2015a, b) and a conservative savings rate of 20 percent was used. Assuming a 2045 projected average water demand of 38.72 mgd and a conservative 15 percent volumetric participation rate, the combined water conservation savings from these measures would be 1.74 mgd.

An example of a successful project that improved irrigation efficiency is the Bartow Golf Course, a city-owned golf course located in Polk County, close to the Peace River. Following an evaluation, it was determined the course was using 172,400 gpd which initiated the water conservation project. The project included the installation of high-efficiency spray heads and a centralized weather-based controller with remote communication (**Figure 17**). The project focused on achieving better distribution uniformity, control of the system, and a reduction in the effective irrigated acreage. Total

project cost was $821,408 which included a grant of $250,000 from the SWFWMD. Post-project water use averaged 89,700 gpd, which is a 48 percent reduction in water use.

Figure 17. Weather Station at Bartow Golf Course.

Commercial/Industrial/Institutional and Power Generation Self-Supply

The water conservation savings estimates for the CII and PG water use categories are combined. An annual savings rate of 0.18 mgd per year was calculated for the 2020 CFWI RWSP from the water conservation savings observed in both the CII and PG water use categories. This rate was projected from the base demand year (2020) and results in 4.5 mgd of water conservation savings by 2045. This is considered the upper estimate of water conservation savings for these water use categories.

To develop a second estimate of water conservation savings, a 15 percent savings rate was applied to the CII water demand, along with a 15 percent volumetric participation rate. This applied savings rate was derived from Dziegielewski, et al. (2000), from observed audit-driven water efficiency improvements at commercial and institutional facilities ranging from 15 to 50 percent, with 15 to 35 percent being typical. Although the total 2045 water demand for these water use categories is 75.77 mgd, the lower water conservation savings projection was calculated using the CII water demand projection of 66.19 mgd since the Dziegielewski study only evaluated the effectiveness of audits at commercial and institutional facilities and did not evaluate the effectiveness of audits on PG processes. The potential water conservation savings was estimated to be 1.49 mgd by 2045. The two methods provide a range of 1.49 to 4.5 mgd.

SUMMARY

Water conservation extends the available supply of traditional water sources to support growth, maintain natural resources, and to delay development of more costly AWS projects. Water conservation programs are often among the lowest cost solutions to meet future water demands and can reduce costs over the long-term if properly planned and implemented. Outdoor water use typically constitutes the largest component of residential use. Coordinated education, outreach, and public engagement are essential for the promotion of water conservation.

It is projected that the water conservation savings in the CFWI Planning Area could range between 45 to 52 mgd by 2045 for all water use categories. These estimates reflect potential water conservation savings as a result of current and future activities. The projected water conservation savings are conservative. There is potential for savings beyond the projected savings with increased participation rates and implementation of additional water conservation measures, including more educational and outreach programs.

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Water Source Options

Within the CFWI Planning Area, water users have primarily relied on groundwater derived from the FAS and reclaimed water to meet water supply needs, with fewer users relying on the SAS and IAS and surface water from rivers, streams, and lakes. As water demands increase and withdrawals approach sustainable limits of traditional water supply resources, it is important to identify and pursue options for diversifying water supply sources. This chapter provides an overview of the water source options available to water users within the CFWI Planning Area.

TOPICS

- Groundwater
- Reclaimed Water
- Surface Water
- Stormwater
- Seawater
- Storage Capacity – ASR and Reservoirs

In the CFWI Planning Area, fresh groundwater sources (i.e., FAS, SAS, IAS) are considered traditional water sources; whereas, nontraditional or alternative sources include brackish/nontraditional groundwater, reclaimed water, surface water, stormwater, seawater, and water stored in aquifer storage and recovery (ASR) wells and reservoirs.

GROUNDWATER

In 2020, an estimated 639 mgd of water was used, of which 94 percent came from groundwater, with the UFA as the primary source. While increased groundwater withdrawals are projected to be limited regionally, groundwater use is expected to remain the largest source of water used. Groundwater sources in the CFWI Planning Area include the UFA, LFA, the locally present IAS, and the sandy sediments of the SAS. Below is a brief description of each of the aquifers, including the potential availability of groundwater supply for future use.

Floridan Aquifer System

The FAS underlies the entire state of Florida and is the primary source of water in the CFWI Planning Area because of good water quality, high productivity, and widespread accessibility. **Figure 18** is a representative diagram of the aquifer systems. The FAS is composed of sequential layers of limestone and dolomite and is traditionally subdivided into the UFA and LFA, which are separated by less productive horizons called the middle confining unit (MCU). Both the UFA and LFA are composed of multiple highly permeable zones, which can be very productive for water supply development. **Figure 19** shows a generalized hydrogeologic cross-section that displays the relationship between the SAS, MCU, and the FAS. The degree of confinement between the UFA and LFA is variable across the CFWI Planning Area (Miller 1986).

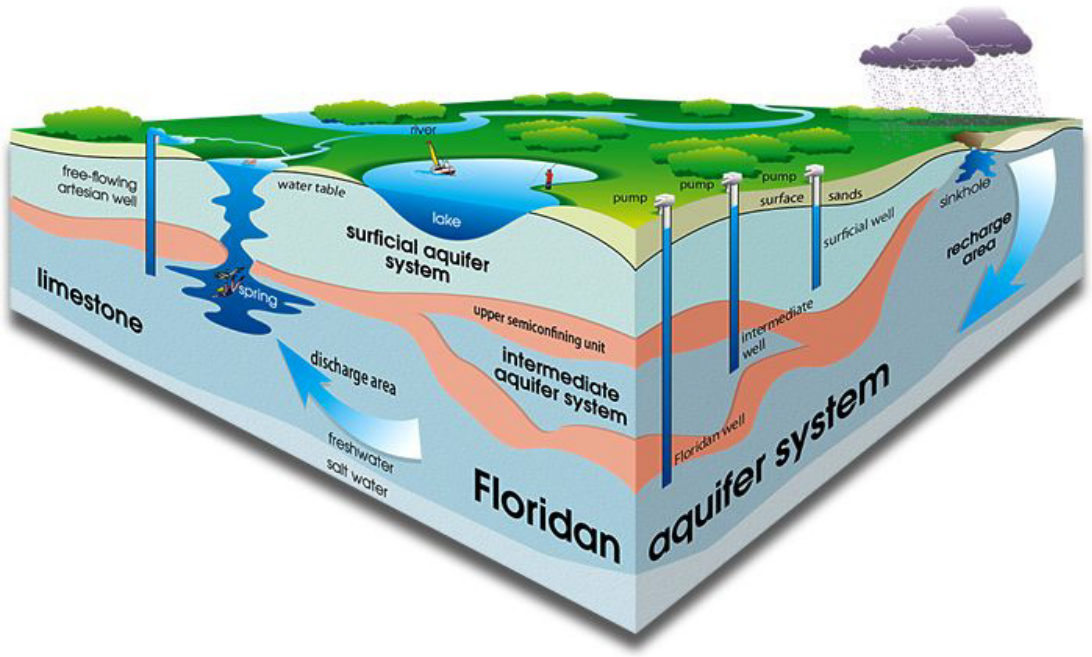

Figure 18. Representative diagram of the aquifer systems.

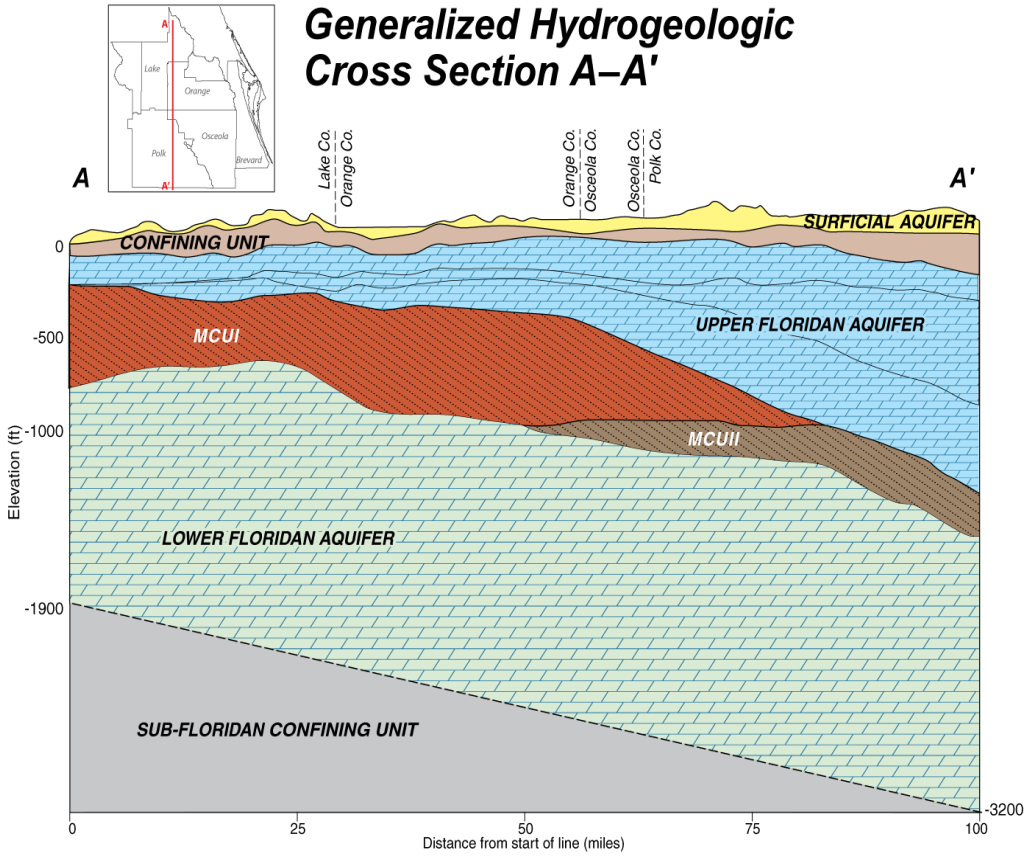

Figure 19. Generalized hydrogeologic cross-section of the Floridan aquifer system through the Central Florida Water Initiative Planning Area.

Source: Miller 1986
Note: MCU = middle confining unit

The amount of additional potential fresh groundwater development, as described in **Chapter 4**, is limited and highly dependent on the location and rates of the withdrawals. The UFA plays a key role in supporting regional surface water systems including wetlands, lakes, springs, and streams. Some withdrawals, depending on location and rate, from the FAS can adversely impact these systems by lowering water levels, which is referred to as drawdown. Opportunities exist to offset certain drawdown impacts locally, but future fresh groundwater development within the CFWI Planning Area will require evaluation during the CUP/WUP review process to determine if unacceptable impacts to wetlands, established MFLs, existing legal users, and water quality are projected to occur.

Brackish/Nontraditional Groundwater

Brackish/nontraditional groundwater in the CFWI Planning Area is a viable source for water supply. Numerous brackish groundwater treatment facilities exist in Florida, and brackish/saline groundwater in the FAS represents a key potential alternative source for regional water supply development. In many areas, the LFA is considered an AWS and several studies and projects are in progress to evaluate and develop this source. Potentially viable brackish aquifer zones exist in areas beneath eastern and southern Osceola County, northern and eastern Polk County, eastern and southern Orange County, and northern Seminole County. Potential impacts to MFL water bodies should be evaluated prior to the use of brackish/nontraditional groundwater. Brackish water, for AWS planning purposes in the CFWI Planning Area for the SJRWMD and SWFWMD, is generally defined as water with a total dissolved solids (TDS) concentration of greater than 500 milligrams per liter (mg/L). The SFWMD defines saline water, which includes brackish water, as water with chloride concentrations greater than 250 mg/L.

Development of brackish/nontraditional groundwater supplies generally requires desalination or blending with other freshwater sources to reduce TDS concentrations to acceptable levels. Typical membrane treatment methods such as RO or electrodialysis reversal (EDR), require the disposal of concentrated salt waste (concentrate). Desalination of brackish or saline water sources has higher treatment costs than treatment of freshwater sources and concentrate disposal can pose a challenge to brackish/nontraditional water supply development.

An additional constraint in developing brackish/nontraditional groundwater supplies is the hydrogeologic connection between the brackish and freshwater portions of the FAS and the need to protect against saline water intrusion. Investigation is needed to properly site brackish/nontraditional groundwater development projects in locations with sufficient hydrogeologic confinement to protect fresh aquifer systems from possible encroachment of saline water. These investigations ensure sufficient yields, hydrologic separation from currently used freshwater aquifers, and assess potential options for concentrate disposal.

The LFA is currently a permitted source of future water for the Water Cooperative of Central Florida (WCCF) and the PRWC. Since approval of the 2020 CFWI RWSP, the SWFWMD has completed three hydrogeologic investigations in Polk County near the City of Frostproof, City of Lake Wales, and west of Crooked Lake to better define the availability and quality of brackish groundwater from the LFA. The SWFWMD also partnered with the PRWC to perform additional LFA exploration and aquifer performance testing within the planned Southeast Polk Wellfield to assess water supply yields in future potential wellfields and a second LFA exploration is planned for the West Polk Wellfield. These efforts are ongoing and part of the assessment of feasibility for several water supply projects as discussed in **Chapter 7**.

Surficial Aquifer System

The SAS is composed primarily of sandy sediments ranging in thickness from just a few feet to approximately 200 feet (along the Lake Wales Ridge). Water supply availability from this aquifer typically has a limited yield and is best suited for small-scale domestic and landscape irrigation use. The sandy sediments of the SAS are thickest in the Lake Wales Ridge region in eastern Polk County and are locally more favorable for water supply development. In this area, there are a substantial number of permitted withdrawals from the SAS, primarily for AG irrigation. Water quality in the SAS typically contains elevated levels of iron, organic compounds, and sulfur (sulfate), and often requires additional treatment if used for drinking water. Additional water supply development from this aquifer system is likely to be local in nature and generally limited to irrigation-type water uses.

Intermediate Aquifer System

The IAS, where it exists, is located between the SAS and the FAS, and has limited yield. Water derived from the IAS may require treatment for iron, organic compounds, and sulfur (sulfate) if used for drinking water. Due to its comparatively low yields and limited spatial extent, the IAS will have only a limited role in meeting future water demands.

RECLAIMED WATER

Reclaimed water is wastewater from a domestic wastewater treatment facility (WWTF) that has received at least secondary treatment and basic disinfection and is reused. Reclaimed water for public access use has a high-level disinfection requirement. The reuse of reclaimed water for beneficial purposes is a key component of water resource management in the CFWI Planning Area, with current reclaimed water use at 95 percent. Reclaimed water is used for many purposes such as landscape irrigation, AG irrigation, PG, groundwater recharge, industrial uses, and environmental enhancement (e.g., wetlands rehydration). Reclaimed water is being investigated for potable reuse, which is the process of treating reclaimed water to state and federal drinking water standards so that it can be recycled for potable water supply uses.

Current Reuse

In 2020, there were 81 wastewater treatment plants (WWTP) in the CFWI Planning Area with permitted capacities over 0.1 mgd. These providers generated 214 mgd of treated wastewater collectively (**Tables A-13a** through **A-13f**). From that flow, 228 mgd of reclaimed water was reused, which includes 12 mgd of supplemental flow, for beneficial purposes. Of the total reused, 126 mgd was for irrigation uses, 28 mgd for industrial uses, 68 mgd for aquifer recharge and environmental benefit, and 6 mgd for other uses.

Differences between wastewater flows at treatment facilities and the sum of water reused and disposed from these facilities can exist due to the addition of post-treatment supplemental water (e.g., concentrate), transfer of flows between facilities, and in-facility processes that can lead to double counting of flows, and/or metering inaccuracies.

Future Potential Reuse

Wastewater flows are projected to increase by 40 percent to an estimated 299 mgd by 2045. In addition, it is expected that 27 mgd of supplemental flows will bring the total flow available for reuse

to 326 mgd. It is projected that over 94 percent or 307 mgd will be used for beneficial purposes. Reclaimed water supplementation is used to improve seasonal availability and maximize reclaimed water use. Reuse is expected to continue to be a key strategy in meeting regional water demands throughout the planning horizon with irrigation expected to remain the largest use. Reuse methods and 2045 projections are summarized in **Appendix A, Tables A-13a** through **A-13f.**

Potable Reuse

Potable reuse is the augmentation of a drinking water supply with advanced treated, reclaimed water, either indirectly or directly. Nationally, potable reuse of reclaimed water is an emerging alternative for meeting PS demands and several successful demonstration projects have been implemented in Florida. Potable reuse could be a viable long-term source of water for meeting future water supply demands in the CFWI Planning Area.

In 2018, the FPRC was established to develop a policy and regulatory framework for the implementation of potable reuse as a water supply source to meet Florida's future water demands. The FPRC is a partnership among state agencies, utilities, and a diverse group of environmental, industry, and public health stakeholders. In 2020, the FPRC published its final report (FPRC 2020), which contains recommendations to improve potable reuse regulation, provide public education and outreach on DPR, and incentivize and protect public investments in potable reuse. Based on the recommendation contained in the FPRC final report, FDEP adopted the Potable Reuse Rules (Chapter 62-565, F.A.C.) on February 26, 2025.

Indirect Potable Reuse

Indirect potable reuse (IPR) is the planned delivery or discharge of reclaimed water to ground or surface waters for the development of, or to supplement, potable water supply and has been implemented locally, nationally, and internationally. Although IPR has not yet been identified as a large-scale future use of reclaimed water, the potential for IPR via groundwater recharge in the CFWI Planning Area is significant, and interest in IPR implementation is growing among area utilities.

Direct Potable Reuse

Direct potable reuse is the introduction of advanced treated reclaimed water into a raw water supply immediately upstream of a drinking water treatment facility or directly into a potable water supply distribution system. The reclaimed water has undergone extensive treatment and monitoring to meet or exceed potable water quality requirements. Although DPR is not currently being implemented within the CFWI Planning Area, there is increasing interest and consideration of the concept as a viable future water supply option. Potable reuse projects within the CFWI Planning Area include a feasibility study by the City of Winter Haven and pilot projects by Polk County and the City of Altamonte Springs (pureALTA).

SURFACE WATER

The CFWI Planning Area includes the headwaters for seven river systems: the Alafia, Peace, Hillsborough, Withlacoochee, KCOL, Ocklawaha, and St. Johns. **Figure 20** shows the watersheds of these river basins within the CFWI Planning Area and surrounding areas. Some opportunities exist for the development of water supplies from the lakes and rivers in or near the CFWI Planning Area. The capture and storage of water from surface water systems can supply significant quantities of water and in some cases could be a component of multi-source water supply development projects. The

following discussion focuses on the potential for the development of surface water supplies from the larger regional systems. The Hillsborough River is not discussed in detail, as only a small portion of the watershed is within the CFWI Planning Area.

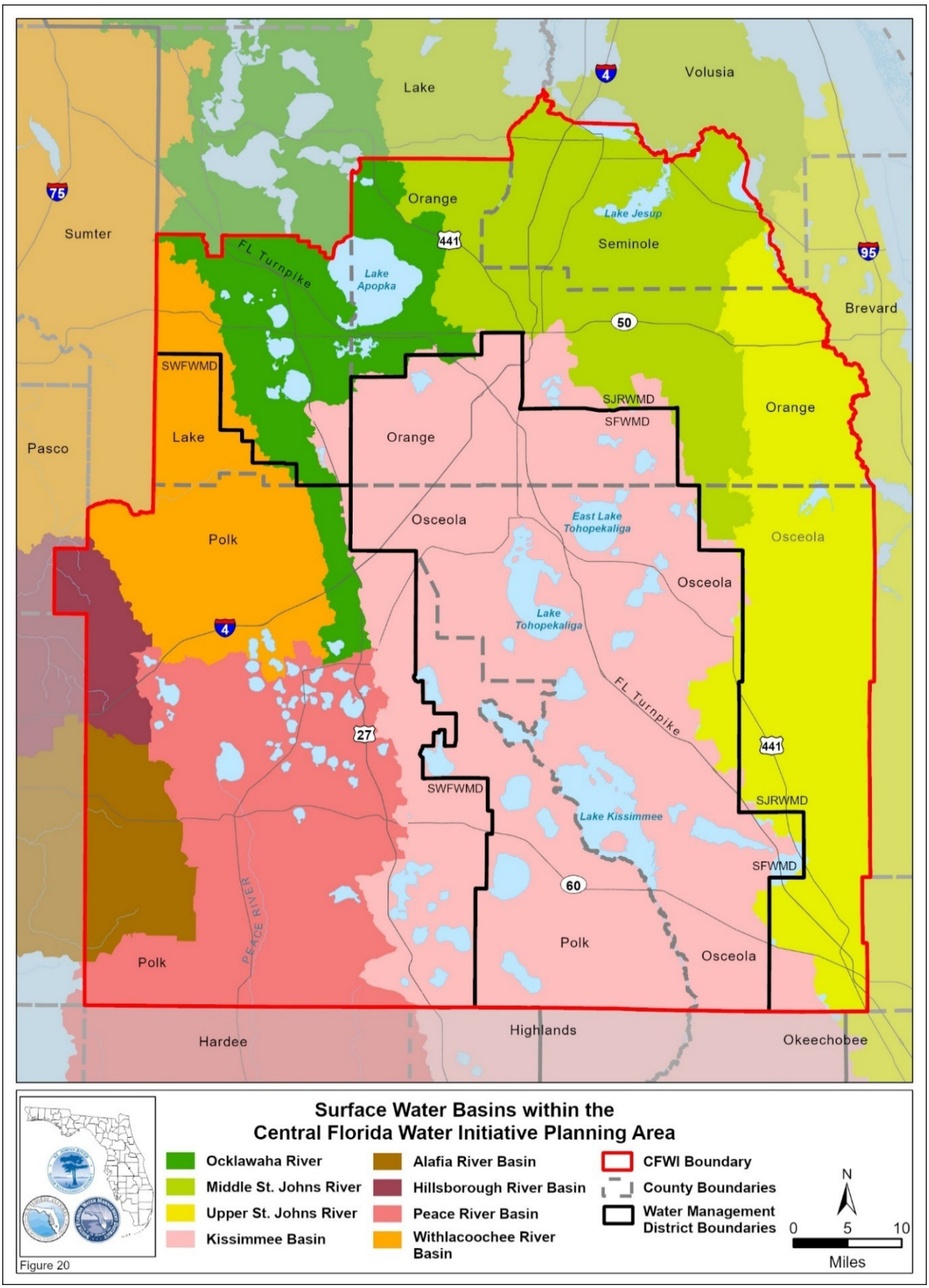

Figure 20. Surface water basins within the Central Florida Water Initiative Planning Area.

St. Johns River System

The SJR flows north approximately 310 miles and is the longest river in Florida. Major tributaries that flow into the SJR, include the Wekiva, Econlockhatchee, and Ocklawaha rivers. Within the SJR watershed, surface water is currently used to meet PS, landscape irrigation, and AG irrigation needs. Water supply projects on the SJR have already been implemented by Seminole County at Yankee Lake, the City of Cocoa at TCR, and the City of Sanford at Lake Monroe. Although the SJR can supply a large volume of raw water, this water varies in both quantity and quality throughout the year. The SJR, like most rivers, is subject to high and low flows. To accommodate these water level fluctuations of availability, significant amounts of raw water, finished water storage, or conjunctive use of surface water with groundwater may be required to provide a reliable water supply at some locations. Additionally, during low-flow periods, water in the SJR is slightly to moderately brackish, requiring higher levels of treatment to remove these dissolved salts and naturally occurring organic matter.

The SJRWMD has conducted multiple studies to evaluate the potential for additional water supply projects on the river. The Water Supply Impact Study (WSIS) assessed the potential environmental impacts associated with increased surface water withdrawals along the SJR (SJRWMD 2012). The study confirmed that the SJR is a viable AWS source, with a possibility of combined withdrawals of up to 155 mgd from three locations, which would result in minimal to negligible environmental impacts to both surface and groundwater resources.

Peace River System

The Peace River is the most prominent river system in Polk County and has two major tributaries (Peace Creek and Saddle Creek) in the CFWI Planning Area. Opportunities for developing water supply projects on the Peace River may be available and are being investigated by the PRWC. A complicating factor in developing potential water supplies from the Peace River is that river flows can be unreliable. The upper Peace River, between Bartow and Zolfo Springs, often does not meet its established MFL in the dry season and has occasionally ceased flowing entirely. The SWFWMD has implemented projects to capture and store river flows during high flow periods and to reestablish minimum flows in the upper Peace River during low-flow periods. In 2020, a water reservation was adopted for Lake Hancock and Lower Saddle Creek in the headwater area of the Peace River to support minimum flow recovery. Restoration projects and related efforts may have benefits that could improve reliability in flow for PS capture. Several AWS project options have been identified for the Peace River and are presented in **Appendix E**.

The Peace River is currently a major source of water for the Peace River Manasota Regional Water Supply Authority (PRMRWSA), which is located outside of the CFWI Planning Area within the SWFWMD's Southern Planning Region. A large portion of available surface water in the Peace River is allocated to the PRMRWSA. The PRWC and PRMRWSA entered into an agreement in 2019 providing for the shared use of the Peace River.

Ocklawaha River System

The Ocklawaha River watershed covers 2,769 square miles from the Green Swamp in Polk County and Lake Apopka sub-basins north through the Rodman Reservoir to the river's discharge into the SJR near the Town of Welaka. The Ocklawaha River emerges from Lake Griffin in the upper Ocklawaha Chain of Lakes and flows north until it is impounded as Rodman Reservoir, also known as Lake Ocklawaha, before ultimately flowing into the SJR. The Ocklawaha River is not currently used as a water supply source; however, two conceptual projects are planned by the South Lake Regional

Technical Advisory Committee Members (Groveland, Minneola, Clermont, Mascotte, Sunshine Water, and Howey-in-the-Hills) to evaluate the potential use of surface waters in the Upper Ocklawaha River Basin to meet demands (**Tables E-1** and **E-7**).

Alafia River System

Although most of the Alafia River watershed is in Hillsborough County, the headwaters are in western Polk County where the land has been mined extensively for phosphate ore. The Alafia River is currently a source of water for local mining operations, as well as Tampa Bay Water (TBW), a regional water supply authority downstream in Hillsborough County. Due to the small portion of the Alafia watershed that is in the CFWI Planning Area, local water supply development may be limited. Partnerships with TBW represent a potential mechanism to develop additional regional water supplies from the Alafia River for the CFWI Planning Area.

Kissimmee River and Chain of Lakes

The Kissimmee River Basin encompasses more than two dozen lakes in the KCOL, their tributary streams and associated marshes and the Kissimmee River and floodplain. The river and its basin forms the headwaters of Lake Okeechobee and the Everglades; together they comprise the Kissimmee-Okeechobee-Everglades system. The Upper Kissimmee Basin (UKB) is encompassed entirely within the CFWI Planning Area. The UKB is 1,581 square miles and contains hundreds of lakes and wetlands. Lake Kissimmee, the third largest lake in Florida, is the outlet of the UKB to the Kissimmee River. Water throughout the UKB is conveyed to the KCOL which includes the Headwaters Revitalization Lakes (Lakes Kissimmee, Hatchineha, Cypress, and Tiger) and the Upper Chain of Lakes through wetlands, sloughs, and tributary streams. The KCOL are interconnected by a series of canals. Surface water draining the UKB is funneled to the KCOL, which discharge into the Kissimmee River. In 2021 water reservations were adopted for the KCOL (**Figure 21** and **Appendix C)**.

Withlacoochee River System

The Withlacoochee River originates in the Green Swamp in Polk County and flows northward for 157 miles where it discharges into the Gulf of America near Yankeetown, Florida. The Withlacoochee River is not currently used as a significant water supply source, and no water supply projects are currently proposed in the CFWI Planning Area.

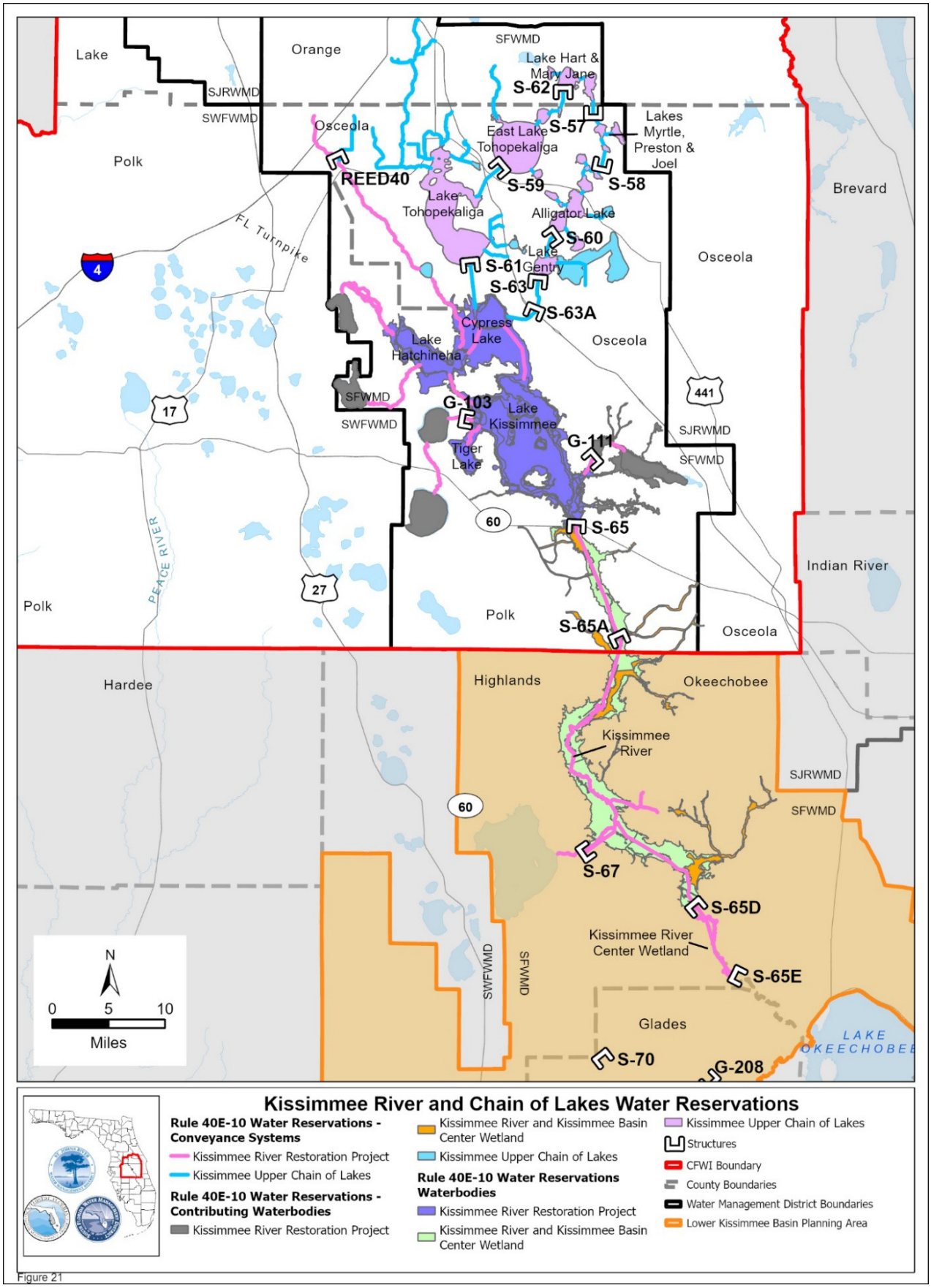

Figure 21. Kissimmee River and Chain of Lakes water reservation water bodies.

STORMWATER

Rule 62-40.210(37), F.A.C., defines "stormwater recycling" as the capture of stormwater for irrigation or other beneficial use. The FDEP and the water management districts define stormwater as the flow of water that results from, and which occurs immediately following, a rainfall event, and which is normally captured in ponds, swales, or similar areas for water quality treatment or flood control. Development of the natural landscape can result in significant changes to the characteristics of stormwater flows. Stormwater runoff can provide considerable volumes of water that can be captured and beneficially used, resulting in water supply, aquifer recharge, water quality, and natural system benefits. The reliability of stormwater can vary considerably, depending upon climatic conditions and storage capability. Therefore, the feasibility of effectively using stormwater as an AWS source often relies on the ability to use it in conjunction with another source (or sources) to decrease operational vulnerability to climatic variability (i.e., conjunctive use) or for implementing seasonal storage. Stormwater represents a potentially viable AWS at the local level, particularly for irrigation water uses.

SEAWATER

The use of desalinated seawater from the Atlantic Ocean and Gulf of America is an additional water source option in the CFWI Planning Area. In assessing the potential for seawater development, it must be noted that the CFWI Planning Area is landlocked, and development of coastal seawater supplies would require significant investment in transmission infrastructure. Seawater is an unlimited source of water. However, desalination is required before seawater can be used for water supply purposes. While seawater treatment costs are decreasing and capital costs are becoming competitive with other AWS, operational costs remain moderately higher than other water supply options. Co-locating seawater desalination plants with PG facilities can help to make this option more feasible in terms of cost-effectiveness. Seawater is currently used in the Tampa Bay area with TBW operating a seawater desalination facility with up to 20 mgd capacity as a portion of its regional water supply system.

STORAGE CAPACITY – AQUIFER STORAGE AND RECOVERY AND RESERVOIRS

Florida's rainfall patterns exhibit strong seasonality, with distinct dry and wet seasons. When developing certain types of water sources, such as reclaimed water and surface water supplies, a seasonal mismatch of water source availability and water demands can constrain the potential for water supply development. When developing these water supplies, storage capacity must be developed to balance supply and demand. Two key strategies for achieving regional storage solutions are listed below and constitute an AWS pursuant to Section 373.019(1), F.S.

- ASR is the underground injection and storage of water into a subsurface formation for withdrawal for beneficial purposes in the future. ASR provides for storage of large quantities of water for both seasonal and long-term storage and ultimate recovery that would otherwise be unavailable due to land limitations, loss to tide, or evaporation. While ASR is not in itself a new supply source, it provides system reliability by allowing for increased development of other sources of water.
- Reservoirs provide a more traditional, aboveground storage option for large volumes of water on a seasonal basis. Regional reservoirs require careful siting and can require

significant land availability for construction but provide an established solution for long-term water storage. An existing regional reservoir in the CFWI Planning Area is the TCR on the SJR (**Figure 22**).

Figure 22. Taylor Creek Reservoir.

7

Water Supply and Water Resource Development Options

INTRODUCTION

An important part of the water supply planning process is to identify water supply and water resource development project options necessary to meet current and future water demands. This chapter provides a summary of the water supply development and water resource development projects and programs. Pursuant to Section 373.709(2)(a)2., F.S., the technical and financial feasibility and permittability of the water supply development project options were considered (at a planning level of analysis) when developing this 2025 CFWI RWSP.

TOPICS

- Introduction
- Water Supply Project Options and Initiatives
- Water Resource Development

As the availability of fresh groundwater is limited regionally due to environmental and resource concerns, development of AWS is necessary to meet water supply needs. It is expected that the key sources to be developed will include the increased use of reclaimed water and the development of brackish/nontraditional surface and groundwater supplies. Water conservation and other demand management techniques are also expected to play an important role in meeting future water demands.

During the planning process, the Districts worked with stakeholders to update the status of project options listed in the 2020 CFWI RWSP and identify new project options. As summarized in **Appendix E,** 140 potential water supply and water resource development project options were identified to meet future water supply demands along with 27 water conservation project options. The projects, if implemented, could supply sufficient quantities of water to meet projected water demands. **Figure 23** provides a map showing the location of the identified project options (**Appendix E, Table E-1**).

Since the development of the 2020 CFWI RWSP, the Districts and area water users have made extensive progress on AWS development, water resource development, and water conservation. From FY2020-FY2024, the Districts invested approximately $397.5 million in 36 AWS projects that have been completed or are under construction in the CFWI Planning Area, making available 88.84 mgd of AWS. Additionally, the Districts provided approximately $2.9 million for 30 water conservation projects that were completed or are being implemented. The projects are estimated to have saved 1.08 mgd and are shown in **Figure 3**.

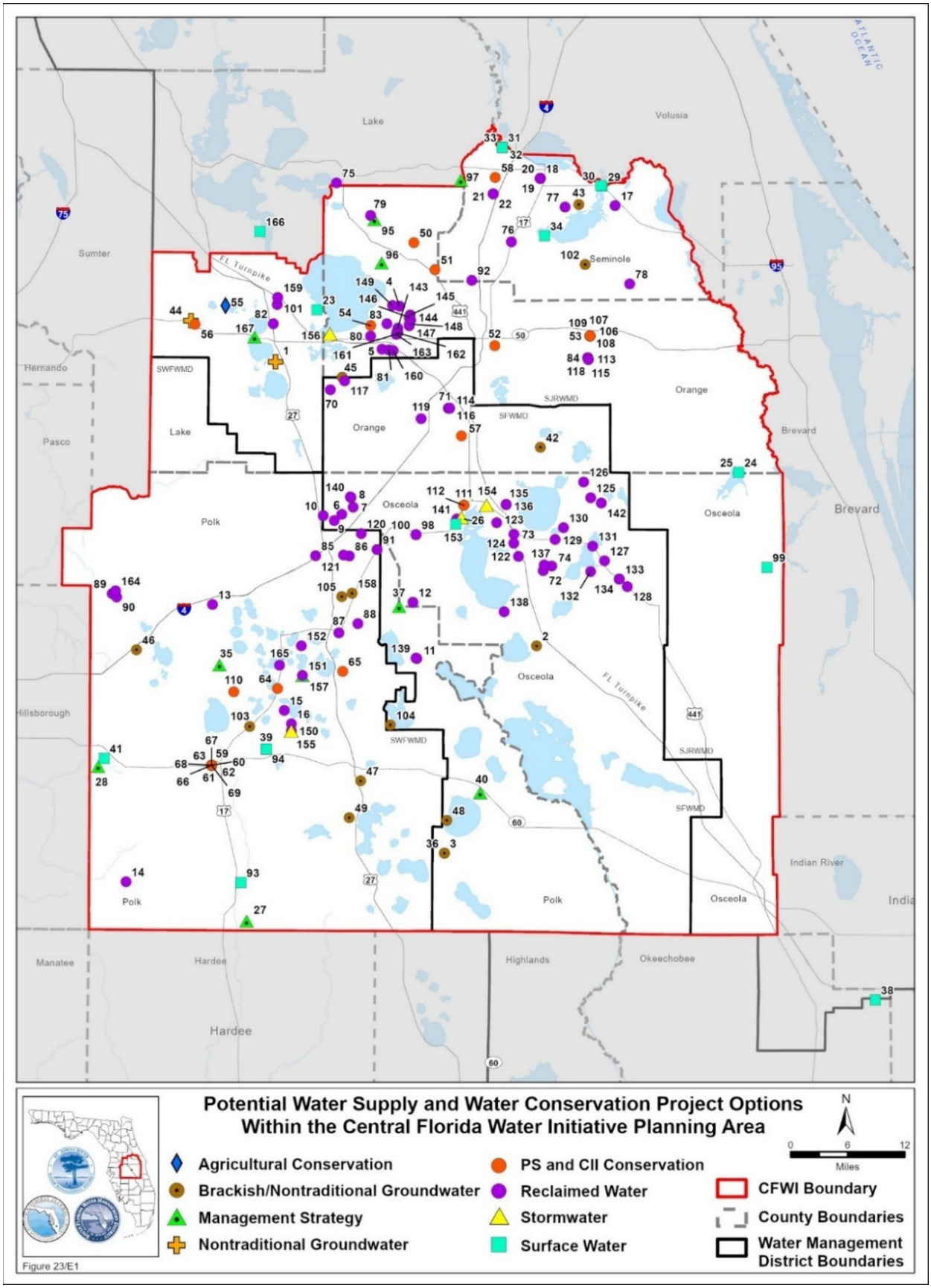

Figure 23. Map of potential water supply and water conservation project options within the Central Florida Water Initiative Planning Area.

Table 18 summarizes water supply and water resource development project options by county and category to meet the 2045 projected water demands. As identified in **Chapter 4**, up to 760 mgd of fresh groundwater may be available, but local management strategies will be needed (e.g., wellfield optimization, aquifer recharge, and natural system enhancement) to address unacceptable impacts. Up to 96 mgd of AWS may need to be developed by 2045 to meet future water demands. The project options identified in this 2025 CFWI RWSP are sufficient to meet and exceed current and projected water demands, providing numerous options for water users.

Table 18. Summary of 2025 to 2045 net water supply and water resource development project options by county and category (mgd) in the Central Florida Water Initiative Planning Area.

County	Brackish/ Nontraditional Groundwater	Management Strategies	Reclaimed Water	Surface Water	Stormwater	Total
Lake	13.70	10.00	6.00	15.00	0.00	44.70
Orange	14.00	5.00	42.26	0.00	1.06	62.32
Orange and Osceola	0.00	0.00	0.00	54.00	0.00	54.00
Osceola[a]	30.00	0.00	30.50	126.00	6.00	192.50
Polk	22.50	0.00	44.36	1.50	0.00	68.36
Seminole	3.00	0.00	7.03	82.20	0.00	92.23
Total	**83.20**	**15.00**	**130.15**	**278.70**	**7.06**	**514.11**

[a]Includes the Grove Land Reservoir Project located in Okeechobee and Indian River counties.
Note: mgd = million gallons per day

WATER SUPPLY PROJECT OPTIONS AND INITIATIVES

Water supply development is defined in Section 373.019(26), F.S., as the planning, design, construction, operation, and maintenance of public or private facilities for water collection, production, treatment, transmission, or distribution for sale, resale, or end use. Water supply development projects are generally the responsibility of local government, regional water supply authorities, and government-owned and privately-owned water utilities, who use the water source options as described in **Chapter 6** to meet their needs (Section 373.705(1)(b), F.S.; Rule 62-40.531(4), F.A.C.).

A list of water supply project options for the CFWI Planning Area was developed in coordination with water suppliers and users. The core of this list represents projects or concepts that were developed in the 2020 CFWI RWSP. Many of these projects have continued to be investigated and developed in greater detail since 2015. The Districts solicited new projects for this 2025 CFWI RWSP and coordinated with PS utilities, AG, and other water users regarding water supply projects to meet water demands through 2045. In addition, pursuant to Section 373.709(2)(a)2., F.S., the technical and financial feasibility and permittability of the water supply development project options were considered (at a planning level analysis) when developing this 2025 CFWI RWSP.

Appendix E identifies 140 potential water supply and water resource development project options, 17 brackish/nontraditional groundwater, 92 reclaimed water, 17 surface water, 4 stormwater, and 10 management strategies as well as 27 water conservation project options. The estimated water supply generated, or water resource benefit, is listed for each project, as well as the project capacity, an implementing entity, and a schedule for project completion. The project list provides information on the planning-level costs of the proposed projects. In general, these costs were developed by the sponsor of the proposed project, so the basis of these cost estimates vary.

Projects identified in this 2025 CFWI RWSP may not necessarily be selected for development by the water supplier. In accordance with Section 373.709(7), F.S., nothing contained in the water supply component of a RWSP should be construed as a requirement for water users to implement a particular project. If the projects identified in this 2025 CFWI RWSP are not selected by a water supplier, the water user may need to identify another source to meet its needs and advise the Districts of the alternate project(s). After approval of a RWSP, local governments are required to prepare a Water Supply Facilities Work Plan (Section 163.3177(6)(c), F.S) which identifies and plans for the water supply sources and facilities needed to serve existing and new development within their jurisdiction for at least a 10-year planning period.

Groundwater Supply Development

The primary source of water supply in the CFWI Planning Area is groundwater. Groundwater is supplied from the SAS, IAS, and FAS, which are described in more detail in **Chapter 6**. The FAS is subdivided into the UFA and LFA. The UFA is a semi-confined, highly productive aquifer and has historically been the primary source of water supply throughout the CFWI Planning Area (averaging about 474 mgd of supply from 2016-2020). The LFA is being used in some areas (averaging about 136 mgd of use from 2016-2020).

Fresh Groundwater

The majority of the 2020 water use in the CFWI Planning Area was met by fresh groundwater from the SAS, IAS, and FAS, with most of the withdrawals occurring from the UFA. As part of this 2025 CFWI RWSP, it was confirmed that water resource concerns have limited the availability of future water supply development of the UFA. As such, there are no new water supply projects identified that propose to use the UFA. The LFA contains fresh groundwater in the northwest portions of the CFWI Planning Area (central Lake, western-central Orange, and southwestern Seminole counties) and is brackish elsewhere. The LFA, as a potential AWS option, continues to be evaluated and developed as described below.

Brackish/Nontraditional Groundwater

The water supply potential of brackish/nontraditional groundwater from the LFA is being extensively investigated in the CFWI Planning Area. Brackish water from the LFA is expected to be a regional solution for meeting water supply needs. Seventeen potential brackish/nontraditional groundwater projects and concepts (over 83 mgd finished water) have been identified within the CFWI Planning Area (**Appendix E, Table E-2**).

These brackish/nontraditional groundwater supply projects range from local projects providing 1 mgd of finished water to regional projects that could provide up to 30 mgd of finished water. One notable example of a regional project, the Cypress Lake Wellfield project, is being developed in central Osceola County by the WCCF with TWA as the lead agency. This project (included in the AWS estimates above) was permitted by the SFWMD and is anticipated to provide new potable supply up to 30 mgd through development of the LFA. Concentrate disposal well #2, the associated monitoring well, and three production wells have been installed. The initial raw water main installation and deepening of an existing production well are underway and the RO WTP is currently under design as of 2024. Additional construction efforts will continue in 2025 and beyond. Construction of the RO plant (30 mgd finished water) is being planned in two phases with each phase delivering 15 mgd of finished water.

Since approval of the 2020 CFWI RWSP, the SWFWMD completed three hydrogeologic investigations in Polk County near the cities of Frostproof and Lake Wales and west of Crooked Lake to better define the availability and quality of brackish groundwater from the LFA. The SWFWMD also partnered with the PRWC to further evaluate the Southeast Polk and West Polk LFA Wellfields to support their final design. A third LFA exploration and aquifer performance test was completed within the Southeast Polk Wellfield in 2024, and exploratory drilling and testing at a second West Polk Wellfield site is planned for 2025. The PRWC's Southeast Polk Wellfield project was permitted by the SFWMD to provide 30 mgd of finished water at build-out. It is anticipated to deliver 7.5 mgd of new finished water in Phase 1 for PRWC members. The West Polk Wellfield project was permitted by the SWFWMD and is expected to provide 10 mgd of finished water at build-out for PRWC members.

Water Conservation

Twenty-seven water conservation projects have been identified by water users and are included in the regional project options list in **Appendix E, Table E-3.** This includes 26 PS water conservation projects and 1 AG water conservation project totaling 1.6 mgd of water savings. In addition to these specific projects, the Districts' ongoing cooperative funding programs are expected to continue to lead to the implementation of new water conservation projects and play an important role in meeting regional water supply needs.

Reclaimed Water

In 2020, approximately 214 mgd of wastewater was generated from 81 WWTPs (with permitted capacities over 0.1 mgd) within the CFWI Planning Area (FDEP 2021). From that flow, 228 mgd of reclaimed water was reused, which includes 12 mgd of supplemental flow, for beneficial purposes. Wastewater flows are projected to increase by 40 percent, to an estimated 299 mgd, by 2045. In addition, it is expected that 27 mgd of supplemental flows (used to improve seasonal availability and maximize reclaimed water use) will bring the total flow available for reuse to 326 mgd. It is projected that over 94 percent or 307 mgd will be used for beneficial purposes. The method for determining the projected availability of wastewater and reuse supplied is described in **Appendix A**.

Ninety-two reclaimed water projects have been identified within the CFWI Planning Area (**Appendix E, Table E-4**). Projects identified include construction of treatment facilities, pipelines, use of surface/stormwater to supplement and increase the total reclaimed water availability during peak use periods, the interconnection of reuse systems to increase reclaimed water utilization and improve reliability, and potable reuse.

In addition to identifying potential reclaimed water projects, the Districts worked with utilities to develop an estimate of the potential future uses of reclaimed water in the CFWI Planning Area. Through 2045, landscape irrigation for residential, golf courses, and other public access areas is expected to remain the primary use of reclaimed water, followed by recharge and industrial uses**.**

Role of Reuse in Meeting CFWI Planning Area Water Supply Needs

Only a portion of reuse quantities offset water demands that would otherwise use fresh groundwater. Utility data have shown that the amount of potable fresh groundwater offset typically achieved is approximately 65 to 75 percent; however, actual fresh groundwater offset can range from 50 to 100 percent, depending on the type of use being replaced. While the amount of fresh groundwater that is achieved by reuse is dependent upon the characteristics of a particular WWTP's service area, the projected wastewater flows do not represent an amount equal to the water demand reduction

due to system losses and inefficiencies of reuse by customers. Several factors could modify this estimate significantly, including changes in the planned types of reuse, local reclaimed water billing rates, and changes in customer demands.

The PS water demand projections compiled in **Chapter 3** were developed assuming that future rates of reclaimed water use will be similar to current rates. To reduce or offset projected water demands, it would be necessary to expand reclaimed water service so that a higher proportion of PS customers have reclaimed water service available in the future as population grows. Overall, the reuse of reclaimed water will be essential to meeting current and future water demands in the CFWI Planning Area.

Surface Water

The CFWI Planning Area contains hundreds of lakes and the headwaters for seven river systems. Despite the abundance of surface water features, a relatively small amount of surface water is currently withdrawn for PS or other uses. These water bodies support significant ecological resources and other environmental values which must be protected from impacts of proposed withdrawals from these systems. Capturing flows from these surface water bodies for water supply, particularly to support conjunctive use projects, may be effective, but could have varying levels of reliability depending on seasonal rainfall patterns.

A total of 17 potential surface water supply projects has been identified within the CFWI Planning Area (**Appendix E, Table E-5**). The surface water project options identified represent options exceeding 278 mgd of potential AWS development.

The SJR projects include the TCR/SJR, the TCR Improvements Project, the SJR near SR 46, the Sanford ASR well for surface potable water storage, the SJR near Yankee Lake (3 options), Grove Land Reservoir, and the South Lake Regional Technical Advisory Committee Reclaimed Water Augmentation Project. Within Polk County, the PRWC and SWFWMD evaluated the potential for surface water supply from the Upper Peace River or Peace Creek for PS use and/or aquifer recharge. Concurrently, the SWFWMD conducted a minimum flows re-evaluation of the upper Peace River and its tributaries, including development of new minimum flows during medium and high flow conditions. The provisional analysis suggested that surface water may not be available for the Peace Creek concept, and lesser quantities than planned may be available from the upper Peace River in Southern Polk County. The PRWC may revisit the project concepts after the new upper Peace River MFL is established and at a time appropriate to meet demands beyond the capacity of ongoing projects.

The Grove Land Reservoir and Stormwater Treatment Area (GLRSTA) Project is proposed to be an approximate 5,000-acre reservoir capable of storing 75,000-acre-feet of water and a 2,000-acre stormwater treatment area (STA) to improve water quality, located outside the CFWI Planning Area in Okeechobee and Indian River counties. The GLRSTA may deliver up to 100 mgd to the headwaters of the SJR. While some reductions due to the current regulation schedule of the Upper St. Johns River Basin project, as well as ET losses, are expected, this project could make a contribution to potential water availability for the CFWI Planning Area

The NRSP, adopted by Osceola County, includes the Pennywash/Wolf Creek Reservoir (PWR) as a potential water supply project option. This project is not anticipated to be needed until after 2040, but since it is listed in the NRSP, Section 163.3245(4)(b), F.S., requires this water supply option to be incorporated into the applicable RWSP. This conceptual project would be a new surface water

reservoir near the junction of Pennywash and Wolf creeks. The PWR is estimated to yield 20 mgd by capturing creek flows before they reach the SJR.

Stormwater

Stormwater is normally captured and/or conveyed by maintained ponds, swales, or similar features for water quality treatment or flood control. Limited water availability in many areas has led to rapid advances in the use of stormwater as a water supply strategy. Central Florida utilities have begun embracing this concept, primarily for augmenting reclaimed water supplies for residential irrigation or other non-potable uses. Four water supply projects in central Florida (**Appendix E, Table E-6**) involve the impoundment of stormwater to supplement reclaimed water supplies.

Other project opportunities include local governments and utilities partnering with the Florida Department of Transportation (FDOT) on stormwater capture and harvesting projects. A placeholder for such conceptual FDOT projects was identified in **Appendix E, Table E-7**.

WATER RESOURCE DEVELOPMENT

Water resource development projects can be categorized into two broad categories. The first category includes regional projects designed to create from traditional or alternative sources an identifiable, quantifiable supply of water for existing and/or future reasonable-beneficial uses. Water resource development projects are typically implemented directly by the Districts or by the Districts in conjunction with other agencies or local governments. These include projects that increase the amount of water available for water supply. The second category encompasses data collection and analysis activities that support water supply development by local governments, utilities, regional water supply authorities, and others. This includes programs that collect and analyze data for natural system monitoring, groundwater monitoring, aquifer analyses, groundwater modeling, water supply planning, and feasibility studies for new technologies.

This section summarizes projects and District programs that are regional in nature and are expected to significantly contribute to water supply development in the CFWI Planning Area. Water resource development projects included in this 2025 CFWI RWSP are included in **Appendix E, Table E-1**.

Surface Water Storage Projects

The seasonal storage of surface water is a water resource development option that may increase the quantity of water available to meet future growth. The Districts conducted feasibility studies to determine the benefits, costs, and potential environmental effects of these projects.

An example of a surface water storage project is the TCR Improvements Project (**Appendix E**, **Table E-5**). This project consists of dam improvements to the TCR to support increased water levels in the reservoir. Raising the water level in the reservoir would increase the water supply yield from the reservoir.

The PRWC completed draft plans of conceptual water supply project options for the Peace Creek and Peace River in 2021 and 2022, respectively. The Peace Creek project option included a wetland treatment system and aquifer recharge wells located northeast of Bartow. The Peace River project option included a conventional potable water treatment system and intake structure on the Peace River south of Fort Meade. However, the reports were not finalized because concurrent MFL evaluations for the upper Peace River and its tributaries are expected to result in further constraints

of surface water available from the watershed. The constraints are expected to impact the feasibility, sizing, and cost estimates of the drafted project options. Adoption of the updated MFL is scheduled for 2025 and will include new minimum flows for the medium and high flow conditions. Provisional analysis of high flow constraints indicates that permittable quantities may not be available in the Peace Creek, and less-than-planned quantities may be available at the proposed Peace River intake. The PRWC may revisit the project options once the MFL is adopted and with consideration to their ongoing brackish groundwater projects.

Aquifer Recharge and Enhancement Projects

Aquifer recharge projects can be used to increase the amount of water in an aquifer to help offset declines caused by groundwater withdrawals. Methods for aquifer recharge include land application in a high recharge area, using recharge wells to inject water into an aquifer, or using other recharge techniques such as RIBs. Sources of water for aquifer recharge can be surface water, reclaimed water, or stormwater. If the water is injected into zones of an aquifer designated as an underground source of drinking water, additional treatment may be required to meet state and federal drinking water standards. Examples of aquifer recharge/enhancement projects are described below (**Appendix E**, **Table E-7**).

The SJRWMD continues to investigate the feasibility of the LANS Recharge Well, an aquifer recharge project. This project conceptually would use infrastructure owned by the City of Apopka to withdraw excess water from the LANS for aquifer recharge via a recharge well.

Minimum Flows and Minimum Water Levels Prevention or Recovery Strategy Projects

Presently, only the SWFWMD has developed prevention or recovery strategies for MFL water bodies within or extending into the CFWI Planning Area. Historical development of groundwater supplies from the UFA in the southern and central portions of the SWFWMD has resulted in significant declines in the water level of the UFA, resulting in saltwater intrusion near the Gulf Coast, lowered lake levels along the Highlands Ridge recharge area, and loss of flow in the upper Peace River. These issues are addressed in the SWUCA Recovery Strategy, which applies to portions of the SWFWMD within the CFWI Planning Area. Water resource development projects for recovery strategies are described below and in **Appendix E**. Projects included in the SWUCA Recovery Strategy for entities within the CFWI Planning Area are incorporated into this 2025 CFWI RWSP per Section 373.0421(3), F.S.

The Lake Hancock Lake Level Modification project is part of an MFL recovery strategy for the upper Peace River. The flows in the Upper Peace River have been severely impacted historically, and at times the river has stopped flowing. The goal of the Lake Level Modification Project is to store water by raising the control elevation of the existing outflow structure on Lake Hancock and to slowly release the water during the dry season to help meet the minimum flow requirements in the upper Peace River between Bartow and Zolfo Springs. This project was combined with the Lake Hancock Outfall Treatment Project, which uses a wetland treatment system to improve lake water quality prior to discharge. This series of projects is now complete and will restore several hundred acres of wetlands contiguous to Lake Hancock and provide recharge to the UFA through exposed sinkholes along the upper Peace River. A reservation for the water stored in Lake Hancock and released to Lower Saddle Creek through implementation of these projects for recovery of the upper Peace River is in place.

The SJRWMD is currently in the process of evaluating five new MFLs and re-evaluating ten MFLs within the CFWI Planning Area. It is anticipated that prevention or recovery strategies will be needed and developed for the Wekiva River Basin and Sylvan Lake. Regional and individual projects may be developed as part of a strategy to address or offset impacts to these MFLs water bodies. The SJRWMD is currently collaborating with key stakeholders to develop regional projects for the anticipated Wekiva River Basin and Sylvan Lake Prevention and Recovery Strategy.

District Regional Programs

Each of the Districts maintain a variety of long-term programs and initiatives that provide for the protection, conservation, and development of water resources. Many of these programs operate throughout each District, not only within the CFWI Planning Area. Each District maintains an annual 5-Year Water Resource Development Work Program, which fully details the various water supply and water resource development programs being implemented by each District. These activities are integral components of each District in achieving its mission; however, they may vary in scope and magnitude of implementation between Districts. Some programs and/or initiatives that are important to ongoing CFWI water resource development efforts include:

- **Cooperative Funding Programs** – These programs provide financial assistance on a cost-share basis to utilities, local governments, and other entities for AWS and water conservation projects that help create sustainable water resources.
- **Agricultural Water Resource Programs** – Currently, both the SWFWMD and SJRWMD operate cooperative funding programs to assist in the development of projects to implement AWS or improve water use efficiency for AG operations.
- **Abandoned Well Plugging Programs** – Currently, both the SWFWMD and the SJRWMD have active programs to properly abandon or back-plug unused, free-flowing wells or substandard wells that impact groundwater quality. These programs can help to improve local groundwater quality and conserve groundwater resources.

Hydrologic Data Collection and Analysis

The data collection and analysis activities conducted by the Districts provide information on the health of natural systems and the development of water supplies. Data collection programs allow the Districts to monitor the status of water resources, observe trends, identify, and analyze existing or potential resource issues, and develop programs to support water resource projects that will assist in correcting existing problems, and prevent future problems. Data collection also supports the CUP/WUP programs and compliance, MFL status evaluation, prevention and recovery strategies, and modeling of surface and groundwater systems.

Groundwater Modeling

The ECFTXv2.0 model documentation report includes the model updates, recalibration approach and results, and a sensitivity analysis to better understand the influence of recharge on model calibration. No other structural changes to the model (e.g., model domain, grid cell size) were conducted for this 2025 CFWI RWSP. For the 2030 CFWI RWSP, the ECFTXv2.0 model will be evaluated to potentially include revisions such as:

- Reviewing and updating model layering and aquifer parameters to incorporate new monitoring data and wells

- Updated water use data
- Updated water level data for wells, lakes, wetlands, and spring flows
- Exploring potential use of more recent versions of MODFLOW with density-dependent capabilities

Lower Floridan Aquifer Investigations

Construction of new data collection sites for the LFA is an important component of the DMIT Work Plan (www.cfwiwater.com). The Districts will continue to maintain and update the monitoring inventory, which includes LFA monitoring. These LFA investigations will provide the necessary data to update the ECFTXv2.0 model aquifer parameters described above. In addition, these investigations will provide insight on the potential water supply availability and constraints, including water quality characteristics.

Groundwater, Surface Water, and Wetlands Monitoring

Ongoing efforts include supporting water supply and water resource development project options and management strategies. The Districts will continue to maintain and update the monitoring inventory and develop additional monitoring sites, as necessary.

In addition, the Districts and other stakeholders will maintain ongoing coordination to evaluate if potential updates to the wetlands analysis methodology are needed. This evaluation will include analyzing the data collected from the long-term wetlands monitoring program and identifying any necessary enhancements to wetlands data collection.

Minimum Flows and Minimum Water Levels and Water Reservation Establishment and Management Activities

Twenty-seven water bodies within or extending into the SJRWMD and SWFWMD portions of the CFWI Planning Area are scheduled for MFLs adoption or re-evaluation (**Appendix C, Figure C-1** and **Table C-2**). These included the re-evaluation of MFLs for Lakes Aurora, Bonnie, Eagle, and Eva, which were not met under the 2023 status assessment and will be re-evaluated using new, updated lake-level methods and peer-reviewed wetland criteria, which will support future assessment of recovery needs.

Section 373.709(2)(c), F.S., requires that RWSPs include prevention or recovery strategies that are needed pursuant to Section 373.0421(2), F.S. One recovery strategy, the SWUCA Recovery Strategy, was adopted within a portion of the CFWI Planning Area. The results in **Chapter 4 Table 15** indicate 16 MFL priority water bodies are currently not being met under the 2016-2020 RC in the SWFWMD and SJRWMD. By 2045, the proposed MFLs for Sylvan Lake MFL-related environmental criteria are predicted to not be met. Prevention or recovery strategies will need to be developed and adopted for the MFL priority water bodies that do not already have a prevention or recovery strategy. Rule development for these strategies is anticipated to be completed by 2026. There are no adopted or proposed MFLs in the SFWMD portion of the CFWI Planning Area, and as such no prevention or recovery strategies are needed.

The SFWMD adopted water reservations for the KCOL in 2021 to protect fish and wildlife, as well as support the Kissimmee River Restoration Project (**Table C-3**). The KCOL water reservations includes the following water bodies: (1) Upper Chain of Lakes; (2) Headwaters Revitalization Lakes; and (3) the

Kissimmee River and floodplain, as well as interconnected canals. The KCOL water reservation area spans portions of the SFWMD's UKB Planning Area (part of the CFWI, as well as the SFWMD's Lower Kissimmee Basin Planning Area (**Figure C-3**). The Upper Chain of Lakes and the Headwaters Revitalization Lakes are the primary source of water for the Kissimmee River (**Figure C-3** and **Table C-3**). The final technical document (SFWMD 2020) and water reservations rules and criteria are provided at https://www.sfwmd.gov/our-work/water-reservations on the Kissimmee tab.

The SWFWMD adopted a water reservation for Lake Hancock and Lower Saddle Creek in 2020 to support minimum flows recovery in the upper Peace River. The reservation reserves the water stored in Lake Hancock within a range of specified stages and the water released from the lake through Structure P-11 to the lower portion of Saddle Creek for the protection of fish and wildlife through recovery of minimum flows in the upper Peace River (**Figure C-3** and **Table C-3**). A re-evaluation of this reservation is scheduled for completion in 2025.

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Funding Options

TOPICS

- Water Supplier and User Funding Options
- Water Management District Funding Options
- State Funding Options
- Federal Funding Options
- Public-Private Partnerships, Cooperatives, and Other Private Investment

Section 373.709, F.S., identifies two types of projects to meet water demands: water supply and water resource development projects (**Chapter 7**). As described in this chapter, RWSPs are required to include an analysis of funding needs and sources of possible funding options for these projects.

Funding for water supply development and water conservation at the local level is the shared responsibility of water suppliers and users. The state of Florida and the Districts may provide funding assistance to local water suppliers developing AWS and measurable water conservation programs. Identification of an AWS project in this 2025 CFWI RWSP makes that project eligible for future funding (Section 373.707(8)(h), F.S.), although funding is not guaranteed. Projects that are not listed in this 2025 CFWI RWSP but are consistent with the goals of the RWSP and meet program requirements, also may be eligible for funding. Funding determinations for individual projects are made by the District's Governing Boards based on statutory and other considerations.

Section 373.705, F.S., describes the roles and responsibilities of the Districts, local governments, regional planning authorities, and utilities concerning funding water supply and water resource development projects. Specifically, the legislation finds:

- The proper role of the water management districts in water supply is primarily planning and water resource development, but this does not preclude them from providing assistance with water supply development (Section 373.705(1)(a), F.S).
- The proper role of local government, regional water supply authorities, and government-owned and privately-owned water utilities in water supply is primarily water supply development, but this does not preclude them from providing assistance with water resource development (Section 373.705(1)(b), F.S).
- Water management districts take the lead in identifying and implementing water resource development projects, and are responsible for securing necessary funding for regionally significant water resource development projects, including regionally significant projects that prevent or limit adverse water resource impacts, avoid competition among water users, or support the provision of new water supplies in order to meet a MFL or to implement a prevention or recovery strategy or water reservation (Section 373.705(2)(b), F.S).
- Local governments, regional water supply authorities, and government-owned and privately-owned water utilities take the lead in securing funds for and implementing water supply development projects. Generally, direct beneficiaries of water supply development projects should pay the costs of the projects from which they benefit, and water supply development

projects should continue to be paid for through local funding sources (Section 373.705(2)(c), F.S).

Subsection 373.707(2)(c), F.S., describes the responsibilities of local governments and water providers in providing funding for the development of AWS:

- Funding for the development of AWS projects shall be a shared responsibility of water suppliers and users, the state of Florida and the water management districts, with water suppliers and users having the primary responsibility and the state of Florida and the water management districts being responsible for providing potential funding assistance.

The water management districts, water providers, and the state of Florida previously funded several water conservation and AWS development projects. Potential sources of funding for water supply and water resource development projects are described in the next sections.

WATER SUPPLIER AND USER FUNDING OPTIONS

Funding for water supply development is the primary responsibility of water suppliers and users. Cost-share or reimbursement funding from water management districts, state, and federal funding programs can contribute to financing the cost of water supply development. Typically, the cost of water supply for water suppliers and users is included in the operation and maintenance to produce the specific commodity and is generally reflected and recovered in the price and sale of the commodity. For water and sewer services, there are a variety of funding methods available to address utility costs, which are summarized below.

Water Utility Revenue Funding Sources

Increased demand generally results from new customers that help finance source development through impact fees and utility bills. The financial structure of utility fees can be highly variable and reflects the needs of each utility. Water utilities draw from a number of revenue sources, such as connection fees, tap fees, impact fees, base and minimum charges, and volume charges. Connection and tap fees generally do not contribute to water supply development or treatment capital costs. Impact fees are generally devoted to the construction of source development, treatment, and transmission facilities. Base charges generally contribute to fixed customer costs, such as billing and meter replacement. However, a base charge or a minimum charge, which also covers the cost of the number of gallons of water used, may contribute to source development, treatment, and transmission construction cost debt service. Volume charges contribute to both source development/treatment/transmission debt service, and operation and maintenance.

Community development districts and special water supply and/or sewer districts may develop non-ad valorem assessments for system improvements to be paid at the same time as property taxes. Typically, community development districts and special district utilities serve planned development in areas not served by a government-run utility. In general, all utilities may issue and secure construction bonds backed by revenues from fees, rates, and charges.

Regional water supply authorities are wholesale water providers to utilities and do not have retail customers. An authority's facilities are funded through fixed and variable charges to the utilities they supply, which are in turn paid by the retail customers of the utilities. Counties, municipalities, and special districts are encouraged by the legislature to create regional water supply authorities under Section 373.701(3), F.S., to supply adequate and dependable supplies of water where needed without resulting in adverse effects. Regional water supply authorities are granted multiple rights and

privileges pursuant to Section 373.713, F.S., including the ability to levy taxes, issue bonds, and borrow money to develop water supplies. Authorities may receive preferred funding assistance from the state and Districts for the capital costs of new AWS and regional infrastructure.

There are several methods available to mitigate the impact of higher costs to customers. Many of these are addressed in various publications by the American Water Works Association, Florida Rural Water Association, Florida Public Service Commission, Water Research Foundation, etc.

WATER MANAGEMENT DISTRICTS FUNDING OPTIONS

The Districts provide financial assistance for water conservation and AWS projects through cost-share or reimbursement programs. Financial assistance is provided primarily to governmental entities, but private entities are also eligible to participate in these programs. Funding options and programs for the Districts are described below and details regarding previous project funding specific to the CFWI Planning Area are included in **Chapter 2**. The Districts annually update their respective 5-year Water Resource Development Work Programs (Work Program), which describes the implementation strategy and funding plan for water resource, water supply, and AWS development components.

St. Johns River Water Management District

Cost-share Program

The SJRWMD cost-share program is funded by the FDEP using grants from the AWS program. Applications are accepted annually for projects that provide an AWS or water conservation benefit.

Since 2002, the SJRWMD has provided over $231 million in incentive-based funding assistance for a variety of AWS, water conservation, and other projects.

Water Conservation Rebate Program

The SJRWMD water conservation rebate program's purpose is to support eligible water conservation projects for non-agricultural water use through rebate grants. This supports one of the District's strategic goals to promote and incentivize water efficiency practices and programs. The grant is provided as an up to 50 percent rebate of actual costs with a not-to-exceed maximum amount per item. Applicants are limited to no more than $10,000 per FY. The District offers rebates for a variety of proven outdoor water-saving items and labor necessary for installation.

Agricultural Cost-share Program

The SJRWMD agricultural cost-share program seeks to engage farmers, growers, and ranchers in shared goals of water conservation and reduction of nutrient runoff. The SJRWMD accepts applications for its district-wide agricultural cost-share program year-round. Eligible projects include those that convert to an AWS, conserve water, and/or reduce nutrient runoff. Cost-share could be up to 75 percent, not to exceed $250,000 annually, for the engineering, design, construction, and implementation costs for approved projects. Projects will be selected and funded pending District Governing Board approval.

Water Resource Development Work Program

The Work Program identifies sufficient water sources to meet the water supply needs of existing and future reasonable-beneficial uses for a 1-in-10-year drought event and to avoid the adverse effects of competition for water supplies. Over the next 5 years, this Work Program outlines SJRWMD's commitment to identifying projects that provide adequate water supplies for all reasonable-beneficial uses and to maintain the function of natural systems.

In total, this Work Program outlines projects that, upon completion, will make available approximately 127 mgd of water, including reuse and non-reuse water. These benefits are associated with approximately $273.3 million budgeted for the 5-year Work Program from FY2024-FY2025 through FY2028-FY2029. This program also sets forth a commitment to develop projects associated with implementation of MFLs, potential prevention or recovery strategies, and potential water reservations. The projects identified that benefit MFLs are anticipated to make available approximately 25.5 mgd (included in the 127 mgd mentioned above).

South Florida Water Management District

Cooperative Funding Program

For over two decades, the SFWMD has provided funding to local governments, special districts, utilities, homeowners' associations, water users, and other public and private organizations for AWS and water conservation projects consistent with the SFWMD's core mission through the Cooperative Funding Program (CFP). The CFP provides financial incentives for local projects that complement ongoing regional restoration, flood control, water quality, and water supply efforts within the SFWMD's 16-county jurisdiction. Since 1997, the SFWMD has provided over $256 million in incentive-based funding assistance for a variety of AWS and water conservation projects.

Each FY, the SFWMD's Governing Board determines the amount of funding, if any, to allocate to the CFP, the project priorities for that year, and the cost-share or reimbursement to be allocated. The SFWMD's Governing Board establishes the priorities and guidelines for review of the projects under consideration for funding.

Water Resource Development Work Program

The FY2024-FY2025 through FY2028-FY2029 Work Program implementation schedule and projected expenditures (including salaries, benefits, and operating expenses) for water resource development activities reflect the SFWMD's continued commitment to ensure adequate water resources are available to meet existing and future reasonable-beneficial needs and related natural systems. The SFWMD allocated $768 million in FY2024-FY2025 for water resource development projects district-wide and anticipates spending $4.65 billion on these projects through FY2028-FY2029.

As part of their annual progress reports required by Section 373.709(8)(b), F.S., PS utilities have tentatively identified 60 reuse and non-reuse water supply development projects they plan to construct with local funding for FY2025-FY2029 by updating SFWMD's Water Supply Utilities Project Database. The 60 projects will create an estimated 245.01 mgd of AWS capacity and 125.85 mgd of reclaimed water distribution capacity. The total amount will increase with water made available upon completion of water supply development projects, including reuse and non-reuse water for urban and AG water supply that may be funded through the CFP.

Southwest Florida Water Management District

Facilitating Agricultural Resource Management Systems Program

The SWFWMD Facilitating Agricultural Resource Management Systems (FARMS) Program assists AG operations in offsetting groundwater withdrawals for irrigation and frost/freeze protection through use of tailwater recovery, irrigation efficiency, and other practices. The FARMS Program also supports water resource development projects by providing financial incentives to private AG operations to implement production-scale AG BMPs. The FARMS Program funded numerous projects within the SWFWMD that enhance surface water quality and reduce the amount of groundwater used for irrigation and frost/freeze protection.

Cooperative Funding Initiative

The SWFWMD's primary funding mechanism for water supply development is the Cooperative Funding Initiative (CFI) Program, which provides funding for AWS and water conservation projects. The SWFWMD jointly participates with local governments and other entities to ensure proper development, use, and protection of regional water resources. The CFI Program is a matching grant program that funds projects of mutual benefit, generally at 50 percent by the SWFWMD and 50 percent by the public or private cooperators. Since 1988, the CFI Program resulted in a combined investment (SWFWMD and its cooperators) of approximately $4 billion for the region's water resources, addressing water supply, natural systems, flood protection, and water quality.

Water Resource Development Work Program

The FY2024-FY2025 SWFWMD budget for Water Resource Development Data Collection and Analysis activities was approximately $24.5 million, with slight reductions expected to occur over the next 5 years. Additionally, the SWFWMD allocated approximately $71 million in the FY2024-FY2025 budget for AWS and environmental restoration projects. The SWFWMD anticipates continued funding for AWS and water resource development projects in Polk County, including PRWC-priority projects. The SWFWMD plans to continue implementing FARMS projects at a cost of approximately $4.5 million each year through FY2028-FY2029. The average proposed funding for the 5-year Work Program is approximately $109.6 million annually through FY2028-FY2029.

Southwest Florida Water Management District Initiatives Program

Through the SWFWMD Initiatives Program, funding is provided outside the CFI Program for projects of significant importance or regional priority. Funding may be provided cooperatively up to 50 percent cost-share for regional water supply development projects. In some cases, the SWFWMD may increase its percentage match or provide total funding for the project.

Water Incentives Supporting Efficiency Program

The SWFWMD's Water Incentives Supporting Efficiency (WISE) Program is a 50 percent cost-share reimbursement program that supports water conservation efforts by awarding applicants up to $20,000 to implement projects that help reduce water use. This program offers a funding opportunity to utilities, apartment complexes, schools, prisons, homeowner's associations, golf courses, hotels, manufacturers, food processing facilities, and other commercial users who do not typically take part in the SWFWMD's CFI Program.

STATE FUNDING OPTIONS

State of Florida Water Protection and Sustainability Program

The Water Protection and Sustainability Program (WPSP) was created by the Florida Legislature in 2005. The program provides funds for several environmental programs including AWS development and water conservation. In the WPSP, AWS includes reclaimed water, brackish/nontraditional water, seawater, and surface water captured during wet season flows (**Chapter 6**). With any WPSP funding, the Legislature established a goal for the Districts to annually contribute funding equal to 100 percent of the state funding for AWS development assistance, of which the Districts have exceeded this annual amount (Section 373.707(6)(a), F.S.). Pursuant to Section 373.707(8)(e), F.S., applicants who receive funding assistance pursuant to the WPSP shall, at a minimum, be required to pay 60 percent of the project's construction costs.

Alternative Water Supply and Development Appropriation

In FY2024-FY2025, the Governor and Legislature allocated $80 million statewide for water supply and water resource development projects to help protect the state's water resources and ensure the needs of existing and future users are met. The funding will support implementation of water conservation programs, AWS projects, and water resource development projects. Funding is prioritized for regional projects in areas that have been determined to have water resource constraints and that provide the greatest resource benefit. From FY2019-FY2020 to FY2023-FY2024, the Governor and Legislature allocated $230 million in statewide funding for these projects. These appropriations were allocated to the five water management districts through their respective cost-share programs. During this same funding period and in addition to the noted statewide funding, the Legislature provided $37.3 million for PRWC and member prioritized projects pursuant to the Heartland Headwaters Protection and Sustainability Act.

Drinking Water State Revolving Fund Program

The Florida Drinking Water State Revolving Fund Program provides low interest loans to eligible entities to plan, design, and build or upgrade drinking water systems (Section 403.8532, F.S.). Discounted assistance (e.g., exceptionally low interest rates, grants) for disadvantaged communities is available. Interest rates on loans are below market rates and vary based on the economic wherewithal of the community. The FDEP receives requests for funding throughout the year. The information is used to establish the project priority list for the following annual cycle. More information may be found on FDEP's website at https://floridadep.gov.

Florida Forever Program

Florida Forever is Florida's statewide conservation and recreation lands acquisition program. The Florida Forever Act (Section 259.105, F.S.) authorizes the distribution of funds to FDEP and the water management districts from the Florida Forever Trust Fund for the acquisition of lands and capital project expenditures necessary to implement the water management districts' priority lists developed pursuant to Section 373.199, F.S.

Springs Restoration Funding

The Florida Legislature recognized the critical importance of Florida's freshwater springs and identified a long-term funding source for the restoration, recovery, protection, and management of these unique natural resources. The FDEP coordinates the development of springs project funding with the Districts. Eligible projects are categorized in the following high-level project types: AG BMPs, water conservation, hydrologic restoration, land acquisition, reuse, wastewater collection and treatment, stormwater, other water quality, and other water quantity.

From FY2011-FY2023, state funding totaling $516 million was appropriated for restoration projects to specifically benefit springs, matching local funding ($311 million) for a total investment of more than $827 million to protect Florida's springs. In addition, since FY2019, $25 million in Federal American Rescue Plan Act funding was provided. The 2016 Legacy Florida legislation earmarked $50 million per year from the Land Acquisition Trust Fund for springs restoration for the next 20 years (Section 375.041(3)(b)2., F.S.). It is anticipated that the Districts, local governments, and PS utilities will continue to partner with the state of Florida through FDEP to implement projects. Of note, $55 million is set to be awarded in the FY2024-FY2025 grant cycle.

Agricultural Best Management Practices

The FDACS Office of Agricultural Water Policy (OAWP) works with multiple partners, including the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), FDEP, the Districts, and Soil and Water Conservation Districts, to provide funds that assist farmers in implementing BMPs. Cost-share programs through the FDACS OAWP vary regionally based upon resource concerns and appropriate practices. Typical BMP practices include:

- Nutrient management to determine nutrient needs, sources, and minimizing impacts to water resources
- Irrigation management to address the method and scheduling of irrigation to reduce water and nutrient losses to the environment
- Water resource protection using buffers, setbacks, and swales to reduce or prevent the transport of sediments and nutrients from production areas to water bodies

FEDERAL FUNDING OPTIONS

Environmental Quality Incentive Program

The Environmental Quality Incentives Program (EQIP) provides technical and financial assistance to producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health, and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against drought and increasing weather volatility. The EQIP provides assistance to farmers, ranchers, and forest landowners who own or rent AG land(s) (https://www.nrcs.usda.gov).

State and Tribal Assistance Program

Another partnership with states involves funding assistance through cooperative agreements, referred to as State and Tribal Assistance Grants. These funds are available through the FDEP, which

historically required 45 percent in matching funds from local government cooperators (https://www.epa.gov/grants).

Water Infrastructure Finance and Innovation Act

The Water Infrastructure Finance and Innovation Act (WIFIA) establishes a new financing mechanism to accelerate investment in our nation's water infrastructure. The WIFIA program will provide loans for up to 49 percent of eligible project costs for projects that will cost at least $20 million for large communities and $5 million for small communities (population of 25,000 or less) (https://www.epa.gov/wifia).

United States Department of Agriculture's Rural Utilities Service

The U.S. Department of Agriculture's Rural Utilities Service's Water and Environmental Programs (WEP) provides loans, grants, and loan guarantees for drinking water, sanitary sewer, solid waste, and storm drainage facilities in rural communities with populations of 10,000 or less. Public bodies, non-profit organizations, and recognized Indian tribes may qualify for assistance. The WEP also makes grants to non-profit organizations to provide technical assistance and training to help rural communities with their water, wastewater, and solid waste problems.

PUBLIC-PRIVATE PARTNERSHIPS, COOPERATIVES, AND OTHER PRIVATE INVESTMENT

Another source of funding that is becoming more common and is a means to reduce financial burden for public entities, is public-private partnerships. These partnerships can require technical expertise and financial risk beyond the expertise and risk tolerance of many utilities and water supply authorities. A range of public-private partnerships and risk options is available to provide this expertise. These options range from all-public ownership to all-private ownership of facility design, construction, and operation. Competition among private firms desiring to fund, build, or operate water supply development projects with assistance from government entities could reduce project costs, potentially resulting in lower customer charges.

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Conclusion and Recommendations

This 2025 CFWI RWSP was jointly developed by the Districts in coordination with other state agencies and stakeholders to be consistent with the water supply planning requirements of Chapter 373, F.S. This 2025 CFWI RWSP is the second 5-year update and builds upon previous work that was completed by the Districts, FDEP, FDACS, and other stakeholders. It identifies programs and projects to ensure that adequate and sustainable water supplies are available to meet future projected water demands while protecting the environment and water resources. This 2025 CFWI RWSP is based on a planning horizon extending through 2045 and provides projected water demands, an evaluation of traditional groundwater sources to support these demands, identification of water conservation measures, and water supply and water resource development project options needed to meet the growing water demands.

TOPICS

- Conclusion
- Recommendations
- Water Conservation
- Project Options
- Regulatory
- Intergovernmental, Stakeholder, and Public Coordination
- Resiliency

Total water demand in the CFWI Planning Area is anticipated to increase 41 percent from 639 mgd in 2020 to 903 mgd in 2045. For 2045, the PS category represents the largest demand (71 percent), followed by AG (15 percent), and CII (7 percent) (**Chapter 3**, **Figure 4**).

Current water sources in the CFWI Planning Area include groundwater (fresh and brackish), reclaimed water, surface water, and stormwater. Fresh groundwater sources (i.e., SAS, IAS, FAS) are considered traditional water sources; whereas, nontraditional or AWS include brackish/nontraditional groundwater, surface water, stormwater, seawater, reclaimed water, and water stored in ASR wells and reservoirs.

CONCLUSION

This 2025 CFWI RWSP concludes that fresh groundwater resources alone cannot meet future water demands or currently permitted allocations without resulting in unacceptable impacts to water resources and related natural systems. Evaluations indicate that expansion of fresh groundwater withdrawals to meet projected water demands through 2045 will increase the existing areas of water resource stress within the CFWI Planning Area. Primary areas that appear to be more susceptible to the effects of groundwater withdrawals include the Wekiwa Springs/Wekiva River System, western Seminole and Orange counties, southern Lake County, the Lake Wales Ridge, the upper Peace River Basin, eastern Osceola County, and central Polk County (north of I-4).

Total water demands for all water use categories are projected to increase 41 percent from 639 mgd in 2020 to 903 mgd in 2045. Of this, the amount of groundwater represents 603 mgd and 856 mgd, respectively (**Appendix A**). These groundwater values in **Appendix A** vary slightly from the modeled demands in **Chapter 4** as it was necessary to develop monthly trends for seasonality for the ECFTXv2.0 transient modeling effort (**Appendix D**). The ECFTXv2.0 model results predict that increased

withdrawal from groundwater sources will be insufficient to meet the entire 2045 projected water demands and current CUP/WUP allocations based upon the current and proposed withdrawal locations. Groundwater availability is highly dependent on withdrawal location, aquifer zones and associated permeability, source limitations, and proximity and hydraulic connection to natural systems, including MFL water bodies and wetlands without MFLs.

As summarized in **Chapter 4**, it was concluded that fresh groundwater availability of up to 760 mgd as identified in the 2020 CFWI RWSP is still valid based on the water resource evaluations of this 2025 CFWI RWSP. Based on the 2045 groundwater demand projections (856 mgd), the resulting groundwater shortfall is approximately 96 mgd. Therefore, local management strategies will continue to be needed (e.g., wellfield optimization, aquifer recharge, natural system enhancement) to address unacceptable impacts.

Appendix E identifies 140 potential water supply and water resource development project options, including 17 brackish/nontraditional groundwater, 92 reclaimed water, 17 surface water, 4 stormwater, and 10 management strategies project options. Cumulatively, the 140 project options could treat, store, or produce up to 596 mgd (approximately 514 mgd net water) of additional water supply or water resource benefit, exceeding the 2045 projected groundwater shortfall of 96 mgd. Most of the 17 surface water project options are associated with the SJR or upper Peace River. Brackish/nontraditional water project options target the LFA, and management strategies include wellfield optimization, aquifer recharge, and natural system enhancement (e.g., improving the ecological value of wetlands, other surface waters, or uplands in comparison to their current situation). **Appendix E** includes 27 water conservation project options that are not included in this total. This 2025 CFWI RWSP identified areas that may require recovery or resource protection and areas where regulatory and water resource protection strategy consistency may be needed.

This 2025 CFWI RWSP concludes that the current and future water demands can be met through the 2045 planning horizon, while sustaining the water resources and related natural systems, through water conservation, implementation of management strategies and measures, and implementation of project options identified in this 2025 CFWI RWSP.

RECOMMENDATIONS

This 2025 CFWI RWSP identifies programs and projects to ensure that adequate and sustainable water supplies are available to meet current and future water supply needs while protecting the environment and water resources. Many actions by the Districts and stakeholders will have to occur for water resource sustainability to be realized and to ensure a level of certainty of water supply to users. This requires an integrated approach that includes:

- Continued implementation and expansion of water conservation measures and other demand management strategies
- Continued development of AWS
- Optimization of groundwater withdrawals through a cooperative approach between water users
- Continued research and hydrogeologic investigations
- Continued pursuit of funding for identified water supply and/or water resource development projects

Recommended actions for implementation and future direction for this 2025 CFWI RWSP are categorized below:

- Water Conservation
- Project Options
  - Brackish/Nontraditional Groundwater
  - Reclaimed Water
  - Surface Water
  - Stormwater
  - Seawater
  - Storage Capacity and Recharge – ASR and Reservoirs
  - Water Resource Development Projects
- Regulatory
- MFLs
- Water Reservations
- Water Bodies without MFLs
- Intergovernmental, Stakeholder, and Public Coordination
- Resiliency

WATER CONSERVATION

Water conservation by all water use categories will continue to be a priority to meet the CFWI Planning Area's future water demands. The Districts' water conservation programs, as well as existing and future water conservation practices in the CFWI Planning Area, are identified and discussed in **Chapter 5** for AG, PS, DSS, and other self-supply uses. While water conservation efforts have already been implemented in the CFWI Planning Area, additional water conservation is critical. It is projected that 45 to 52 mgd of water conservation savings could be achieved by 2045 for all water use categories (**Chapter 5**, **Table 16**).

The projected water conservation savings for all water use categories in this 2025 CFWI RWSP are conservative. There is potential for increased water conservation savings beyond the projected water conservation savings with increased participation rates and implementation of additional water conservation measures, including more educational and outreach programs.

PROJECT OPTIONS

For this 2025 CFWI RWSP, a total of 140 water supply and water resource development project options were identified. If implemented, these options could treat, store, or produce up to 596 mgd (approximately 514 mgd net water) of additional water supply or water resource benefit (**Appendix E**). **Appendix E** also includes 27 water conservation project options that are not included in this total.

Brackish/Nontraditional Groundwater

A number of brackish/nontraditional groundwater projects from the LFA have been proposed and are included in **Appendix E**. In many areas, the LFA appears to be a viable alternative source for additional potable water, but more research is needed about long-term water quality impacts and drawdowns in the UFA due to sustained withdrawals from the LFA.

Proposed recommendations to support sustainable development of brackish/nontraditional groundwater include:

- Continue to monitor, study, and evaluate the LFA as a sustainable source of water.
- Continue data collection, investigations, and evaluation to better understand the relationship between the UFA and LFA, as well as the overlying SAS.
- Continue collaboration among the Districts and local water users and utilities developing and implementing FAS well drilling programs. Sharing water quality, water level, and hydrogeologic data from these wells can increase understanding of the FAS to improve groundwater models and predictive capabilities.
- Continue coordinated monitoring among the Districts, the USGS, utilities, and other governmental agencies to ensure resource protection and sustainable use of the FAS.
- Evaluate local and regional wellfield management options that minimize or reduce existing and projected impacts on water resources, wetlands, water quality, and MFLs.
- Investigate options for brackish groundwater development in appropriate locations to avoid or minimize unacceptable impacts.
- Encourage establishment of regional partnerships among users to optimize use of the UFA and LFA.

Reclaimed Water

Future reclaimed water flows are anticipated to continue to play an important role in meeting future water demands. The following actions could enhance the beneficial use of reclaimed water:

- Conduct further investigation and maximize development of natural system enhancement/recharge projects
- Conduct further investigation and development of demonstration or pilot projects for IPR and DPR
- Continue regional analysis and implementation of beneficial reuse
- Promote the efficient use of reclaimed water

Surface Water

There are opportunities for development of surface water supplies from lakes and rivers in or near the CFWI Planning Area. The following actions could enhance the use of surface water:

- Evaluate potential storage options, including locations (e.g., reservoirs and ASR systems)
- Investigate opportunities for conjunctive use of surface water with other water sources (e.g., stormwater or reclaimed water)

- Conduct analyses to identify potential quantities of surface water while ensuring hydrologic functions of lakes and downstream environmental needs are maintained, including MFLs and water reservations
- Continue implementing each District's annual priority list for MFLs and water reservations

Stormwater

Stormwater management is anticipated to play an increasing role in meeting future water demands. The following actions could increase the beneficial use of stormwater:

- Conduct further investigation and development of natural system enhancement/recharge projects
- Continue regional analysis of the beneficial use of stormwater
- Ensure required treatment levels are met for SAS recharge, conjunctive use with reclaimed water, and direct injection to the FAS
- Evaluate existing drainage well use and expansion to increase the beneficial use of stormwater
- Encourage coordination of watershed planning, water supply, water quality, natural systems restoration, and flood protection initiatives to achieve greater return on investment for stormwater projects

Seawater

The Atlantic Ocean and the Gulf of America are relatively unlimited sources of seawater. Desalination is required before seawater can be used for most water supply purposes. Use of desalinated seawater would require a transmission pipeline from the coast to the CFWI Planning Area. Where appropriate, utilities should consider the feasibility of desalinated seawater as an additional water source option.

Storage Capacity and Recharge – Aquifer Storage and Recovery and Reservoirs

Potential water storage options include ASR wells, reservoirs, and smaller on-site surface water impoundments. Proposed projects that develop new storage and create additional water supply may be considered AWS.

Proposed recommendations for new storage capacity include:

- Evaluate the potential for new or retrofitted surface water reservoirs to provide additional supply, natural systems enhancement, and/or aquifer recharge
- Continue to evaluate and expand the use of ASR, reservoirs, and other storage options to capture wet weather flows
- Continue studies and develop strategies, as appropriate, to address regulatory requirements for the implementation of ASR

Water Resource Development Projects

Programs and initiatives that support ongoing CFWI water resource development efforts include cooperative funding programs, AG water resource programs, and abandoned well plugging programs. In addition, data collection and analysis activities conducted by the Districts support the health of natural systems and development of water supplies. The following data collection and analysis tasks should be continued:

- LFA investigations
- Monitoring of wetlands, surface, and groundwater levels
- Establishment of and activities related to MFLs and water reservations
- CUP/WUP programs and compliance
- MFLs status evaluation and development and implementation of prevention or recovery strategies
- Modeling of surface and groundwater systems

REGULATORY

Both the water supply planning and the CUP/WUP programs are tools that the Legislature has provided to the Districts to protect water resources. In 2016, the Legislature supported regulatory consistency in the CFWI Planning Area and set forth rulemaking requirements for the FDEP (Section 373.0465(2)(d), F.S.). The FDEP held numerous workshops, in coordination with the Districts, FDACS, and other stakeholders, to adopt uniform rules for application within the CFWI Planning Area. Rules 62-41.300 through 62-41.305, F.A.C., were completed in 2021 and are currently being implemented by the Districts as outlined in the *CFWI Supplemental Applicant's Handbook* (CFWI 2022a).

Minimum Flows and Minimum Water Levels

The Districts' MFLs programs are described in **Chapter 4** and **Appendix C**. Analyses conducted for this 2025 CFWI RWSP indicate that 17 MFLs are currently not meeting or are projected to not be met under the 2045 Withdrawals Condition. For these MFLs, the Districts will need to develop and implement a prevention or recovery strategy if one has not already been established. These strategies will identify and may include the development of water supply and water resource development projects, in addition to those included in this 2025 CFWI RWSP, when needed to achieve recovery to the established MFLs as soon as practicable or prevent the existing flow or level from falling below the established MFL. Upon completion of the strategies, these additional water supply and water resource development projects will be added to the next update of the CFWI RWSP. In addition, the Districts should continue to collaborate with stakeholders on the development or re-evaluation of MFLs as identified in the Districts' priority list.

Water Reservations

Continue to support the water reservations of KCOL and the Hancock and Lower Saddle Creek. A re-evaluation of the reservation for Lake Hancock and Lower Saddle Creek is scheduled for completion in 2025.

Wetlands Typically Without Minimum Flows and Minimum Water Levels

Groundwater-dominated wetlands typically without MFLs are described in **Chapter 4** and **Appendix D** and the Environmental Measures Technical Report (CFWI 2025). It is recommended that the Districts continue to monitor, study, and evaluate wetlands typically without MFLs within the CFWI Planning Area and include wetlands studied during this planning process and those that may be affected by CUP/WUP withdrawals. Evaluation of needed enhancements related to wetland data collection or assessment methodology will be ongoing.

INTERGOVERNMENTAL, STAKEHOLDER, AND PUBLIC COORDINATION

The Districts recognize the need for continued collaboration of the following activities:

- Active participation in statewide and regional reclaimed water and water conservation coordination groups
- Encouragement of local coordination and collaboration in future development of regional public water supplies
- Seek funding for identified water supply and water resource development projects as described in **Chapter 8**
- Review and assist local governments and utilities with the development of Water Supply Facilities Work Plans and comprehensive plan amendments
- Outreach and messaging to encourage implementation of water conservation measures to reduce demands

RESILIENCY

To plan and prepare for regional climate change, the Districts should coordinate with other resource management entities and governments to ensure a coordinated approach to developing effective adaptation strategies for the future. The Districts should continue collaboration with the Florida Water and Climate Alliance.

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Glossary

1-in-10 year drought A drought of such intensity that it is expected to have a return frequency of once in 10 years. A drought in which below normal rainfall occurs and has a 90 percent probability of being exceeded over a 12-month period.

Alternative water supply (AWS) "Saltwater; brackish surface and groundwater; surface water captured predominately during wet weather flows; sources made available through the addition of new storage capacity for surface water or groundwater, water that has been reclaimed after one or more public supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and, any other water supply source that is designated as nontraditional for a water supply planning region in the applicable regional water supply plan", (Section 373.019(1), F. S.).

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

Aquifer storage and recovery (ASR) The underground storage of stormwater, surface water, groundwater, or reclaimed water, which is appropriately treated to potable standards and injected into an aquifer through wells during wet periods. The aquifer acts as an underground reservoir for the injected water, reducing water loss to evaporation. The water is stored and retrieved later as needed.

Aquifer system A heterogeneous body of (interbedded or intercalated) permeable and less permeable material that functions regionally as a water-yielding hydraulic unit and may be composed of more than one aquifer separated at least locally by confining units that impede groundwater movement, but do not greatly affect the hydraulic continuity of the system.

Available supply The maximum amount of reliable water supply, including surface and groundwater, and purchases under secure contracts.

Basin (groundwater) A hydrologic unit containing one large aquifer or several connecting and interconnecting aquifers.

Basin (surface water) A tract of land drained by a surface water body or its tributaries.

Brackish water Brackish water, for alternative water supply planning purposes in the CFWI for SJRWMD and SWFWMD, is generally defined as water with a total dissolved solids (TDS) concentration of greater than 500 mg/L. SFWMD defines saline water, which includes brackish water, as water with chloride concentrations greater than 250 mg/L.

Capacity The physical ability of a system to treat, move, or reuse water. Typically, capacity is expressed in millions of gallons per day.

Central Florida Water Initiative (CFWI) A collaborative effort among the SJRWMD, SFWMD and SWFWMD and other state agencies and stakeholders to implement effective and consistent water resource planning, development, and management.

CFWI Planning Area An area in central Florida consisting of all Orange, Osceola, Seminole, and Polk counties and southern Lake County. The SJRWMD, SFWMD, and SWFWMD each contain portions of the CFWI Planning Area.

Confined aquifer An aquifer bounded above and below by impermeable beds, or beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined groundwater.

Confining unit A body of significantly less permeable material than the aquifer, or aquifers, that it stratigraphically separates. The hydraulic conductivity may range from nearly zero to some value significantly lower than that of the adjoining aquifers and impedes the vertical movement of water.

Conjunctive use Using and combining surface and groundwater supplies, or any other use of multiple sources such as fresh or brackish groundwater, surface water, or desalination of seawater to better manage and prevent environmental impacts, improve system reliability, operational flexibility, and emergency backup capability.

Consumptive use Any use of water that reduces the supply from which it is withdrawn or diverted.

Cubic feet per second (cfs) A rate of flow (e.g., in streams and rivers) equal to a volume of water 1 foot high and 1 foot wide flowing a distance of 1 foot in 1 second. One cfs is equal to 7.48 gallons of water flowing each second.

Deficit The magnitude of UFA rebound or increase in flow in the vicinity of a site that would be necessary to recover or meet established MFLs or MFL-related criteria.

Demand management Reducing the demand for water through activities that alter water use practices, improve efficiency in water use, reduce losses of water, or reduce waste of water. Often referred to as water conservation.

Desalination A process that treats saltwater to remove or reduce chlorides and dissolved solids, resulting in the production of fresh water.

Discharge The rate of water movement past a reference point, measured as volume per unit of time (usually expressed as cubic feet or cubic meters per second or gallons per minute).

Disinfection The process of inactivating microorganisms that cause disease. All potable water requires disinfection as part of the treatment process prior to distribution. Disinfection methods include, but are not limited to, chlorination, ultraviolet radiation, and ozonation.

Drainage basin Land area where precipitation runs off into streams, rivers, lakes, and reservoirs. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge. The drainage basin is a part of the earth's surface that is occupied by a drainage system, which consists of a surface stream with all its tributaries and impounded bodies of water. It is also known as a watershed, a catchment area, or a drainage area.

Drawdown (1) The vertical distance between the static groundwater level and the surface of the cone of depression while pumping. (2) A lowering of the groundwater surface caused by pumping.

Drought A long period of abnormally low rainfall, especially one that adversely affects growing or living conditions.

East-Central Florida Transient Groundwater Expanded Model (ECFTX) A groundwater model for the CFWI Planning Area that simulates transient groundwater flow in the surficial aquifer system and the Floridan aquifer system.

Ecosystem Biological communities together with their environment functioning as a unit.

Effective rainfall The portion of rainfall that infiltrates the soil and is stored for plant use in the crop root zone.

Electrodialysis Dialysis that is conducted with the aid of an electromotive force applied to electrodes adjacent to both sides of the membrane.

Elevation The height in feet above mean sea level according to the National Geodetic Vertical Datum of 1929. May also be expressed in feet above mean sea level as reference datum.

Evapotranspiration (ET) The total loss of water to the atmosphere by evaporation from land and water surfaces and by transpiration from plants.

Finished (net) water Water that completed a purification or treatment process; water that passed through all the processes in a water treatment plant and is ready to be delivered to consumers. Contrast with raw water.

Fiscal Year (FY) The fiscal year for water management districts begins on October 1 and ends on September 30 of the following year.

Florida Administrative Code (F.A.C.) The official compilation of the administrative rules and regulations of state agencies.

Florida Statutes (F.S.) A permanent collection of state laws organized by subject area into a code made up of titles, chapters, parts, and sections. The Florida Statutes are updated annually by laws that create, amend, or repeal statutory material.

Floridan aquifer system (FAS) An aquifer system composed of sequential layers of limestone and dolomite and is traditionally subdivided into the Upper and Lower Floridan aquifers which are separated by less productive horizons called the middle confining unit.

Flow The actual amount of water flowing by a particular point over some specified time. In the context of water supply, flow represents the amount of water being treated, moved, or reused.

Freeboard The magnitude of UFA drawdown or flow reduction in the vicinity of an MFL or MFL-related site that can occur without violating an adopted MFL or MFL-related environmental criterion.

Fresh water For water supply planning purposes, an aqueous solution with a total dissolved solids concentration less than or equal to 500 mg/L.

Groundwater Water that exists underground in saturated zones beneath the land surface.

Headwaters The waters at the highest upstream point of a natural system that are considered the major source waters of the system.

Hydrogeology The branch of geology that investigates the distribution, movement, and chemistry of groundwater in the soil and rocks of the Earth's crust.

Hydrologic condition The state of an area pertaining to the amount and form of water present.

Hydrology The scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Impoundment Systems or structures designed to collect and store water (e.g., reservoirs).

Infiltration The movement of water through the soil surface into the soil under the forces of gravity and capillarity.

Inflow (1) The act or process of flowing in or into. (2) The measured quantity of water that moved into a specific location.

Intermediate aquifer system (IAS) A confined aquifer system between the Surficial aquifer system and Upper Floridan aquifer.

Irrigation efficiency A measure of the effectiveness of an irrigation system in delivering water to a plant.

Million gallons per day (mgd) A rate of flow of water. 1 mgd is equal to 133,680 cubic feet per day, or 1.55 cubic feet per second, or 3.07 acre-feet per day.

Minimum Flows and Minimum Water Levels (MFLs) The limit at which further withdrawals would be significantly harmful to the water resources or the ecology of the area (Section 373.042, F.S.).

MFLs prevention strategy Developed when the MFLs criteria are currently met but are projected to not be met within the next 20 years. The goal of a prevention strategy is for the water body to continue to meet the established MFLs in the future (Section 373.0421 (2)(b), F.S).

MFLs recovery strategy Developed when a water body does not meet the MFLs criteria. The goal of a recovery strategy is to achieve the established MFLs as soon as practicable (Section 373.0421 (2)(a), F.S).

Mobile irrigation laboratory A vehicle furnished with irrigation evaluation equipment that is used to carry out on-site evaluations of irrigation systems and to provide recommendations on improving irrigation efficiency.

Model A computer program representing a system and its operations that can evaluate future system changes, summarize data, and help understand interactions in complex systems.

MODFLOW A modular, three-dimensional, finite-difference groundwater modeling code created by the United States Geological Survey, which is used to simulate the flow of groundwater through aquifers.

Monitoring well A well for measuring or monitoring fluctuations in groundwater levels and quality.

Natural system A self-sustaining living system that supports an interdependent network of aquatic, wetland-dependent, and upland living resources.

Natural system enhancement Activities conducted to improve the habitat value of wetlands or surface waters for fish and wildlife by eliminating harmful drainage, improving water quality,

preventing erosion, stabilizing eroding shorelines, planting wetland vegetation, removing spoil, removing exotic and nuisance vegetation, providing structural habitat, and restoring dredged areas.

Per capita use The average amount of water used per person per day, also expressed as gpcd.

Permeability The capacity of a porous rock, sediment, or soil for transmitting a fluid.

Potable water Water that is safe for human consumption.

Potable reuse Augmentation of a drinking water supply with advanced treated water from a municipal wastewater source.

Rapid infiltration basins (RIBs) An area where treated wastewater is applied for percolation through highly porous soil.

Raw water Water in its natural state directly from the surface or groundwater source without any water quality treatment.

Reasonable-beneficial use Use of water in such quantity as is needed for economic and efficient use for a purpose which is both reasonable and consistent with the public interest.

Recharge The downward movement of water through soil to groundwater; the process by which water is added to the zone of saturation; or the introduction of surface water or groundwater to groundwater storage, such as an aquifer. It can be used to raise groundwater levels.

Reclaimed water Water that has received at least secondary treatment and basic disinfection and is reused after flowing out of a domestic wastewater treatment facility, (Rule 62-610.200(45), F.A.C.).

Reference Condition A reference condition was established and used to compare modeled results from several projected future withdrawal conditions.

Regional water supply plan (RWSP) Detailed assessment report of water demands, sources, and projects to meet those demands developed by the Water Management Districts under Section 373.709, F.S., providing an evaluation of available water supply and projected demands at the regional scale. The planning process projects future demand for at least 20 years and recommends projects to meet identified needs.

Retention The prevention of stormwater runoff from direct discharge into receiving waters; included as examples are systems that discharge through percolation, exfiltration, filtered bleed-down, and evaporation processes.

Retrofit (1) Indoor: the replacement of existing water fixtures, appliances, and devices with more efficient models for the purpose of water conservation. (2) Outdoor: the replacement or changing of an existing irrigation system or components with a more efficient irrigation system or components.

Reverse osmosis (RO) A membrane process for desalting water using applied pressure to drive the feed water (source water) through a semipermeable membrane.

Runoff That component of rainfall, which is not absorbed by soil, intercepted, and stored by surface water bodies, evaporated to the atmosphere, transpired, and stored by plants, or infiltrated into groundwater, but which flows to a watercourse as surface water flow.

Saltwater intrusion The invasion of a body of fresh water by a body of saltwater due to its greater density or higher elevation (or pressure). It can occur either in surface water or groundwater bodies. The term is applied to the flooding of freshwater marshes by seawater, the upward migration of seawater into rivers and navigation channels, and the movement of seawater into freshwater aquifers along coastal regions.

Saltwater Intrusion Minimum Aquifer Level (SWIMAL) Minimum aquifer levels adopted by the SWFWMD pursuant to Sections 373.042 and 373.0421, F.S.

Seawater or **saltwater** Seawater is defined by the SJRWMD and SFWMD as water with a chloride concentration at or above 19,000 mg/L and by the SWFWMD as water with a total dissolved solids concentration greater than or equal to 10,000 mg/L.

Semi-confined aquifer A completely saturated aquifer that is bounded above by a semi-pervious layer, which has a low, though measurable permeability, and below by a layer that is either impervious or semi-pervious.

Service area The geographical region in which a water supplier has the ability and the legal right to distribute water for use.

Solution channels Pathways in a limestone or a sandstone that have been dissolved by water. Sometimes they are vertical (infiltrating rainfall or seepage) or horizontal (groundwater flow).

Southern Water Use Caution Area (SWUCA) A regulatory area established by the SWFWMD in 1992 due to environmental concerns related to groundwater withdrawals in the southern and central regions of the SWFWMD. The primary areas of resource concern within the SWUCA include lake levels along the Lake Wales Ridge, flows in the upper Peace River, and saltwater intrusion into the UFA from the Gulf of America.

Stormwater Water that does not infiltrate but accumulates on land as a result of rainfall runoff from impervious or semi-pervious areas such as roads and roofs.

Surface water Water above the soil or substrate surface, whether contained in bounds, created naturally or artificially, or diffused. Water from natural springs is classified as surface water when it exits from the spring onto the earth's surface.

Surficial aquifer system (SAS) An unconfined aquifer consisting of varying amounts of limestone and sediments that extend from the land surface to the top of an ICU.

Treatment facility Any facility or other works used to treat, stabilize, or hold water or wastewater.

Upconing Process by which saline water underlying fresh water in an aquifer rises upward into the freshwater zone as a result of pumping water from the freshwater zone.

Utility Any legal entity responsible for supplying potable water for a defined service area.

Wastewater Water carrying pollutants from residences, commercial buildings, industrial plants, and institutions together with any groundwater, surface runoff, or leachate that may be present.

Water budget An accounting of total water (inputs, outputs, or storage) for a given location or activity.

Water conservation The prevention or reduction of unnecessary or inefficient uses or losses of water.

Water conservation rate structure A conservation-based rate structure encourages the efficient use of water by charging customers more as water use increases (e.g., increasing or inclining block rates, seasonal rates, quantity-based surcharges, etc.).

Water Protection and Sustainability Program (WPSP) Florida trust fund created by the legislature to provide Districts with state matching funds to support the development of alternative water supplies by local governments, water supply authorities, and other water users.

Water quality usually concerning the physical, chemical, and biological characteristics of water, usually in respect to its suitability for a particular purpose. Federal and state guidelines set water quality standards based on the water's intended use, whether it is for recreation, fishing, drinking, navigation, shellfish harvesting, or agriculture.

Water reservation Water set aside for the protection of fish and wildlife or the public health and safety. Reserved water is not available to allocate for consumptive use purposes (Section 373.223, F.S.).

Water resource development The formulation and implementation of regional water resource management strategies, including collection and evaluation of surface water and groundwater data; structural and nonstructural programs to protect and manage the water resources; development of regional water resource implementation programs; construction, operation and maintenance of major public works facilities to provide for flood control, surface and groundwater storage, and groundwater recharge augmentation; and related technical assistance to local governments and to government-owned and privately owned water utilities (Section 373.019, F.S.).

Watershed A region or area bounded peripherally by a water parting and draining, ultimately to a particular watercourse or body of water. Watersheds conform to federal hydrologic unit code standards and can be divided into sub-watersheds and further divided into catchments, the smallest water management unit recognized by SFWMD operations. Unlike drainage basins, which are defined by rule, watersheds are continuously evolving as the drainage network evolves.

Water supply development The planning, design, construction, operation, and maintenance of public or private facilities for water collection, production, treatment, transmission, or distribution for sale, resale, or end use (Section 373.019, F.S.)

Water use Any use of water that reduces the supply from which it is withdrawn or diverted.

Wellfield One or more wells producing water from a subsurface source.

Wetland An area that is inundated or saturated by surface or groundwater at a frequency and a duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation adapted for life under those soil conditions (e.g., swamps, bogs, and marshes).

Withdrawal Water removed from a groundwater or surface water source for use.

Yield The quantity of water (expressed as rate of flow or total quantity per year) that can be collected for a given use from surface or groundwater sources.

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