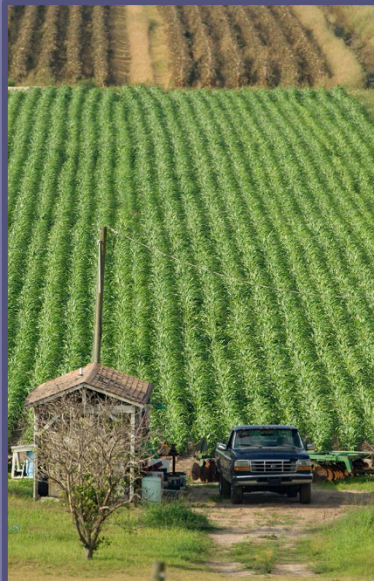


2026 Upper East Coast Water Supply Plan Update



Welcome

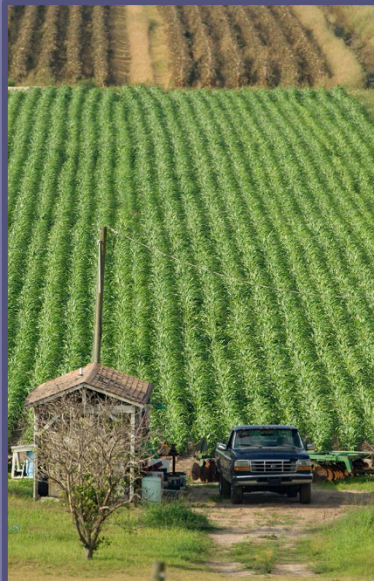
2026 UEC Stakeholder Meeting #3

September 14, 2026

Questions and public comment will occur after each presentation.



Welcome



Tom Colios

Flood Control and Water Supply Planning (FloWS) Section Administrator

2026 UEC Stakeholder Meeting #3

September 14, 2026

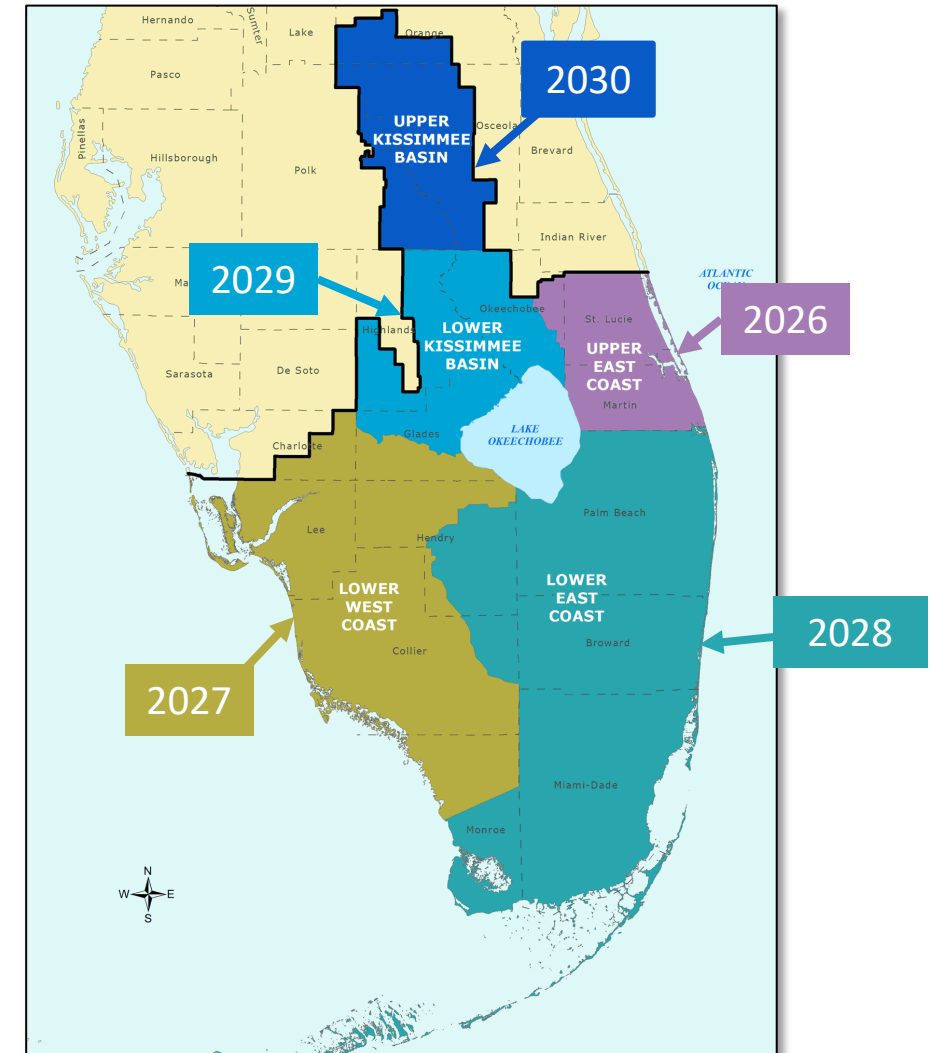


Today's Agenda

- Overview of the Draft 2026 UEC Water Supply Plan Update
 - *Chad Brcka Flood Control and Water Supply Planning (FloWS) Plan Manager, SFWMD*
- St. Lucie Estuary MFL Evaluation and Analysis
 - *James Beerens, Ph.D., Resource Protection and Monitoring Section Leader, Applied Sciences Bureau, Cassondra Armstrong, Ph.D., Applied Sciences Bureau Chief, SFWMD and Walter Wilcox, P.E., Water Resource Systems Modeling Bureau Chief, SFWMD*
- East Coast Floridan Model and East Coast Surficial Model Analyses and Results
 - *Anushi Obeysekera, FloWS Bureau Chief, SFWMD*
- Next Steps
 - *Chad Brcka, FloWS Plan Manager, SFWMD*

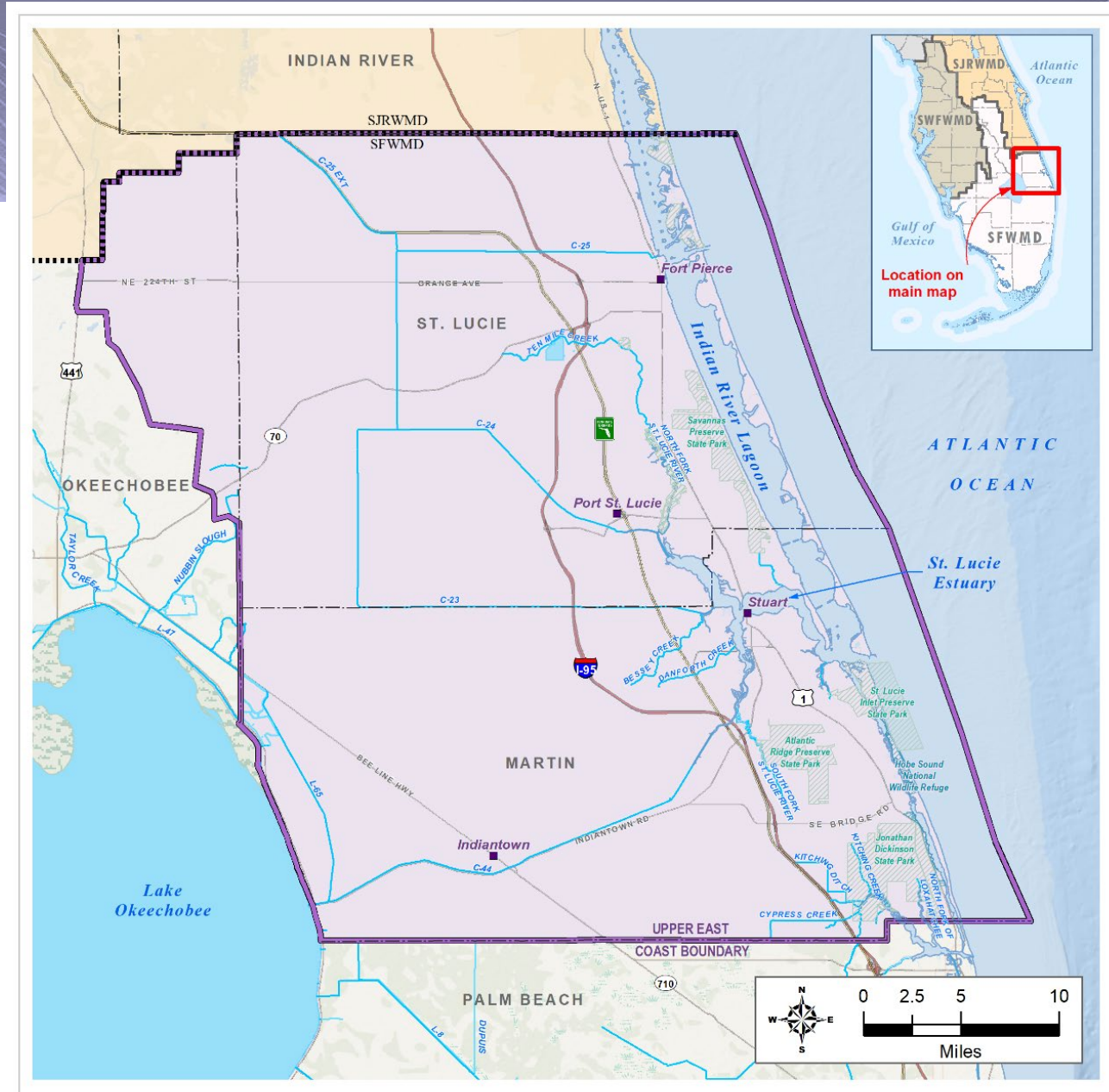
Water Supply Plan Requirements

- 20-year planning period
- Demand estimates and projections
- Resource analyses
- Issue identification
- Evaluation of water source options
- Water resource development
 - Responsibility of water management district
- Water supply development
 - Responsibility of water users
- Environmental protective and restoration strategies
 - Review/update prevention and recovery strategies for minimum flows and minimum water levels (MFLs)



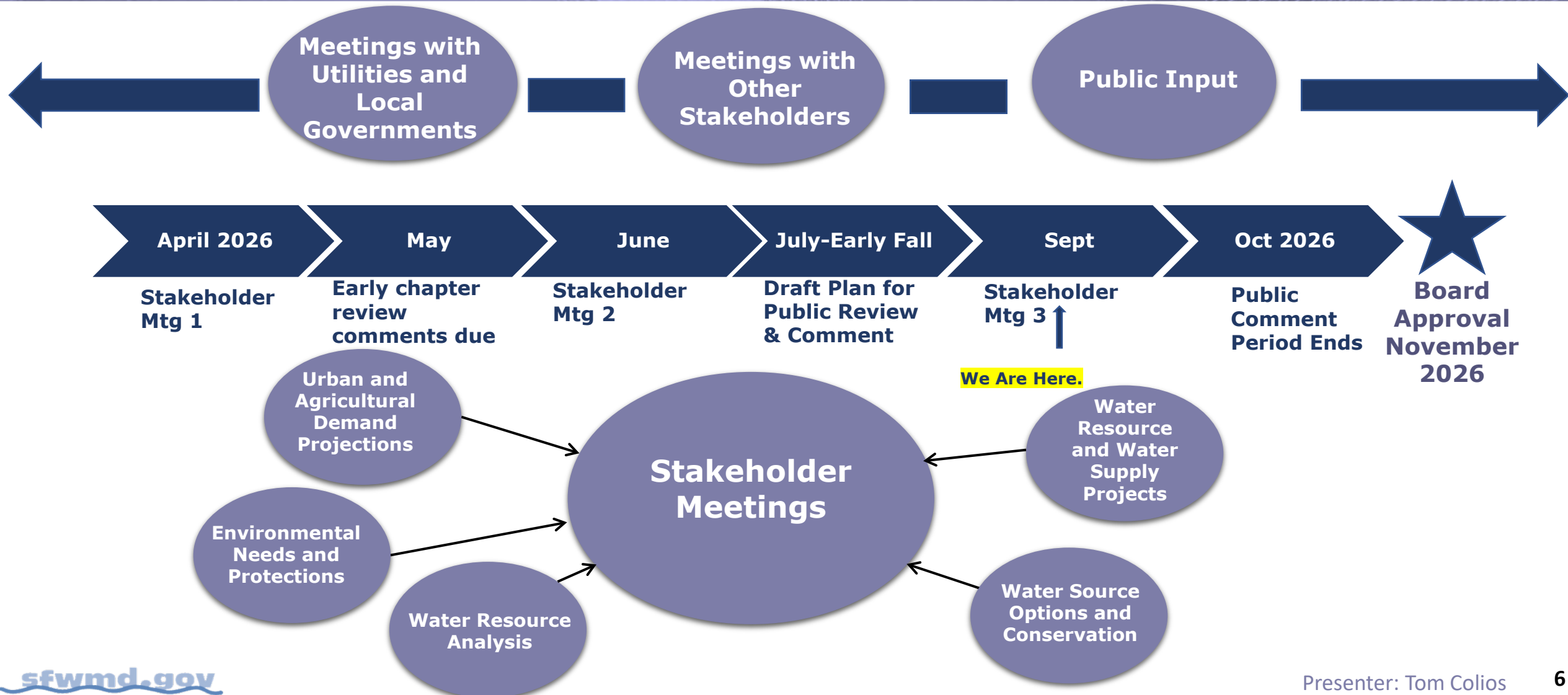
UEC Planning Area

- All of Martin and St. Lucie counties and the northeastern portion of Okeechobee County
- 1,230 square miles
- 17 public supply utilities
- Major agricultural industry
- Important natural and water resources
 - C-44, C-23, C-24, and C-25 canals
 - St. Lucie River and Estuary
 - Indian River Lagoon
 - North Fork of the Loxahatchee River



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UEC Water Supply Plan Update Process



Public Participation

➤ **Active participation to ensure plan reflects the needs of the planning area**

- Agricultural interests
- Public water suppliers
- Environmental community
- County commissions/city councils/tribal governments
- County/city planning staff
- Regional planning council
- Governing Board member involvement
- State agencies and special districts

➤ **Opportunities for public participation**

- Three Stakeholder meetings
- Governing Board meetings
- One-on-one meetings
- Draft document review and comment
- Written comments are due back by October 21st

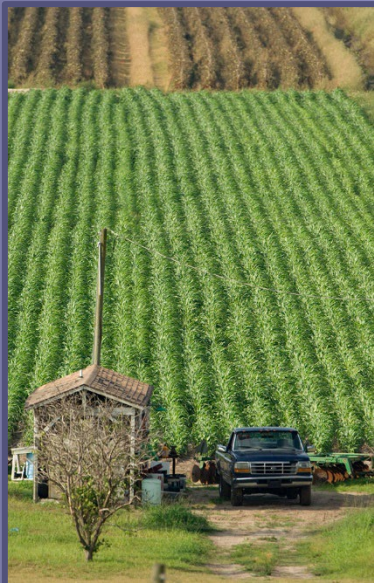


Questions and Public Comment



- If you are participating via Zoom:
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- If you are participating via phone:
 - *9 raises hand
 - *6 mutes/unmutes your line
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Overview of the Draft 2026 UEC Water Supply Plan Update

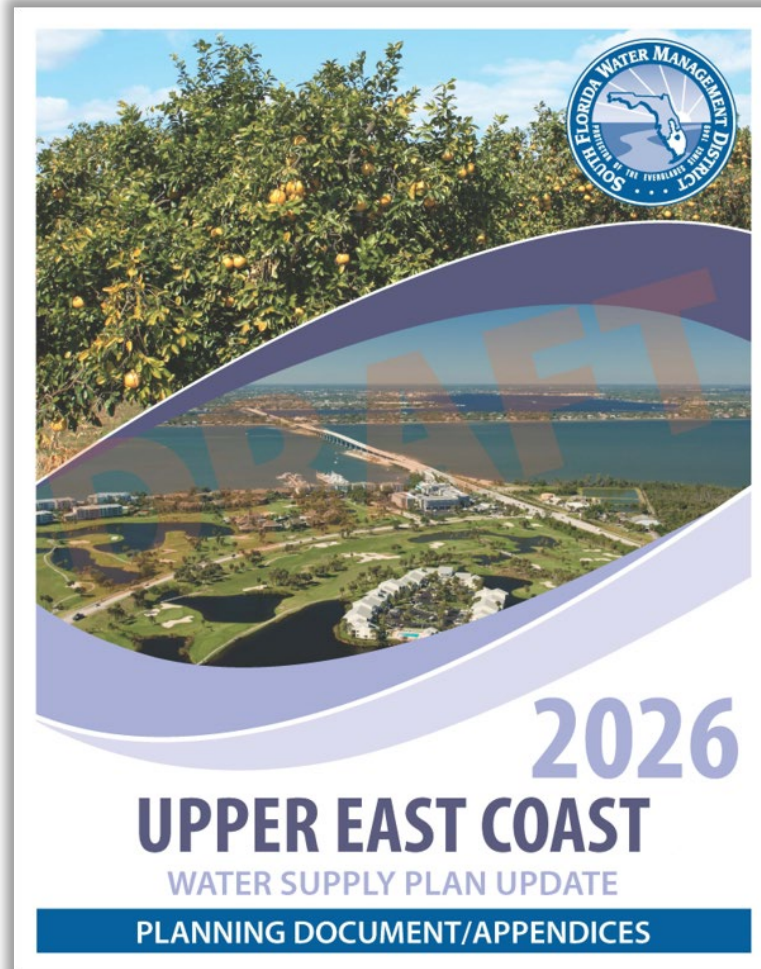


Chad Brcka
FloWS Plan Manager
2026 UEC Stakeholder Meeting 3
September 14, 2026

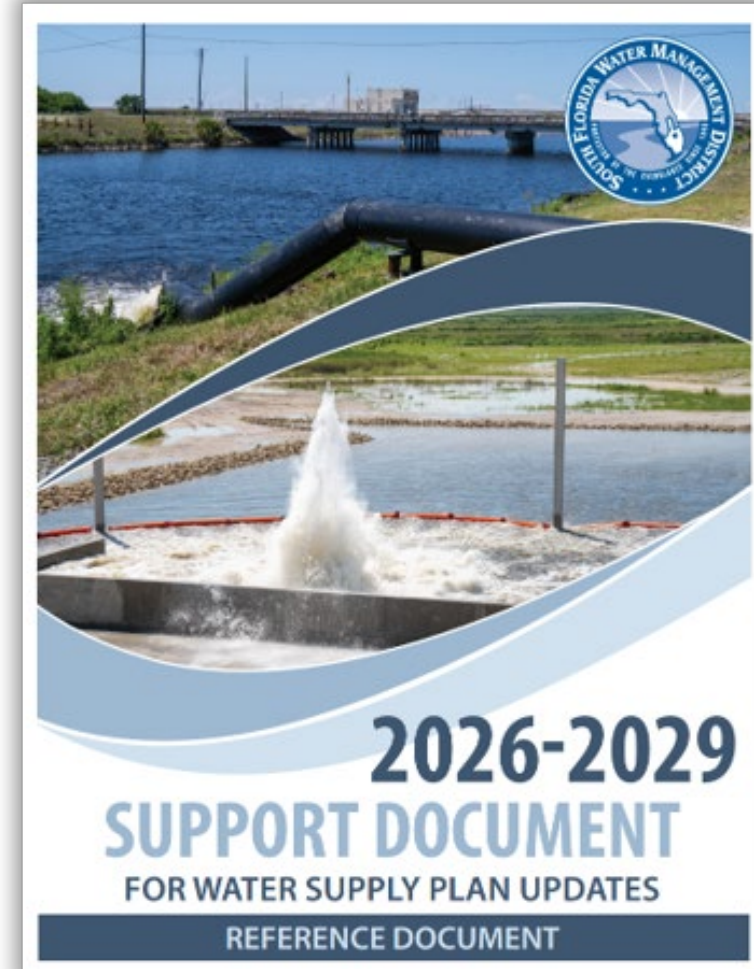


2021 Upper East Coast Water Supply Plan Update Documents

Planning Document/Appendices



Support Document



Planning and Support Document Outlines

Executive Summary

Chapter 1: Introduction

Chapter 2: Demand Estimates and Projections

Chapter 3: Demand Management: Water Conservation

Chapter 4: Water Resource Protection

Chapter 5: Water Source Options

Chapter 6: Water Resource Analyses

Chapter 7: Water Resource Development Projects

Chapter 8: Water Supply Development Projects

Chapter 9: Conclusions and Future Direction

Appendices:

- A: Water Demand Projections
- B: Public Supply Utility Summaries
- C: St. Lucie Estuary MFL and Prevention Strategy
- D: Groundwater Monitoring and Analysis
- E: Wastewater Treatment Facilities

Support Document:

- Chapter 1: Introduction
- Chapter 2: Water Conservation
- Chapter 3: Water Use Permitting
- Chapter 4: Water Resource Protection
- Chapter 5: Ecosystem Restoration and Water Resource Development
- Chapter 6: Water Source Options and Treatment
- Appendix: Conservation Glossary

Objectives of 2026 UEC Plan Update

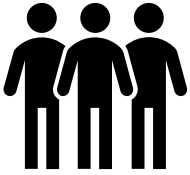
1. Quantify sufficient water supply during 1-in-10 year drought conditions through 2050
2. Sustain water resources and natural systems
3. Encourage water conservation measures and the use of alternative water supplies
4. Promote compatibility with local government planning
5. Coordinate and integrate with other water resource initiatives



UEC Planning Area

- Planning Horizon 2024 - 2050
- Population*

• 2024	546,710
• 2050	742,217
	36% increase

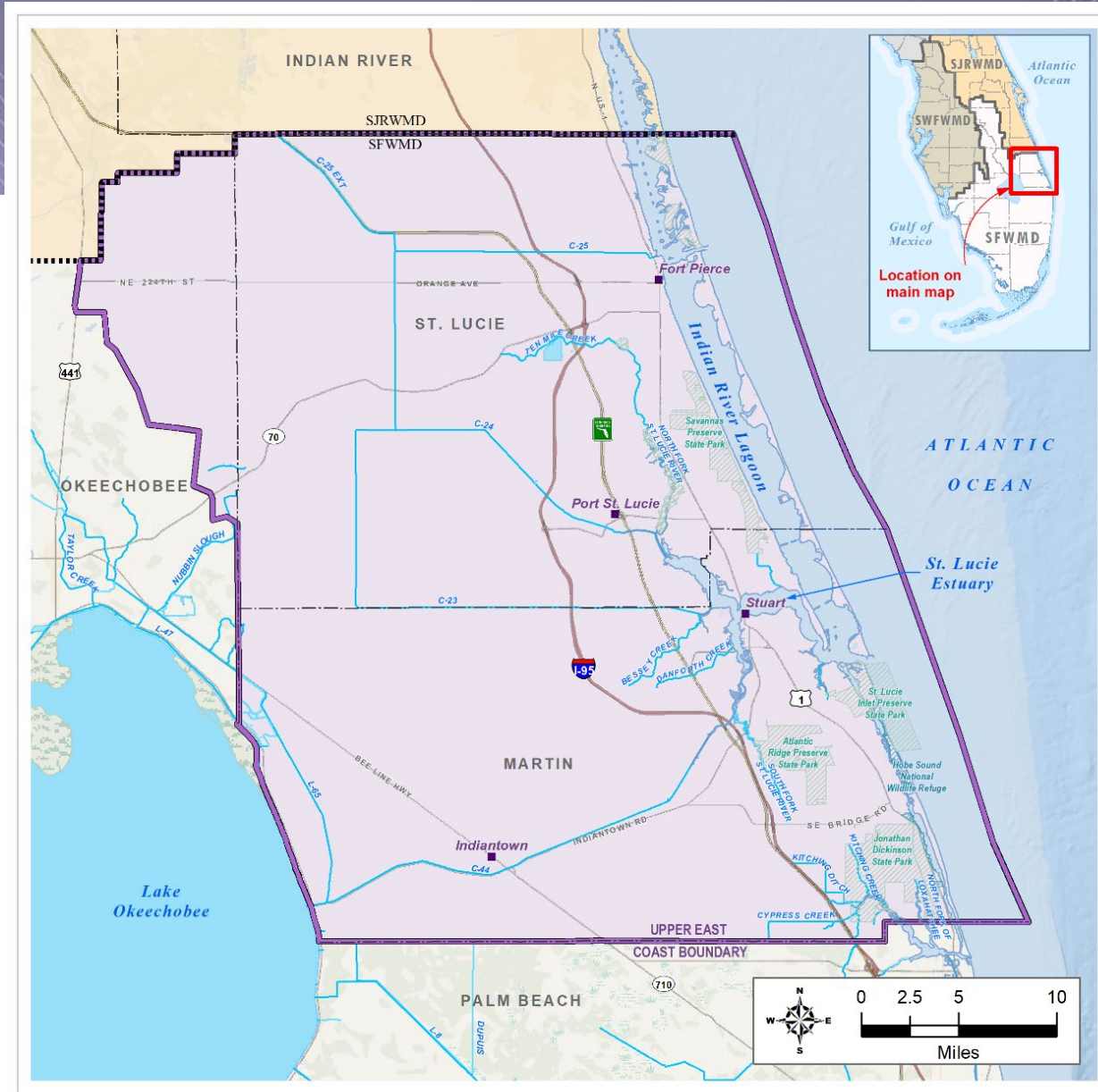

- Irrigated agricultural acreage**

• 2024	92,065
• 2050	82,935
	10% decrease


- Total gross water demand (mgd):

• 2024	299.53
• 2050	315.65
	5% increase



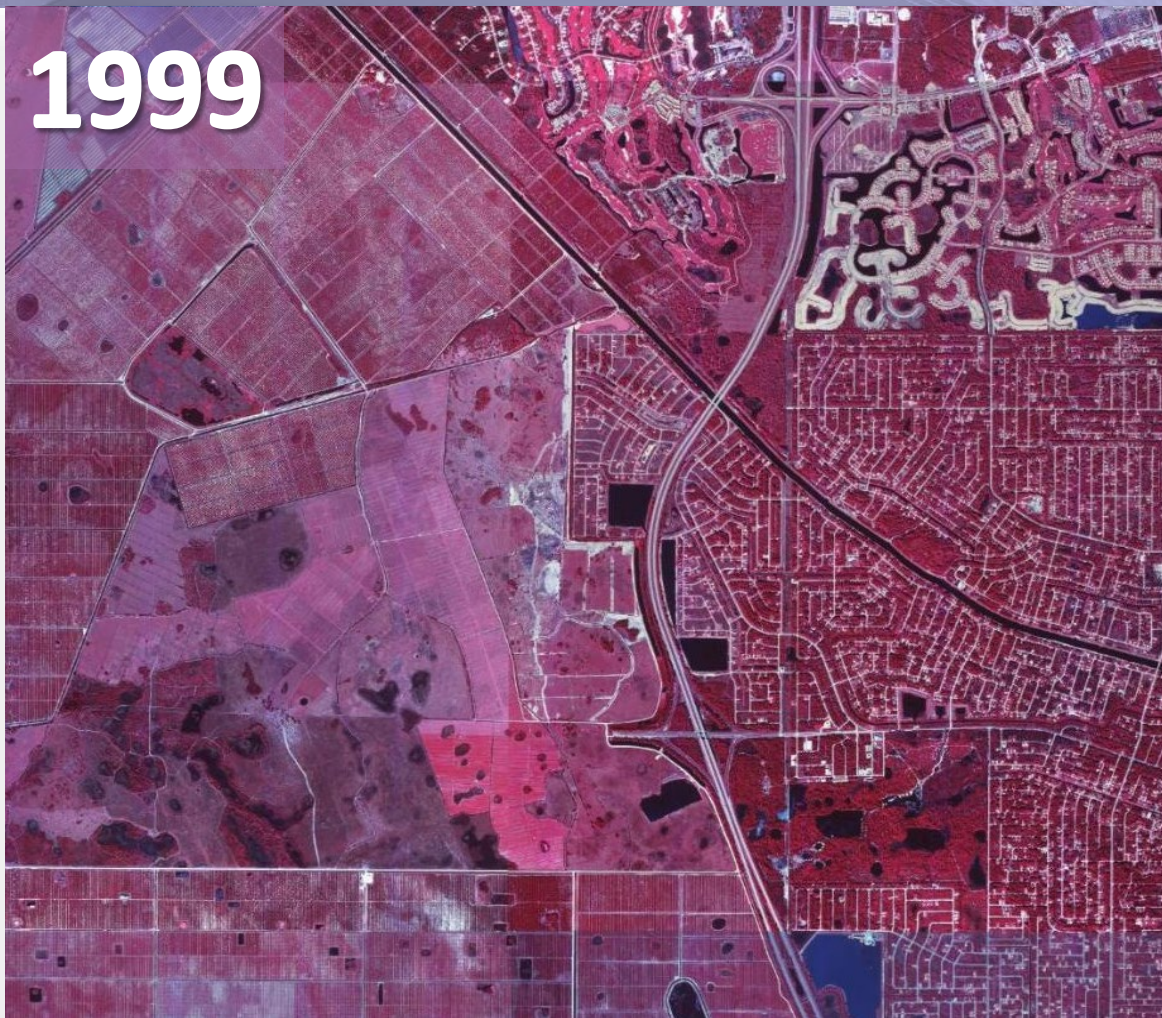


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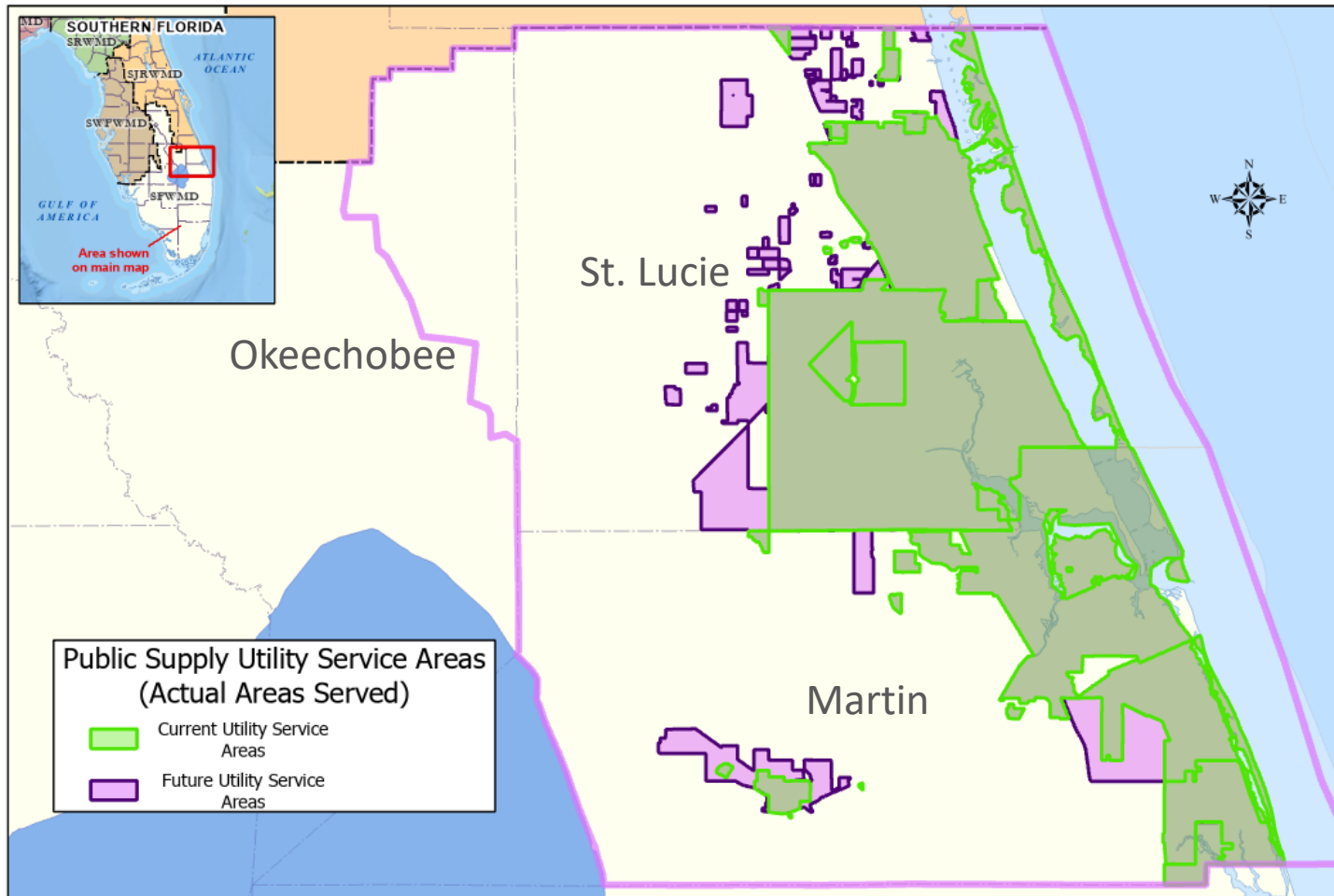
* Data from University of Florida (UF) Bureau of Economic and Business Research

** Data from Florida Department of Agriculture and Consumer Services

Land Use Changes: Port St. Lucie



Draft UEC Population Projections



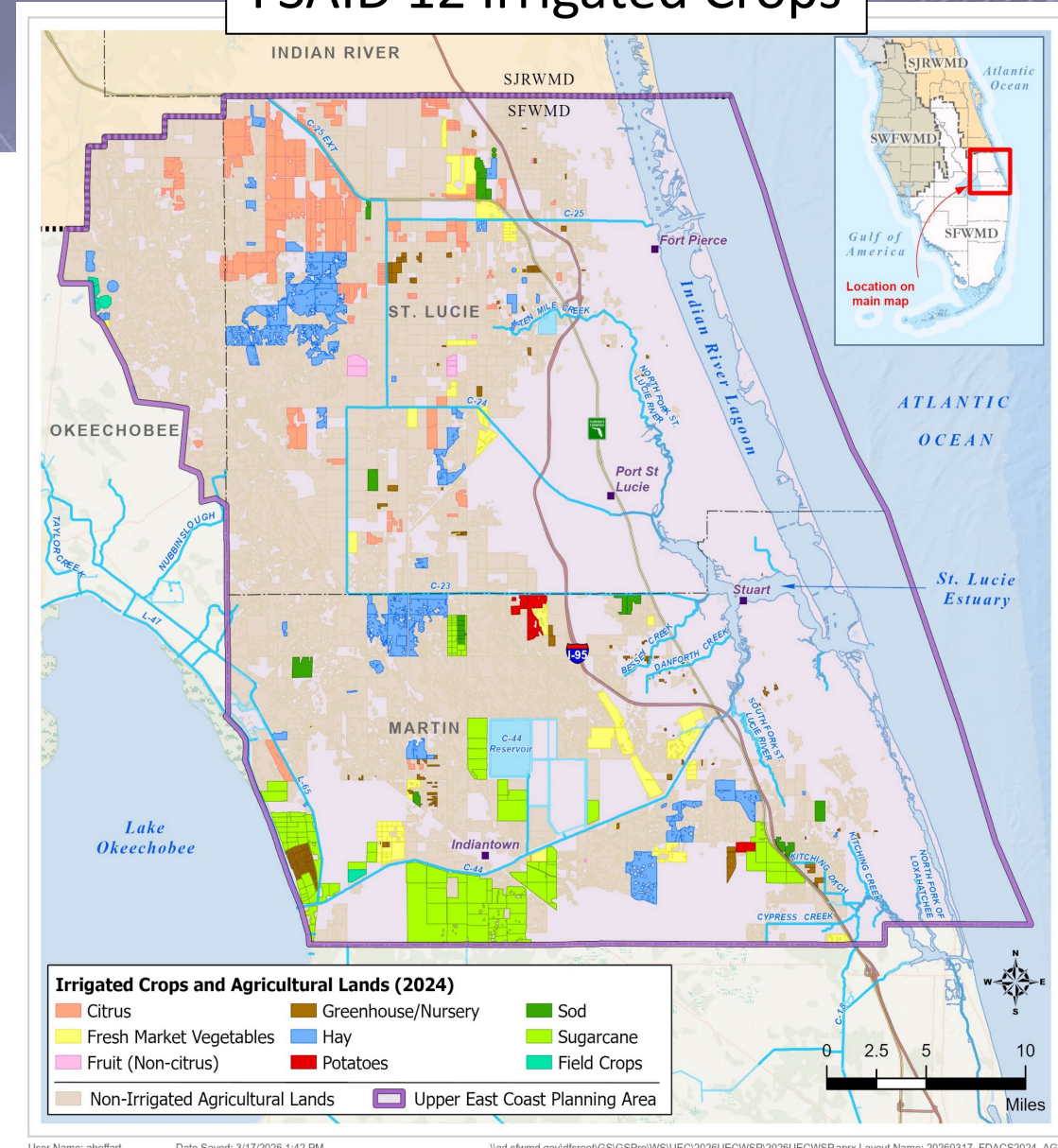
County		2024	2050
Martin	PS	153,359	185,386
	DSS	12,021	2,414
	Total	165,380	187,800
St. Lucie	PS	336,848	522,772
	DSS	43,925	31,028
	Total	380,773	553,800
Okeechobee	PS	0	0
	DSS	557	617
	Total	557	617
UEC Total	PS	490,207	708,158
	DSS	56,503	34,059
	Total	546,710	742,217

UEC Agriculture

- Largest UEC water use category
- Predominant crops are sugarcane, citrus, and hay/pasture
- Projected overall demand decline of 12%

Data from: Florida Department of Agriculture and Consumer Services (FDACS) Florida Statewide Agricultural Irrigation Demands Geodatabase (FSAID)

FSAID 12 Irrigated Crops

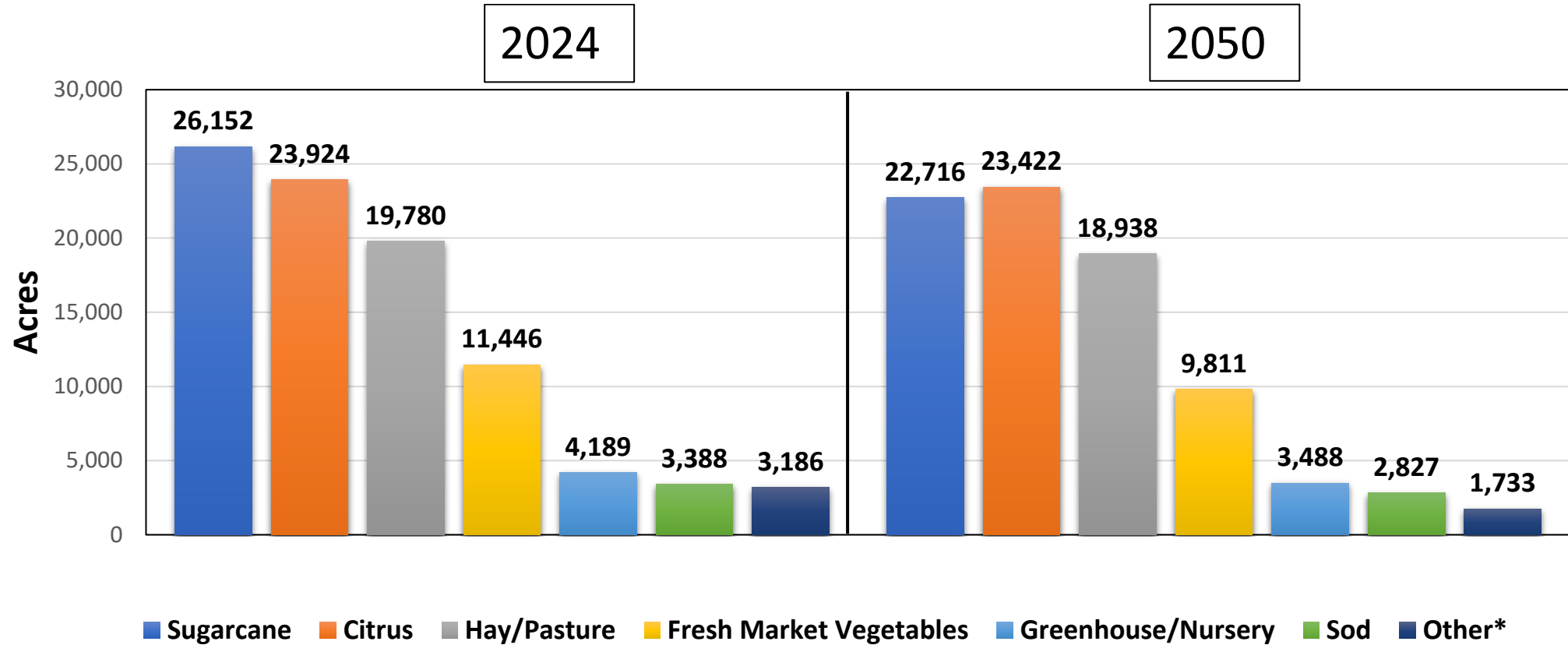


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UEC Agricultural FSAID12 Crop Acreage



*Other category includes Fruit (Non-Citrus), Potatoes, and Field Crops

Landscape and Recreational Irrigation

- Third largest use category
- Includes irrigation for landscape, golf courses, sports fields, parks, common areas, road medians
- Projected to grow at a similar rate as population
- Often supplemented with reclaimed water

Reclaimed water meets approximately 19% of the
L/R irrigation demands



Upper East Coast Water Demands (mgd) Summary

Water Use Category	2024	2050	2045 From 2021 Plan Update
Public Supply	68.83	99.83	81.62
Domestic Self-Supply	6.23	3.59	5.61
Agriculture (i.e., crop, livestock, and aquaculture)	156.77	138.52	130.10
Commercial/Industrial/Institutional	0.55	0.71	5.74
Landscape/Recreational	46.04	56.58	40.64
Power Generation	21.11	16.42	17.47
UEC Planning Area Total	299.53	315.65	281.18

Demands in million gallons per day.

2026 UEC Demand Total = 5% Increase

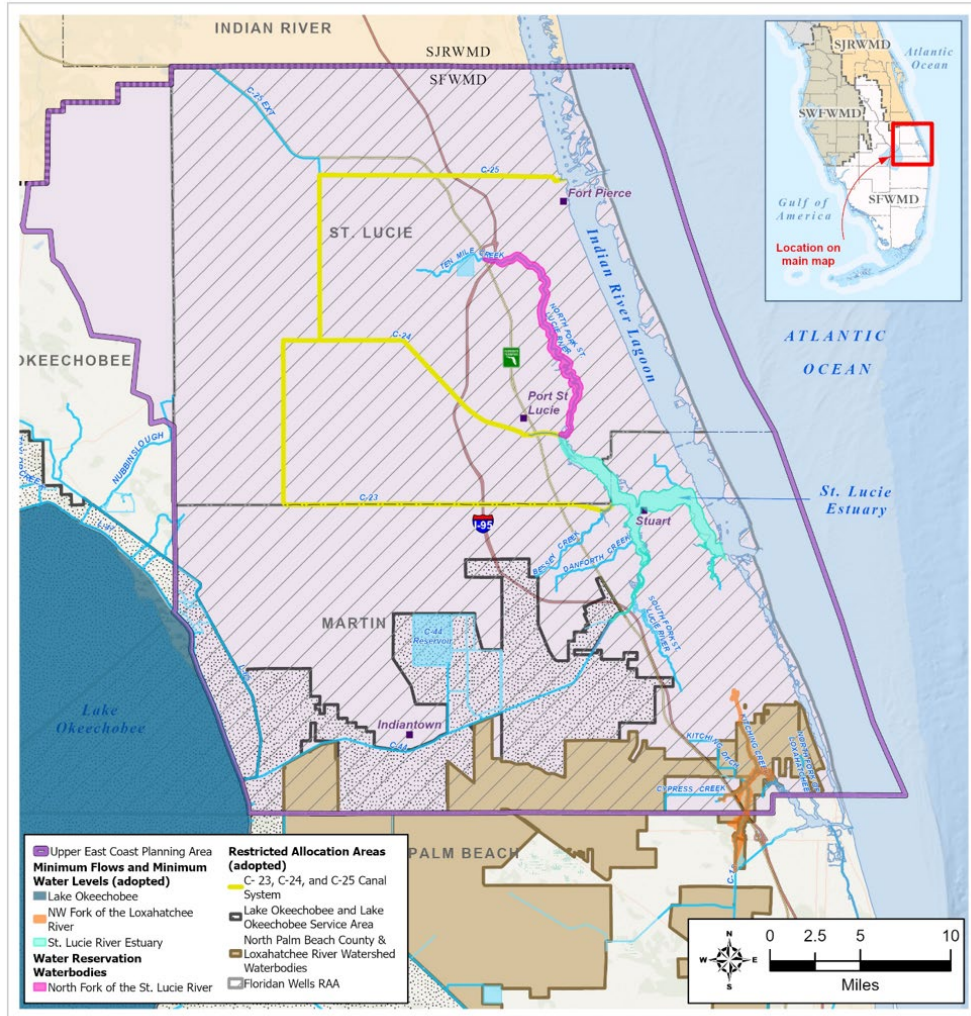
Demand Management: Water Conservation

- Agriculture
 - FDACS best management practices
 - More efficient irrigation systems
- Public supply
 - Indoor and outdoor programs
 - Conservation rate structures
- Public supply per capita use rate (gallons per capita per day)
 - 2000 167
 - 2024 113

32% decrease
- 15 mgd potential savings through conservation
 - Urban – 8 mgd
 - Agriculture – 7 mgd

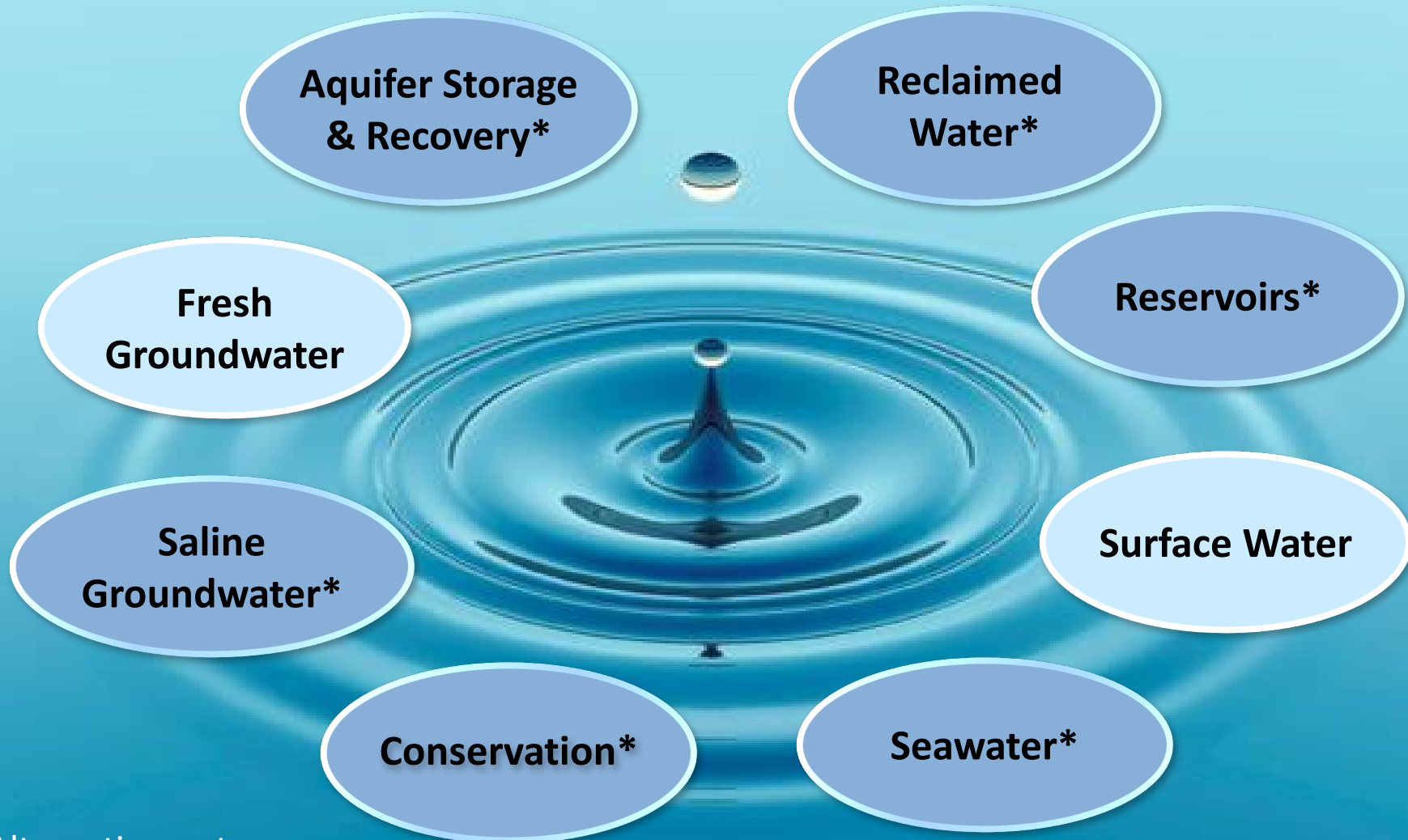


Water Resource Protection



- Minimum Flows and Minimum Water Levels
 - St. Lucie Estuary
 - Northwest Fork of Loxahatchee River (Lower East Coast)
 - Lake Okeechobee (Lower East Coast)
- Water Reservations
 - North Fork of the St. Lucie River
- Restricted Allocation Areas
 - C-23, C-24 and C-25 canal system
 - Lake Okeechobee Service Area
 - North Palm Beach County and Loxahatchee River Watershed waterbodies
 - Floridan wells in Martin and St. Lucie counties

Water Source Options & Alternatives



* Alternative water source

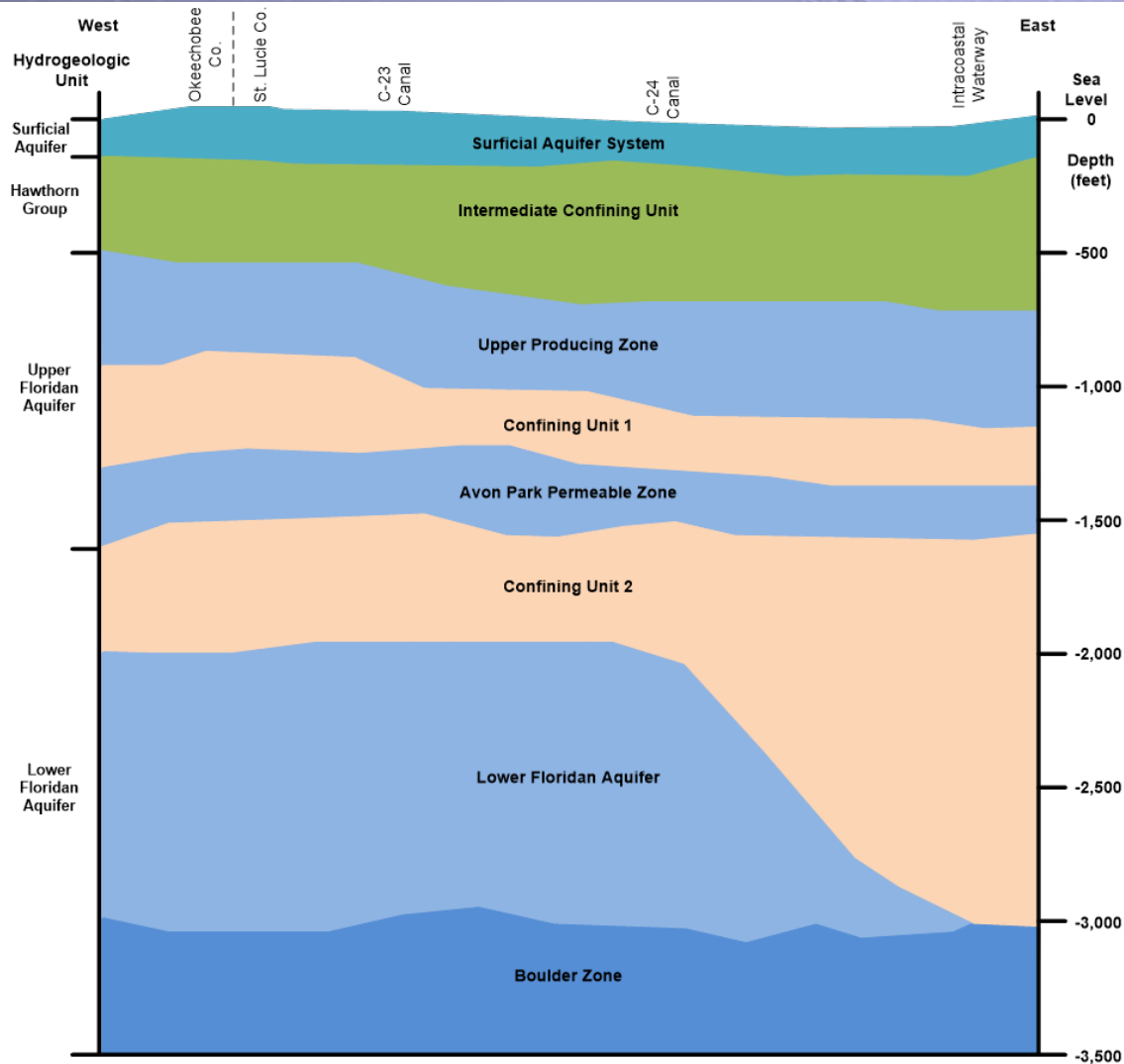
Water Source Options

Category	Surface Water	Fresh Groundwater	Brackish Groundwater	Reclaimed Water	Storage
Public Supply		✓	✓	*	*
Domestic Self-Supply		✓			
Agriculture	✓	✓	✓		✓
Landscape/Recreational	✓	✓	✓	✓	✓
Commercial/Industrial/Institutional	✓	✓	✓	✓	
Power Generation	✓		✓	*	✓

✓ Existing

* Proposed projects (stormwater, potable reuse, ASR)

Groundwater Sources



➤ Fresh Groundwater
(Surficial Aquifer System)

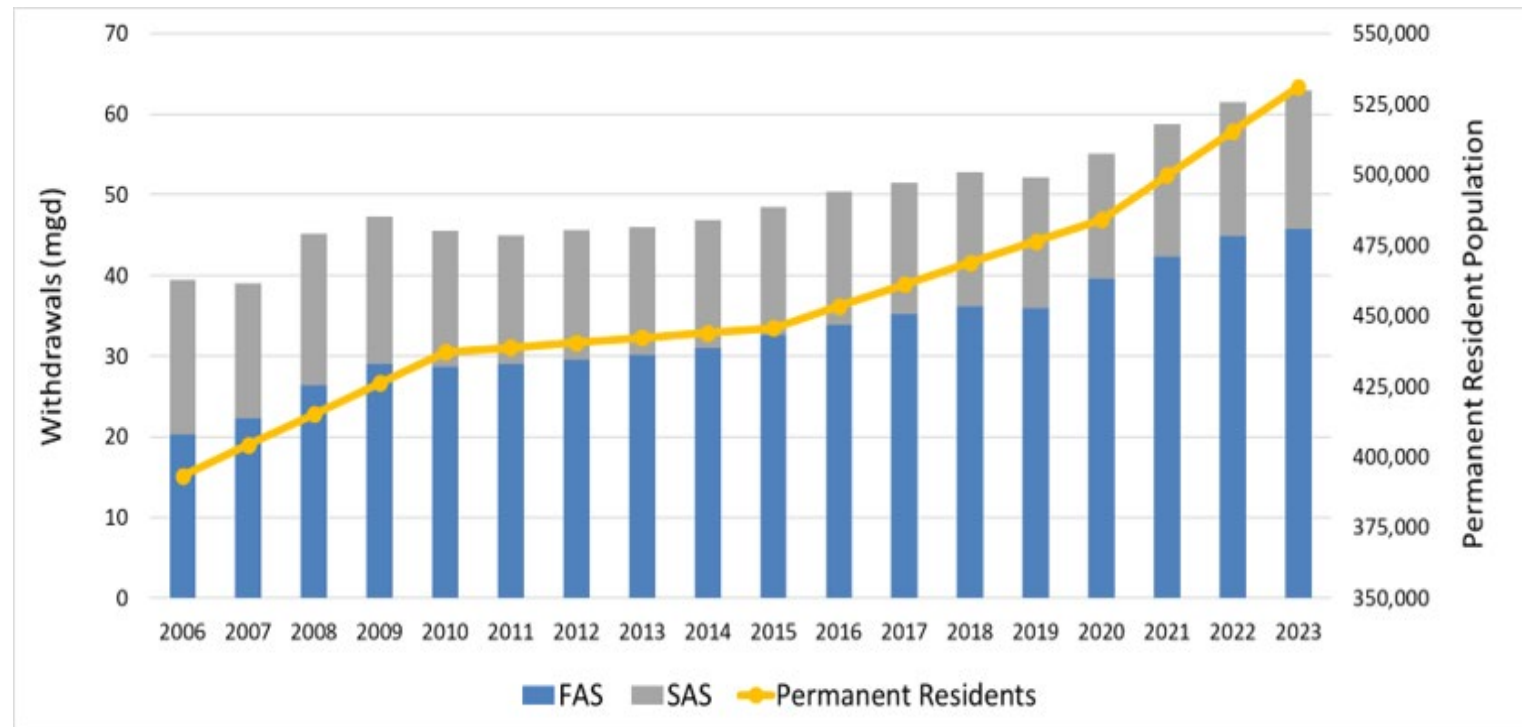
➤ Saline Groundwater
(Floridan Aquifer System)
(*chloride >250 mg/L*)

- Upper Floridan aquifer
- Avon Park Permeable Zone
- Lower Floridan aquifer

➤ Seawater
(*chloride >19,000 mg/L*)

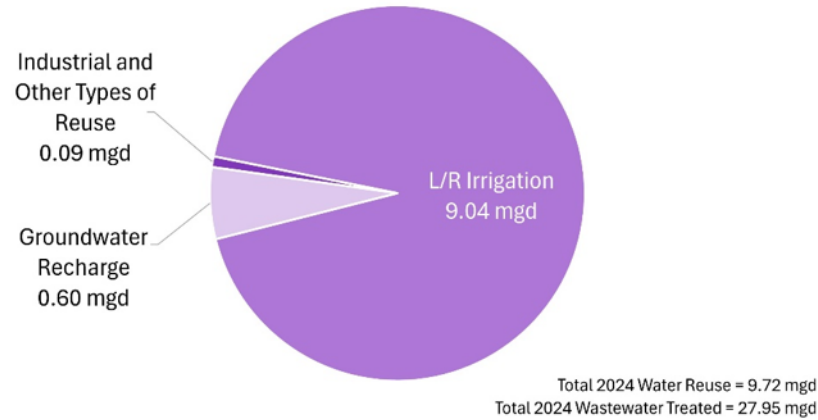
Public Supply Groundwater Demands (million gallons per day)

- Conservation and source diversification have been beneficial
- Surficial aquifer system (SAS) use has decreased slightly and remained stable since 2006
- Floridan aquifer system (FAS) use has increased to supply population growth

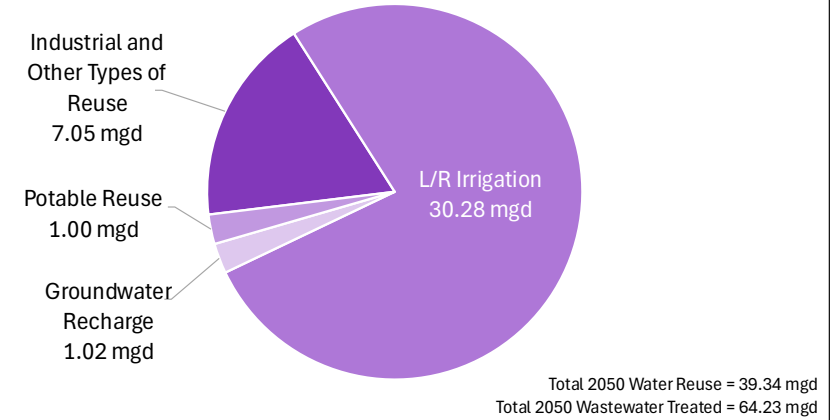


Water Reuse

2024 Reuse in the UEC Planning Area



2050 Reuse in the UEC Planning Area



County	AAD Wastewater Flows (mgd)		AAD Disposal Flows (mgd)		AAD Supplemental Flows (mgd)		AAD Reuse (mgd)	
	2024	2050	2024	2050	2024	2050	2024	2050
Martin	8.11	14.10	3.89	6.68	0.19	0.00	4.64	7.42
Okeechobee ^a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
St. Lucie	19.84	50.12	15.96	18.85	1.16	1.35	5.08	31.92
UEC Planning Area Total	27.95	64.22	19.85	25.53	1.35	1.35	9.72	39.34

AAD = annual average daily; mgd = million gallons per day.

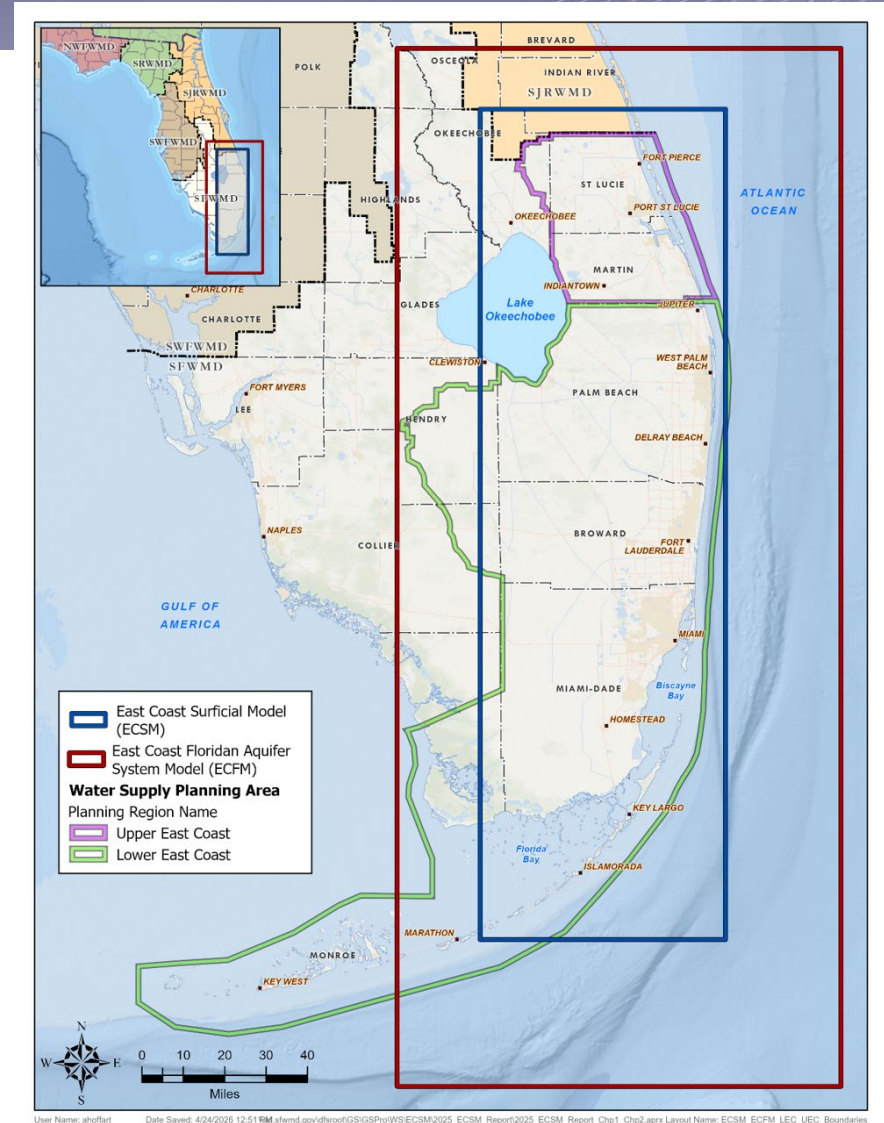
Water Resource Considerations

- In many areas, especially coastal areas, large increases in withdrawals from the surficial aquifer system are limited due to low aquifer productivity
- Regulatory limitations on surface water availability
 - C-23, C-24, and C-25 canals
 - Lake Okeechobee Service Area (including C-44 Canal)
 - The St. Lucie Estuary MFL
- Long-term availability of the Floridan aquifer system
- Changing hydrologic and climate conditions, including sea level rise



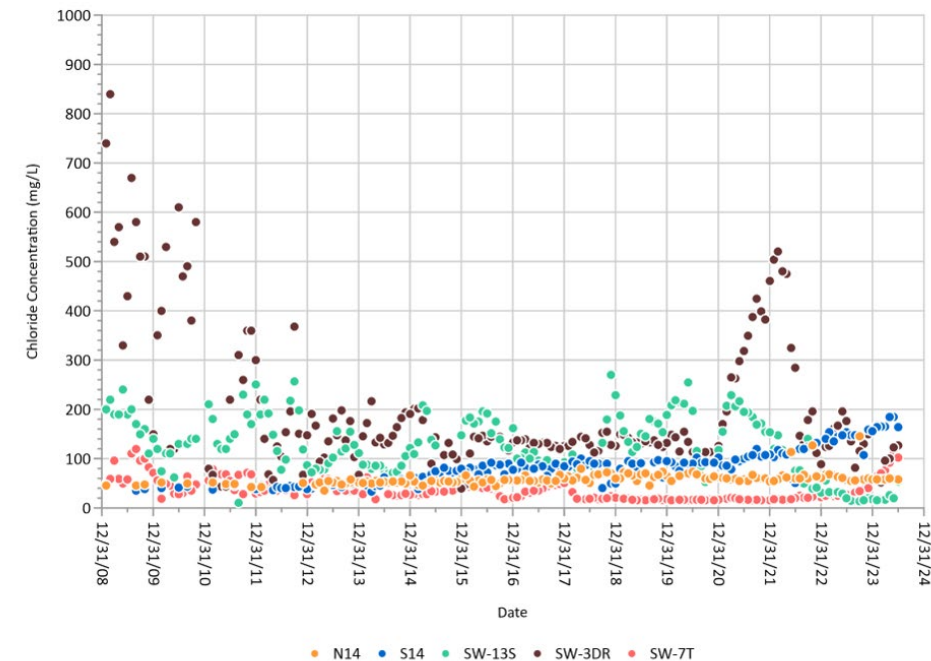
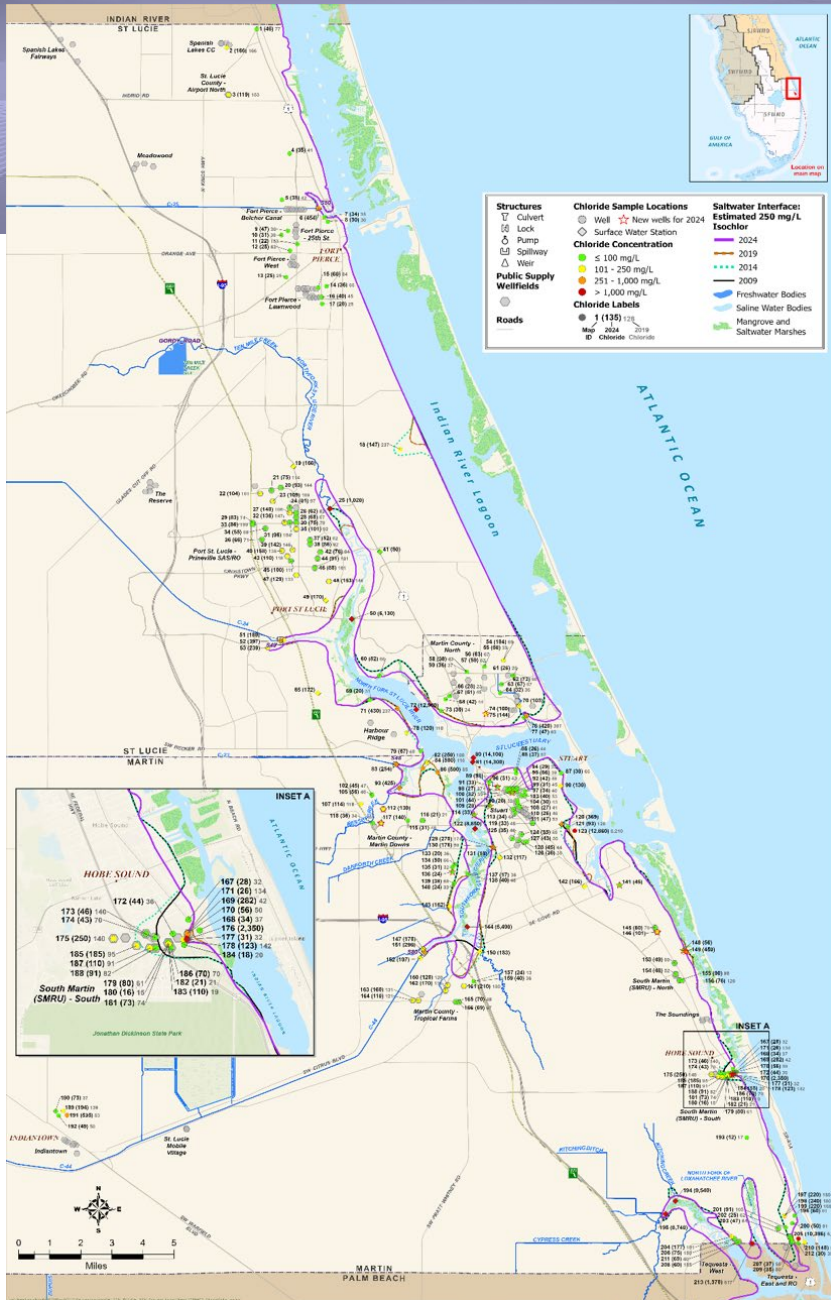
Water Resource Evaluation & Analysis

- Data sources:
 - Water use permit information
 - Regulatory withdrawal limits
 - Groundwater level and salinity monitoring data
 - Demand estimates and projections
- East Coast Surficial Model (ECSM)
- East Coast Floridan Model (ECFM)
- Regional Simulation Model (RSM)
 - St. Lucie Estuary MFL Evaluation



Saltwater Intrusion

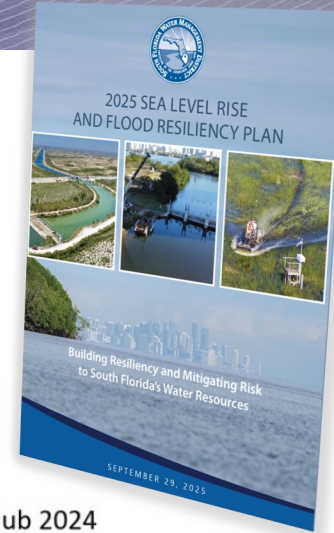
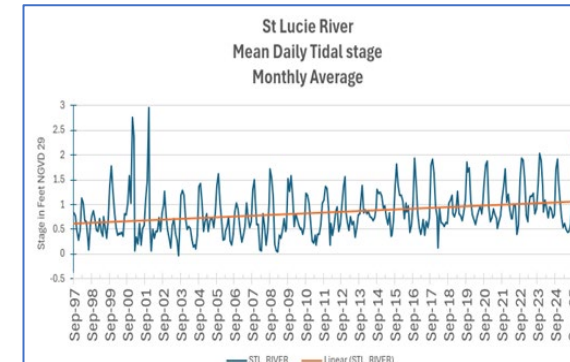
- Saltwater interface maps
 - Updated in 2009, 2014, 2019, and 2024 by SFWMD [WS-67 2024 swi mapping report.pdf](#)
- Chloride graphs



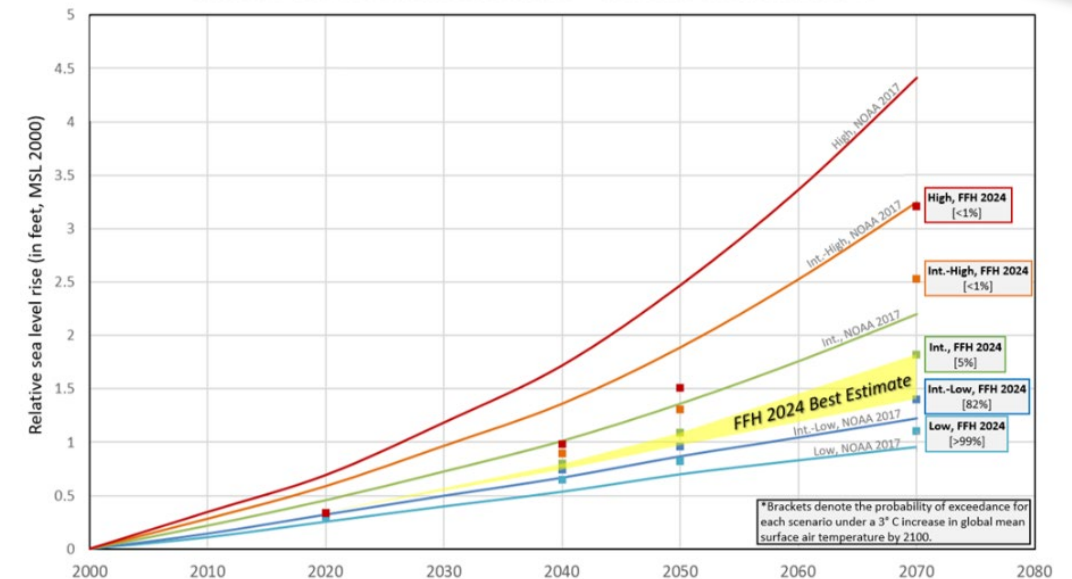
Sea Level Rise and Other Changing Conditions

- South Florida is particularly vulnerable
- Observed Sea Level Rise: 6-8 inches
- The SFWMD is preparing by:
 - Conducting research
 - Performing computer simulations
 - Analyzing vulnerabilities in the current water management system and developing adaptation strategies
- Coordinate with other local and state agencies and stakeholders

Website: <https://www.sfwmd.gov/our-work/district-resiliency>



Relative Sea Level Rise Scenarios – Florida Flood Hub 2024



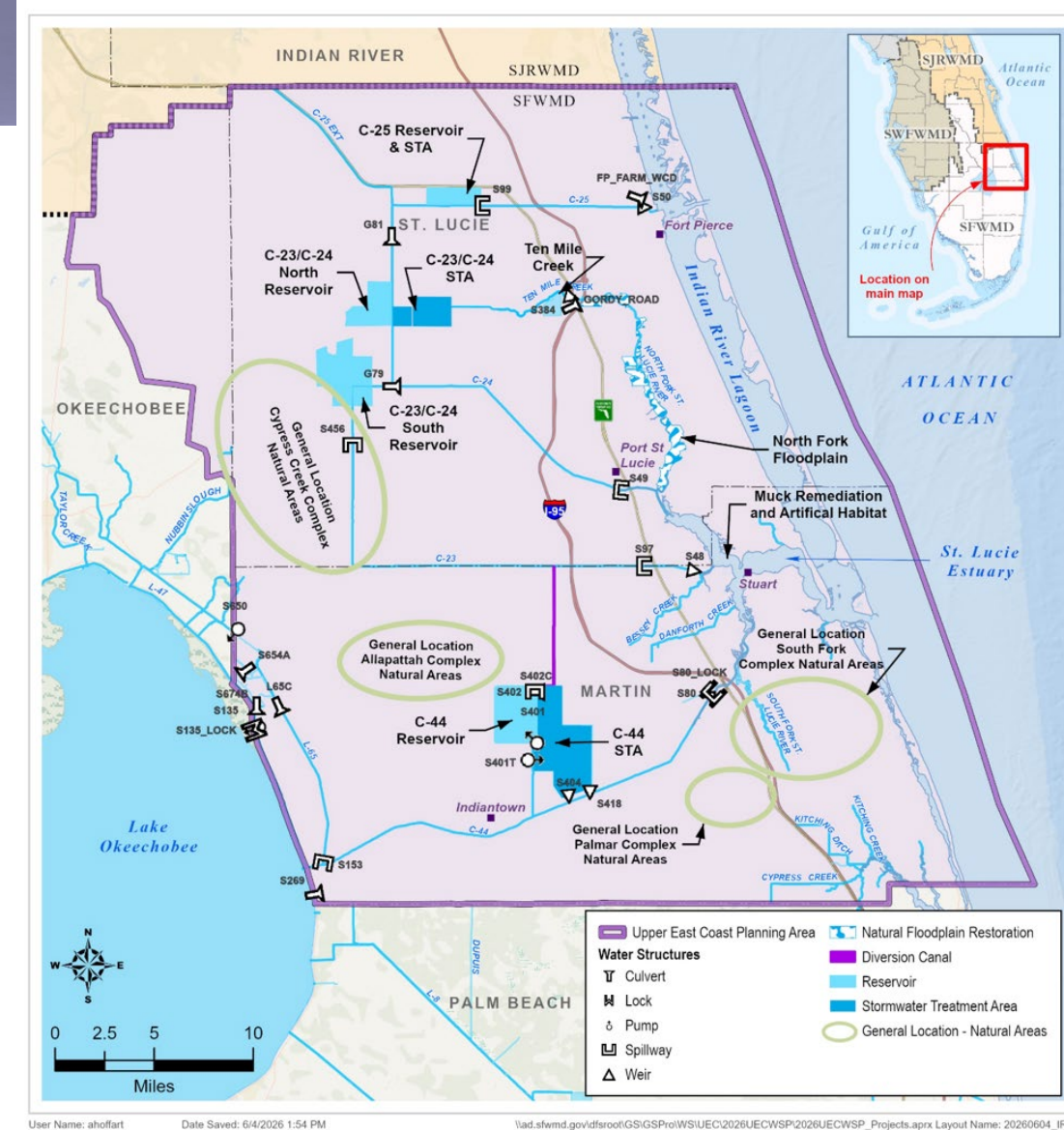
Water Resource Development Projects



- Implementation of CERP and other projects
- Resource protection rules
- Hydrogeologic investigations
- Groundwater monitoring and modeling
- Alternative water supply and conservation cooperative funding program

Water Resource Development Projects

- Comprehensive Everglades Restoration Plan (CERP) Projects
 - Indian River Lagoon – South Project
 - Loxahatchee River Watershed Restoration Project
- Additional CERP Projects (outside UEC)
 - Lake Okeechobee Watershed Restoration Project
 - Lake Okeechobee Component A Reservoir
- Ten Mile Creek Project
- Northern Everglades and Estuaries Protection Program (NEEPP)
 - Lake Okeechobee Protection Plan
 - Dispersed Water Management Program



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Water Supply Development

- 27 proposed projects adding treatment or AWS storage capacity
- Potable
 - Most utilities have sufficient capacity and permit allocations to meet 2050 demands
 - 14 projects proposed by 7 utilities
 - Only 3 utilities need projects to meet 2050 demand projections or treatment requirements
- Nonpotable
 - 13 projects proposed by 5 utilities



Water Supply Projects Summary

Water Source	Number of Projects	Capacity (mgd)	Cost (\$ million)
Potable Projects			
Surface Water/Stormwater	1	10.00	\$172.60
Floridan Aquifer System	12	33.00	\$394.30
Potable Reuse	1	2.50	\$5.00
Potable Total	14	45.50	\$571.90
Nonpotable Projects			
Reclaimed Water	9	24.85	\$539.56
Surface Water/Stormwater Storage	3	10.00*	\$27.22
Aquifer Storage and Recovery	1	10.00*	\$14.00
Nonpotable Total	13	24.85	\$580.78
UEC Planning Area Total	27	70.35	\$1,152.68

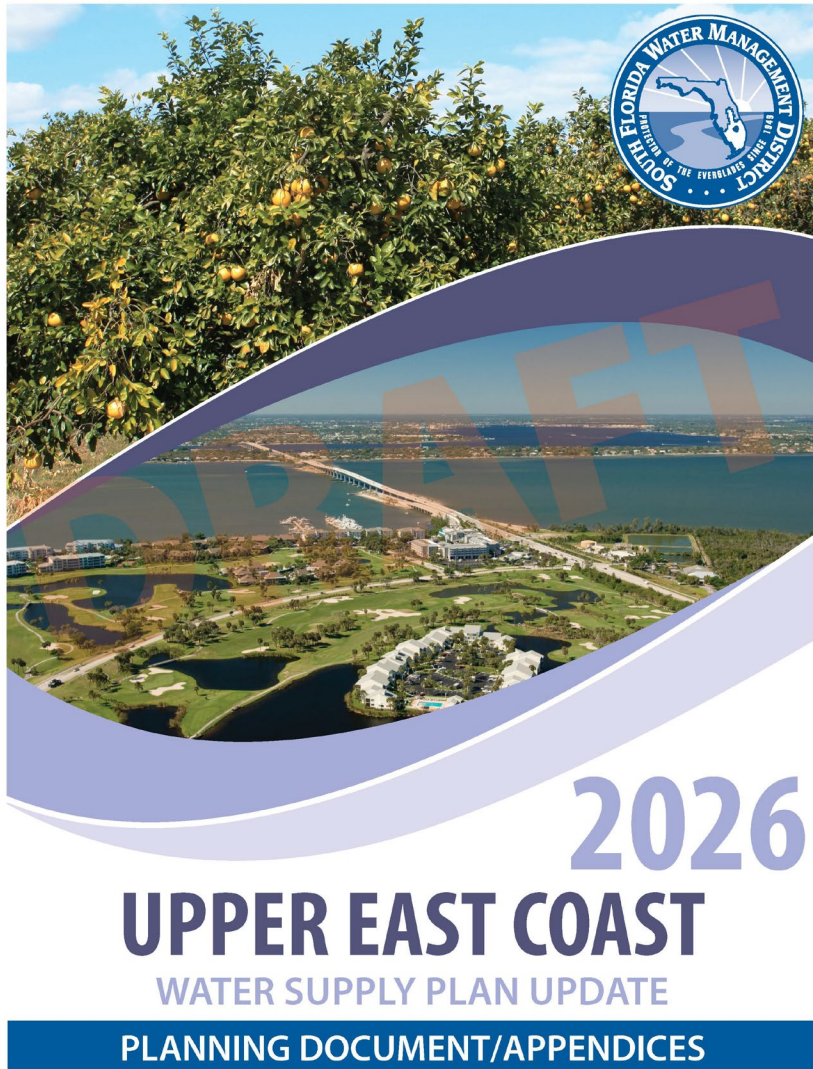
* This is the estimated recoverable storage capacity, not new water supply treatment capacity.

Future Direction

- Continue implementation of:
 - SAS and FAS monitoring programs
 - Water conservation programs
 - Alternative water supply development projects
 - CERP and other ecosystem restoration projects
- Evaluate, monitor, and plan resiliency solutions to adapt to sea level rise and changing conditions
- Implement long-term management measures for the FAS in coordination with utilities
- Continue to coordinate with other agencies, local and tribal governments, and utilities on water supply elements



Draft Plan Conclusion



The future water needs of the region can continue to be met through the 2050 planning horizon with appropriate management, conservation, and implementation of projects in this plan.

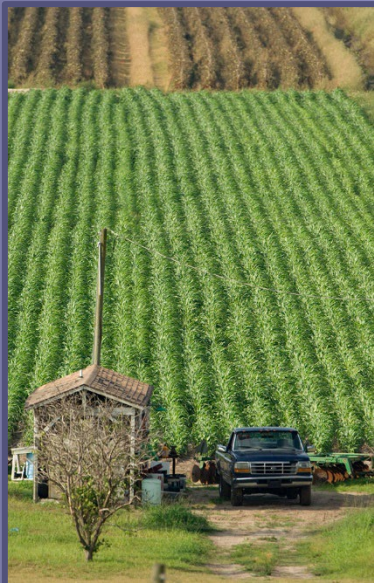
- Construction of potable water supply development projects by three PS utilities.
- Implementation of the CERP Indian River Lagoon – South Project and other ecosystem restoration projects.

Questions and Public Comment



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- If you are participating via phone:
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- When you are called on, please state your full name and affiliation prior to providing comments and/or questions

Water Resource Protection Tools



James Beerens

Section Lead, Resource Protection & Monitoring

2026 UEC Stakeholder Meeting
September 14, 2026



Minimum Flows and Minimum Water Levels (MFLs)

Statutory Authority: Chapter 373, Florida Statutes (F.S.)

Defined in Rule 40E-8.021, F.A.C.

MFL

- Point at which further withdrawals will cause "significant harm" to the water resources or ecology of an area

Significant Harm

- Temporary loss of water resource functions that takes more than two years to recover, but is less severe than serious harm

May be adopted for both surface waters and groundwaters



Lotus pads on Lake Okeechobee
Source: Katherine Wolkoff at <https://www.audubon.org>

MFL Recovery and Prevention Strategies

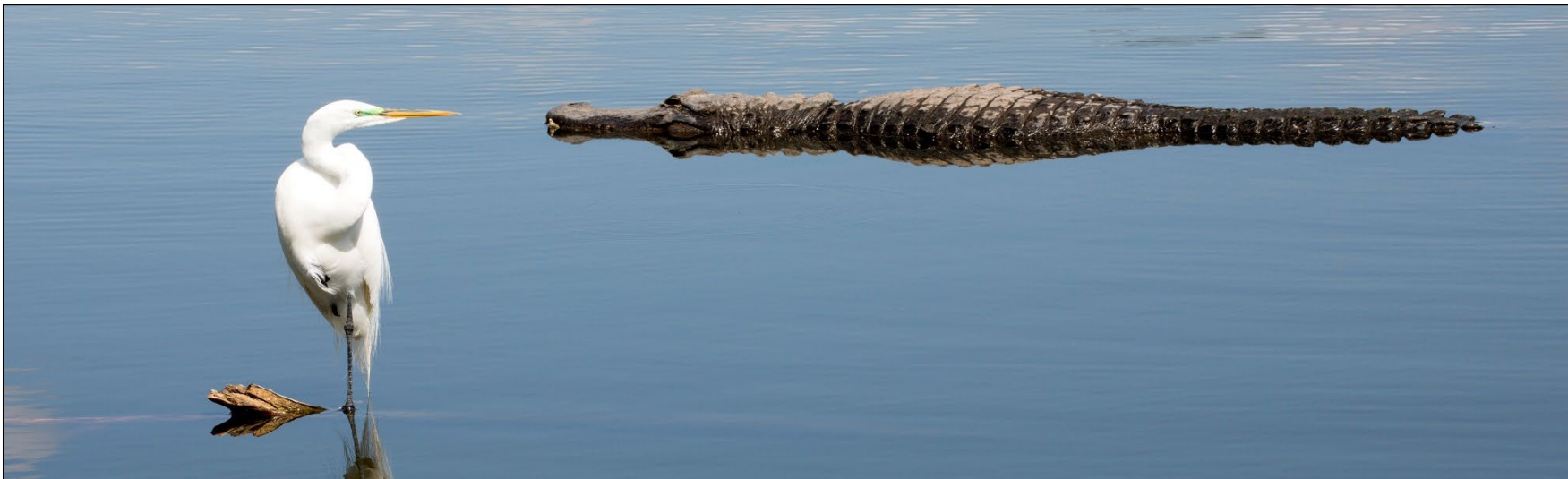
Section 373.0421(2), F.S.

Recovery Strategy

- For waterbodies not meeting the MFL at the time of adoption
- Achieve recovery to the established MFL as soon as “practicable”

Prevention Strategy

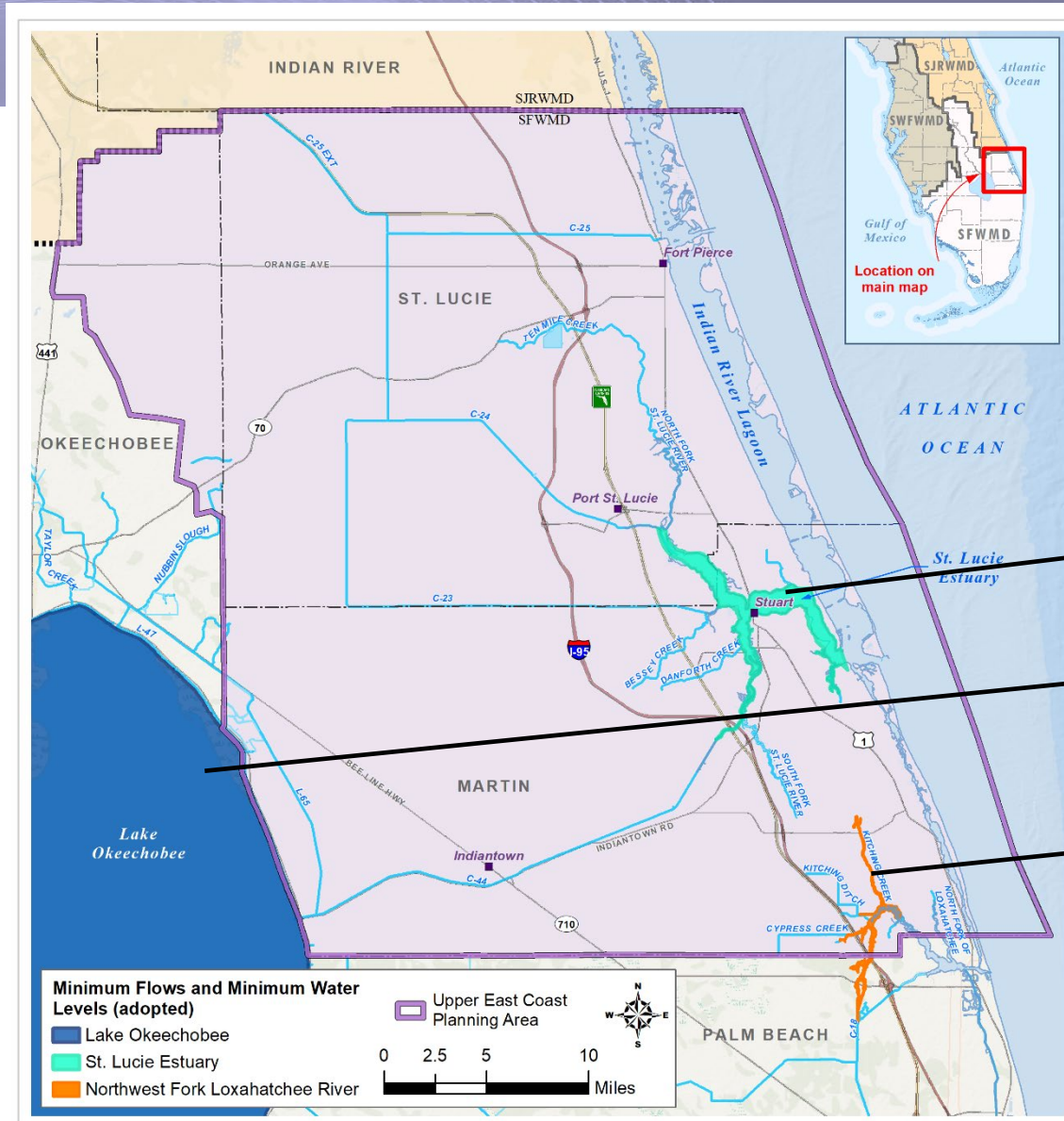
- For waterbodies that are meeting the MFL but are not expected to meet it in 20 years
- Prevent the existing flow or level from falling below the adopted MFL



Great Egret (*Ardea alba*) and American Alligator (*Alligator mississippiensis*)

Source: <https://naturetime.wordpress.com>

MFLs Adopted in the UEC



St. Lucie Estuary

Lake Okeechobee

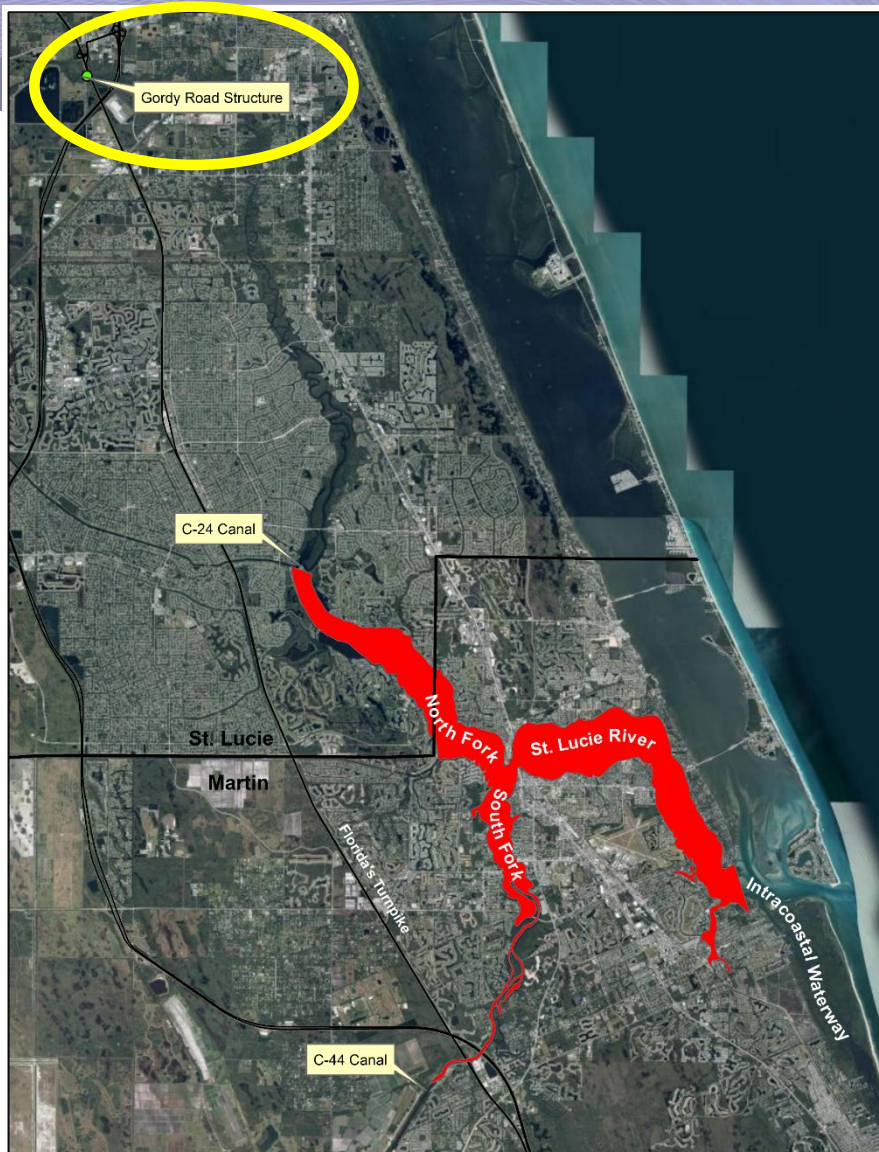
NW Fork of Loxahatchee River

MFLs Covered in Other Water Supply Plans

MFL Waterbody	Water Supply Plan	MFL Criteria	Recovery or Prevention Strategy
Northwest Fork of Loxahatchee River	Lower East Coast	Subsection 40E-8.221(4), F.A.C.	Recovery Subsection 40E-8.421(6), F.A.C.
Lake Okeechobee	Lower East Coast	Subsection 40E-8.221 (1), F.A.C.	Recovery Subsection 40E-8.421(2), F.A.C.



St. Lucie Estuary MFL

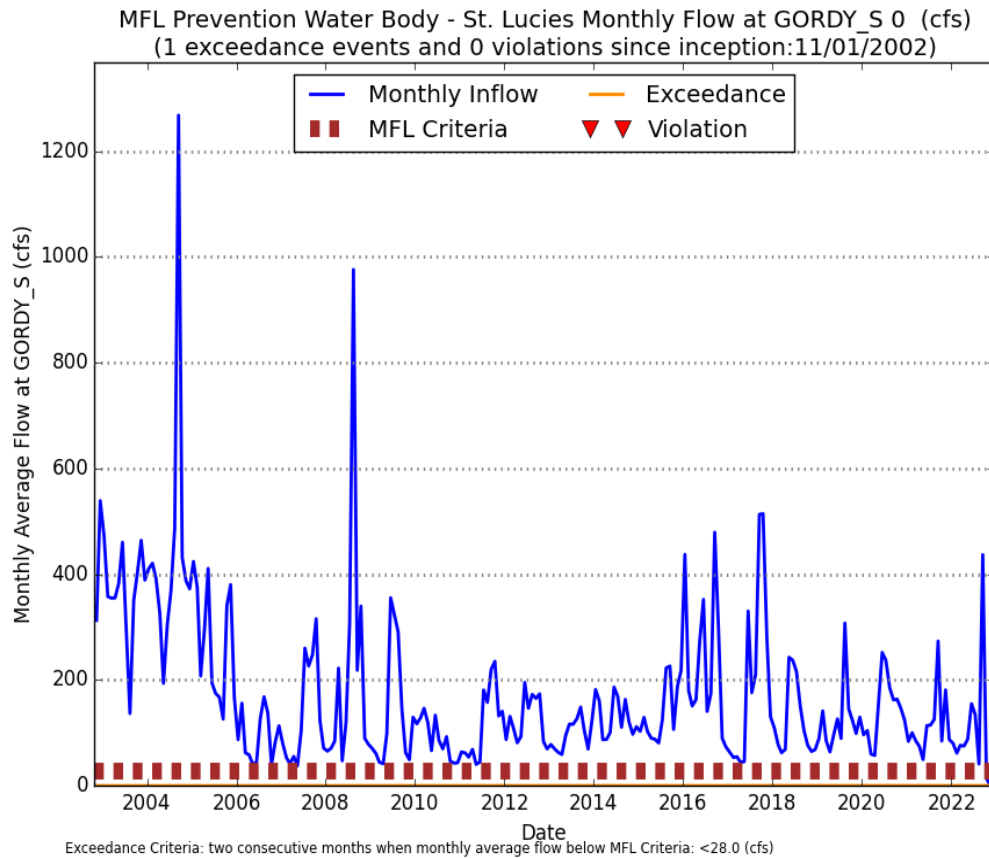


Rule 40E-8.341, F.A.C. (adopted 2002)

Defined in Subsection 40E-8.021(29), F.A.C, as... “the surface water body south of the confluence of the St. Lucie River North Fork and the C-24 Canal; north of the confluence of the St. Lucie River South Fork and the C-44 Canal; and west of the western boundary of the Intracoastal Waterway, exclusive of canals”

- Minimum mean monthly flow of 28 cubic feet per second (cfs) at the Gordy Road Structure
- An MFL violation occurs when:
 - Mean monthly flow at the Gordy Road Structure declines below 28 cfs, for two consecutive months, during a 365-day period, for two consecutive years

St. Lucie Estuary MFL



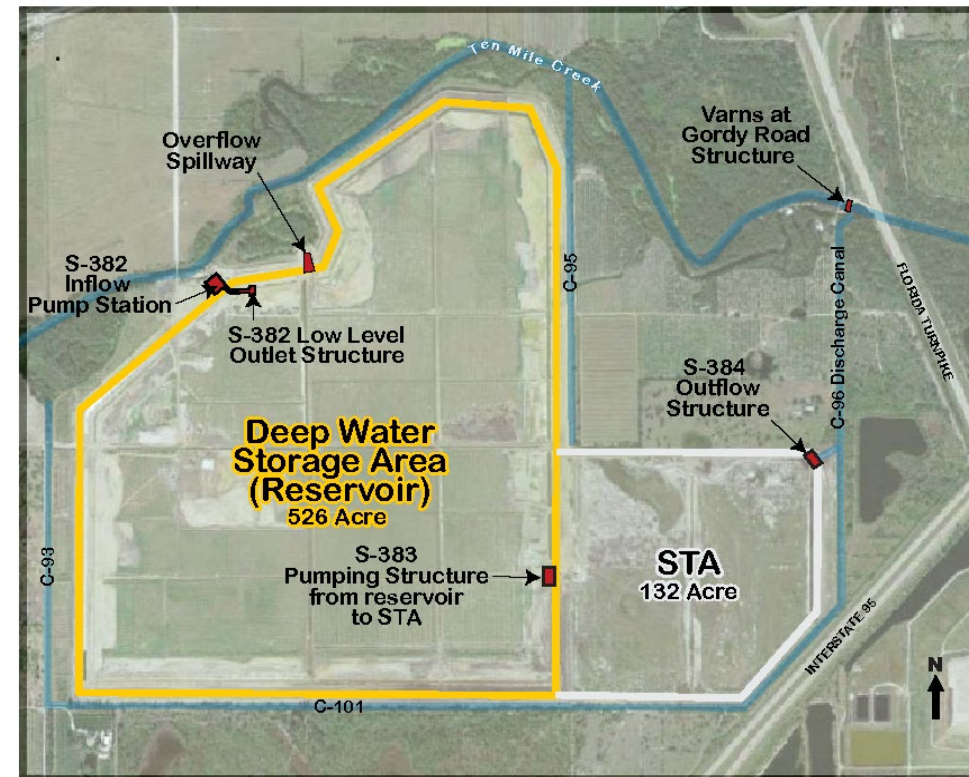
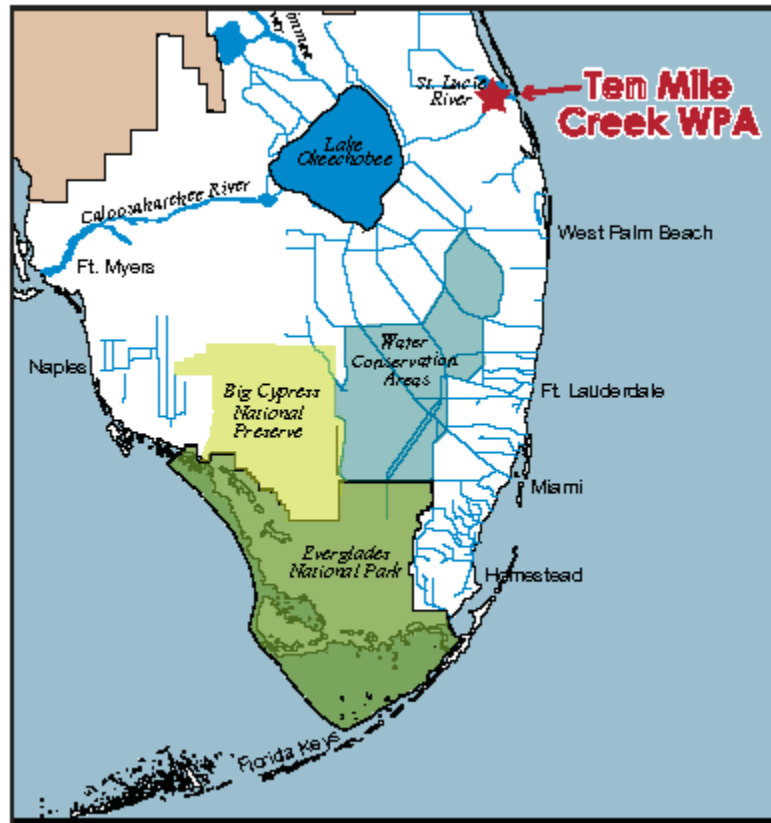
Rule 40E-8.341, F.A.C. (adopted 2002)

- Minimum mean monthly flow of 28 cubic feet per second (cfs) at the Gordy Road Structure
- An MFL violation occurs when:
 - Mean monthly flow at the Gordy Road Structure declines below 28 cfs, for two consecutive months, during a 365-day period, for two consecutive years

St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Discharges from the North Fork are managed within the operational protocols of the Ten Mile Creek Project



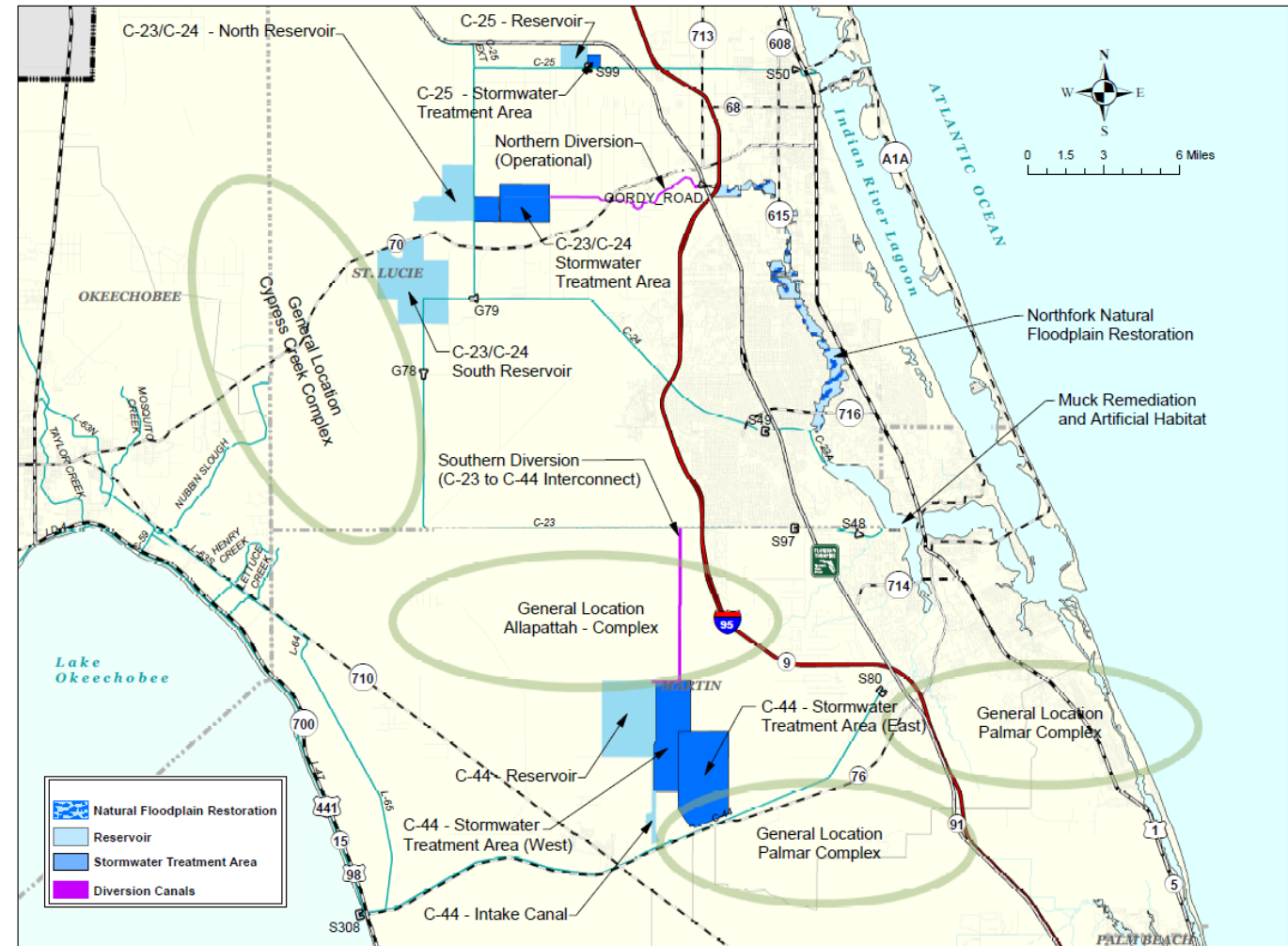
Ten Mile Creek Project components.

From: <https://www.saj.usace.army.mil/Media/Fact-Sheets/Article/479985/ten-mile-creek-water-preserve-area/>

St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Flow targets are consistent with the Comprehensive Everglades Restoration Plan (CERP) performance requirements for Indian River Lagoon as part of the CERP Indian River Lagoon – South (IRL-S) Project



For copies of this map (I:\arc_data\maps\proj\indian\am\Uec_8.5x11_Revised_APR2021_4.mxd

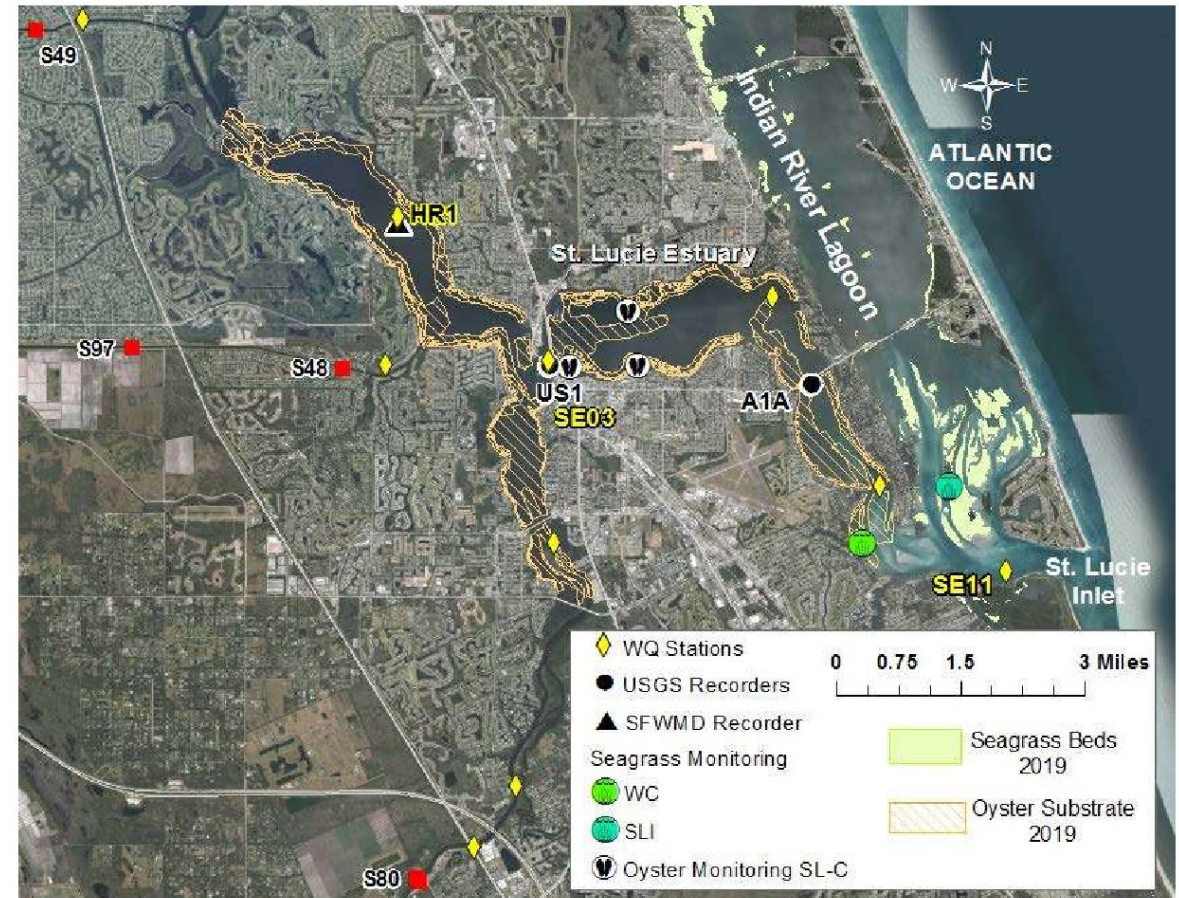
St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Ongoing research and monitoring are conducted in the North and South Forks of the St. Lucie River



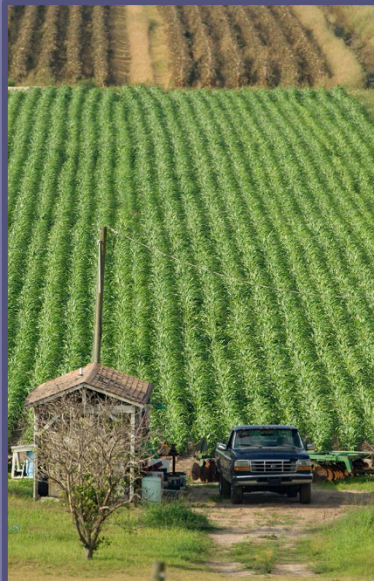
Eastern Oyster (*Crassostrea virginica*).



St. Lucie Estuary monitoring locations for water quality (HR1, SE03, and SE11), salinity (US1 and A1A salinity recorders), seagrass (Willoughby Creek= WC and St. Lucie Inlet= SLI sites), and oysters (St. Lucie Central Site = SL-C, stations C1, C2, and C3). Also shown are the seagrass cover maps from aerial photography conducted in 2019 of the Southern IRL and lower SLE, and the 2019 sidescan-sonar mapping results for oyster substrate, which includes live oysters and oyster shell.

From: 2021 South Florida Environmental Report https://apps.sfwmd.gov/sfwmd/SFER/2021_sfer_final/v1/chapters/v1_ch8c.pdf

Regional Modeling Analysis



Walter Wilcox

Chief, Water Resources & Systems Modeling Bureau

Acknowledgments: Zhi Chen, Alaa Ali, Raul Novoa, Clay Brown

2026 UEC Stakeholder Meeting

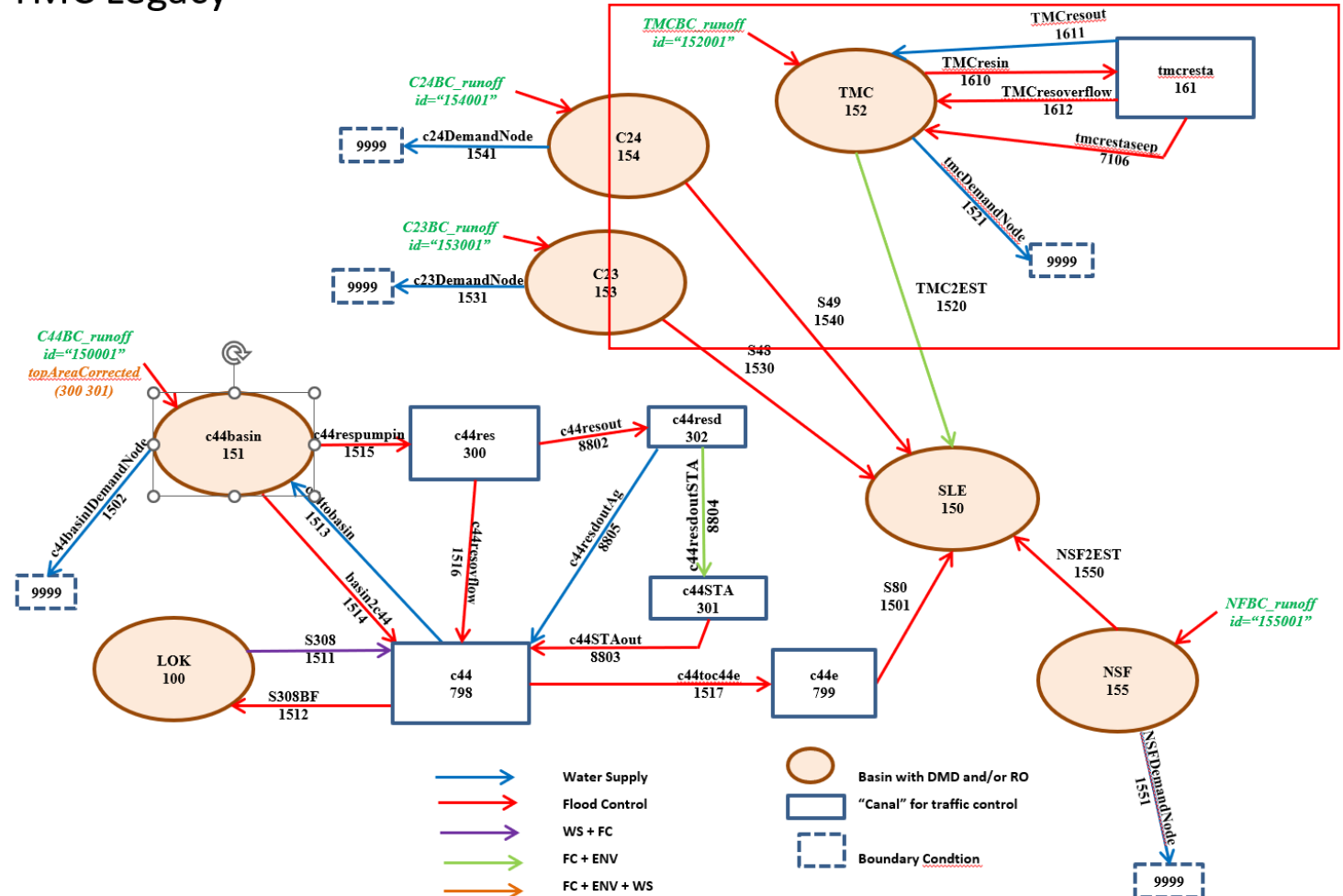
September 14, 2026



Regional Simulation Model Basin Network (RSMBN)

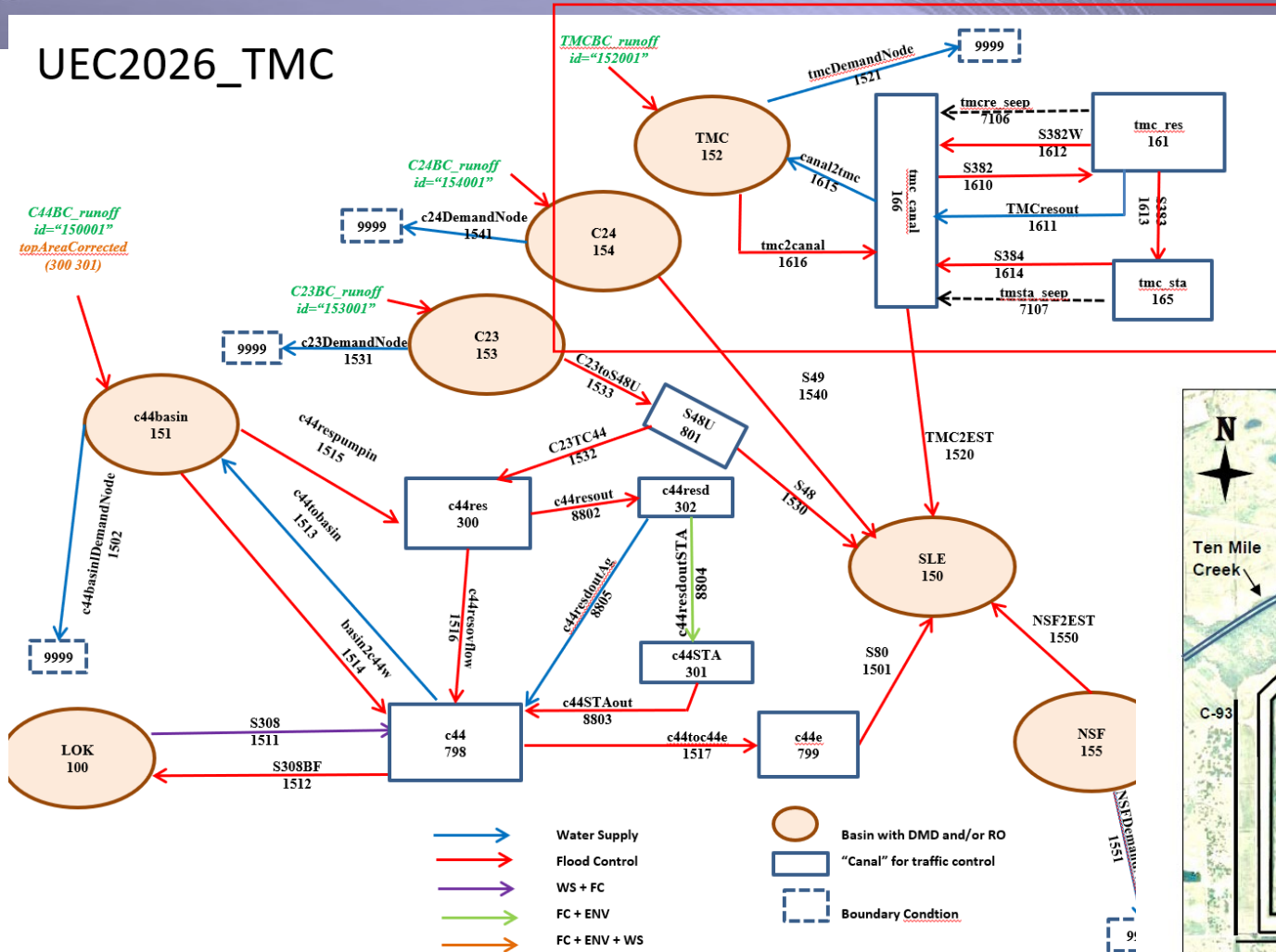
- A link-node application of the Regional Simulation Model (RSM) specific to Lake Okeechobee and basins in its vicinity, i.e., the Indian River Lagoon
- Previously utilized for the Comprehensive Everglades Restoration Plan (CERP) and SFWMD Northern Everglades planning initiatives
- Will provide hydrologic representation of stages and flow in modeled watersheds including flows to the St Lucie Estuary.
- Simulates daily time-step hydrology and water management for a historical period of climate from 1965-2016.

TMC Legacy

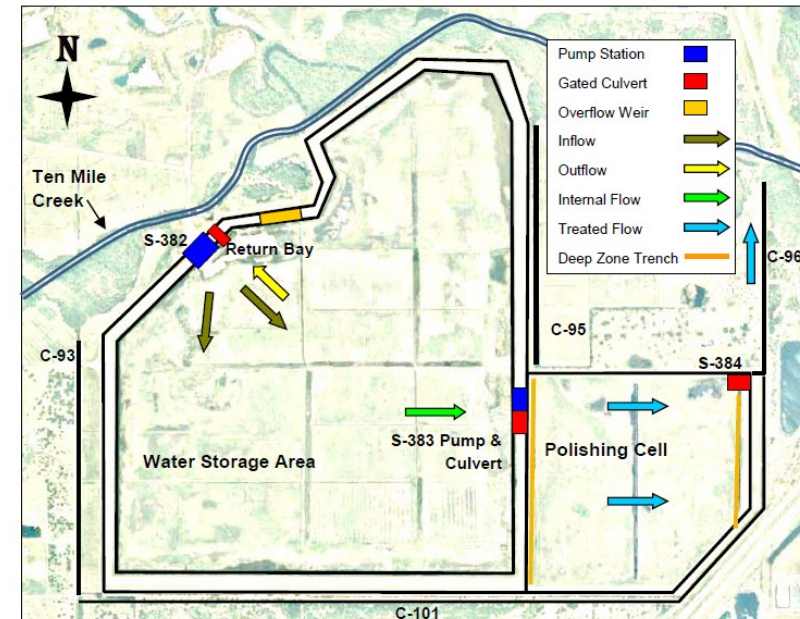


RSMBN Model Refinements in Support of UEC Planning

UEC2026_TMC



The model was updated to reflect a more detailed and current representation of the Ten Mile Creek Basin, including the TMC Water Storage and Stormwater Treatment Areas

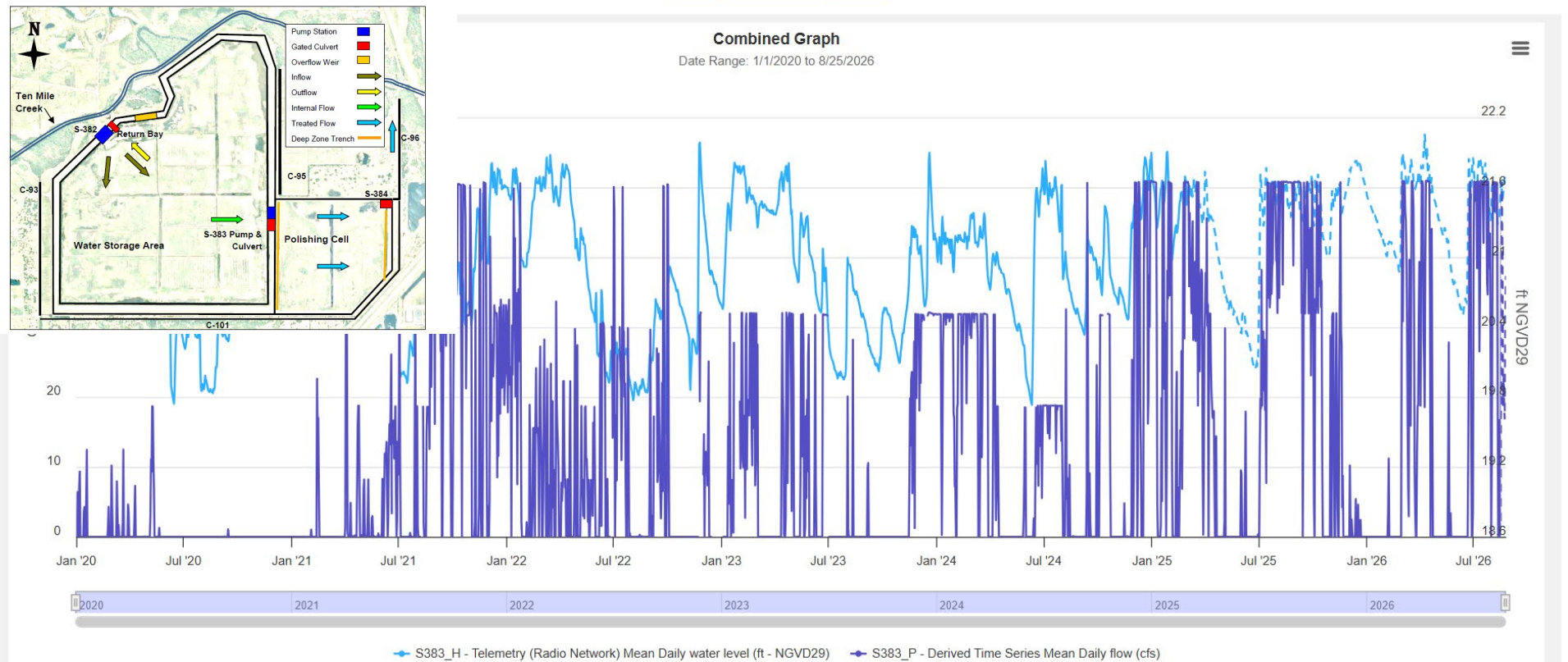


-
- The diagram illustrates a network topology with the following components and connections:
- Nodes:**
 - TMC 152** (Orange oval)
 - C24 154** (Orange oval)
 - tmcDemandNode 1521** (Blue rectangle)
 - tmc canal 166** (Blue rectangle)
 - tmc res 161** (White rectangle)
 - tmc sta 165** (Blue oval)
 - Connections and Data Flows:**
 - TMCBC runoff id='152001'** (Green text) points to **TMC 152**.
 - Node** (Green text) points to **C24 154**.
 - TMC 152** sends **tmcDemandNode 1521** to **tmcDemandNode 1521**.
 - TMC 152** sends **canal2tmc 1615** to **tmc canal 166**.
 - TMC 152** sends **tmc2canal 1616** to **tmc canal 166**.
 - tmc canal 166** sends **tmc res 161** via **S382 1610**.
 - tmc res 161** sends **tmc sta 165** via **S383 1613**.
 - tmc res 161** sends **tmc sta 165** via **S384 1614**.
 - tmc res 161** sends **tmc sta 165** via **tmcsta seep 7107**.
 - tmc res 161** sends **tmc sta 165** via **tmc res seep 7106**.
 - tmc res 161** sends **tmc sta 165** via **S382W 1612**.
 - tmc res 161** sends **tmc sta 165** via **TMCresout 1611**.

Presenter: Walter Wilcox 51

Simulation of the Current TMC Storage Operations Plan

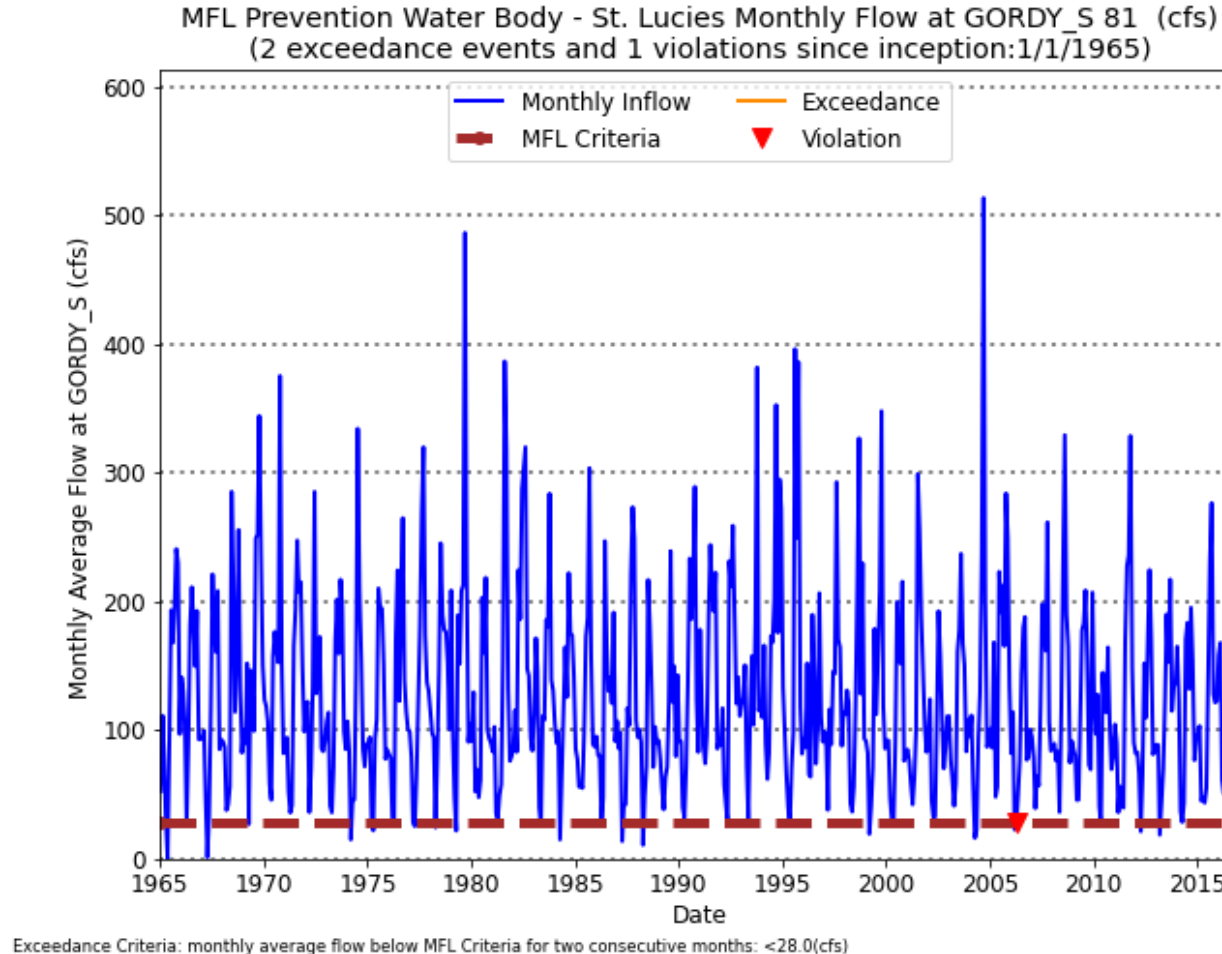
Observed Data ->



Corresponding
Modeling Protocol ->

RES stage		Early Wet	Late Wet	Early Dry	Late Dry
20	Empty	10	10	5	5
20.5	Medium	30	30	10	10
21.6	High	40	40	30	30

Deterministic Simulation of SLE MFL for Updated RSMBN



Only two exceedances
simulated for the
1965-2016 Period of
Simulation

How Physically Based and Stochastic Models Work Together

The stochastic model is calibrated from events generated by the physically based model under the scenario being evaluated.



PHYSICALLY BASED DOMAIN

- Applies the proposed regulation schedule
- Simulates stage under the available historical climate/forcing record
- Produces the exceedance and violation data used for calibration

STOCHASTIC DOMAIN

- Estimates the event-process parameters from the simulated record
- Tests assumptions such as independence and rate structure
- Generates an ensemble of plausible future event histories

The Poisson process is calibrated from RSM output to extend the analysis into the 20-year probabilistic planning horizon.

Where the Protocol Begins

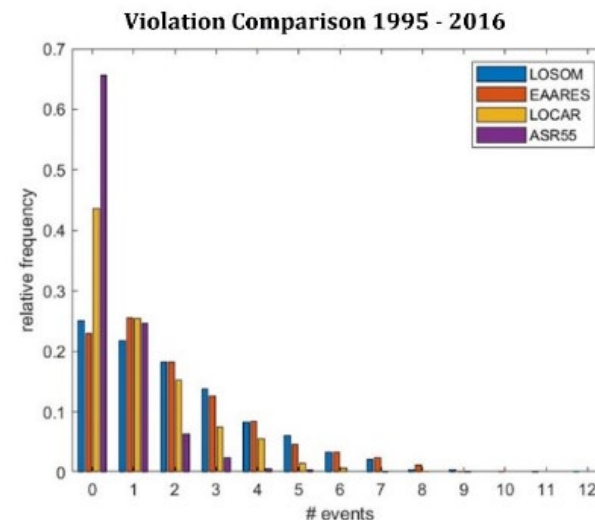
The forward-looking workflow works only when the simulated event record carries enough information to support stochastic calibration and inference.

STANDARD CASE

The physically based model produces enough exceedances and violations to calibrate, diagnose, and validate an HPP/NHPP representation before projecting 20-year risk.



Example for Lake Okeechobee
Evaluation for LECWSP->

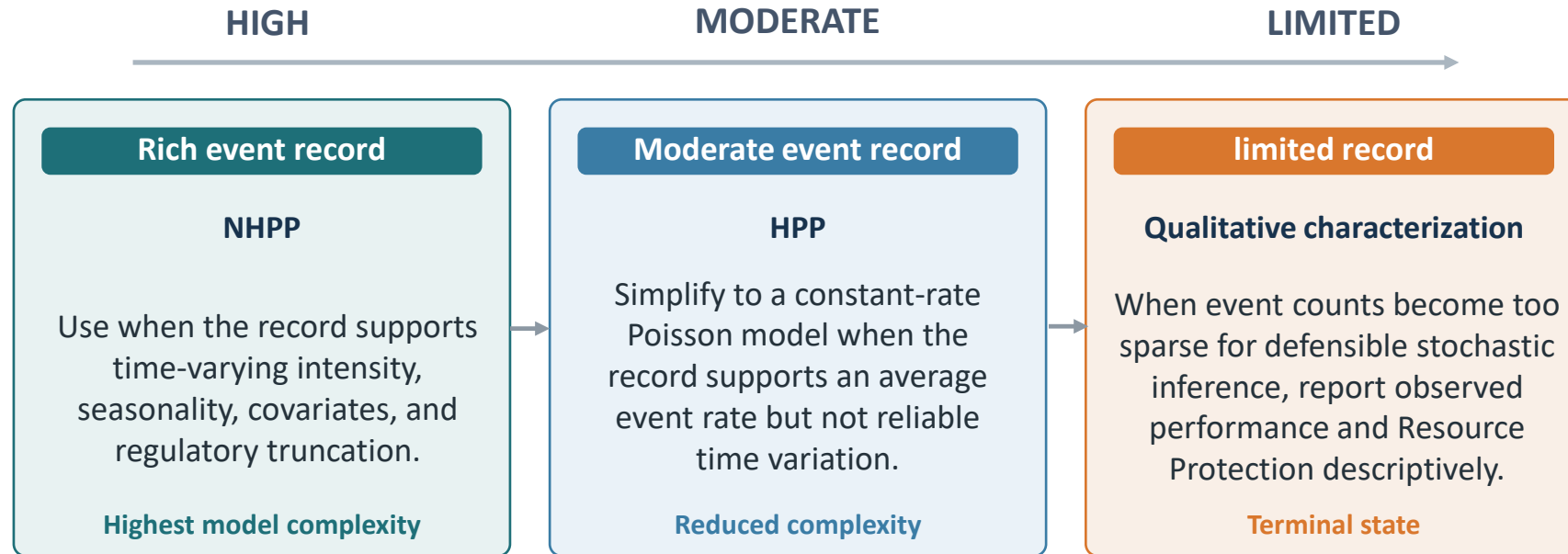


But what happens when system improvements make the event record increasingly sparse?

Protocol question: As exceedance and violation record become increasingly rarer, How should the modeling approach adapt?

To Model or not to Model?

Model complexity should follow the available information carried by the exceedance and violation record.



Framework principle Start with the richest model justified by the data, simplify as information declines, and stop stochastic inference when the record no longer supports it.

Transition from Stochastic Inference to Qualitative Characterization

A terminal stage for rare-event frameworks when successful management makes events too sparse for reliable inference.

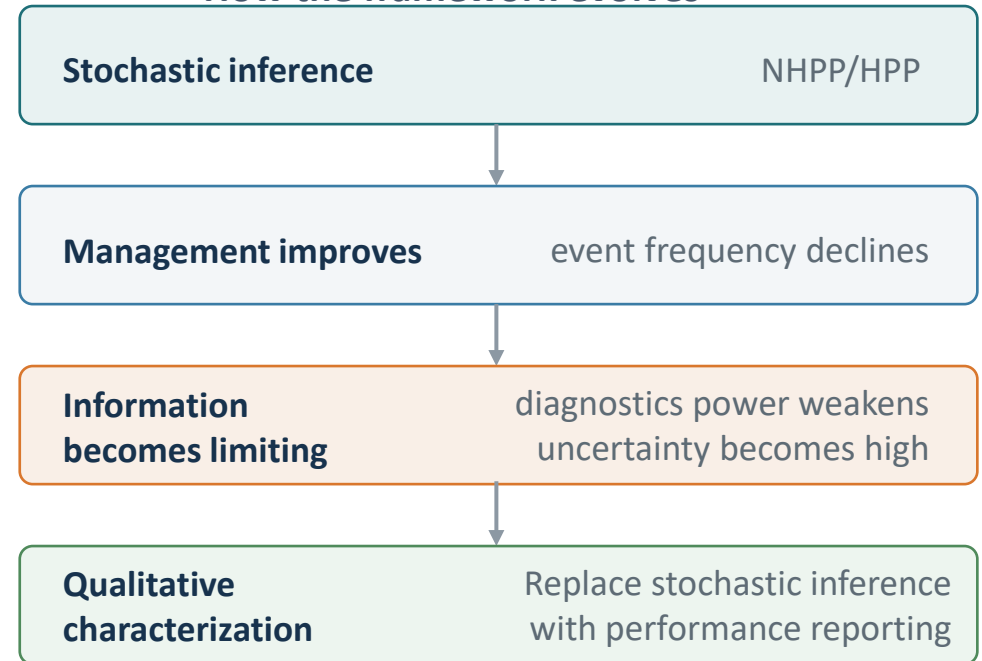
Core Idea

As events become increasingly rare, the available record can no longer support reliable stochastic inference

Fewer exceedances and violations are bad for model fitting, but good for Resource Protection.

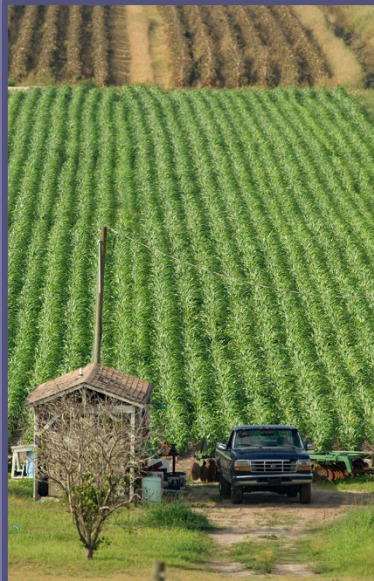
The framework should stop forcing a stochastic model once the data no longer carry enough information.

How the framework evolves



For St Lucie Estuary, this approach indicates exceedingly small risk of exceedances in the forward-looking 20-year window.

St. Lucie Estuary MFL Evaluation



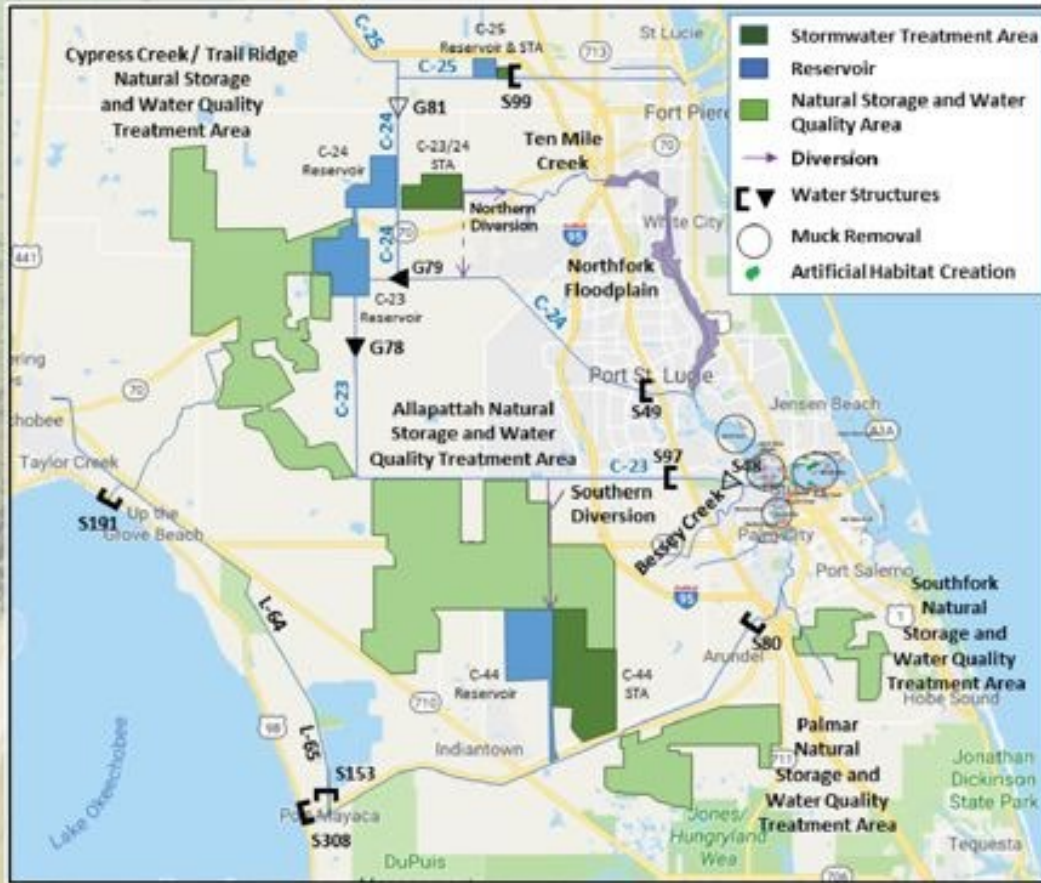
Cassandra Armstrong, Ph. D.
Chief, Applied Sciences Bureau

2026 UEC Stakeholder Meeting
September 14, 2026



Impact of CERP – Indian River Lagoon-South Projects

Indian River Lagoon - South Project



Governor Ron DeSantis Announces Completion of the C-23 Canal Estuary Project to Reduce Harmful Discharges into the Indian River Lagoon

Wed September 9, 2026

Category:

[News](#)

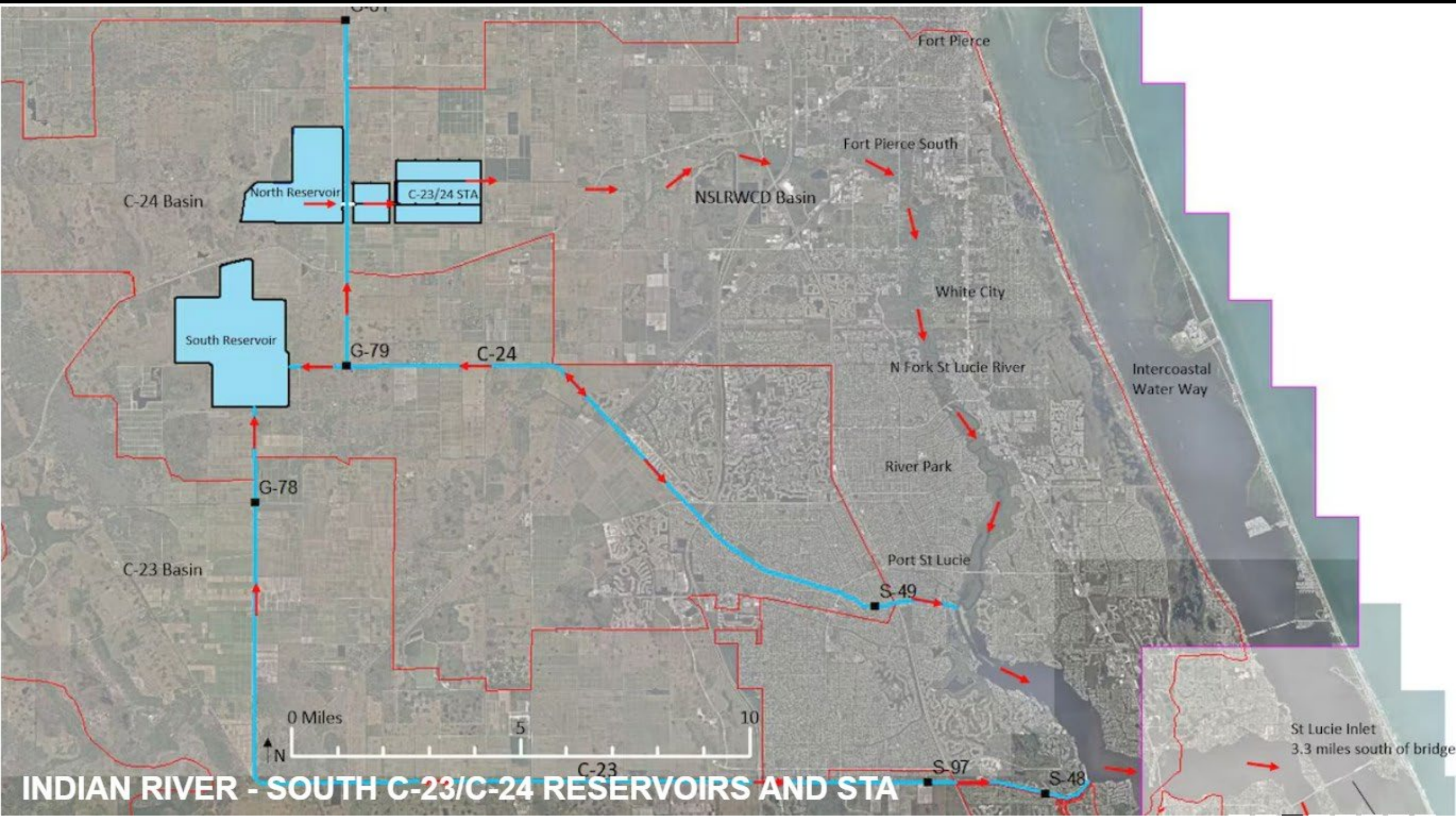


MARTIN COUNTY, Fla.— Today, Governor Ron DeSantis joined the Florida Department of Environmental Protection and the South Florida Water Management District to officially celebrate the completion of the C-23 Canal Estuary Discharge Diversion Project, which recently completed a successful operational testing period. The \$50 million dollar project was funded and completed during the Governor's tenure and will prevent the risk of future harmful discharges into the St.



U.S. Army Corps of Engineers® | Jacksonville District

BUILDING STRONG®



INDIAN RIVER - SOUTH C-23/C-24 RESERVOIRS AND STA

St. Lucie Estuary Conclusions

Based on the following, the MFL will continue to be met through the 20-year planning period and remain in a prevention strategy

- Historic flows at the Gordy Road structure with no violations in over 20 years
- Declining demands for surface water in estuary basins
- Implementation of the CERP Indian River Lagoon – South Project and other ecosystem restoration projects.
- Continued implementation of the prevention strategy
- Modeling analysis

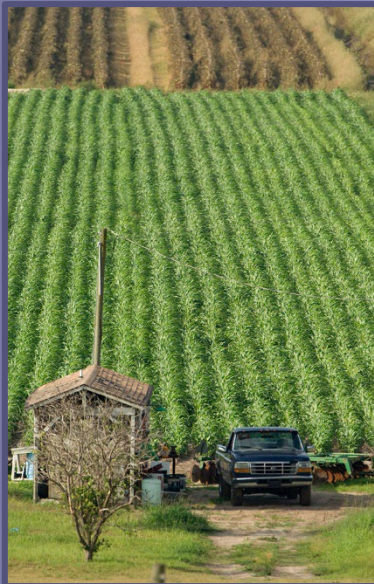


Questions and Public Comment



- If you are participating via Zoom:
 - Click the Reactions button to access the Raise Hand feature
- If you are participating via phone:
 - *9 raises hand
 - *6 mutes/unmutes your line
- When you are called on, please state your full name and affiliation prior to providing comments and/or questions

East Coast Floridan Model and East Coast Surficial Model Analyses & Results



Anushi Obeysekera

Chief, Flood Control and Water Supply Planning Bureau

2026 UEC Stakeholder Meeting 3

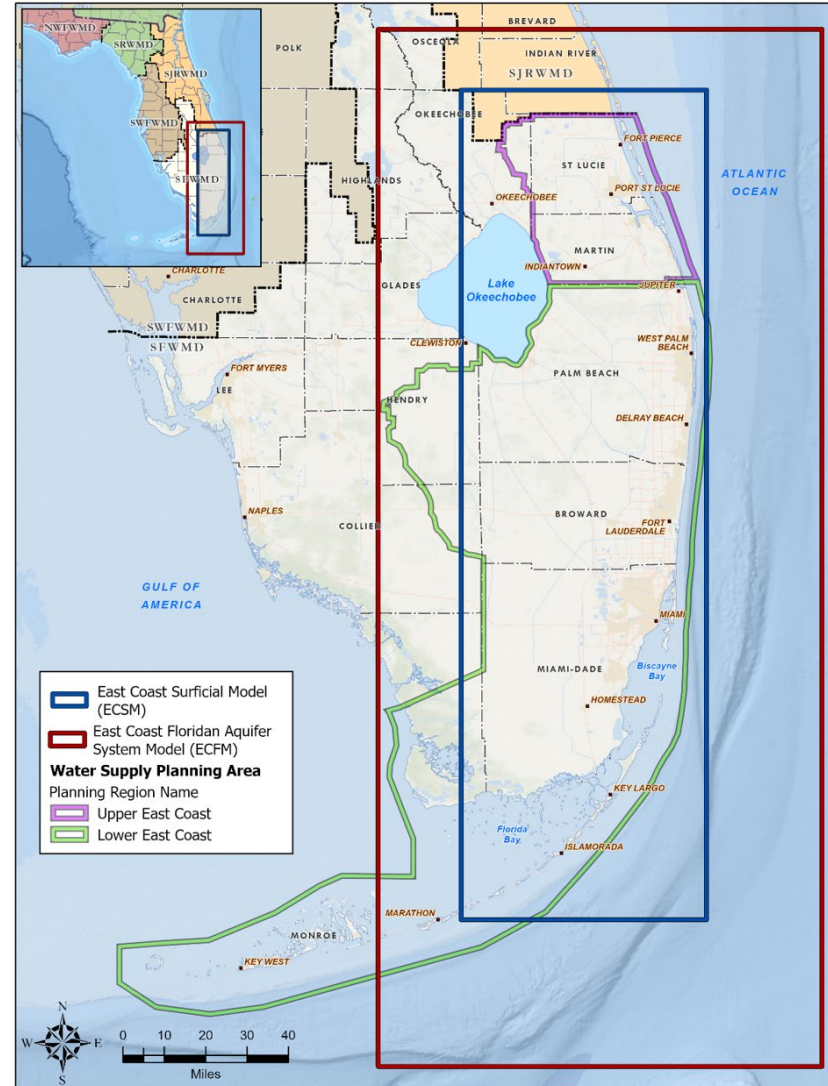
September 14, 2026



ECFM and ECSM Overview

ECFM

- Groundwater flow and transport model using USGS' SEAWAT v4.0
- Period of Simulation: 1989 – 2012 (24 years)
- Monthly stress periods
- Cell size: 2,400 ft x 2,400 ft
- 7 model layers
 - Layer 1: Upper Floridan Aquifer
 - Layer 3: Avon Park Permeable Zone



ECSM

- Groundwater flow and transport model using SFWMD modified version of USGS' SEAWAT code
- Period of simulation: 1985 – 2016 (32 years)
- Daily stress periods
- Cell size: 1,000 ft x 1,000 ft
- 5 model layers

Modeled Scenarios

➤ 2024 Base Condition

- Public Supply (PS) and Power Generation (PG) demands from raw pumpage data
- Agricultural (AG) irrigation demands are based on FSAID acreage and AFSIRS
- All other demands are estimated from raw pumpage and allocations

➤ 2050 Future Condition

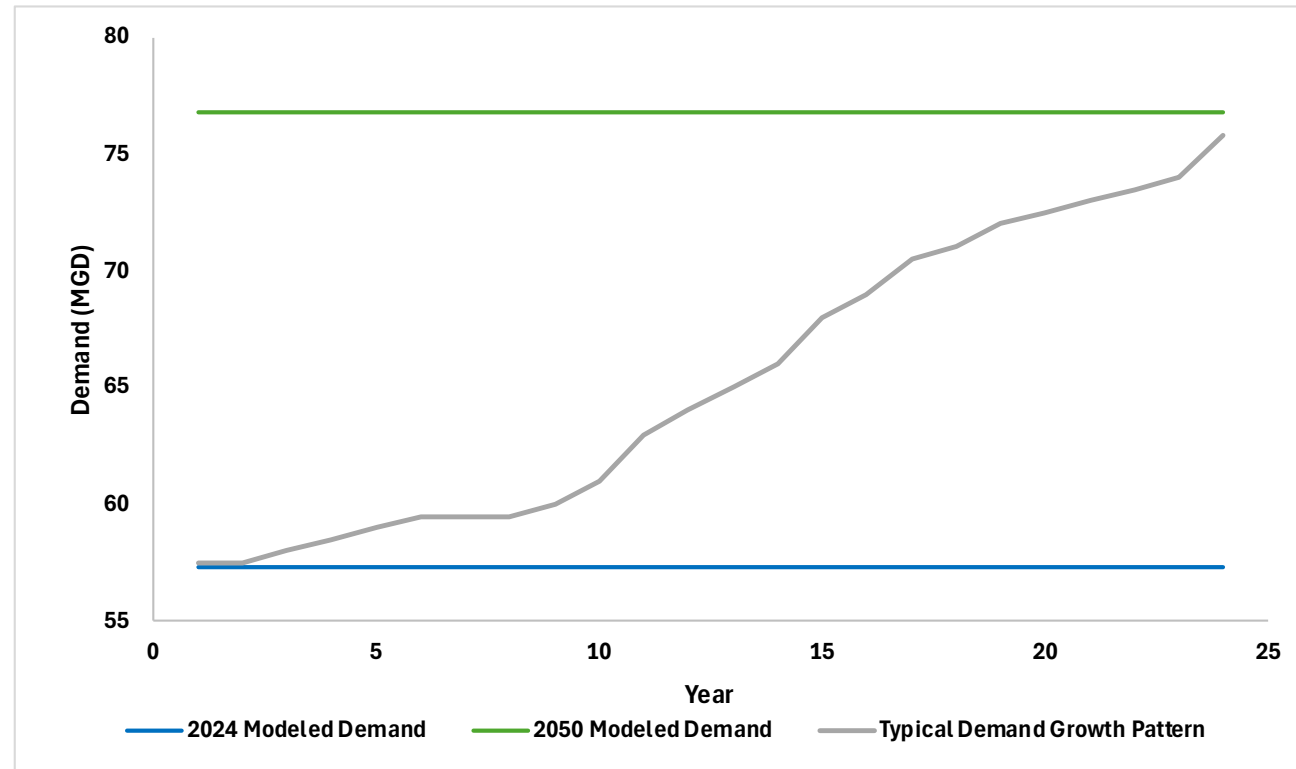
- Public Supply (PS) demands are based on planning projections, limited by allocations
 - For permits with SAS and FAS operational flexibility, source allocations were maximized in ECSM and ECFM, respectively
- Agricultural (AG) irrigation demands are based on projected FSAID acreage and AFSIRS
- All other demands are estimated based on planning projections, limited by allocations

➤ 2050 Future Condition with Sea Level Rise

- NOAA Intermediate Curve for 2050

Limitations in Simulating Demands

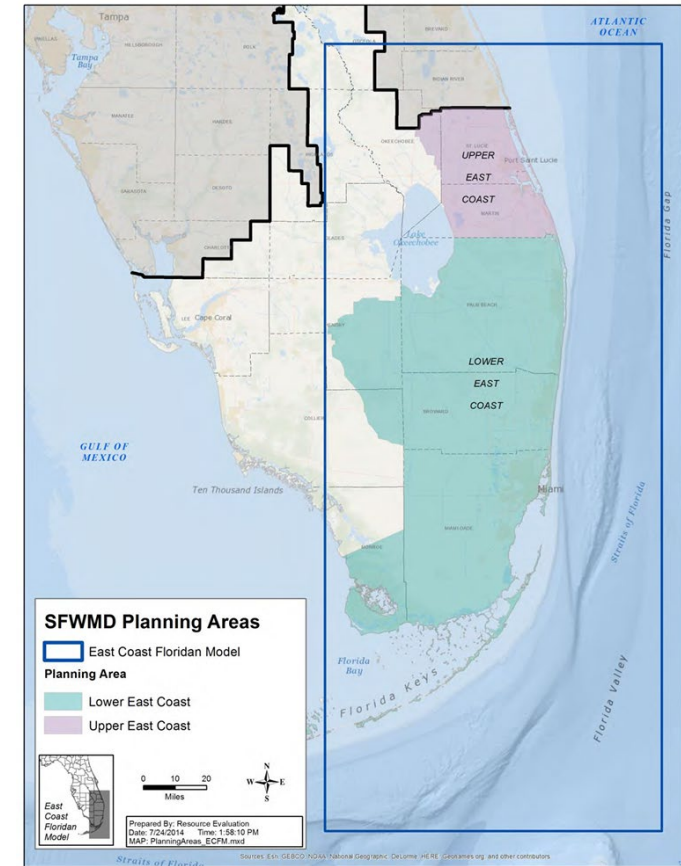
- Model does not simulate annual demand growth
- Simulated demands are “instant on”
- Results from the 2050 future scenarios are considered conservative



Regional Model Limitations

- Multiple wells in a single model cell
 - Model aggregates all withdrawals at the center of the model cell
 - Tends to exaggerate water level drawdowns and water quality degradation
 - Results are considered conservative
- Regional model may not capture local heterogeneity in the aquifers and localized responses in individual wells
- Regional model results should be used as an overall planning tool; results should not be considered absolute

East Coast Floridan Model Application and Results

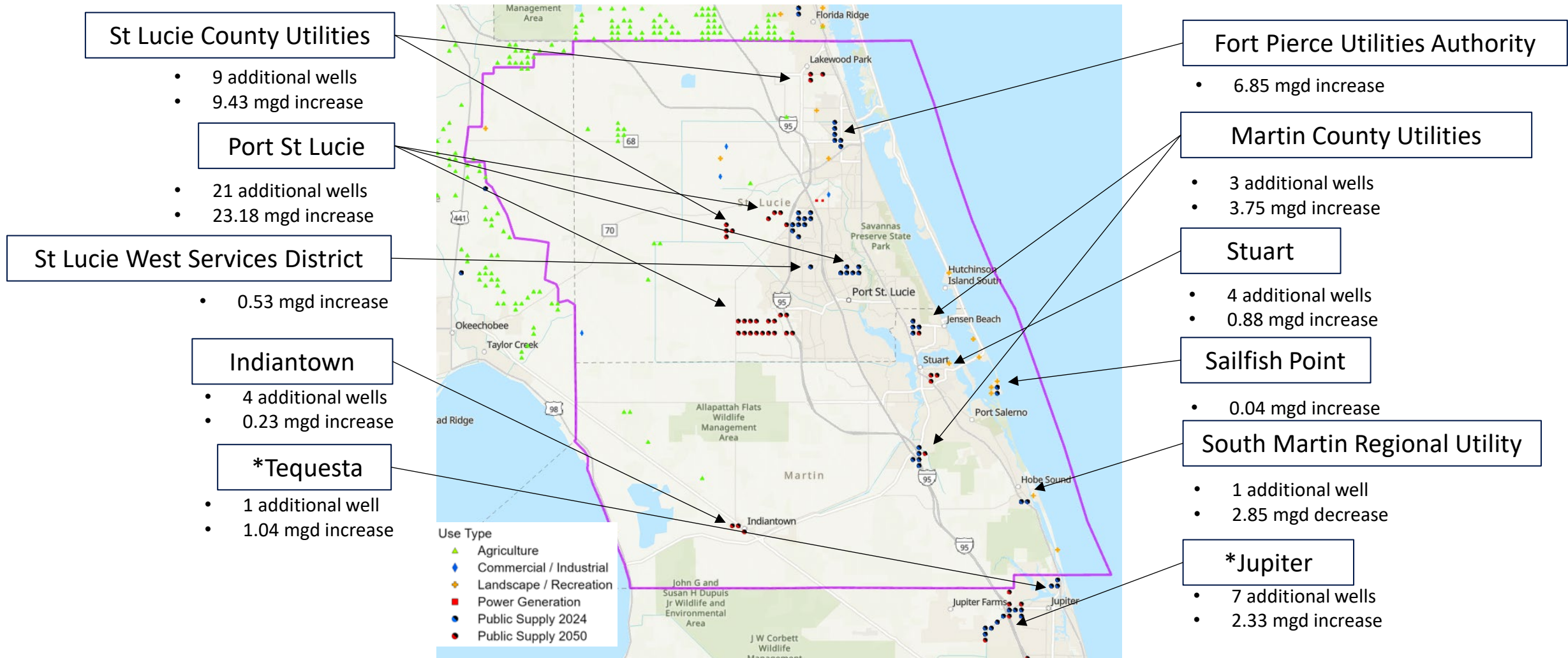


Public Water Supply FAS Demands

County	Permit Number	Utility	FAS Allocation (MGD)	2024 (MGD)	2050 (MGD)	Difference (MGD)
Martin	43-00041-W	Indiantown	N/A	0	0.23	0.23
	43-00053-W	Stuart	0.88	0	0.88	0.88
	43-00066-W	South Martin Regional Utility	4.76	1.91	4.76	2.85
	43-00102-W	Martin County Utilities	15.09	11.34	15.09	3.75
	43-00146-W	Sailfish Point	0.27	0.24	0.27	0.03
Total Martin County Demand			21	13.49	21.23	7.74
Martin/Palm Beach	50-00010-W	*Jupiter	11.71	9.38	11.71	2.33
	50-00046-W	*Tequesta	3.43	2.39	3.43	1.04
Total Palm Beach County Demand			15.14	11.77	15.14	3.37
St Lucie	56-00085-W	Fort Pierce Utilities Authority	13.13	6.28	13.13	6.85
	56-00142-W	Port St Lucie	46.38	23.2	46.38	23.18
	56-00406-W	St Lucie County Utilities	9.43	0	9.43	9.43
	56-00614-W	St Lucie West Services District	3.1	2.57	3.1	0.53
Total St Lucie County Demand			72.04	32.05	72.04	39.99

*The full raw water demands for Jupiter and Tequesta were simulated, including the demands for populations served within the LEC and UEC planning areas.

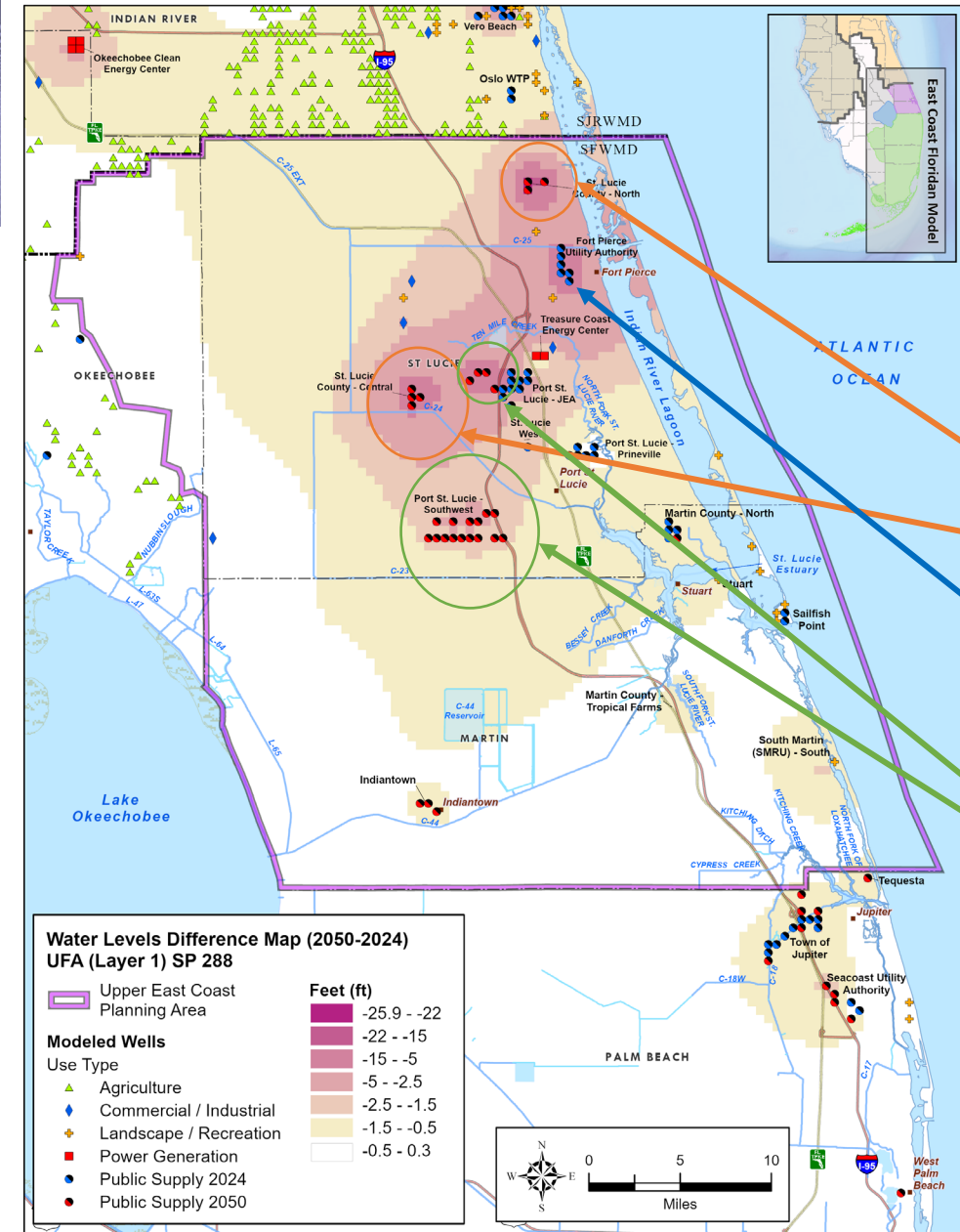
Public Water Supply FAS Wellfields



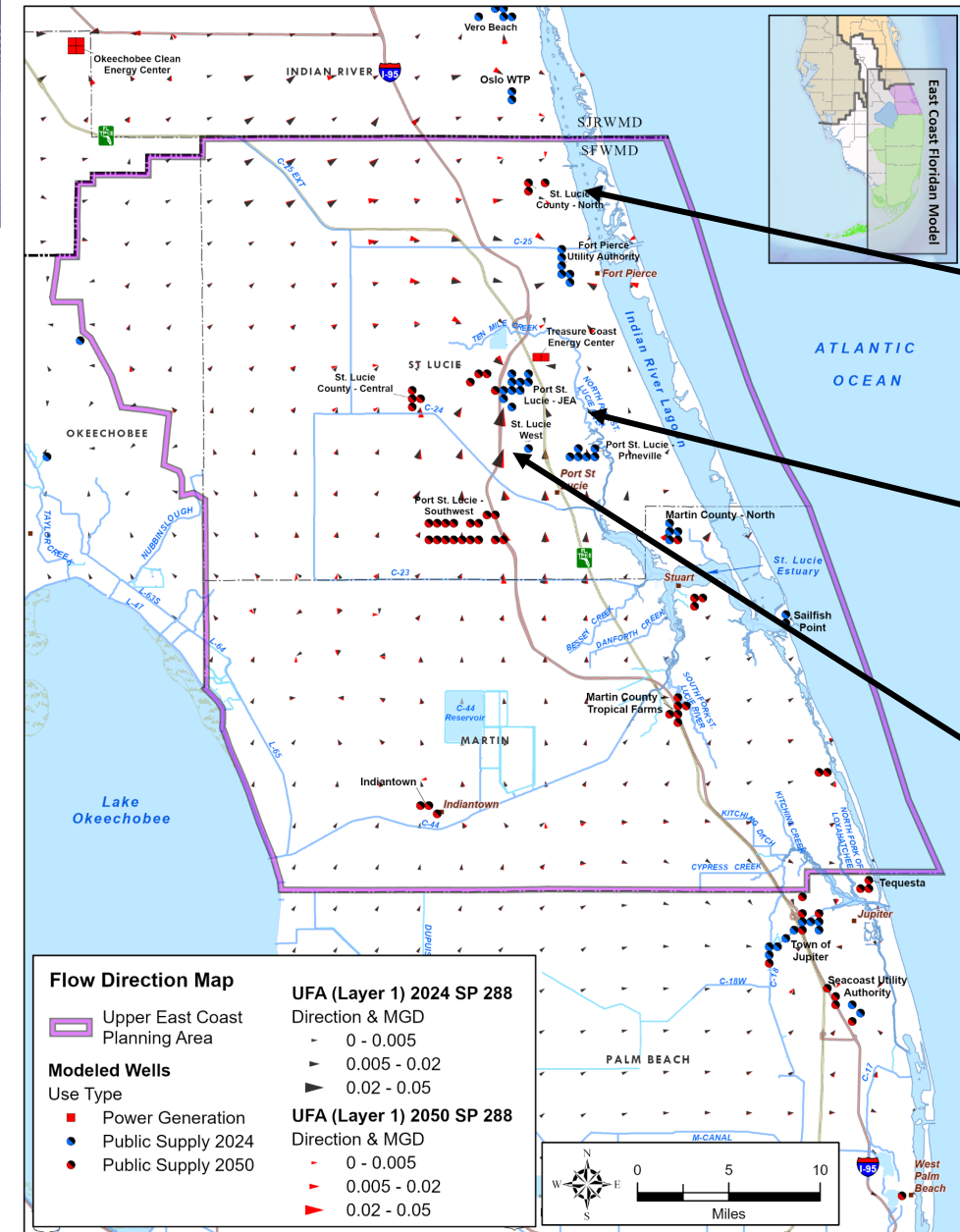
*The full raw water demands for Jupiter and Tequesta were simulated, including the demands for populations served within the LEC and UEC planning areas.

UFA Water Level Difference (2050-2024)

- (2050 – 2024) final condition water level difference
- Up to 25.9 ft of additional drawdown at **St Lucie County Utilities**
- Up to 6.09 ft drawdown at **Fort Pierce Utilities Authority**
- Drawdown up to 8.01 ft in JEA RO and 2.86 ft in Southwest RO at **Port St Lucie**



UFA Horizontal Flow Vectors (2050-2024)



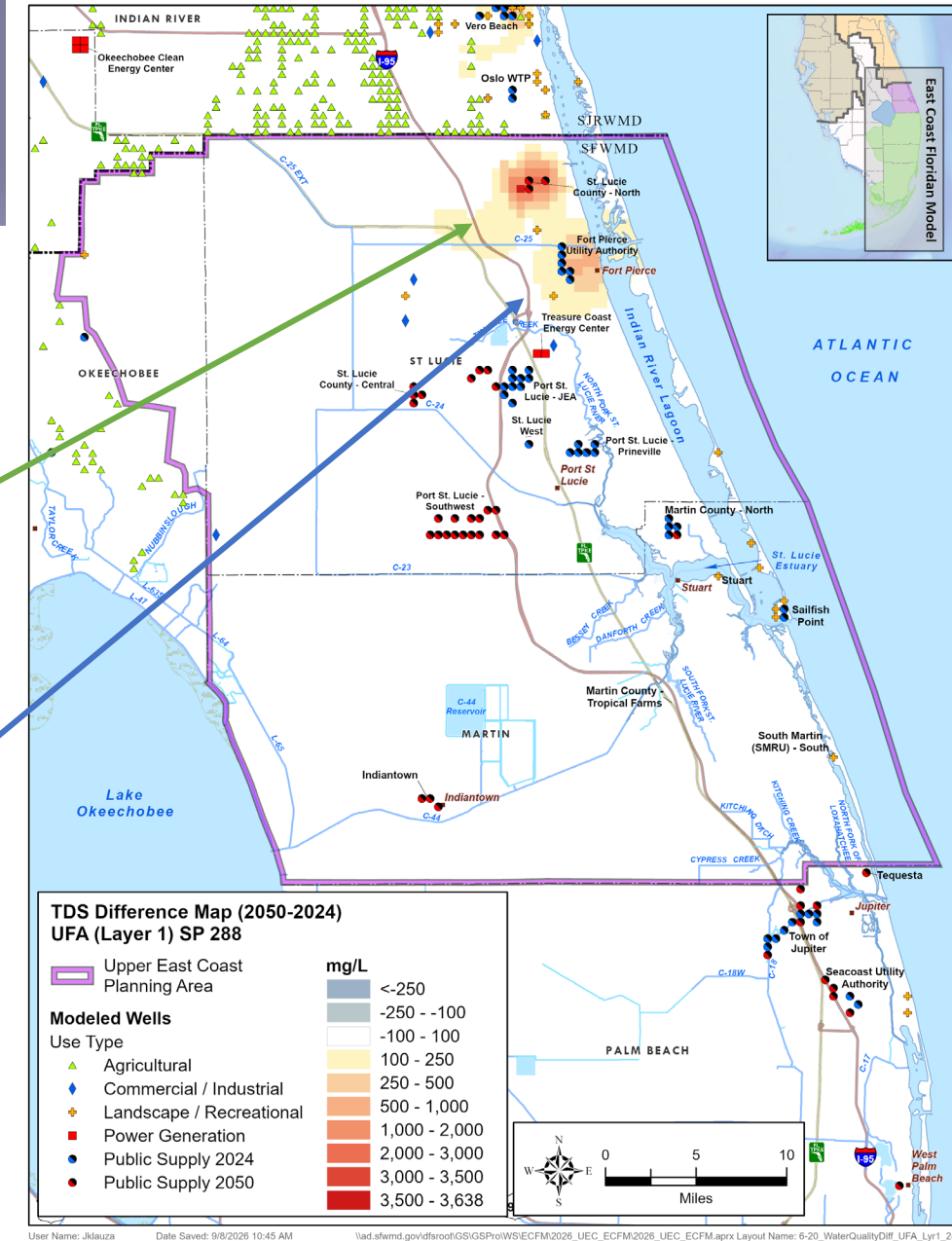
Horizontal flow direction changes towards St Lucie County Utilities (North).

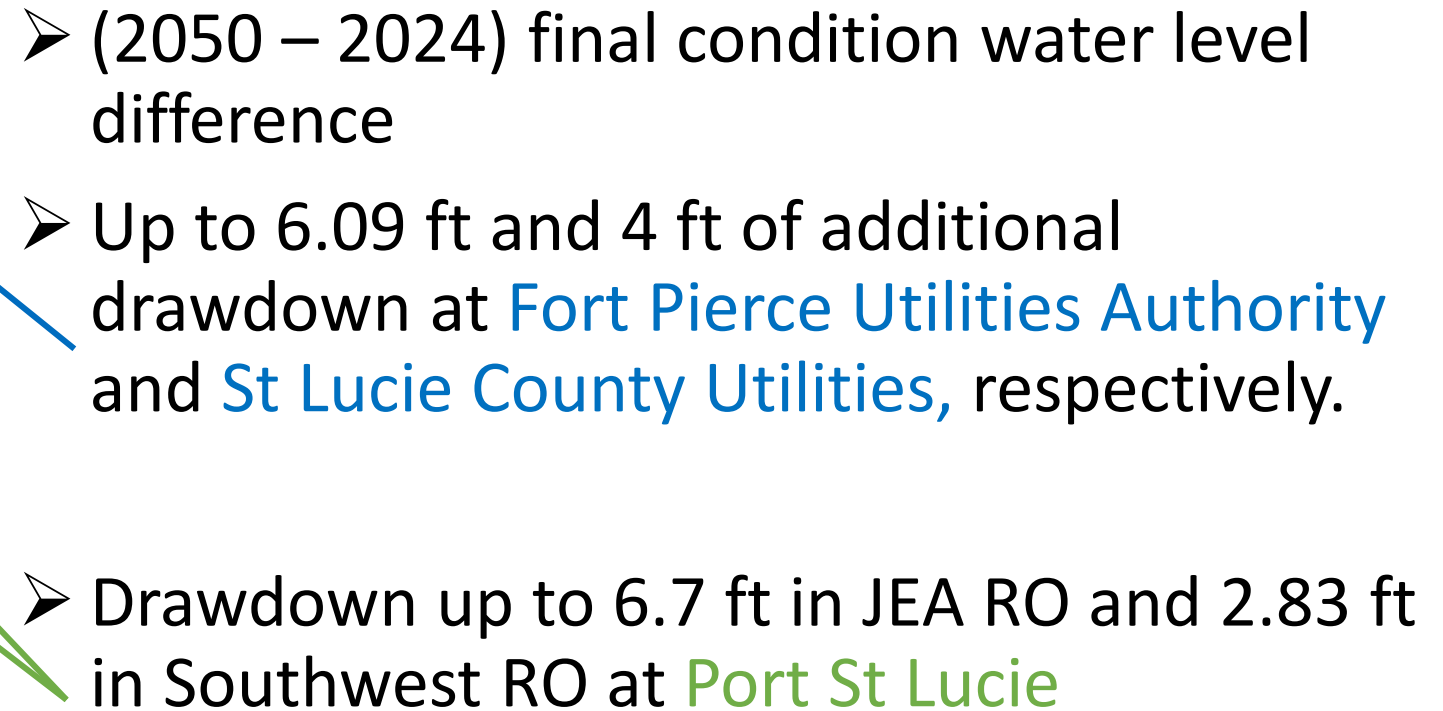
Increase and slight direction change in horizontal flow towards Port St Lucie

New wells and increased pumpage will increase the flow and flow direction in Port St Lucie

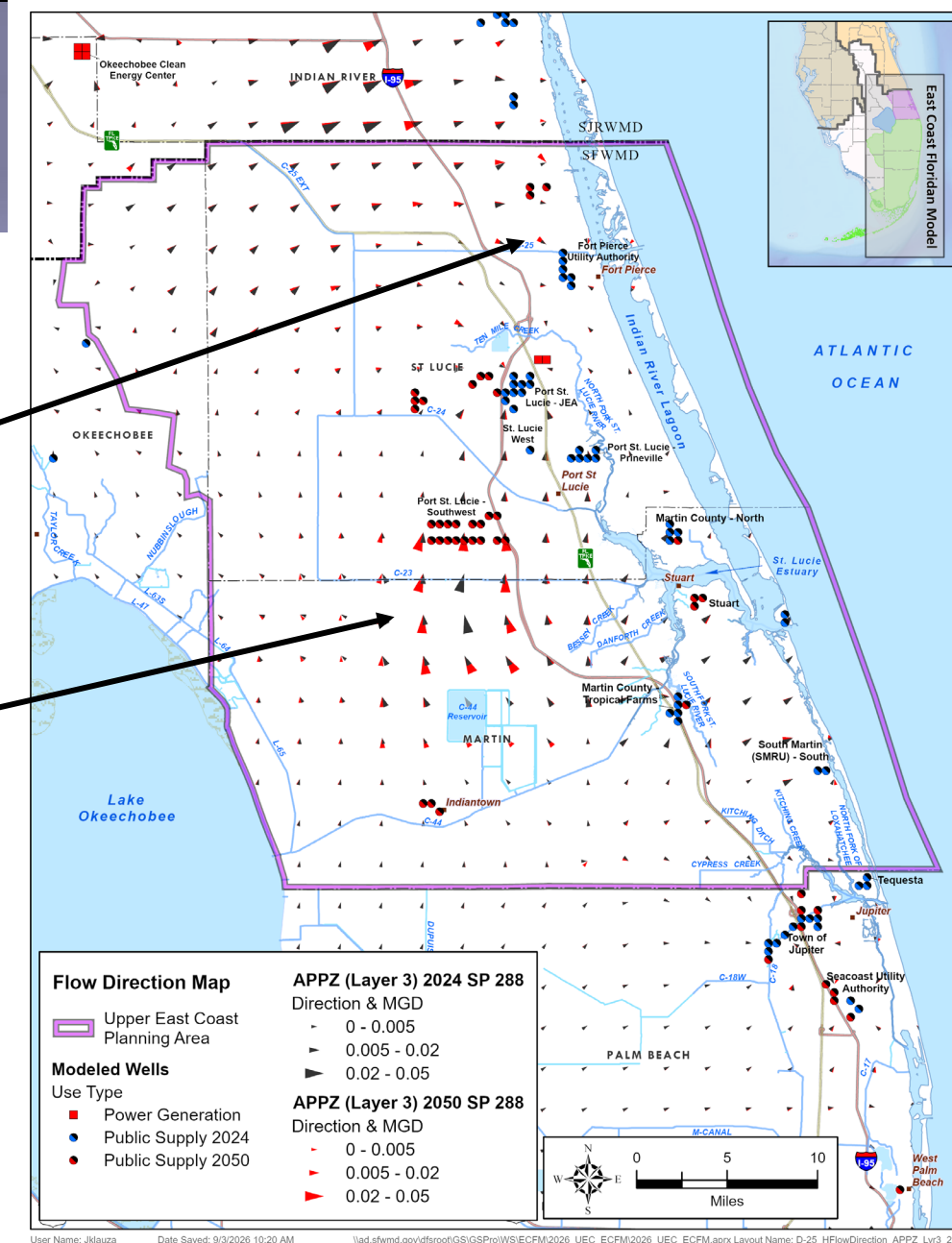
UFA Water Quality Difference (2050-2024)

- (2050 – 2024) final condition water quality difference
- Total dissolved solids (TDS) degradation at **St Lucie County Utilities**. TDS increased 100-500 mg/L, with a maximum degradation of 3,200 mg/L
- TDS degradation at **Fort Pierce Authority** PWS. TDS increased up to approximately 500 mg/L

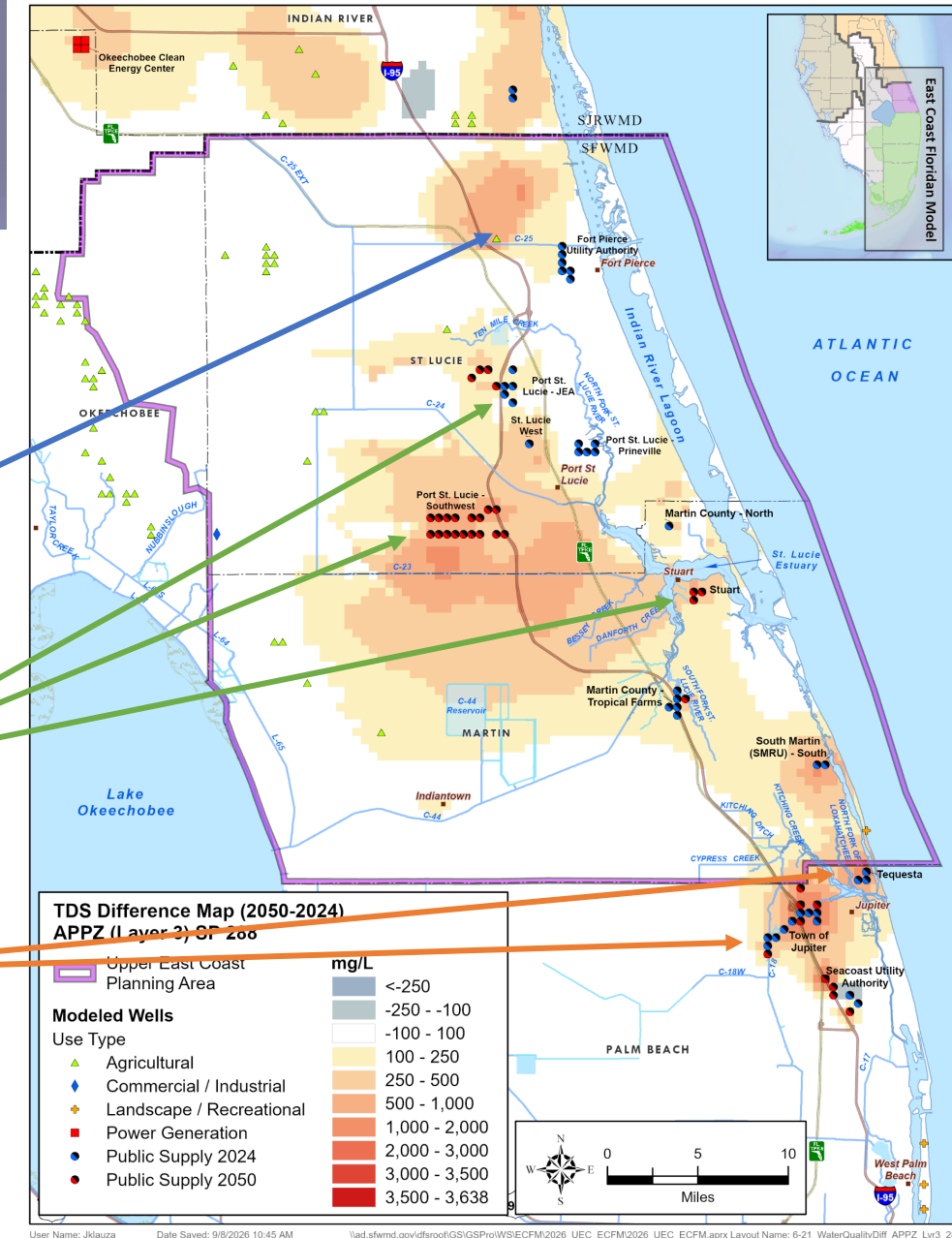




- Increase and change in horizontal flow direction for Fort Pierce Utilities Authority and St Lucie County Utilities
- Increase in horizontal flow due to Port St Lucie



- (2050 – 2024) final condition water quality difference
- TDS degradation between 100-1,000 mg/L near **St Lucie County Utilities (North)**
- TDS degradation between 100-800 mg/L near **Port St Lucie & Stuart**
- TDS degradation up to 2,000 mg/L near **Jupiter & Tequesta**



ECFM Conclusions

➤ ***St Lucie County:***

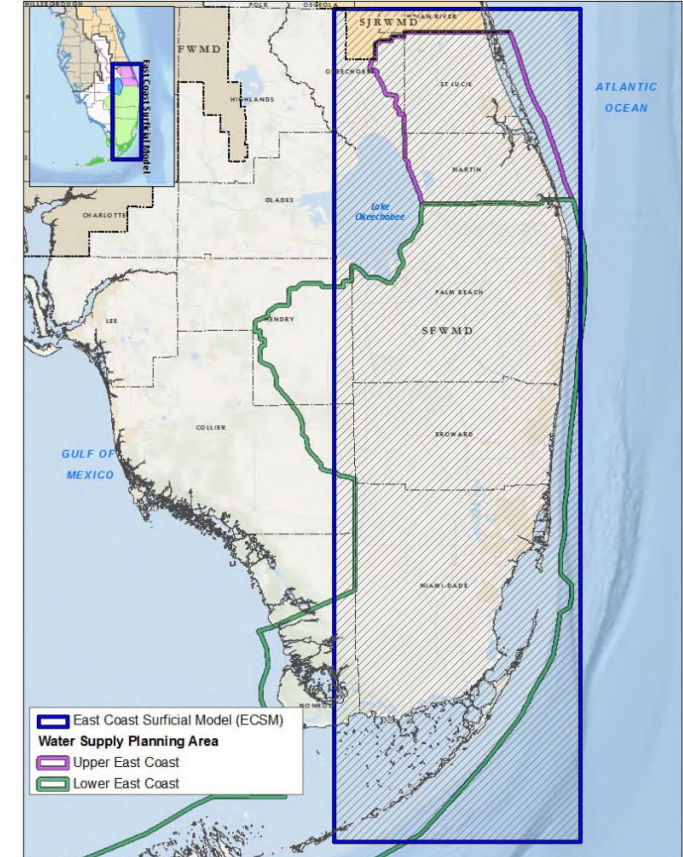
- The total PS demand increases by 39.99 MGD in 2050 projection.
- Highest drawdown is observed in St Lucie County Utilities. Increase of 9.43 MGD demand will create up to 25.9 ft of drawdown and an increase of 3527 mg/L TDS in these newly introduced wellfields. In North wellfield of St Lucie County Utilities, potential saltwater intrusion is observed. Decreasing the demand along with spatial expansion of the wellfields can potentially reduce the drawdown.
- Port St Lucie may face up to 8.01 ft drawdown for the increased pumping in 2050, which may also increase TDS up to 852 mg/L.
- Fort Pierce Utilities Authority and St Lucie West Services District show up to 6.09 ft and 2.2 ft drawdown respectively because of the increased demand. Addition and spatial expansion of wells can potentially improve this scenario.

ECFM Conclusions (continued)

➤ ***Martin County & Palm Beach County:***

- The total PS demand in Martin County increases by 11.12 MGD in 2050 projection.
- Newly introduced Indiantown and Stuart wells may cause relative drawdown of up to 1.43 ft and 1.36 ft, respectively. Indiantown may observe TDS increase of up to 185 mg/L and Stuart may observe a TDS increase of up to 608 mg/L.
- South Martin Regional Utility may experience up to 3.77 ft drawdown with 1070 mg/L TDS increase because of the increased demand.
- Martin County Utilities and Sailfish Point can possibly experience up to 2.23 ft and 1.12 ft drawdown respectively, and 375 mg/L TDS increase.
- Jupiter and Tequesta show up to 3.95 ft and 3.7 ft drawdown, respectively because of the increased demand. This may also increase the TDS up to 2484 mg/L. Addition and spatial expansion of wells can potentially improve this scenario.

East Coast Surficial Model Application and Results



Public Water Supply SAS Demands

County	Permit Number	Utility	SAS Allocation (MGD)	2024 (MGD)	2050 (MGD)	Difference (MGD)
Martin	43-00041-W	Indiantown Company	1.17	0.72	1.17	0.45
	43-00053-W	City of Stuart	3.40	3.36	3.41	0.05
	43-00066-W	South Martin Regional	4.83	3.64	4.83	1.19
	43-00102-W	Martin County Consolidated	5.92	2.48	5.92	3.44
	43-01284-W	St. Lucie Park Life	0.10	0.11	0.10	-0.01
Total Martin County Demand			15.42	10.31	15.43	5.12
St Lucie	56-00085-W	Fort Pierce Utilities Authority	8	3.68	5.15	1.47
	56-00142-W	City of Port St. Lucie	5.00	2.83	5.00	2.17
	56-00401-W	Spanish Lakes Country Club	0.31	0.24	0.25	0.01
	56-00406-W	St. Lucie County	0.17	0.17	0.00	-0.17
	56-00449-W	Harbour Ridge	0.13	0.04	0.13	0.09
	56-00462-W	Meadowood Community Association	0.14	0.11	0.09	-0.02
	56-00552-W	Reserve	0.17	0.07	0.13	0.06
	56-00627-W	Spanish Lakes Fairways	0.27	0.25	0.27	0.02
Total St Lucie County Demand			14.19	7.39	11.02	3.63

Public Water Supply SAS Wellfields

Spanish Lakes Fairways

- 0.02 mgd increase

Meadowood Community Association Inc.

- 0.02 mgd decrease

Reserve

- 0.06 mgd increase

City of Port St. Lucie

- 2.17 mgd increase

Harbour Ridge

- 0.09 mgd increase

St. Lucie Park Life

- 0.01 mgd decrease

Indiantown Company

- 1 additional well
- 0.45 mgd increase

Spanish Lakes Country Club

- 0.01 mgd increase

St. Lucie County Utility

- SAS allocation expires 12/31/2028
- Reduction of 2 wells
- 0.17 mgd decrease

Fort Pierce Utilities Authority

- 1.47 mgd increase

Martin County Consolidated

- 3.44 mgd increase

City of Stuart

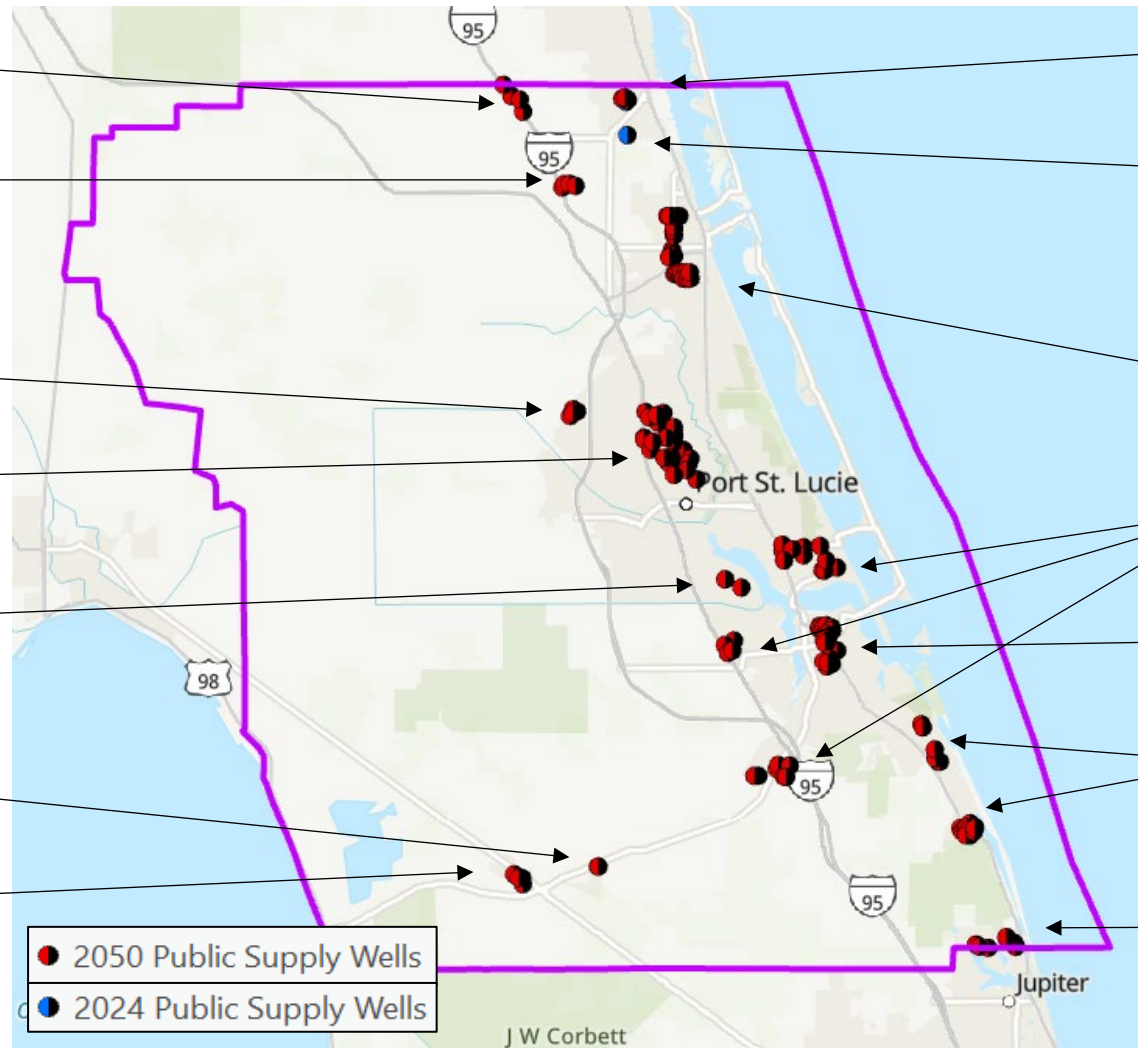
- 0.05 mgd increase

South Martin Regional

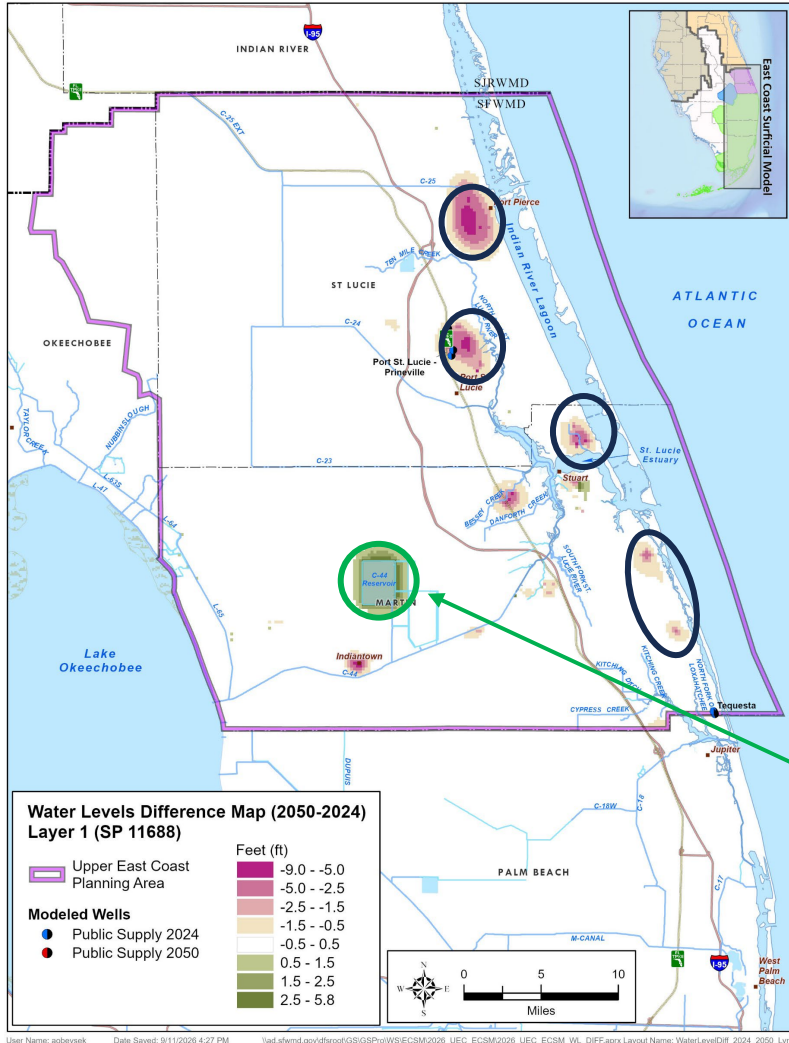
- 1 additional well
- 1.19 mgd increase

Tequesta

- 1 additional well
- 0.13 mgd increase

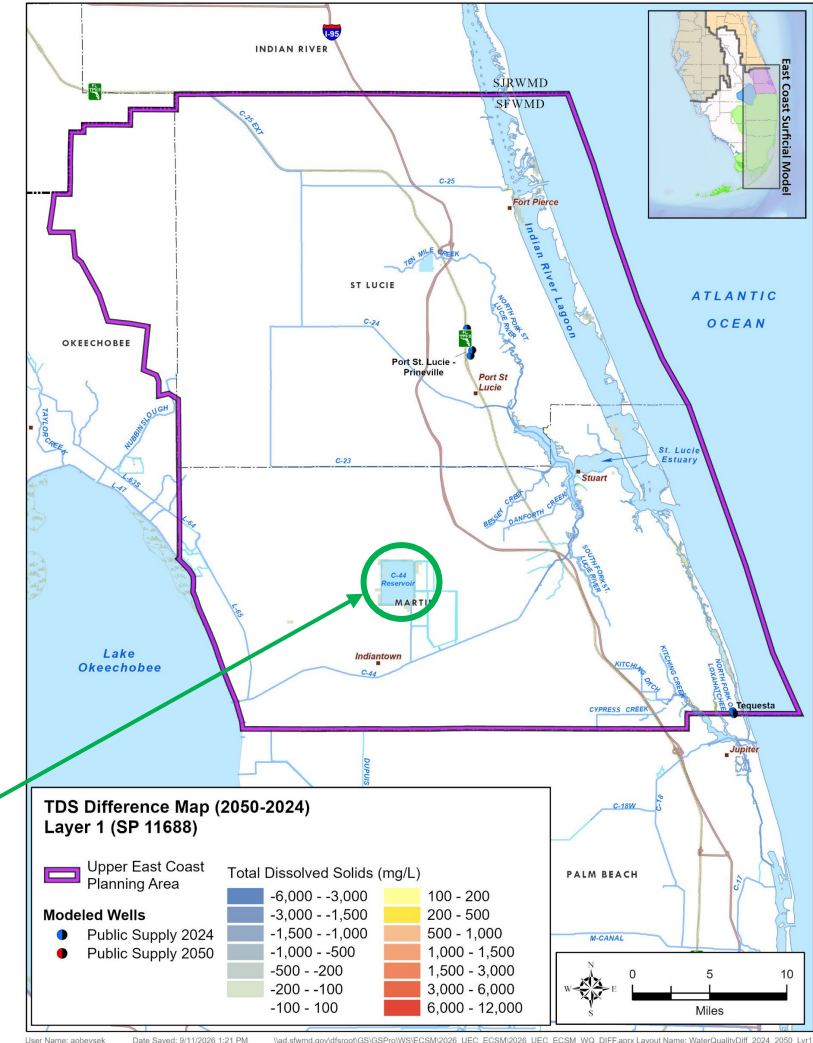


Water Level and Water Quality Differences (2050 – 2024): Layer 1

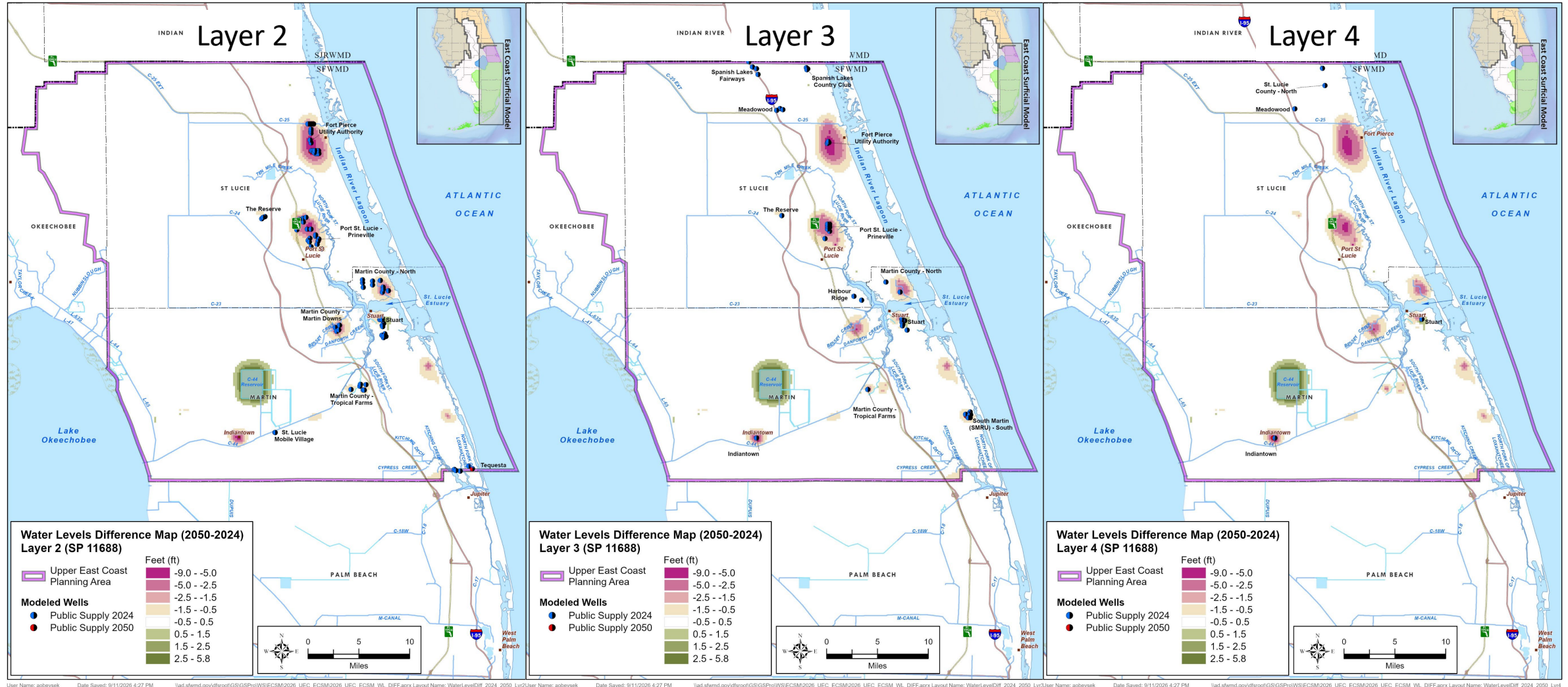


Drawdown up to 9 feet in Layer 1 as a result of pumping in lower layers, but no noticeable water quality degradation in Layer 1

Rebound in Layer 1 due to holding water in C-44 Reservoir, which also results in a slight improvement in water quality in Layer 1

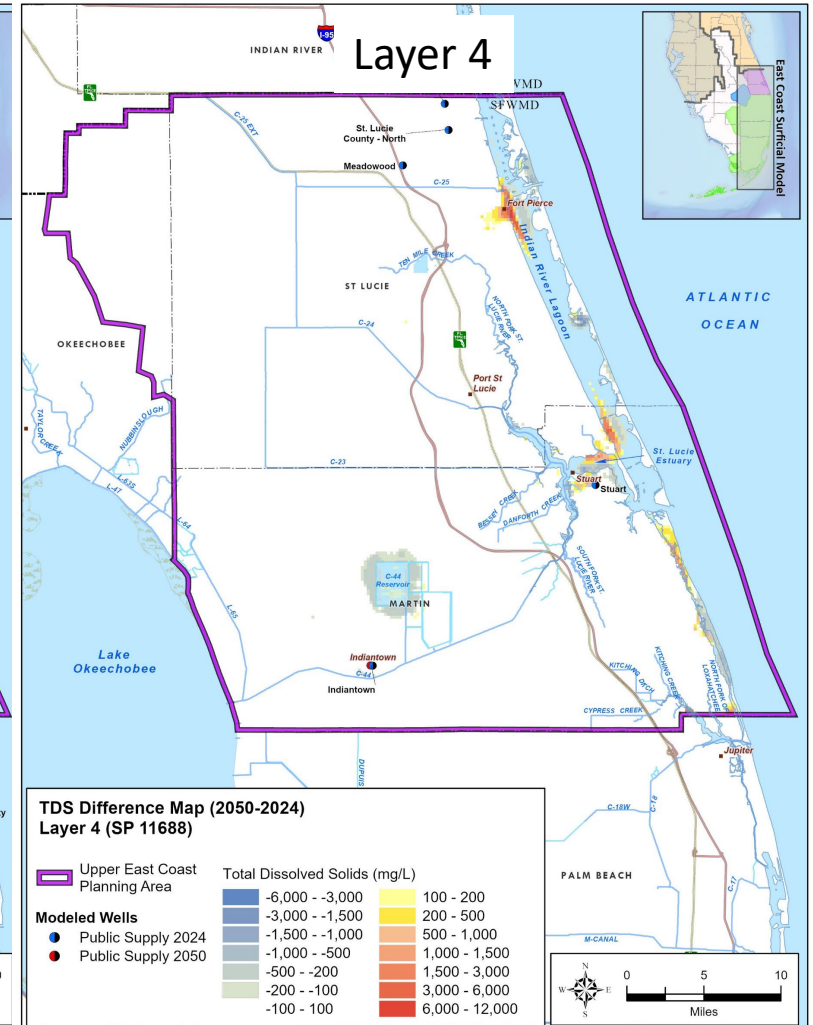
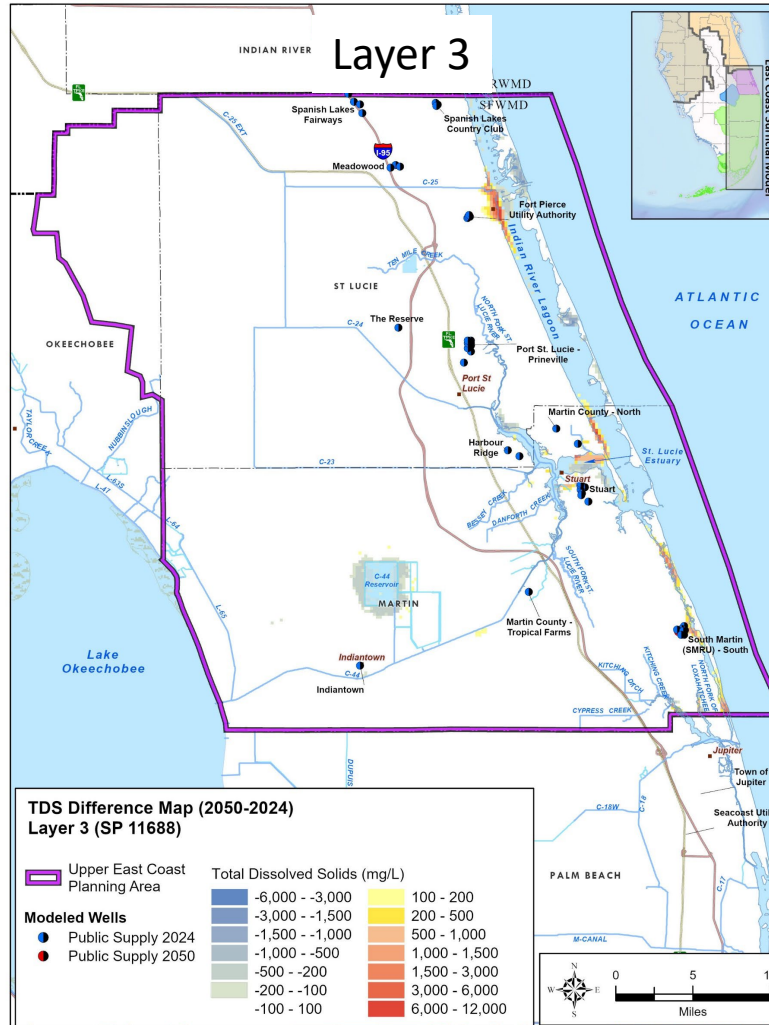
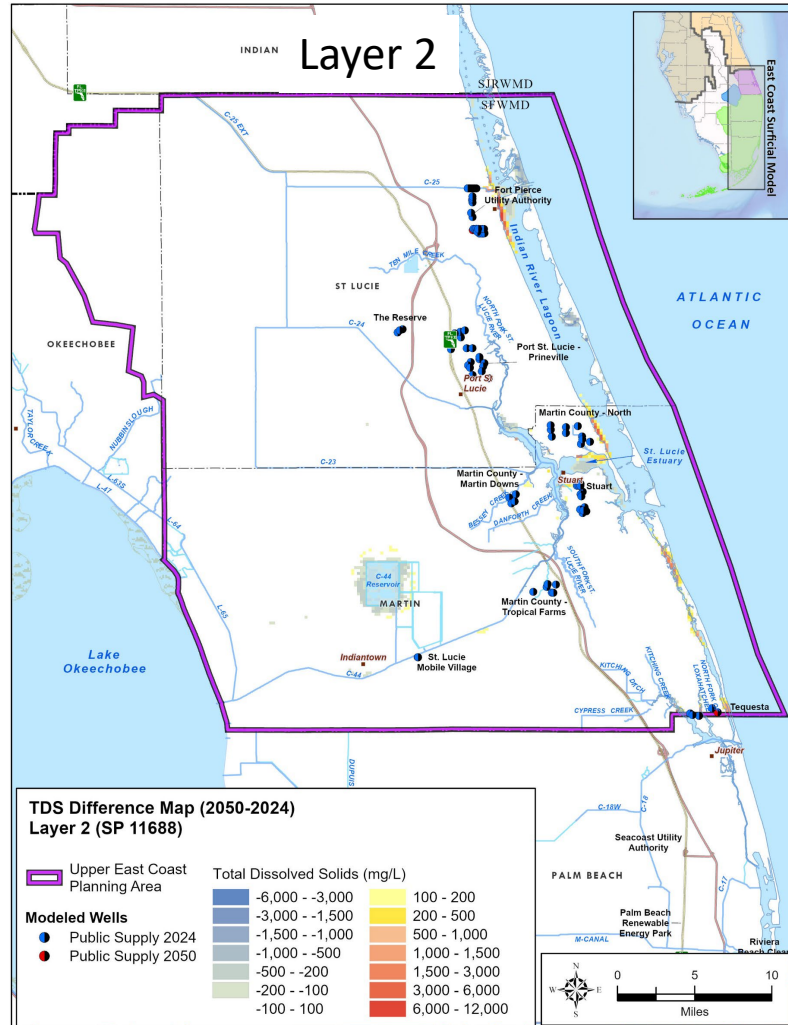


Water Level Differences (2050 – 2024)

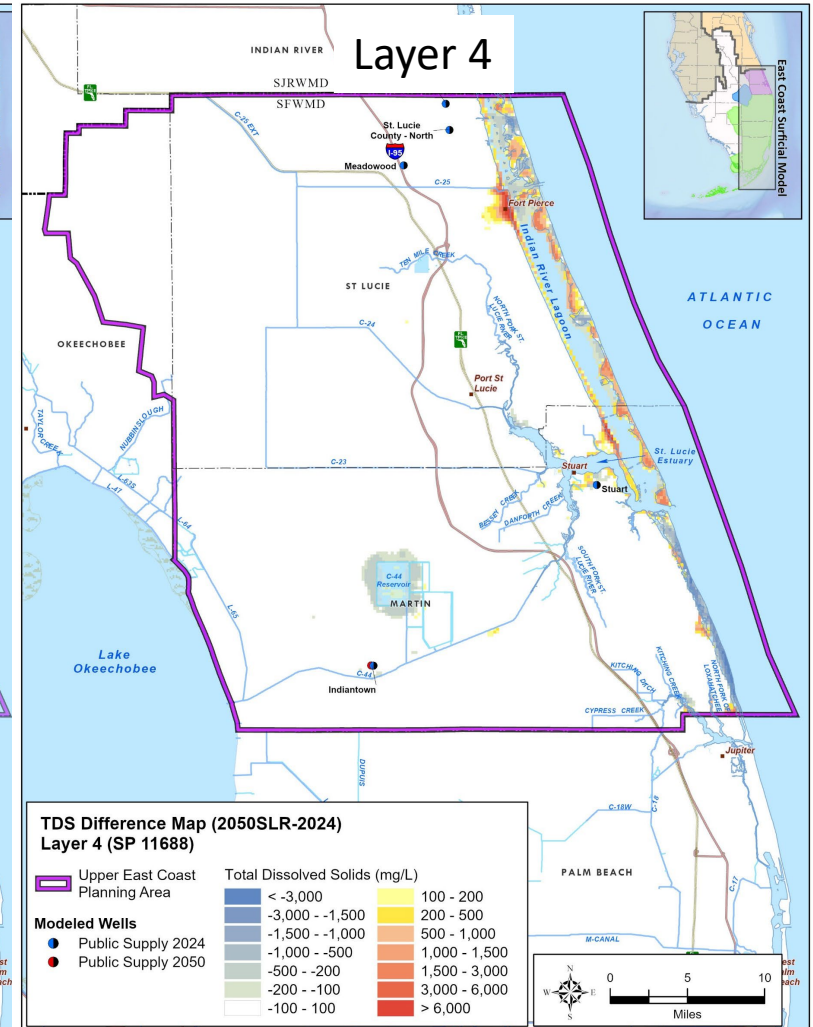
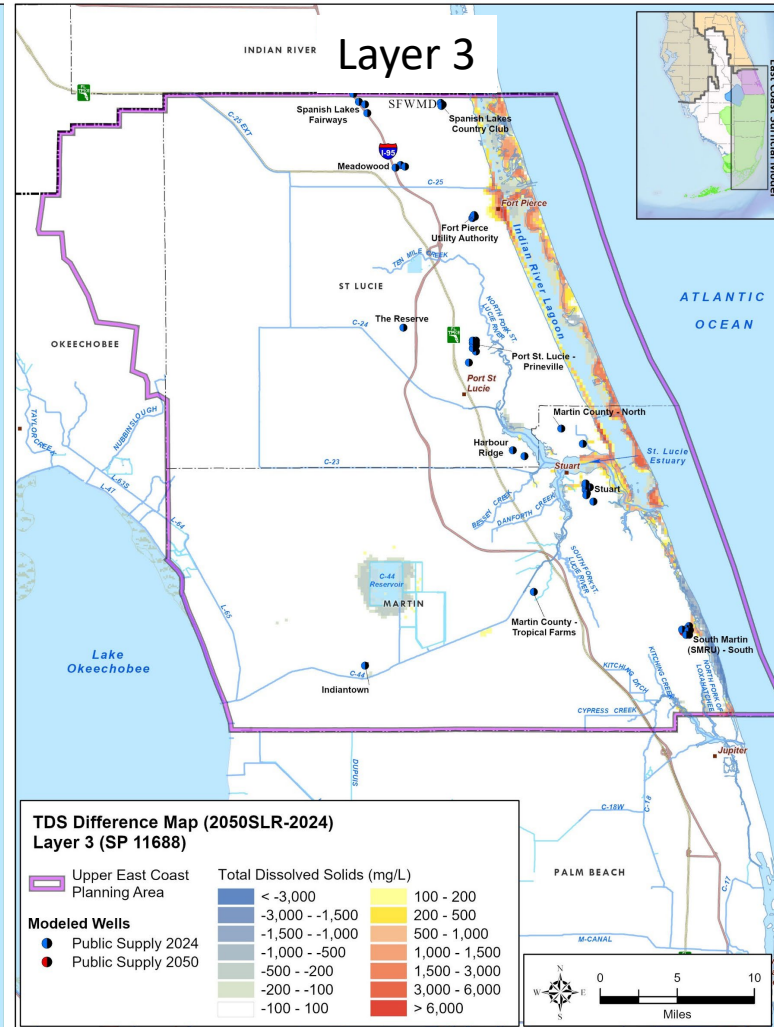
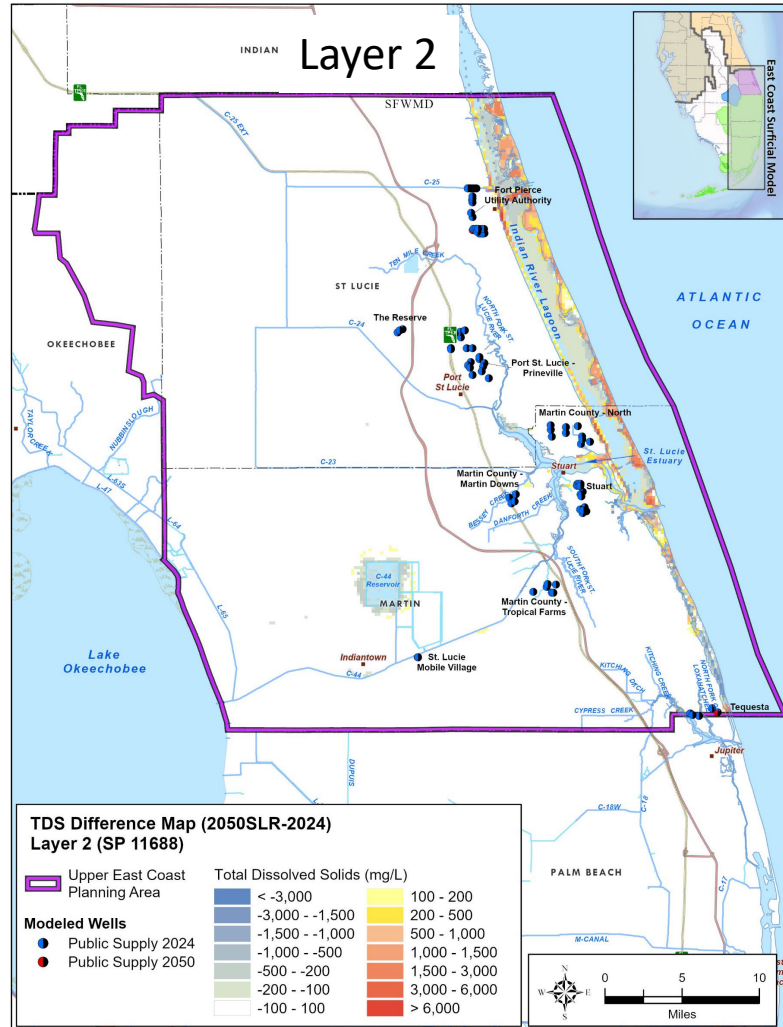




Water Quality Differences (2050 – 2024)



Water Quality Differences (2050SLR – 2024)



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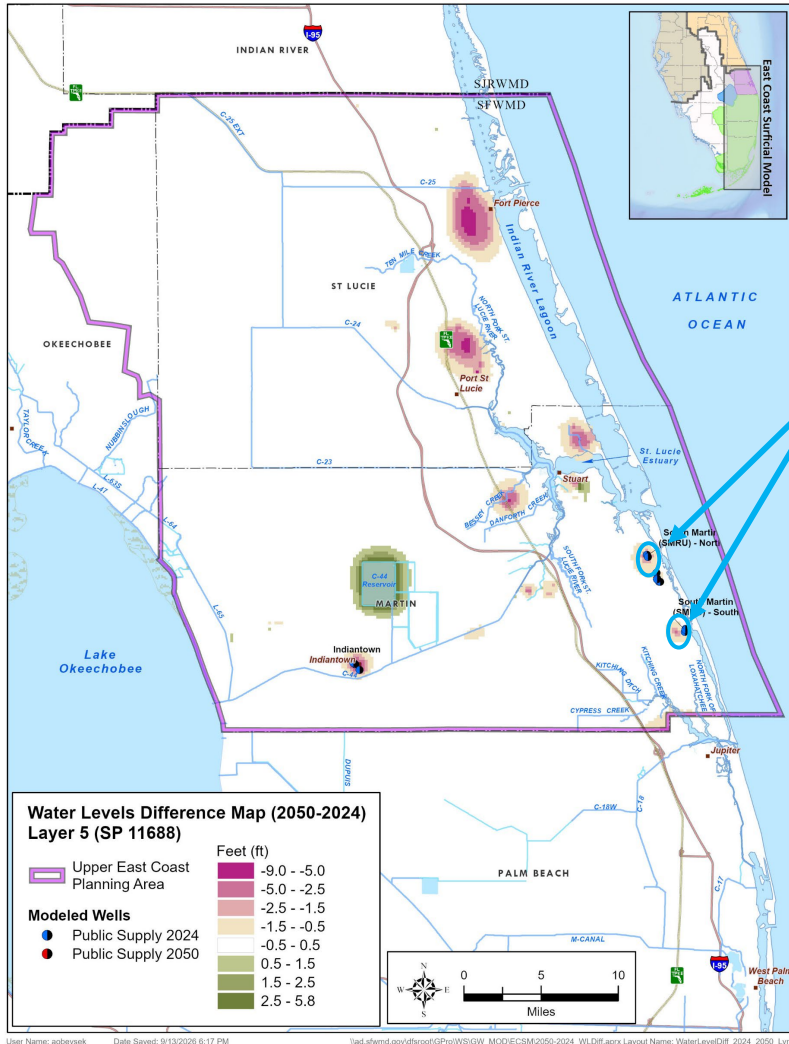
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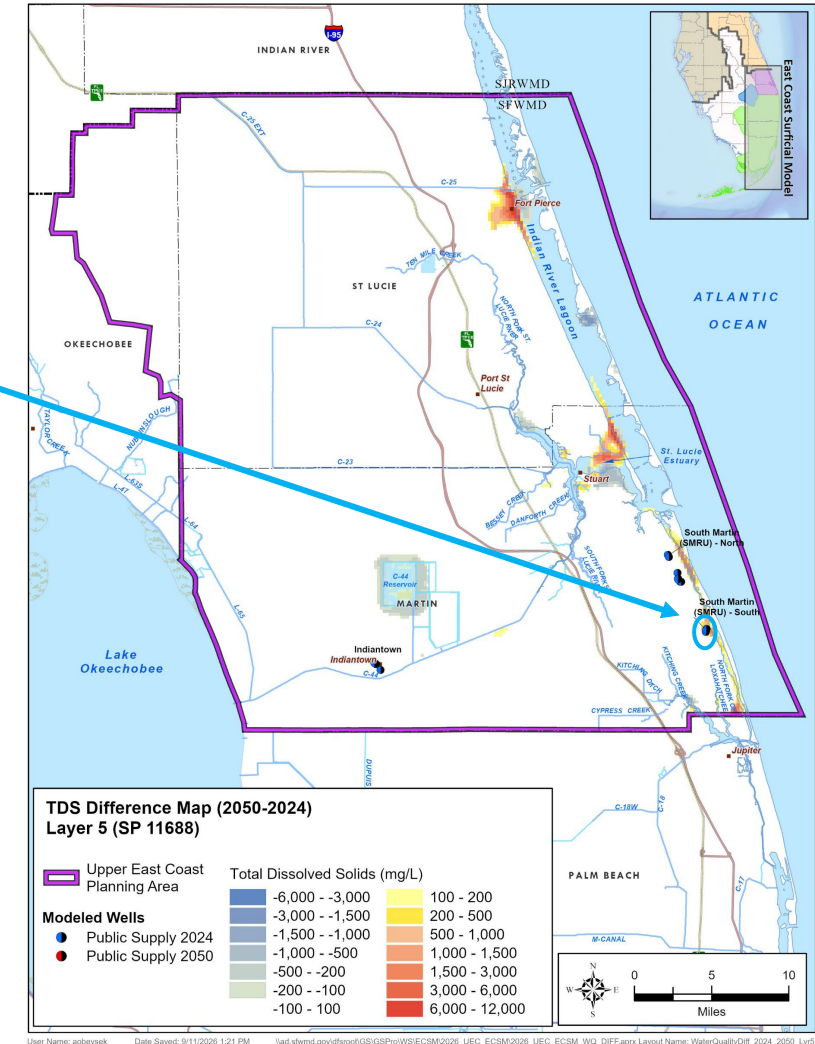
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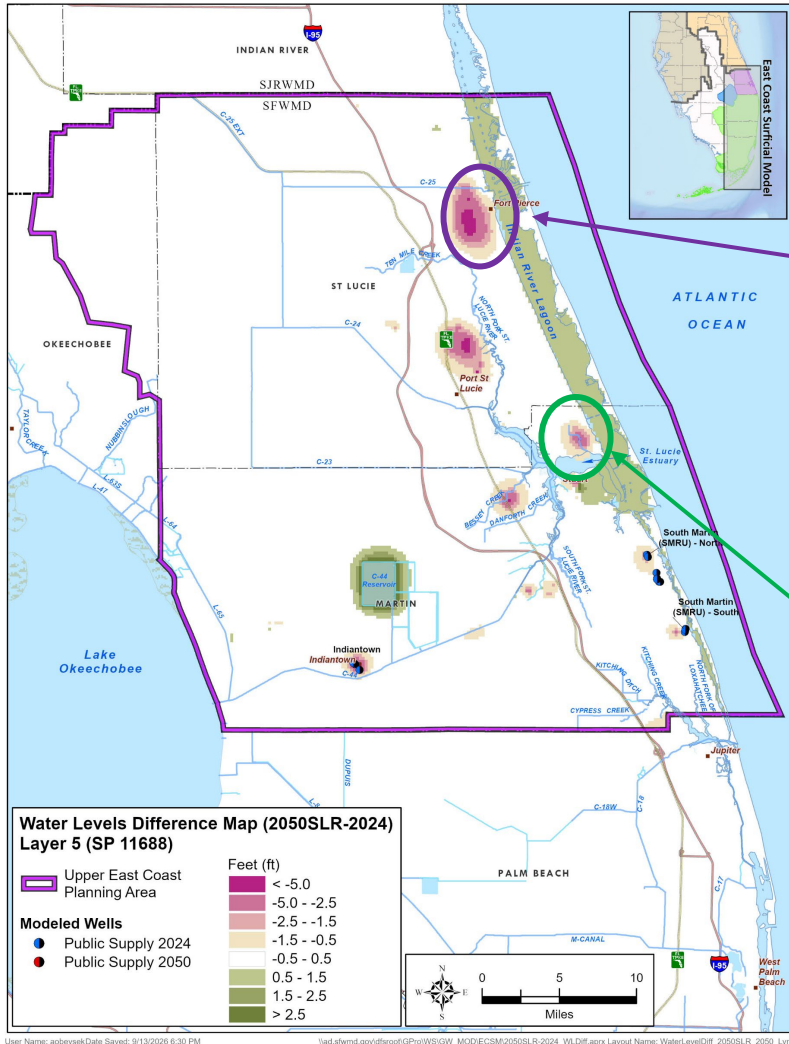
Water Level and Water Quality Differences (2050 – 2024): Layer 5



SMRU has drawdown of up to 5 ft in localized areas, with an associated change in TDS of up to 2,000 m/L near the South wellfield

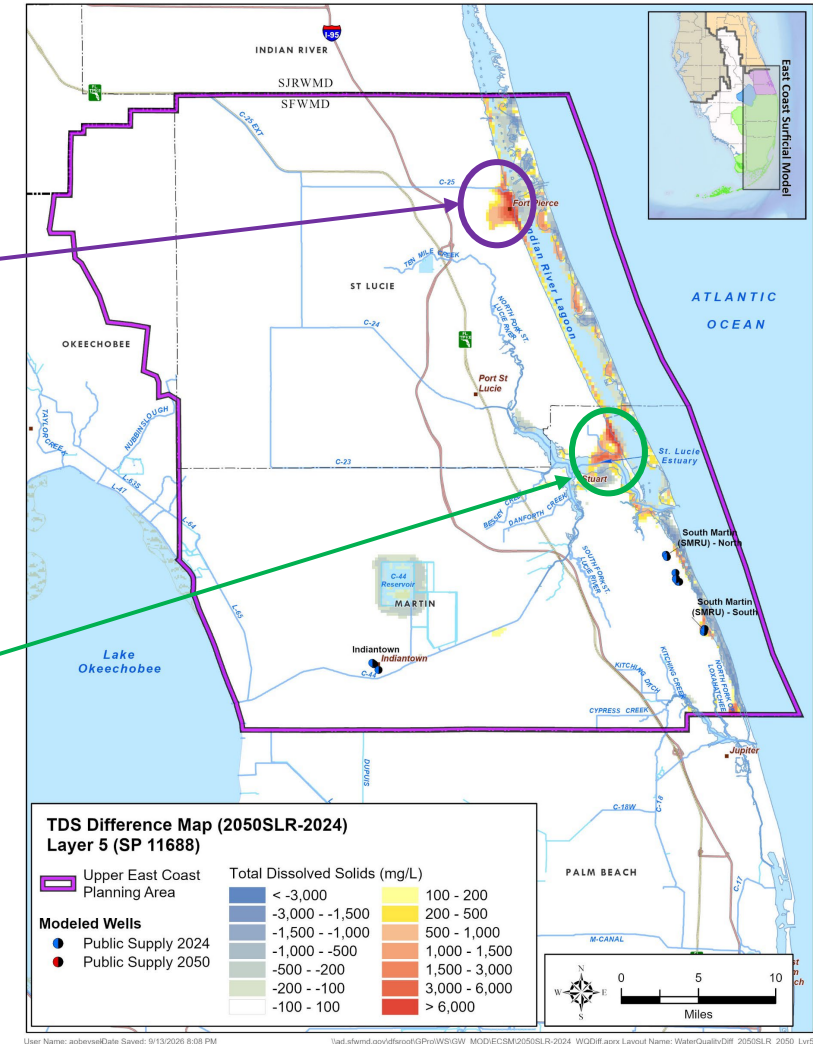


Water Level and Water Quality Differences (2050SLR – 2024): Layer 5



SLR increases water levels in the Indian River Lagoon, minimizing drawdown at Fort Pierce Utilities Authority. Layer 5 shows additional water quality degradation under SLR.

SLR increases water levels and minimizes drawdown at Martin County Consolidated. Layer 5 shows additional water quality degradation under SLR.



ECSM Conclusions

➤ ***St Lucie County:***

The total SAS PS demand increases by 3.63 MGD in the 2050.

- Highest potential drawdown is observed in Fort Pierce Authority PS. An increase in demand could create up to 9.2 ft of drawdown. Presence of saltwater intrusion is observed in deeper layers.
- City of Port St. Lucie may face up to 6.9 ft drawdown due to an increased demand. There is no expected change in TDS near the wellfield.

ECSM Conclusions (continued)

➤ ***Martin County:***

The total SAS PS demand in Martin county increases by 5.12 MGD in the 2050 projection.

- Highest potential drawdown is observed in Martin County Consolidated. Up to 9.0 ft of drawdown was predicted in the North Jensen wellfield. Presence of saltwater intrusion is also observed in deeper layers of the North Jensen wellfield.
- Indiantown Company shows up to 8.6 ft of drawdown.
- City of Stuart has up to 4.5 ft of drawdown and about 900 mg/L of degradation. Some areas show over 3 ft of rebound and water quality improvement due to some wells having decreased pumpage.
- South Martin Regional shows up to 5.1 ft of drawdown and over 2,000 mg/L of degradation.
- The portion of Tequesta's wellfield within UEC shows up to 4.8 ft of drawdown and above 4,500 mg/L of degradation.

Overall Conclusions

- Increased demand and the spatial extent of wellfields are the primary influences on drawdown. Decreasing demand and increasing the spacing between wells among proposed wells and wellfields may help decrease potential drawdown.
- Diversification of water supply sources, such as utilizing the Floridan aquifer, can minimize drawdown and potential saltwater intrusion in the Surficial aquifer system.
- Changes in sea level show less drawdown within coastal wellfields, but also show increased water quality degradation, especially at the base of the Surficial aquifer.

Acknowledgements

➤ Groundwater Modeling Unit

- Alexis Akers
- Yirgalem Assegid
- Alicia Magloire
- Brayan Martinez
- Sumiaya Amin Preota

➤ Data Analysis Unit

- Jenifer Barnes
- Jose Grisales
- Brian Moore
- Kevin Rodberg

➤ GIS Unit

- Alexandra Hoffart
- Jakob Klauza
- Sarah Smith

➤ Water Resources System Modeling Bureau

- Maliha Ahmed
- Eli Brussels
- Raul Novoa
- Naiming Wang

Questions and Public Comment



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 - *9 raises hand
 - *6 mutes/unmutes your line
- When you are called on, please state your full name and affiliation prior to providing comments and/or questions

Next Steps

- September Post full draft
- October 8 Present full draft plan to Governing Board
- October 21 Deadline for external comments on draft
- November 12 Final Plan to Governing Board for consideration

Questions and Public Comment



Written comments are due 30 days after posting:

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