

St. Lucie River Watershed Protection Plan

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South Florida Water Management District
August 28, 2020



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Objectives

- Engage stakeholders and the public in a collaborative approach to meet Northern Everglades & Estuaries Protection Program (NEEPP) goals
- Identify projects, activities, and programs that can be implemented for additional water quality improvements, with an emphasis on meeting reduction goals
- Review St. Lucie River Watershed (SLRW) characteristics, recent data, and projects and programs
- Prioritize areas for South Florida Water Management District (SFWMD) focused assessments to identify sources and integrated solutions

sfwmd.gov/wpps

Workshop Schedule

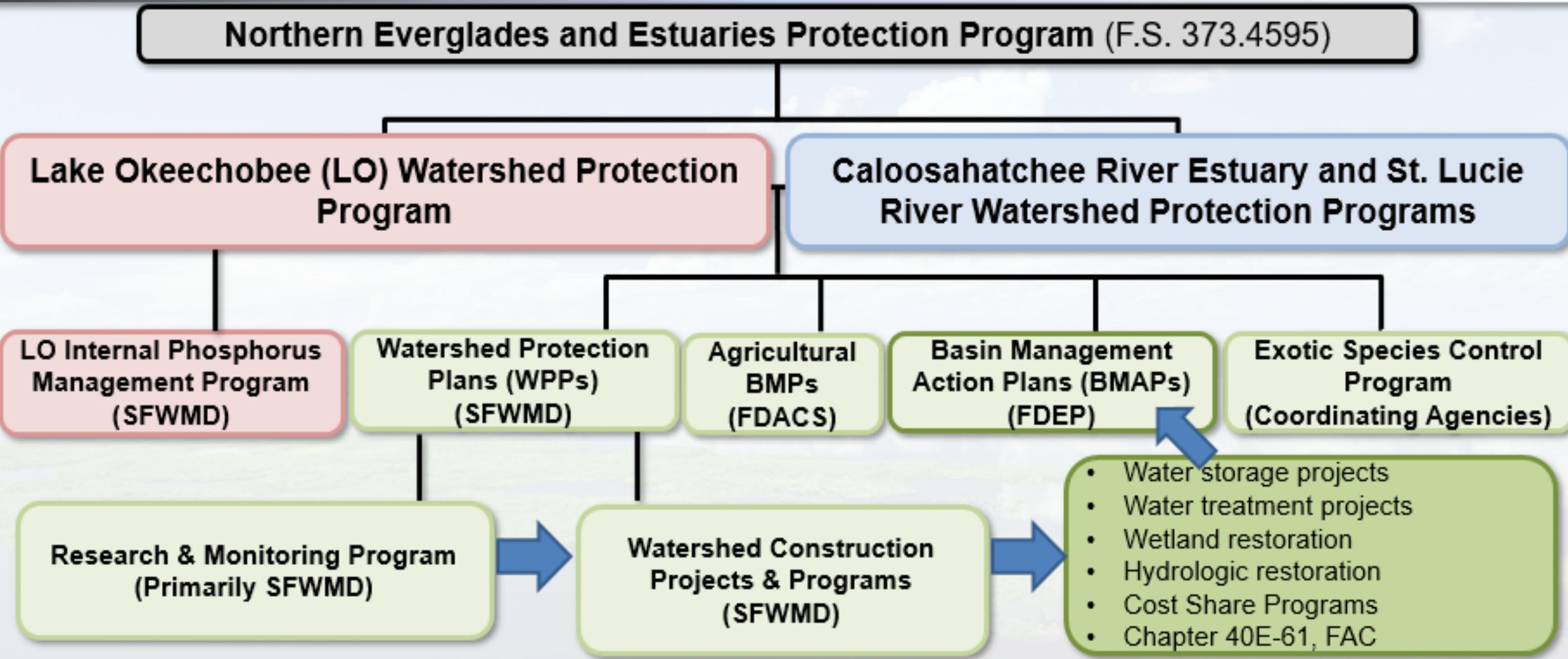
- June 26 - Kickoff and Overview
- July 21 – Lake Okeechobee Watershed
- August 28 - St. Lucie River Watershed
- September 2 – Caloosahatchee River Watershed

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St. Lucie Inlet

NEEPP: Coordinating Agency Roles



NEEPP: Coordinating Agency Roles



- Watershed Protection Plans (WPPs) Inform FDEP in BMAP Progress Reports & 5-Year Updates
- Research and Water Quality Monitoring Program
 - Comprehensive monitoring network
 - Flow, water quality, precipitation, biology, etc.
 - Major structures, upstream, and estuarine
 - Research and modeling of a wide-range of ecosystem processes
- Watershed Construction Projects & Programs
 - Programs
 - Regional projects
 - New Projects
 - Project costs
 - Estimated and measured project performance
- When combined with information from other agencies, WPPs help further understanding of the ecosystem, identify problems/deficiencies, and lead future restoration activities.

Workshop Approach for Identifying Solutions

1. Summarize Water Quality Data
2. Prioritize areas of focus
3. Account for existing projects and programs
4. Define the gaps & remaining “problems”
5. Identify potential solutions via projects and programs
6. Feedback to Coordinating Agencies
7. Facilitate discussions to propose solutions to problems



Considerations

Parameters

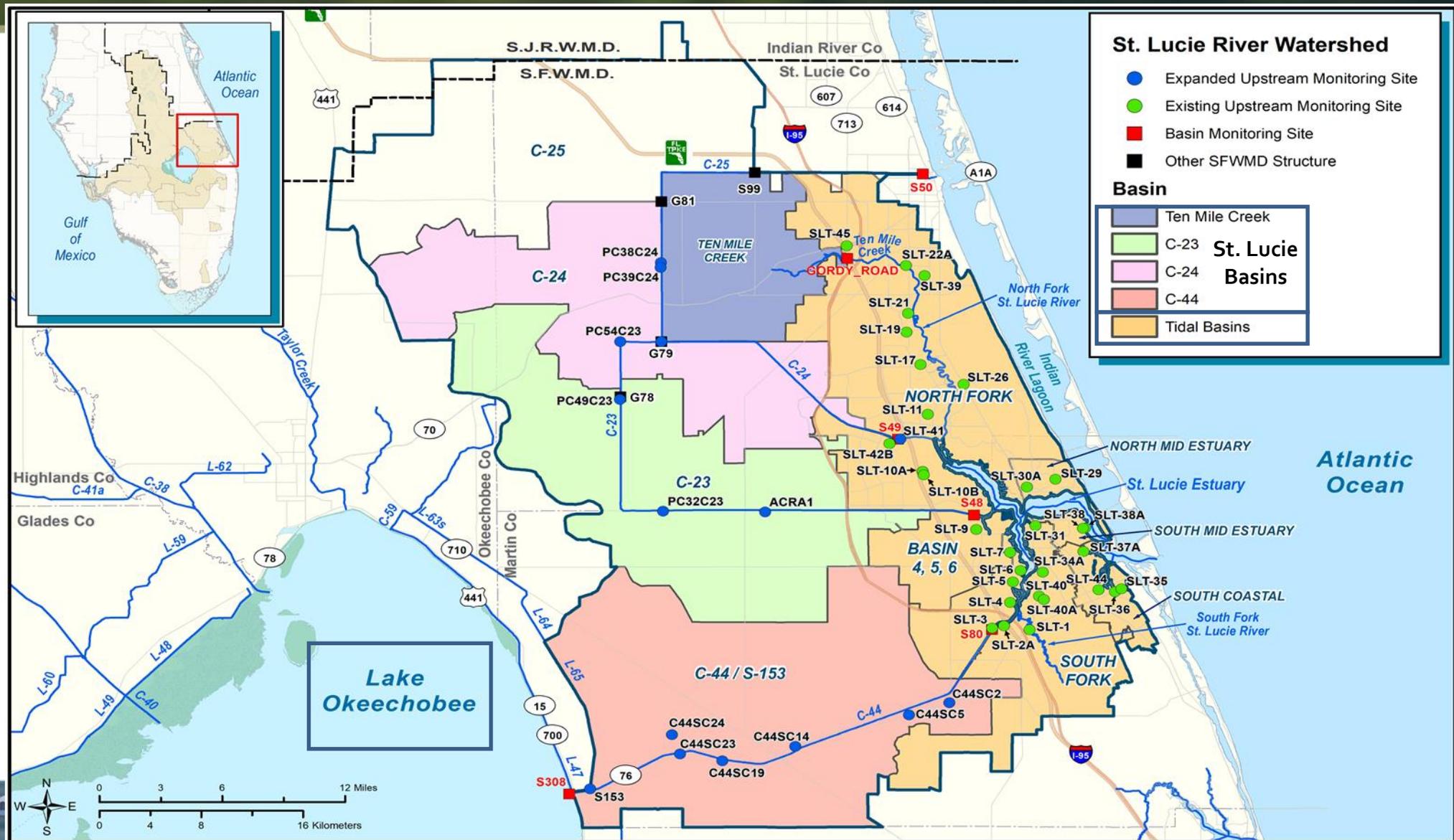
- Nutrient Load: The cumulative weight of a constituent transported (usually by stormwater) passed the point of measurement. Commonly expressed in pounds (lbs) or metric tons (t).
- UAL: Unit Area Load is the nutrient load per acre of area.
- Discharge Volume (acre-feet): Amount of water required to cover 1 acre of land to a depth of 1 foot.
- Runoff (inches): The depth to which the drainage area would be covered.
- FWMC: Flow Weighted Mean Concentration: Represents the average concentration of a constituent that passes through a structure relative to the total flow volume passing through.

Other

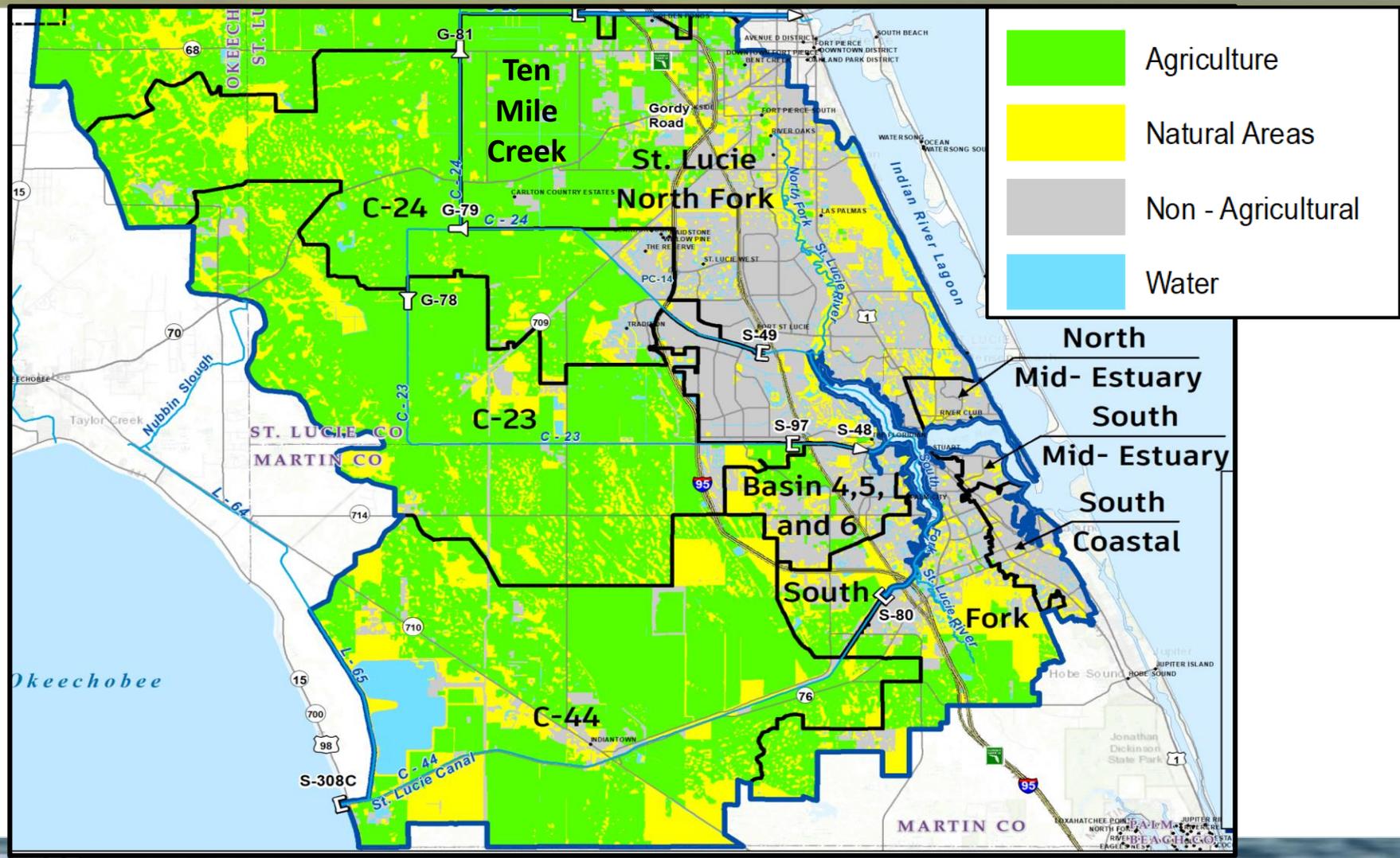
- Project Site Selection
- Proximity to Receiving Body
- Planned Projects
- Quick fix vs. Long-term



St. Lucie River Watershed

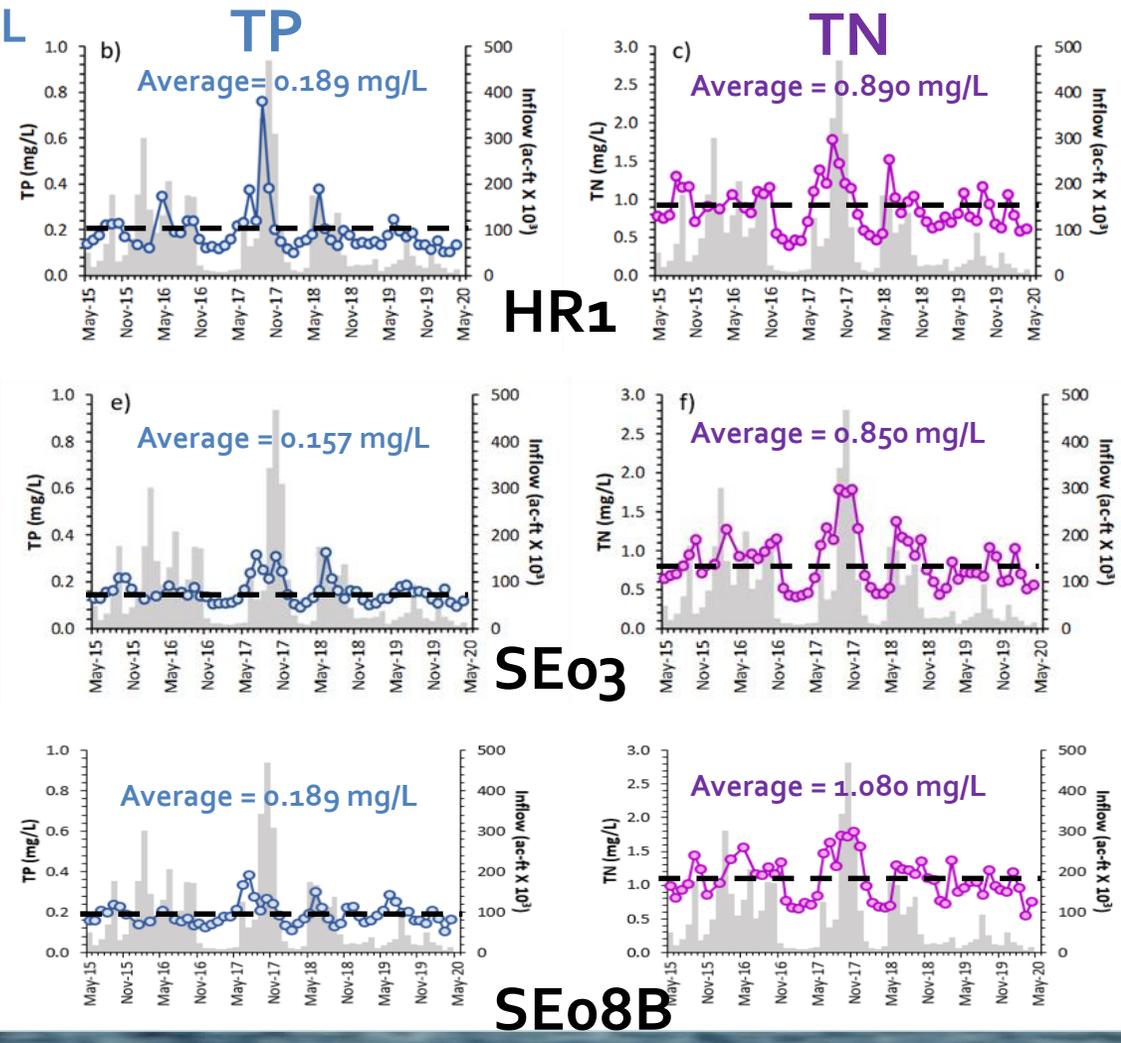


Land Uses (2014-2016)



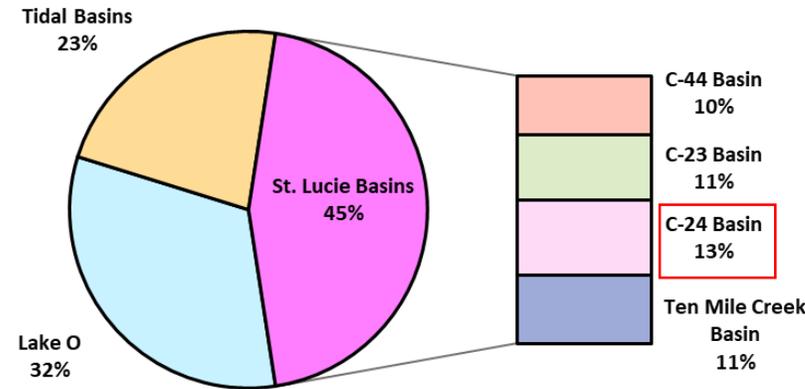
St. Lucie Estuary Monitoring

St. Lucie Estuary TMDL: Total Phosphorus (TP): 0.081 mg/L
 (TMDL = Total Maximum Daily Load) Total Nitrogen (TN): 0.720 mg/L

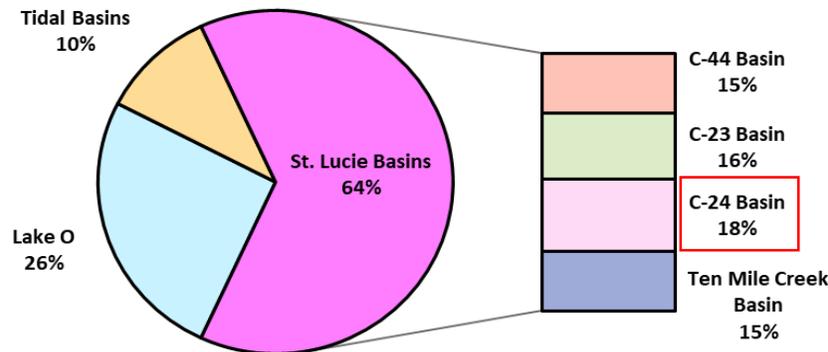


St. Lucie River Watershed Monitoring Data WY2016 – WY2020

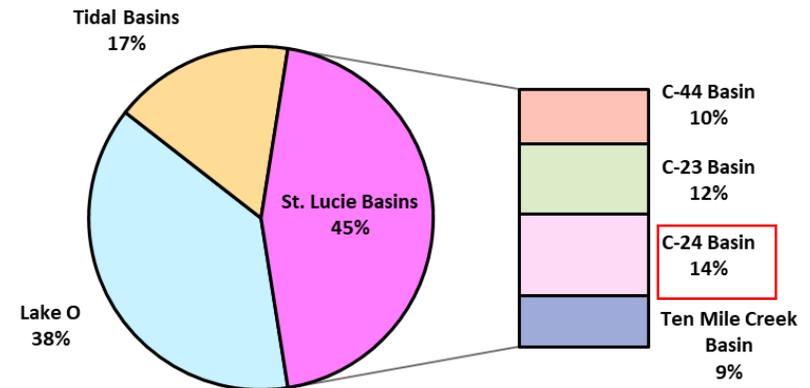
5-Year Average Flow



5-Year Average TP Load

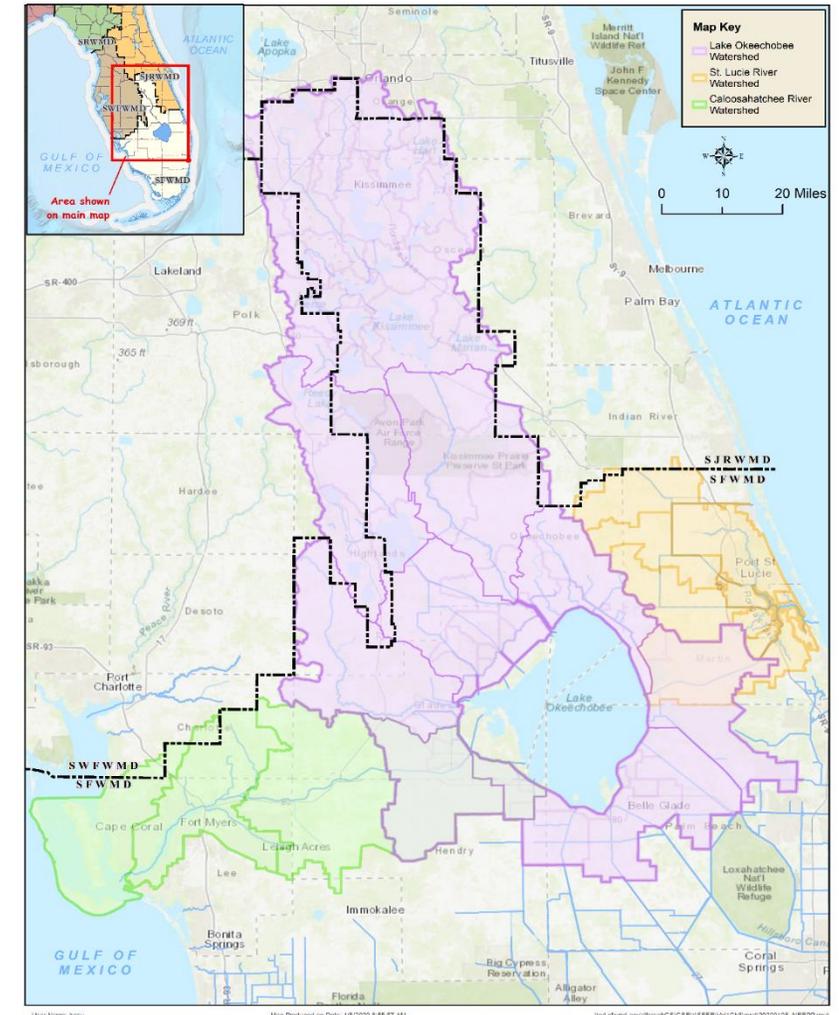


5-Year Average TN Load



Accounting for Lake Okeechobee's Contribution

- Northern Everglades watersheds are all connected by Lake Okeechobee
- Each watershed has individual restoration goals and BMAPs
- St. Lucie River and Estuary BMAP assigns allocations and accounts for projects within the SLRW.
- Lake contributions accounted for in:
 - WPPs through regional projects and programs
 - BMAPs through Targets Restoration Area (TRA) Process

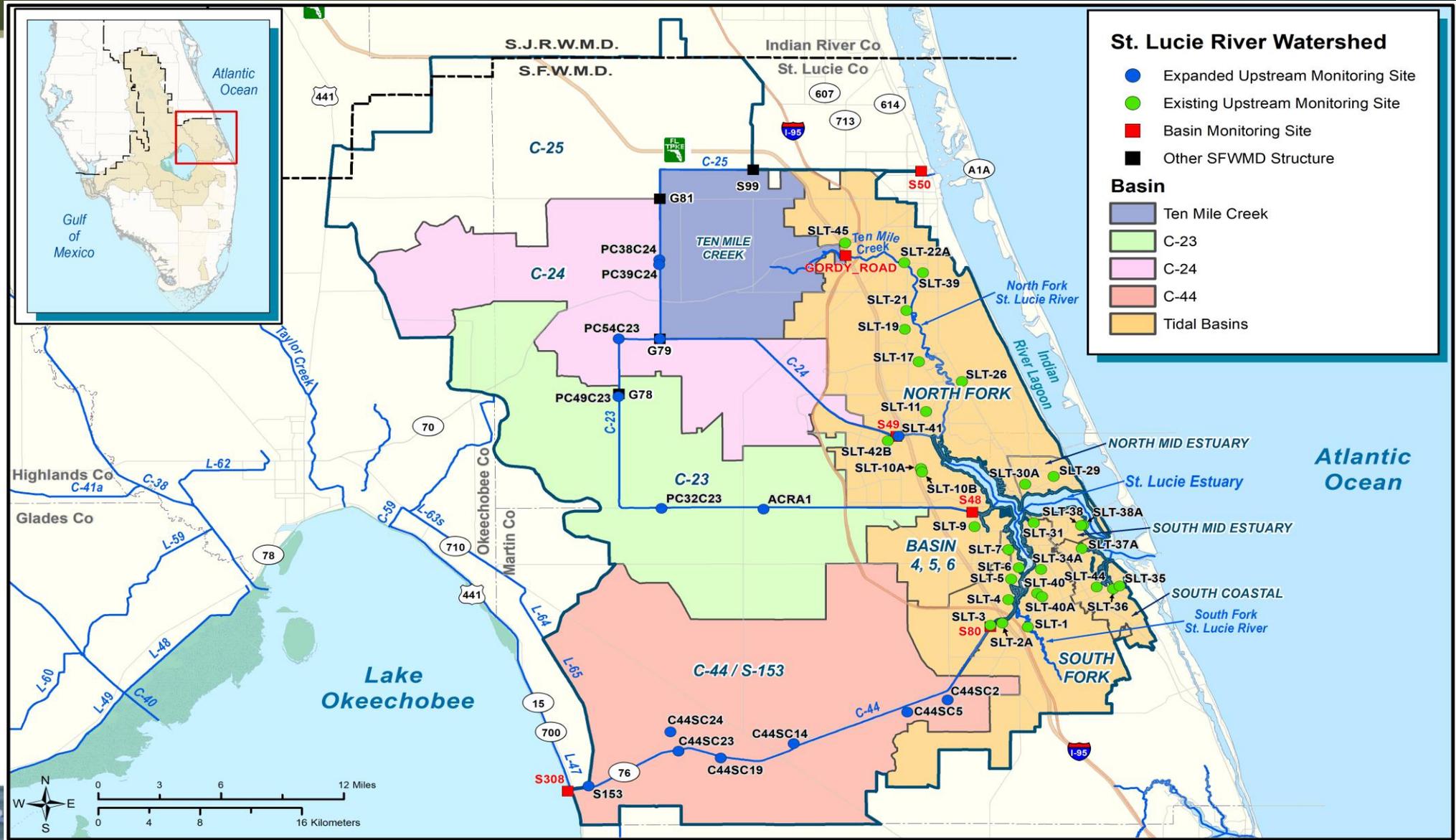


SLRW 5-year Average for WY2016-WY2020

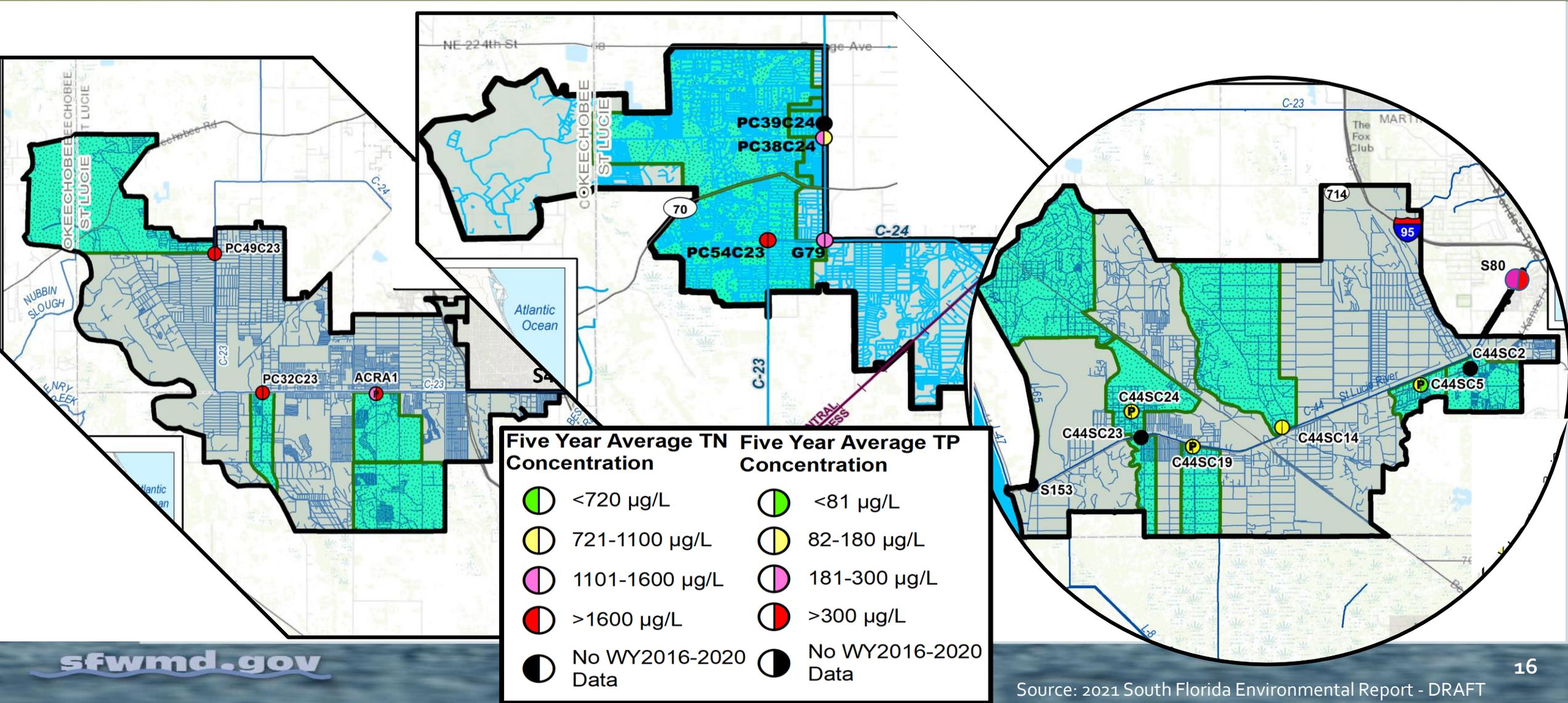
Basin	TP UAL (lb/ac)	TP Load (t)	TP FWMC (mg/L)	Runoff (Inches)	Area (ac)
Ten Mile Creek	2.35	43.0	0.292	34.14	40,327
C-24	1.38	52.3	0.321	18.20	83,373
C-23	0.94	47.1	0.338	11.70	110,872
C-44	0.72	43.6	0.348	9.03	132,705
Tidal Basins	0.40	30.7	0.117	15.82	170,509

Basin	TN UAL (lb/ac)	TN Load (t)	TN FWMC (mg/L)	Runoff (Inches)	Area (ac)
Ten Mile Creek	8.28	151.5	1.06	34.14	40,327
C-24	6.39	241.8	1.53	18.20	83,373
C-23	4.14	208.1	1.5	11.70	110,872
Tidal Basin	3.72	287.5	1.11	15.82	170,509
C-44	2.70	162.6	1.35	9.03	132,705

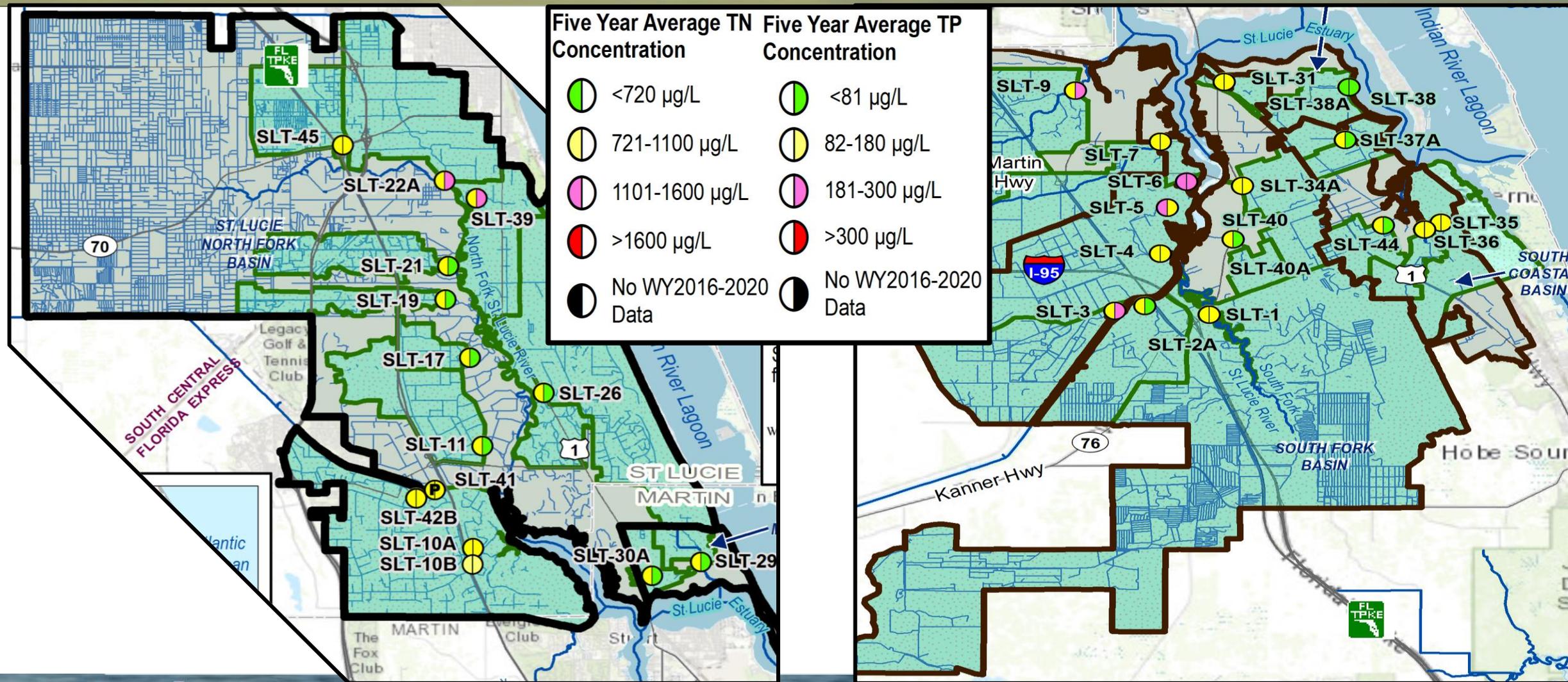
Upstream Monitoring Data



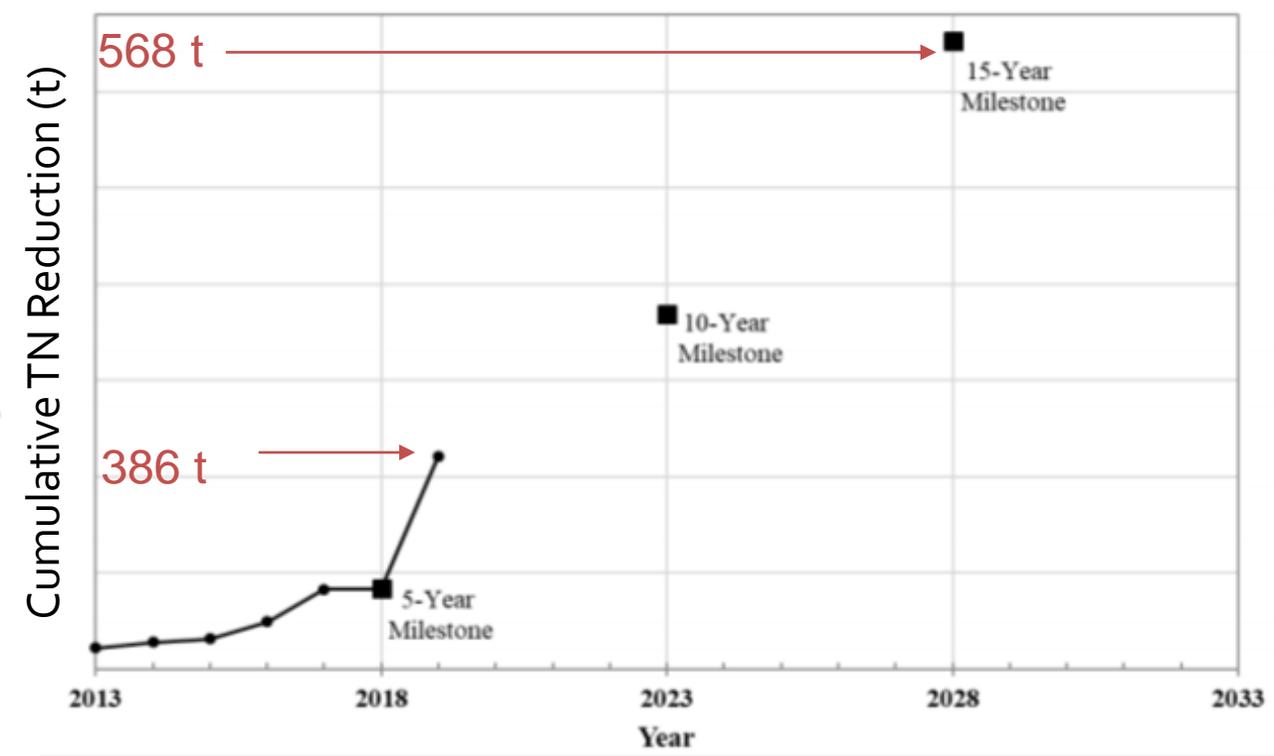
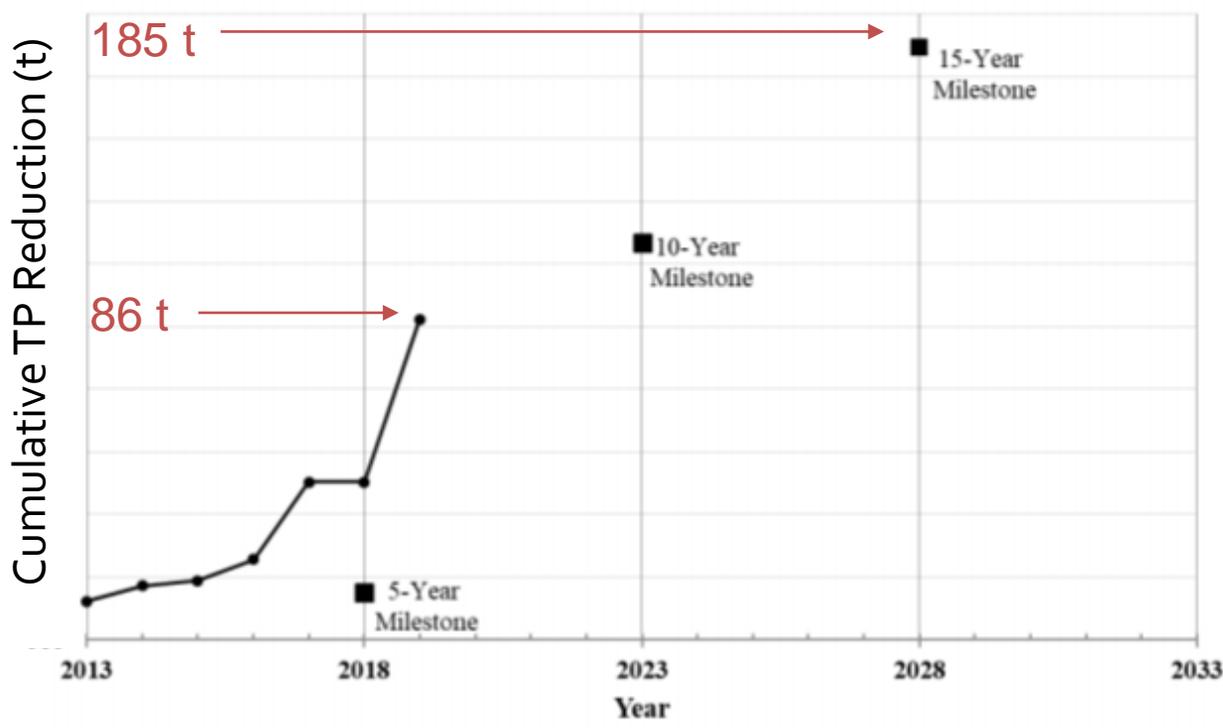
Upstream Monitoring Data (C-23, C-24, C-44 Basins)



Upstream Monitoring Data (Tidal Basins)



Estimated Progress toward Achieving TMDL Based on Projects



Required Nutrient Reductions by Basin

- BMAP reductions estimated with modeled concentrations.
- Model calibrated using SFWMD data from 2001 to 2006 and verified from 1995 to 2000.
- BMAP modeled concentrations represent the average modeled outputs from 2007 – 2016.
- Measured data using the most recent 5-year period 2016 - 2020.

Basin	TP Modeled ^a Concentration (mg/L)	Required Reduction to meet TMDL (%)	TP Measured ^c Concentration (mg/L)
C-23	0.352	77	0.338
C-24	0.279	71	0.321
C-44	0.111	27	0.348
Ten Mile Creek	0.201	60	0.292
Tidal Basins	0.175 ^b	51	0.117 ^d

Basin	TN Modeled ^a Concentration (mg/L)	Required Reduction to meet TMDL (%)	TN Measured ^c Concentration (mg/L)
C-23	1.74	59	1.5
C-24	1.71	58	1.53
C-44	0.92	22	1.35
Ten Mile Creek	1	28	1.06
Tidal Basins	0.906 ^b	20	1.11 ^d

a. Source – 2020 St. Lucie River and Estuary BMAP

b. Represents the average concentrations for the Tidal Basins reported in the BMAP.

c. Source- 2021 South Florida Environmental Report – DRAFT

d. Represents the average concentrations for 29 upstream monitoring sites .

Reduction Goals & Expected Reductions from Projects

BMAP Reduction Goals			Expected Reductions		SFWMD Projects		Other Projects		What is Left?		
Basin	TP (t/yr)	TN (t/yr)	Basin	TP (t/yr)	TN (t/yr)	TP (t/yr)	TN (t/yr)	Basin	TP	TN	
SLRW Total	185	568	SLRW Total	90	334	34	82	SLRW Total	33%	27%	
C-23	59	168	C-23	29	113	21	16	C-23	15%	23%	
Tidal Basins	58	154	Tidal Basins	5	19	8	55	Tidal Basins	86%	64%	
C-24	40	150	C-24	17	71	-	-	C-24	57%	53%	
Ten Mile Creek	14	32	Ten Mile Creek	4	19	2	-	Ten Mile Creek	58%	41%	
C-44	14	64	C-44	35	112	3	11	C-44	-167%	-93%	

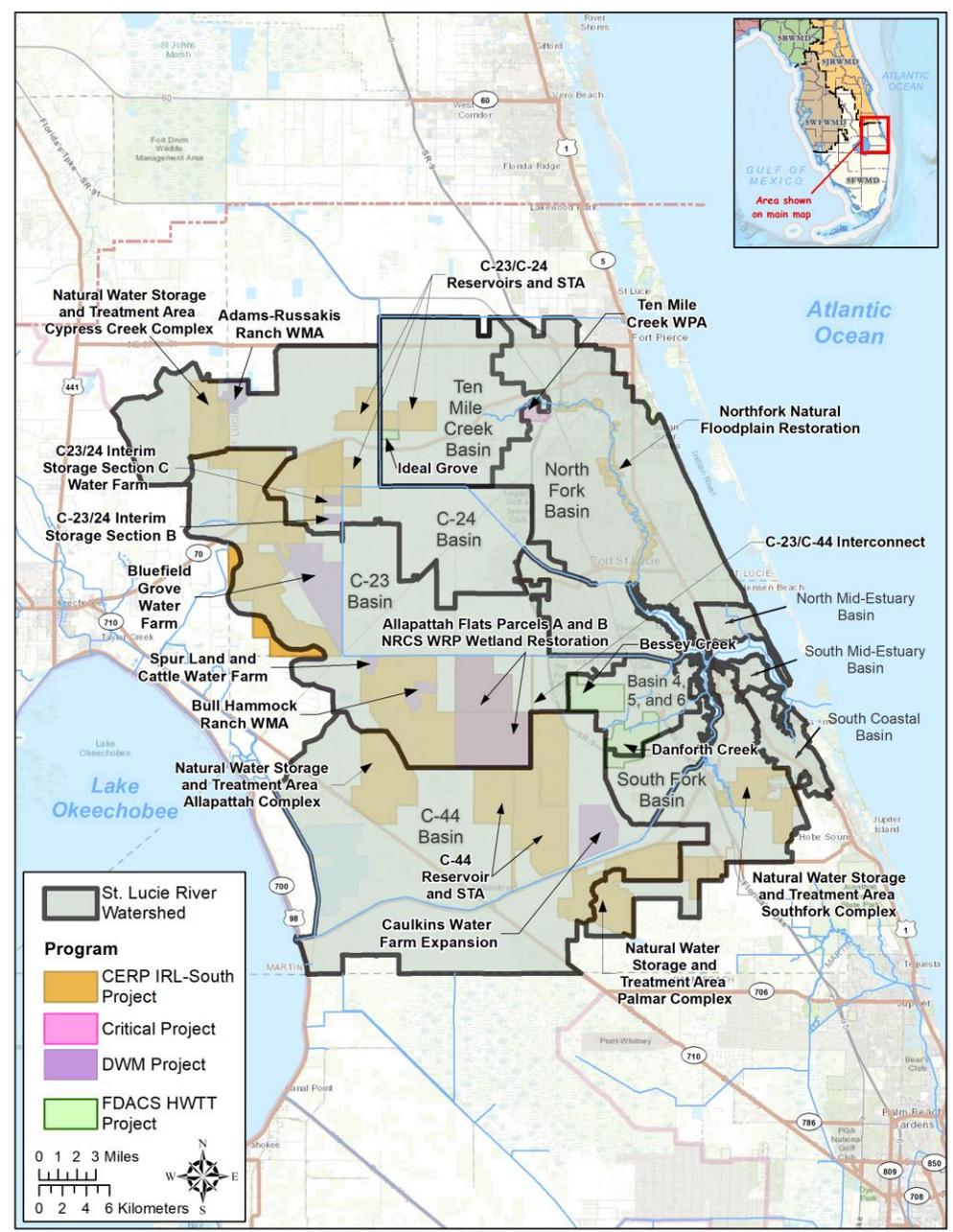
Reductions from projects are estimates

Watershed Storage Goals & Progress

Protection Plan Storage Goal	
SLRW	200,000 AF

Expected Storage	
Basin	Storage (AF)
C-44	128,005
C-23	96,651
C-24	57,408
Tidal Basins	7,500
Ten Mile Creek	2,104
Total	291,668

Expected Storage from projects are estimates



Putting It All Together

Basin	Measured Data Results			Reduction Deficit	
	TP UAL (lbs/ac)	TN UAL (lbs/ac)	Runoff (Inches)	TP	TN
Ten Mile Creek	2.35	8.28	34.14	58%	41%
C-24	1.38	6.39	18.20	57%	53%
C-23	0.94	4.14	11.70	15%	23%
C-44	0.72	2.70	9.03	0%	0%
Tidal Basins	0.40	3.72	15.82	86%	64%

Summary

- The St. Lucie Basins are the greatest contributor of the basins' total flow, TP load and TN load to the St. Lucie Estuary when reviewing measured data.
- Lake Okeechobee is also a significant contributor. Accounted for in WPPs through regional projects and programs, and in the BMAPs Targeted Restoration Area process.
- Of the St. Lucie Basins, the C-24 and TMC have the highest UAL and runoff.
- The C-24, TMC, and Tidal Basins have the greatest deficit in required reductions based on the BMAP reduction goals and SFWMD and BMAP project estimates.
- Upstream monitoring concentrations are the lowest in the C-44 and Tidal Basins.
- C-24 and TMC basins selected by the SFWMD team of experts as priorities for conducting detailed assessments; however, not locked into any area to focus on.

Next Steps

- Gather detailed information on focus areas
- Perform detailed assessments to identify all potential contributing sources and potentially responsible entities (e.g. local ordinances to control urban runoff, stricter ERPs, more NOIs, septic tank hook ups, etc.)
- Assess SFWMD existing project/program performance and cost effectiveness
- Identify problems and potential solutions
- Adjust and change course as necessary based on findings/feedback
- Future workshops to discuss findings and recommendations
- Comment by September 15

Watershed Protection Planning Website

sfwmd.gov/wpps



The screenshot shows the website's header with the South Florida Water Management District logo and navigation links: "ASK US", "Contact Us", "Careers", "WHO WE ARE", "OUR WORK", "DOING BUSINESS WITH US", and "COMMUNITY & RESIDENTS". The main heading is "Northern Everglades Watershed Protection Plans". Below the heading are three links: "Lake Okeechobee Watershed", "St. Lucie River Watershed", and "Caloosahatchee River Watershed". The text describes the 2016 Northern Everglades and Estuaries Protection Program (NEEPP) and its requirements for watershed protection programs.

Geographic Area

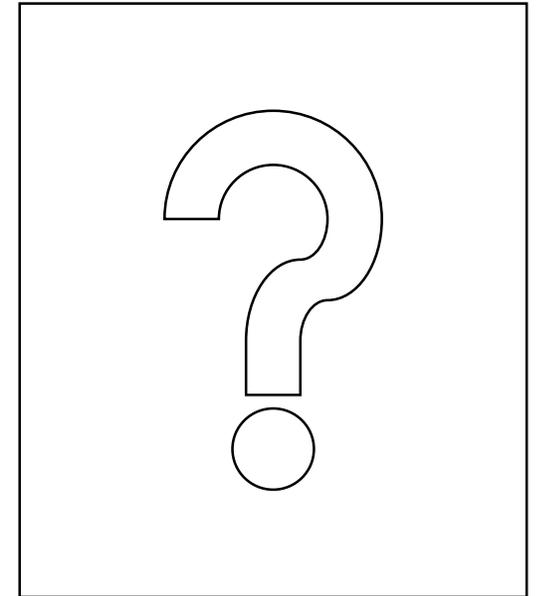
Northern Everglades map:

[Map of current Northern Everglades and Estuaries Protection Program boundaries](#)

Question & Answer Period

Have a question?

- Please use the Q & A feature using zoom to type in your question so that we respond.



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 - *6 Mutes/Unmutes your phone

