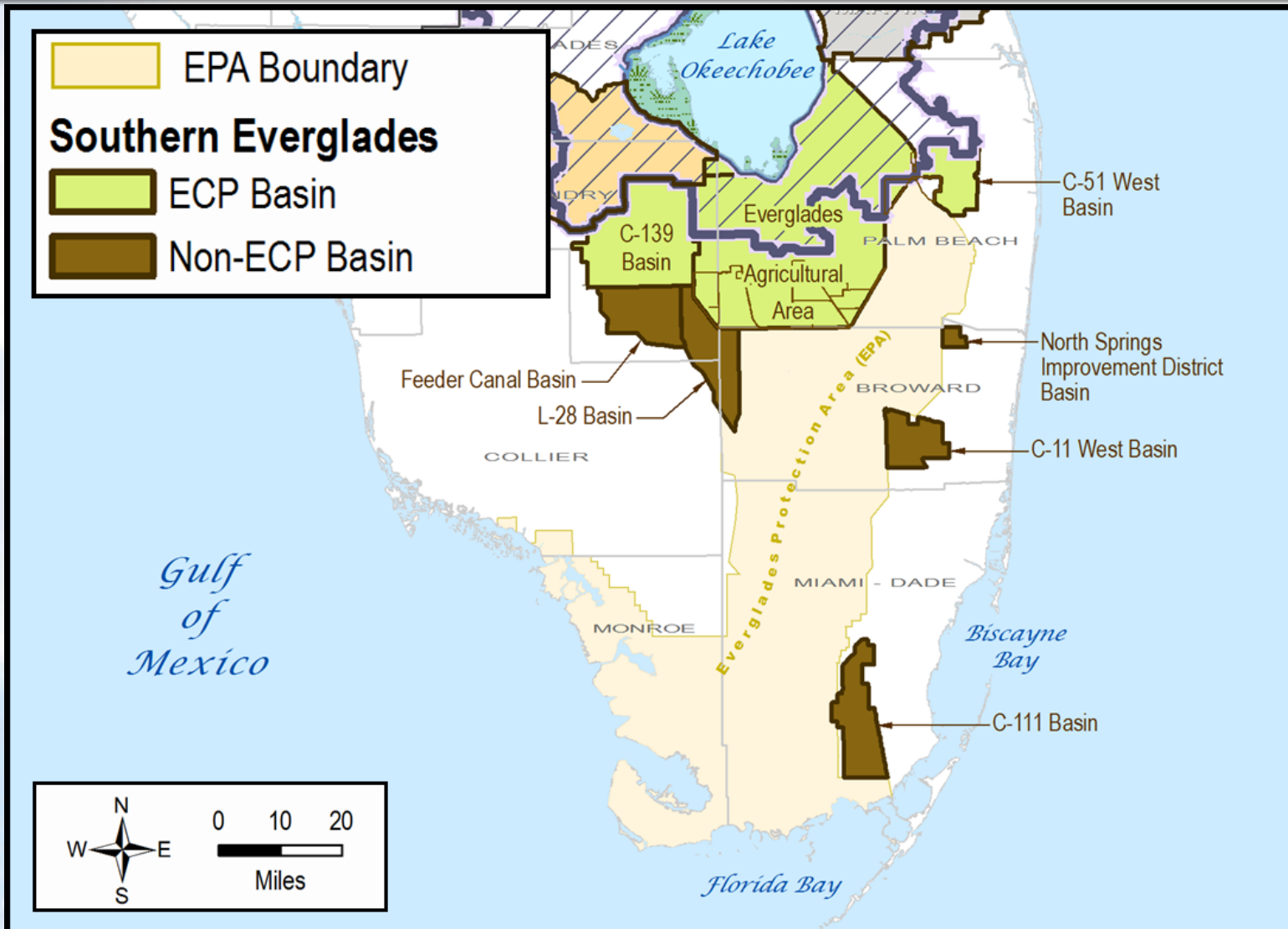


**15th Annual Public Meeting on the Long-Term Plan for Achieving
Water Quality Goals for Everglades Protection Area Tributary Basins**

February 23, 2018

**SFWMD Southern Everglades
Nutrient Source Control Program Update**
Carmela Bedregal, PE

Basins Tributary to the Everglades Protection Area (EPA)



Long Term Plan Project Objectives

The Process Development and Engineering (PDE) component of the Long-Term Plan recommends activities designed to:

“Maintain and improve upon the contribution of source controls to overall water quality improvement goals.”

Specifically:

- Identify discharges that are candidates for implementation of cost effective source controls
- Characterize management practices on lands or processes tributary to those discharges
- Implement these source controls in concert with landowners or municipalities

Contents

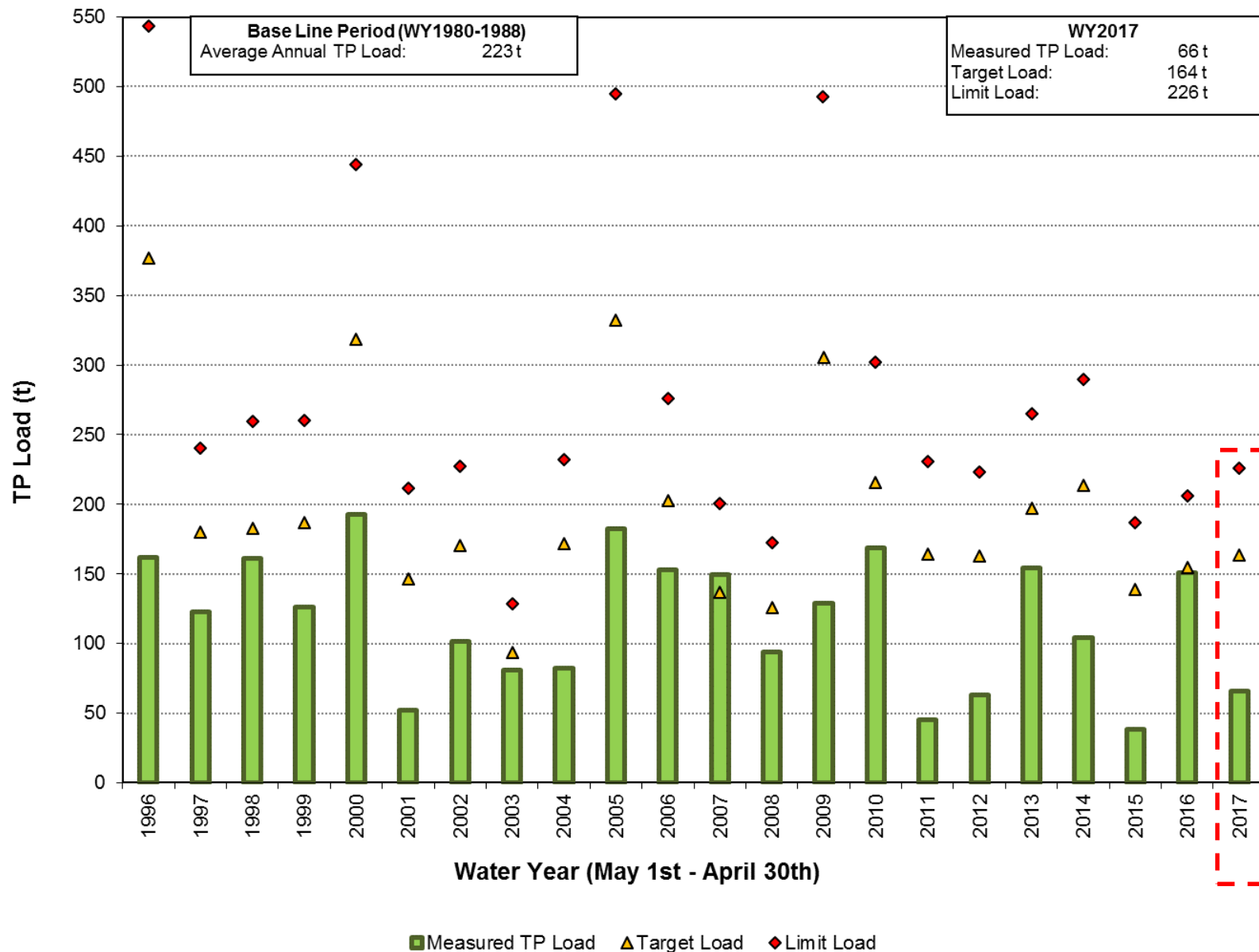
- EAA and C-139 Basins
 - Regulatory activities
 - Research and demonstration projects
 - Sub-regional source control projects
- Non-Everglades Construction Project (Non-ECP) Basins
 - Regulatory and cooperative activities
 - Project integration

WY2017 Phosphorus Data by Basin

Basin	Receiving Body	WY2017 TP Load mt	WY2017 FWM TP Concentration ppb	Area acres
Everglades Agricultural Area (EAA)	STAs Lake Okeechobee	66	81	446,730
C-139	STA 5/6 EAA	26	150	168,450
Lake Okeechobee Diversion Basins	EAA Lake Okeechobee	10	174	31,400
Feeder Canal	WCA-3A	8	97	68,883
L-28	WCA-3A	5	45	71,790
C-51 West (includes Acme Improvement District)	STA-1E C-51 East Basin WCA-1	5	118	51,080
C-11 West	WCA-3A	3	15	45,728
C-111	ENP	3	9	72,902
North Springs Improvement District (NSID)	WCA-2A	0.01	6	9,022
North New River (NNR)	Coastal Broward County	0	-	18,200
Boynton Farms	LWDD	0	-	215

EAA Basin-Level Compliance

Phosphorus load reduction of 25%



EAA Permit-Level Compliance

- Permit renewal
- Best Management Practices (BMP) site verifications
 - Comprehensive BMP plan
 - Discharge monitoring plan

Nutrient Management



Water Management



Particulate Matter & Sediment Controls

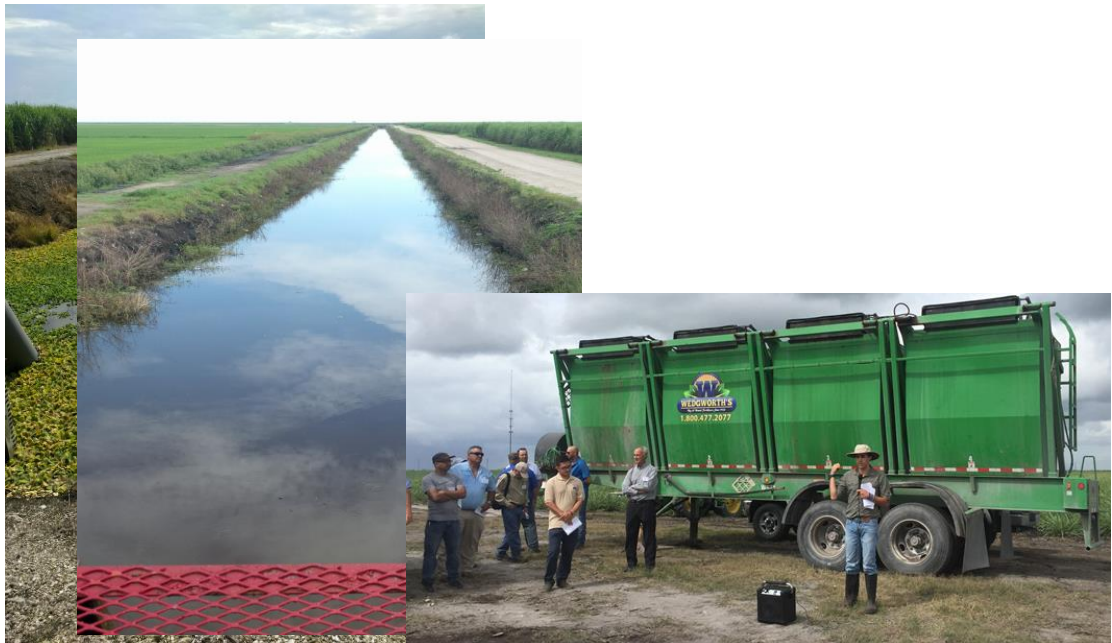


BASIN ID:		26-500-01	CROP TYPE/LAND USE:		RED PEPPERS	
STRUCTURE:		DF20.11N	FARM NAME:		SOUTH FARM	
		WEST WEIR	MONTH OF:		May 2002	
Day	Rainfall (in)	Start Time (hh:mm)	Stop Time (hh:mm)	Water Elevation (feet)	Inlet	Notes
		Start	Stop	Inside	Outside	
4	0.5					
5	0.3					Start elevation: 14'
6	1.1	7:00	20:00	14.0		CB (4)
7	0.9	7:00	19:00	13.4	12.0	CB
8	1.0	6:30	17:00	12.8	12.0	CB
9				closed		
10						
30	0.4	8:00	20:00	13.8		CB (1)

Note Codes
 (1) Harvesting (4) Start Elevation Reached
 (2) Planting (5) Malfunctioning
 (3) Land preparation (6) Others

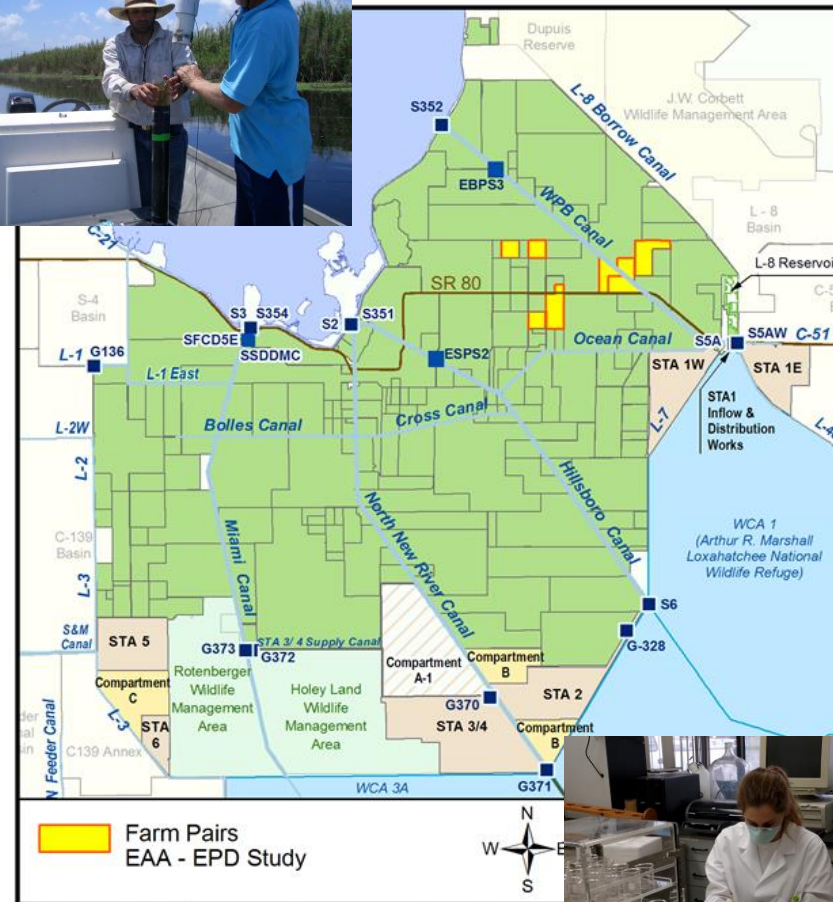
EAAEPD Research Master Permit Background

- BMP research is mandated by the Everglades Forever Act (EFA) and Chapter 40E-63, Florida Administrative Code (FAC)
- The Scope of Work includes:
 - Research on the impact of alternate management practices for the control of floating aquatic vegetation (FAV) in EAA farm canals
 - Develop improved techniques for FAV management and
 - BMP education and extension services



EAAEPD Research Master Permit – Data Collection and Analyses

- Eight representative farms
 - Calibration: 2011 - 2013
 - Treatment: 2013 - 2017
- Data collection includes:
 - Drainage and ambient canal water (quantity and quality)
 - Sediment analyses & surveys
 - FAV surveys and composition analysis



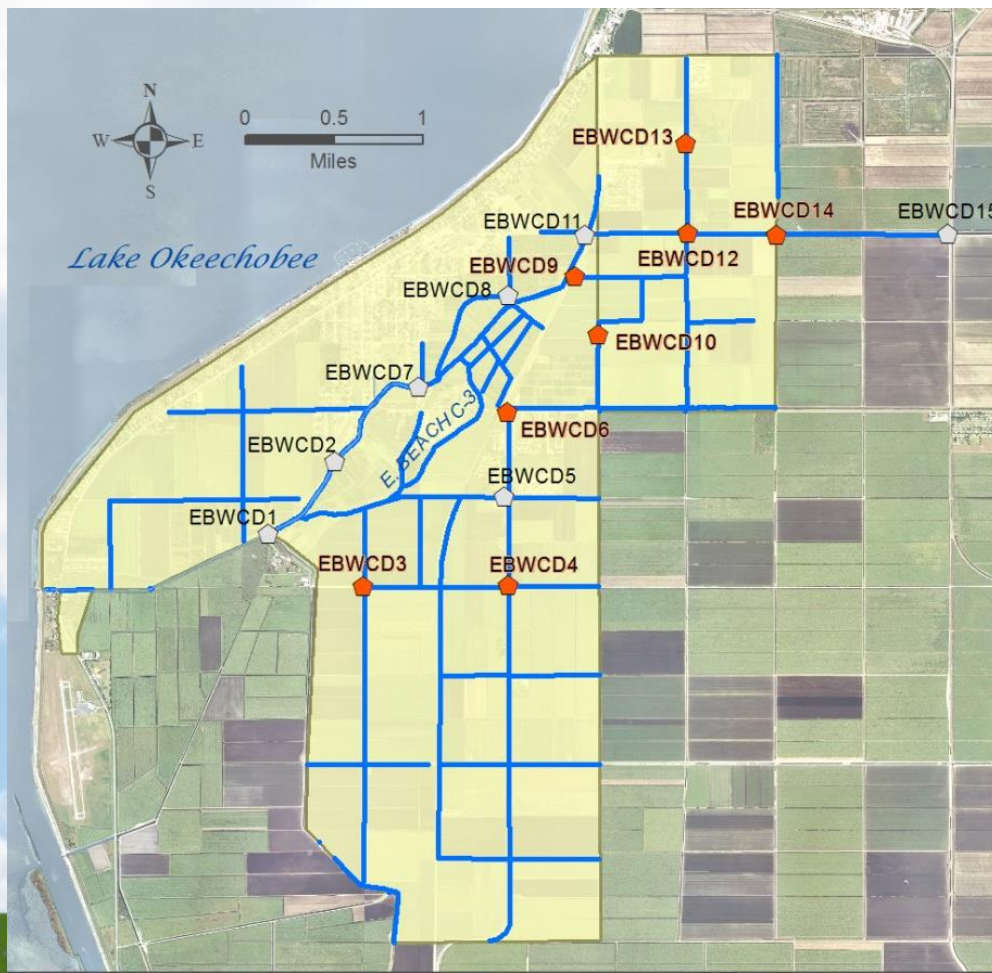
EAAEPD Research Master Permit - Permit Status

- March 2018 Draft Final Research Report
- May 2018 Meeting with Water Resource Advisory Committee and UF-IFAS
- July 2018 Final Research Report and proposed scope of work for future investigations
 - Public workshop
 - Final agency action within 60 days of workshop



EBWCD Canal Cleaning Demonstration

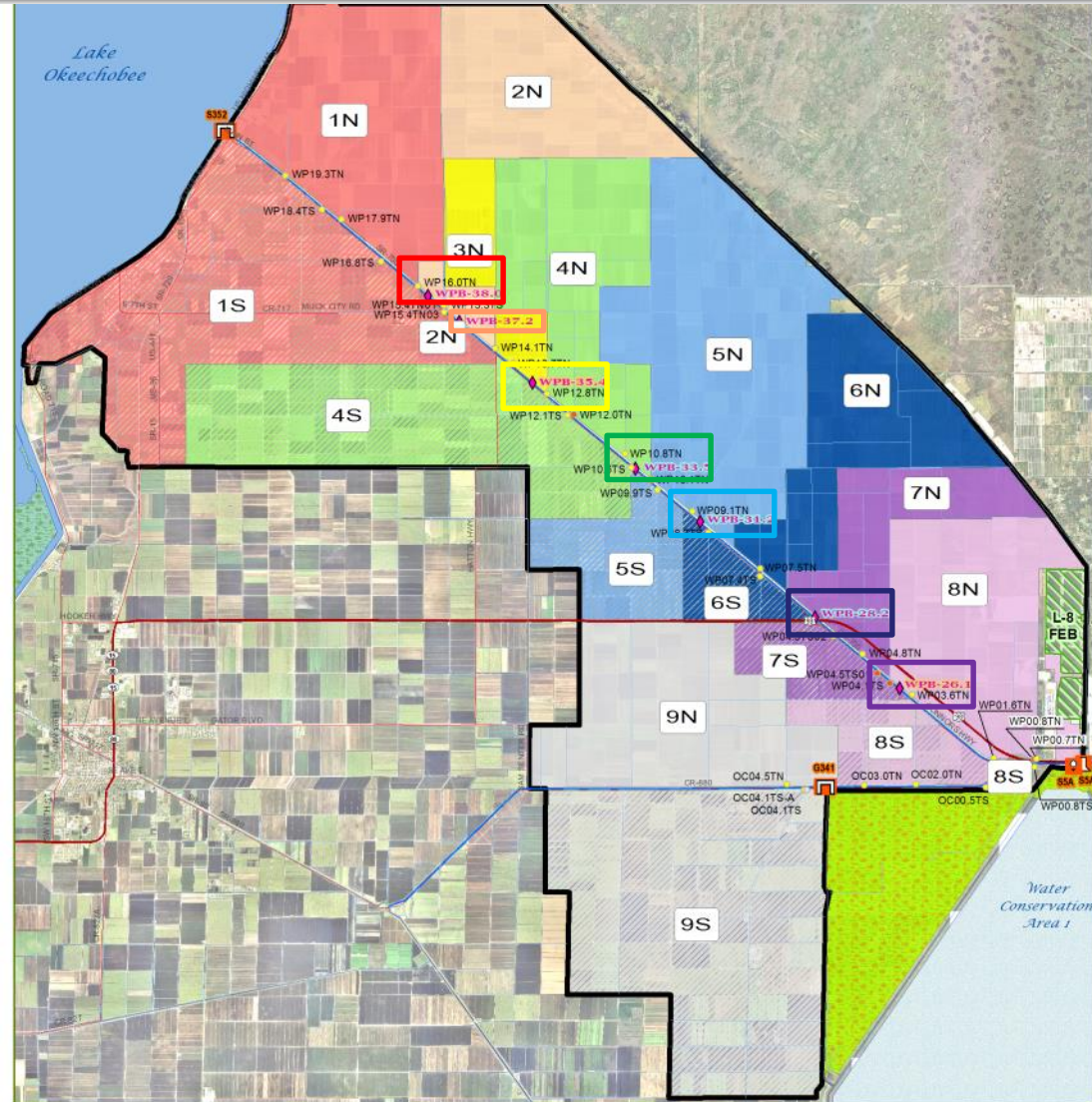
Partnership to optimize FAV control and sediment removal at a sub-regional level paired with water quality monitoring



- EBWCD canal cleaning and reporting:
Aug 2013 - Oct 2015
 - 17.8 miles of canals cleaned of FAV and/or sediments
- District water quality monitoring:
May 2013 - Sep 2016
 - 50 trips at 8 sites (orange diamonds)

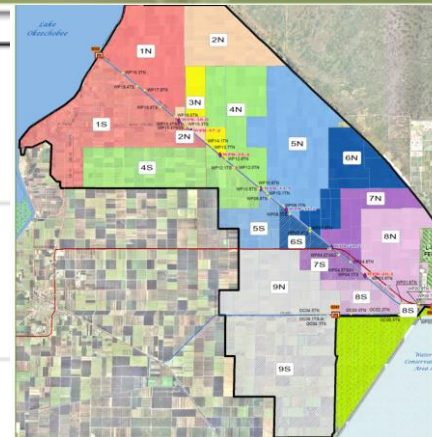
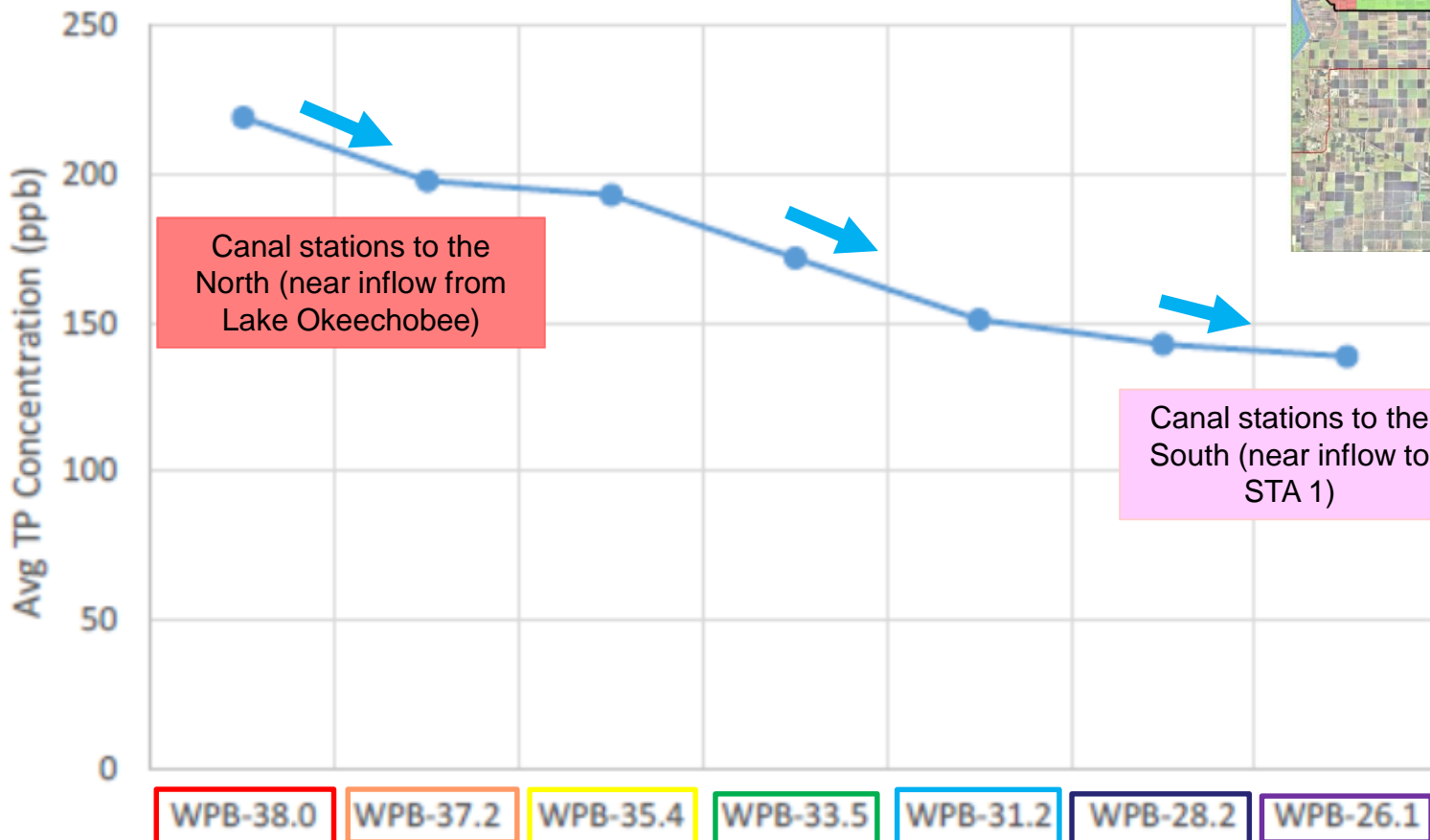
S5A Data Collection Project

- Summarize S5A initiatives and water quality data
- Understand phosphorus sources, and transport mechanisms affecting basin phosphorus load
- West Palm Beach Data Collection Project
 - November 2012 - October 2015. Reports complete



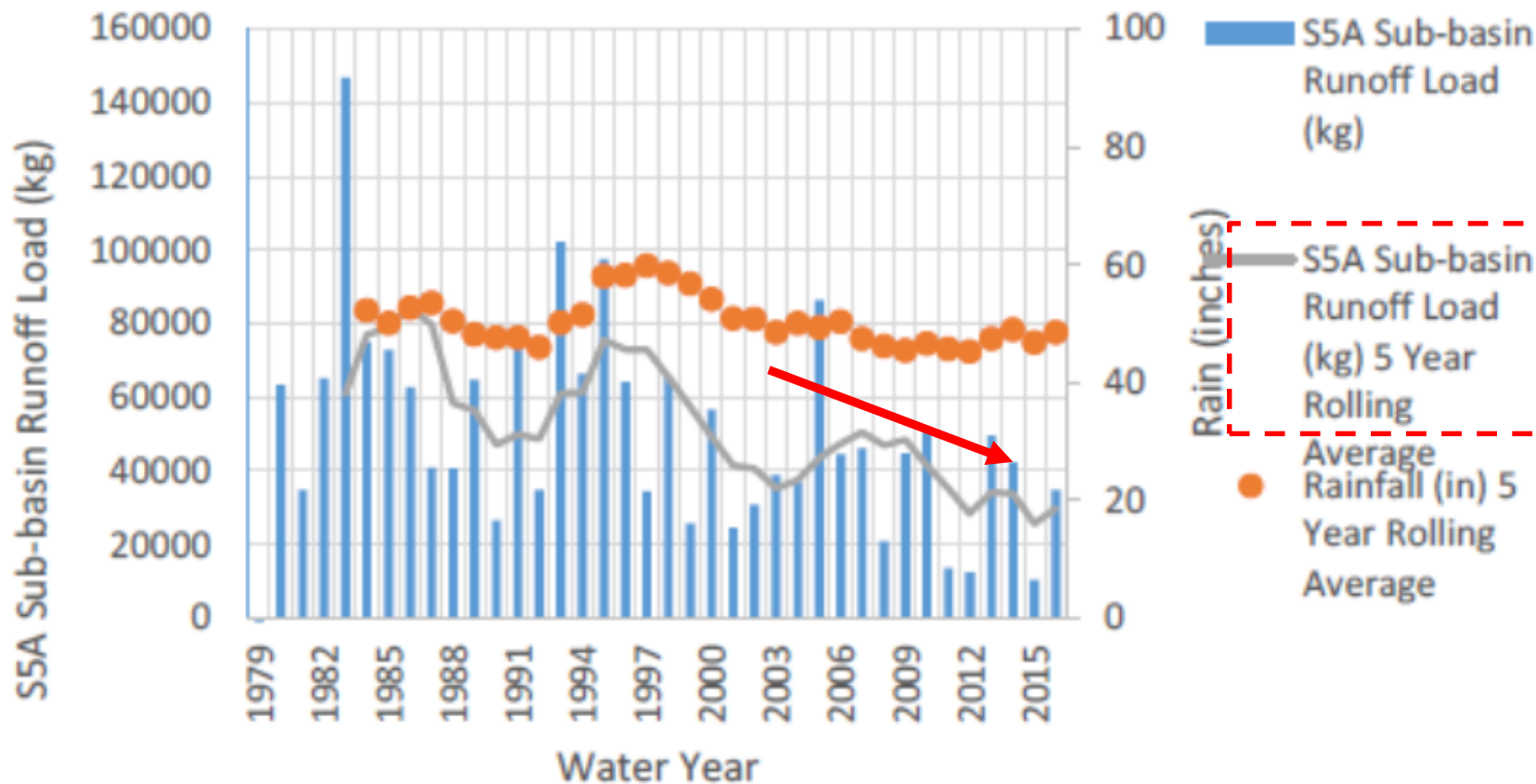
West Palm Beach Canal Phosphorus

Average TP Concentration WPB Canal



S5A Basin Runoff Phosphorus Load

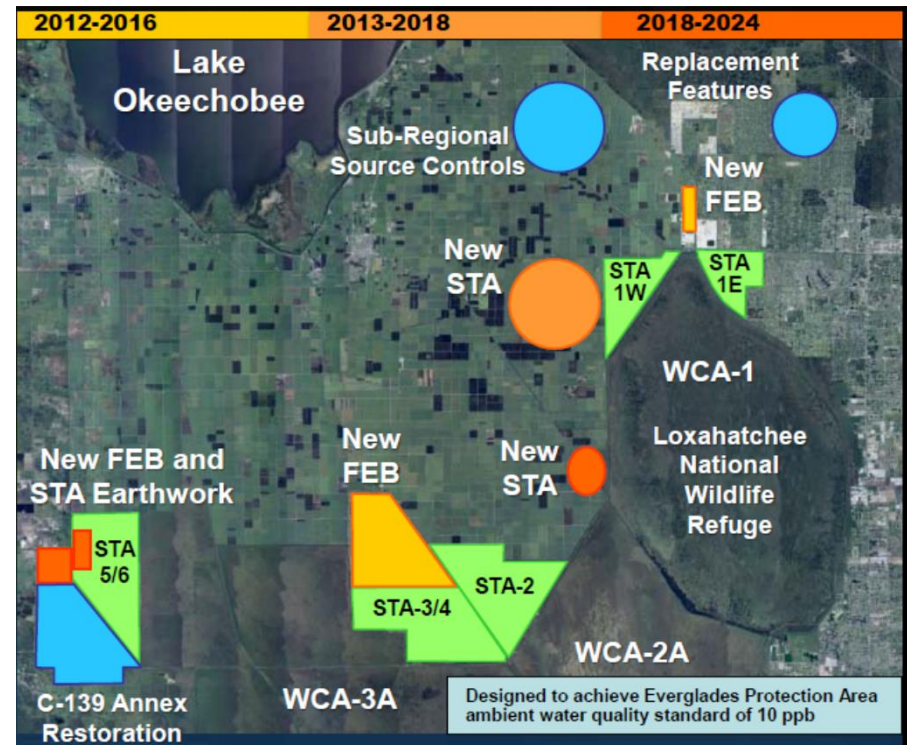
S5A Basin Runoff TP Load 5 Year Rolling Average



Sub-regional Source Control Projects

- Projects to provide a safety factor for meeting water quality based limits downstream of STA1E and STA1W (Eastern Flow path, EAA S5A Basin)
- Discussion of concepts and methods to further develop projects has been initiated

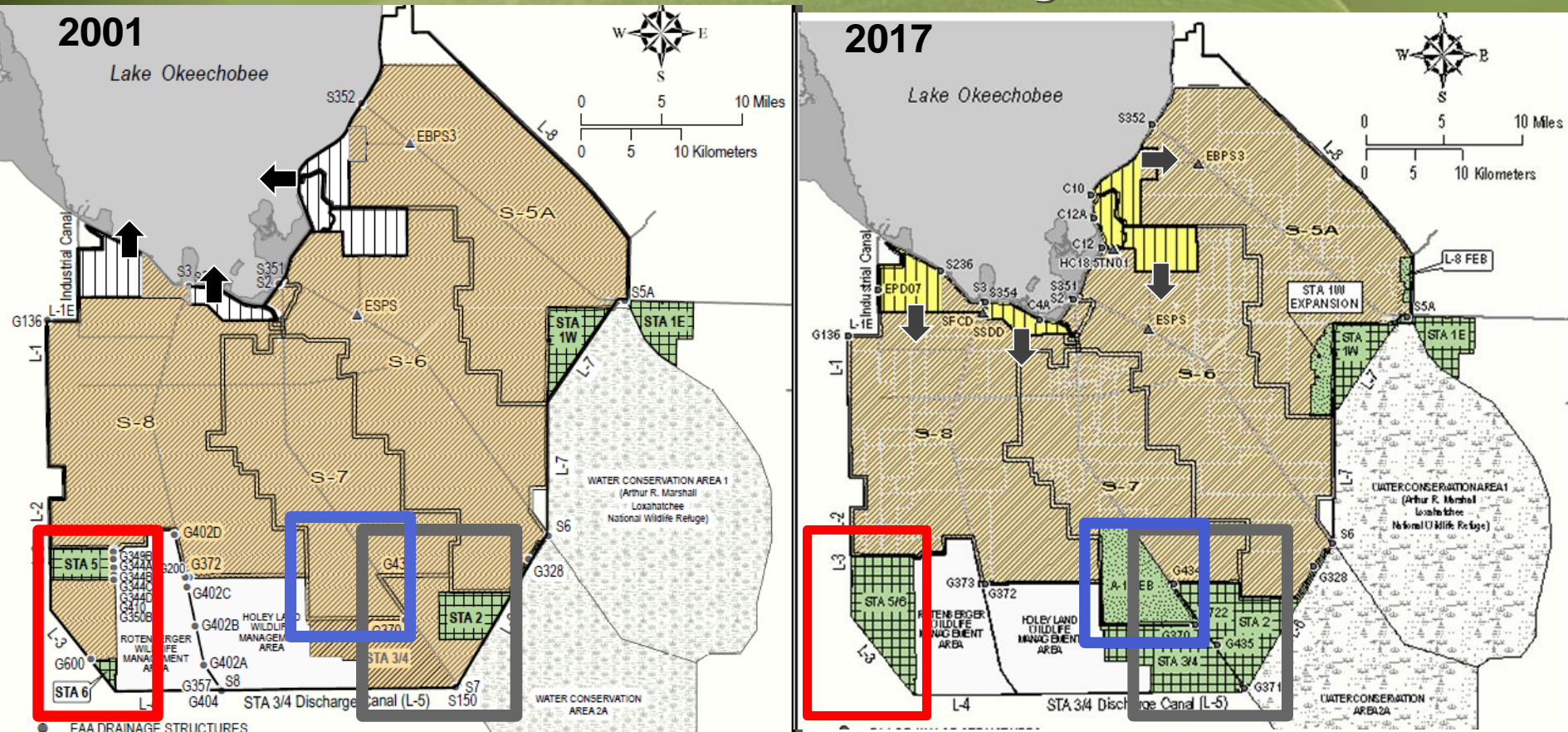
➤ Sub-regional projects downstream of areas where BMPs are implemented



Updates to Chapter 40E-63

- The Everglades Forever Act mandates implementation of Chapter 40E-63, FAC
- Chapter 40E-63, FAC, adopts methods to determine compliance with a phosphorus load reduction requirement
- Changes in the methods require rule amendment
- Since the last amendment (2001) various projects were completed as part of the Everglades Construction Project, Long-term Plan and Restoration Strategies
 - New boundary structures and methods have become effective
 - New EAA basin inflows (Lake Okeechobee diversion basins)

What are these Projects?



- Stormwater Treatment Areas (STA) 5/6, 3/4 and 2
- A-1 Flow Equalization Basin
- Diversion of flows from water control districts and Closter Farms away from Lake Okeechobee and into the EAA

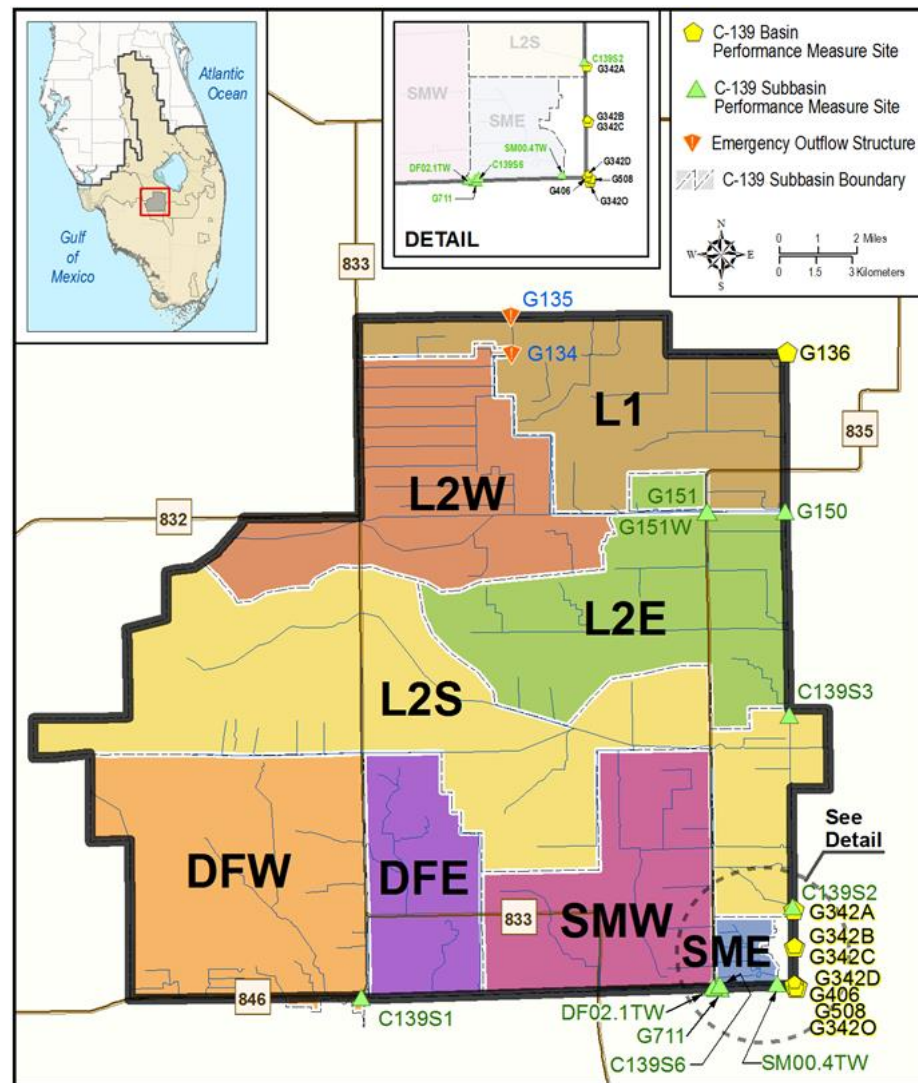
Amendment Status

- July 2017 Governing Board authorized initiation of rule development
- August 2017 Stakeholders workshop
- December 2017 Governing Board authorized rule making and adoption, unless requests for hearing are received
- February 2018
 - No requests for hearing were received
 - Coordination with Joint Administrative Procedures Committee
- March 2018 rule adoption

<https://www.sfwmd.gov/doing-business-with-us/rules>

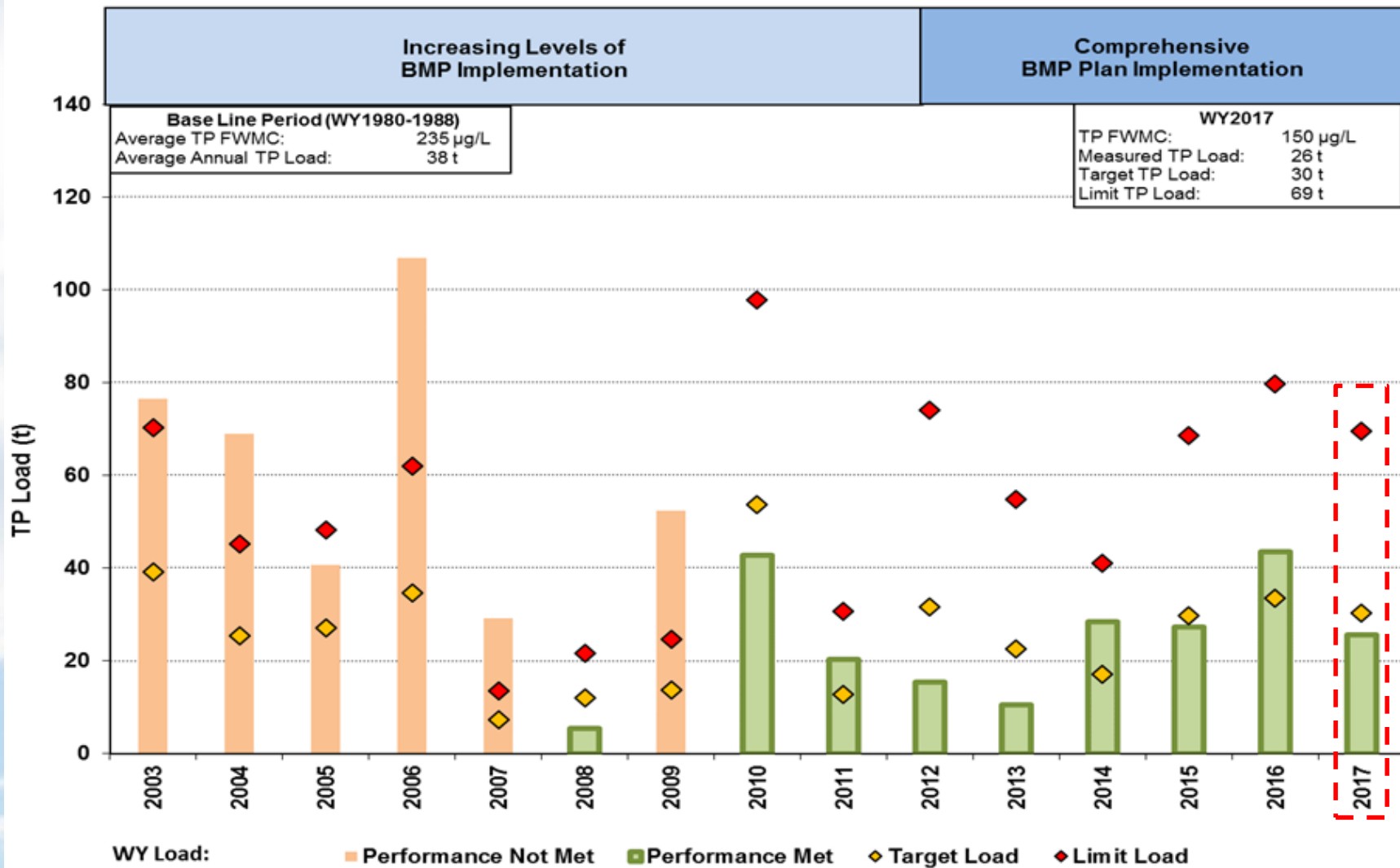
C-139 Basin Source Controls

- Basin-Level water quality compliance
- Permit-level compliance
- Upstream monitoring
 - Eight sub-basins automatic sampler and flow stations
 - Synoptic monitoring



C-139 Basin-Level Compliance

Do not exceed historic levels



BMP Site Verification

- BMP inspections
 - Verification of comprehensive BMP plans

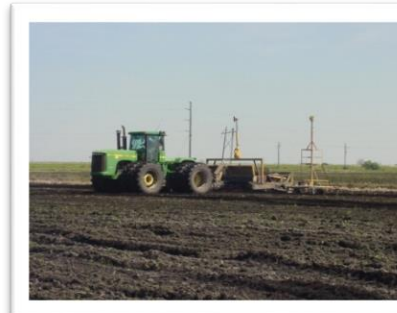
Nutrient Management



Water Management



Particulate Matter & Sediment Controls



Non-ECP Basins

To ENP and WCA via SFWMD structures:

C-111	S-18C + S-332D
C-11W	S-9 + S-9A
L-28 Canal	S-140
Feeder Canal	S-190

To WCA via private structures:

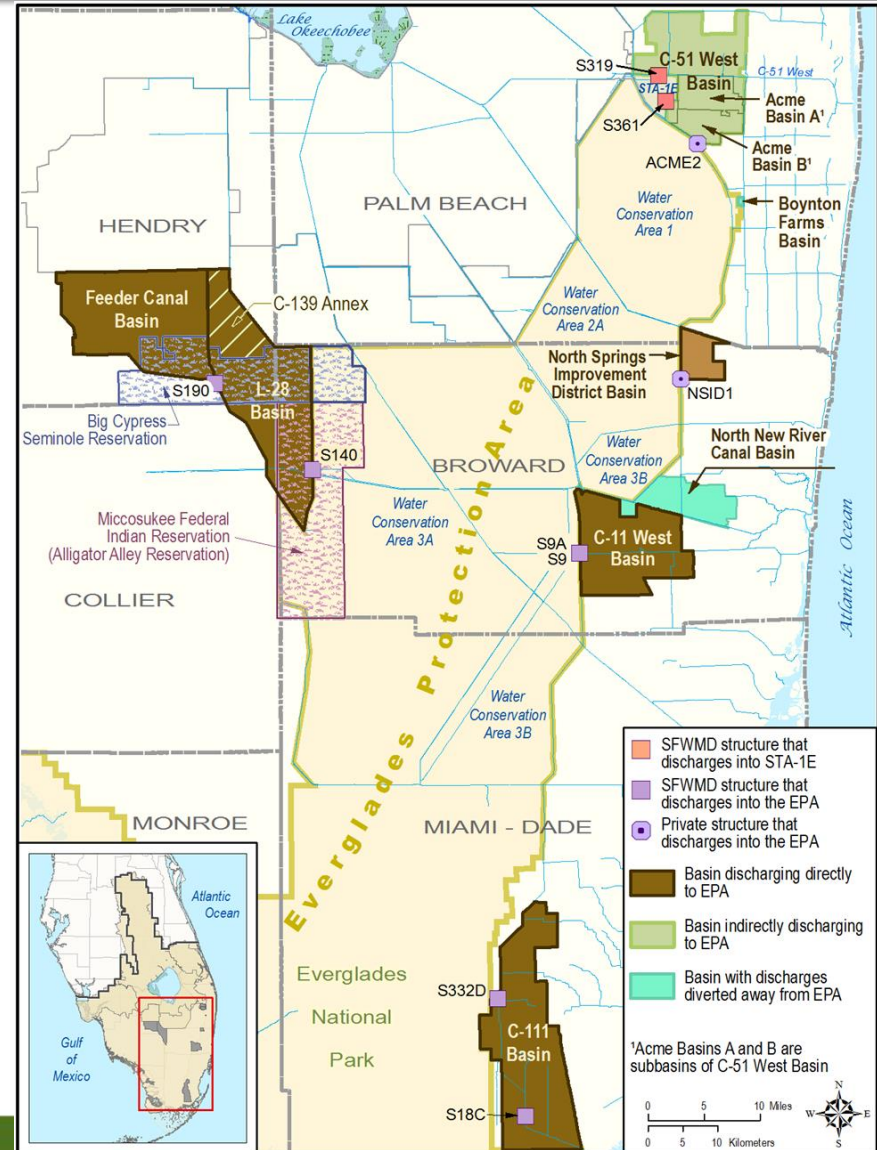
North Springs Improvement District	NSID1
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To STAs or WCA via SFWMD structures:

C-51 West	S-319 + S-361 (Acme2)
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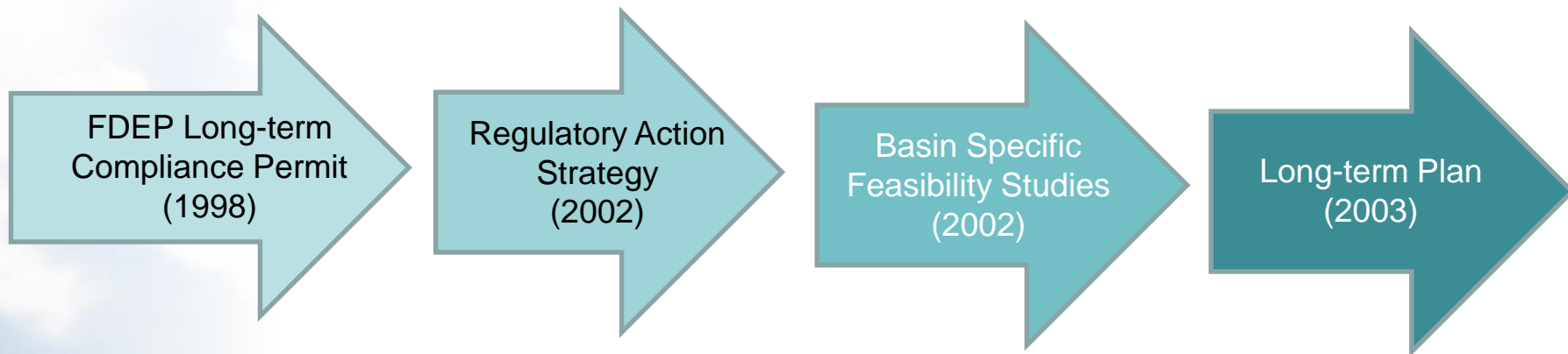
Not discharging:

North New River Canal
Boynton Farms



Non-ECP Basins Source Controls

South Florida Environmental Report



Water Quality Improvement Plans (WQIPs)

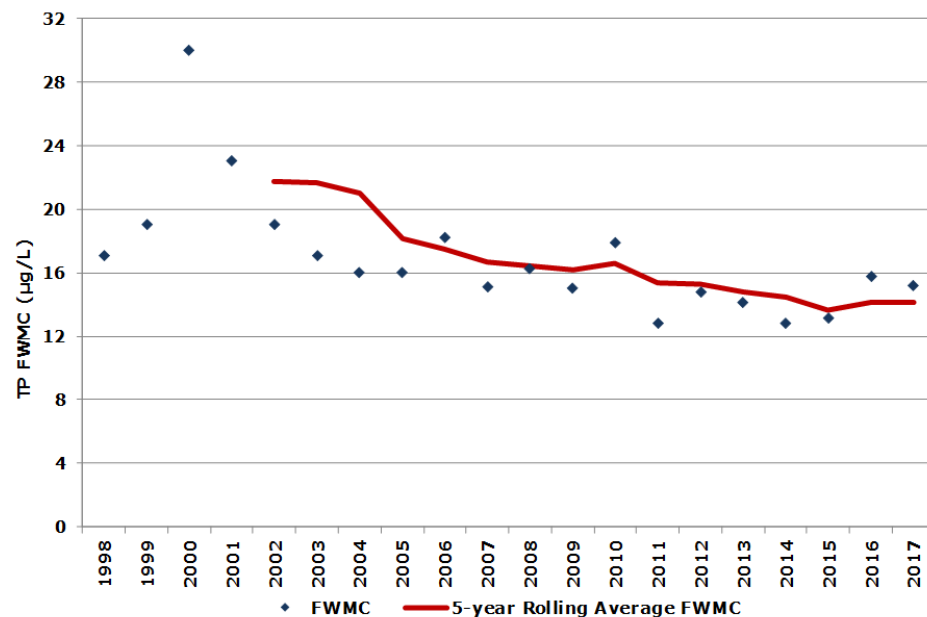
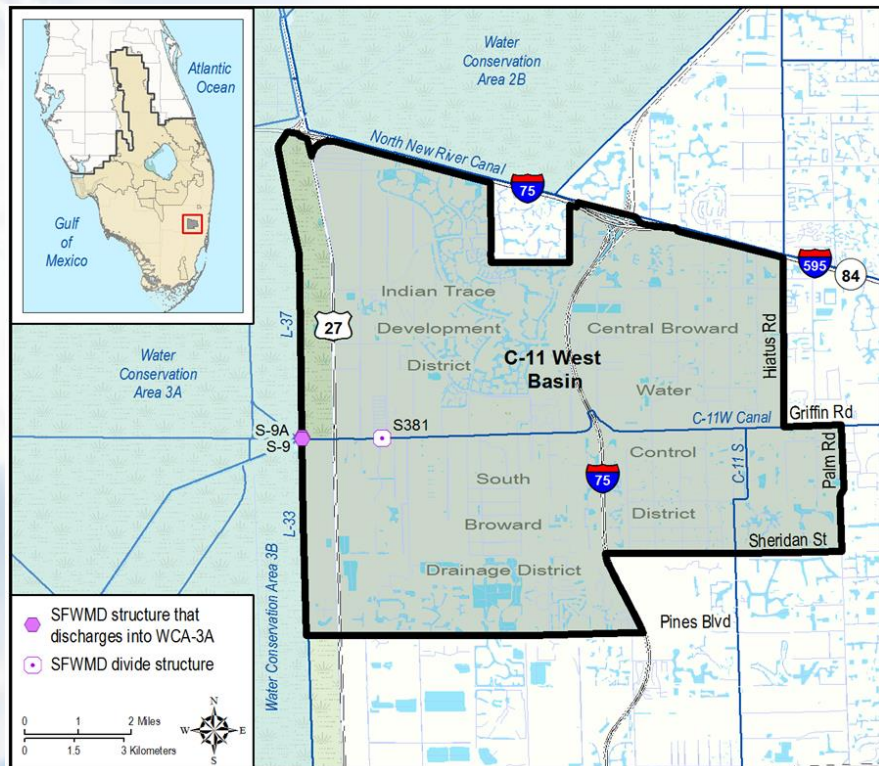
Formal Agreements

Local Ordinances

Permits for Water Quality

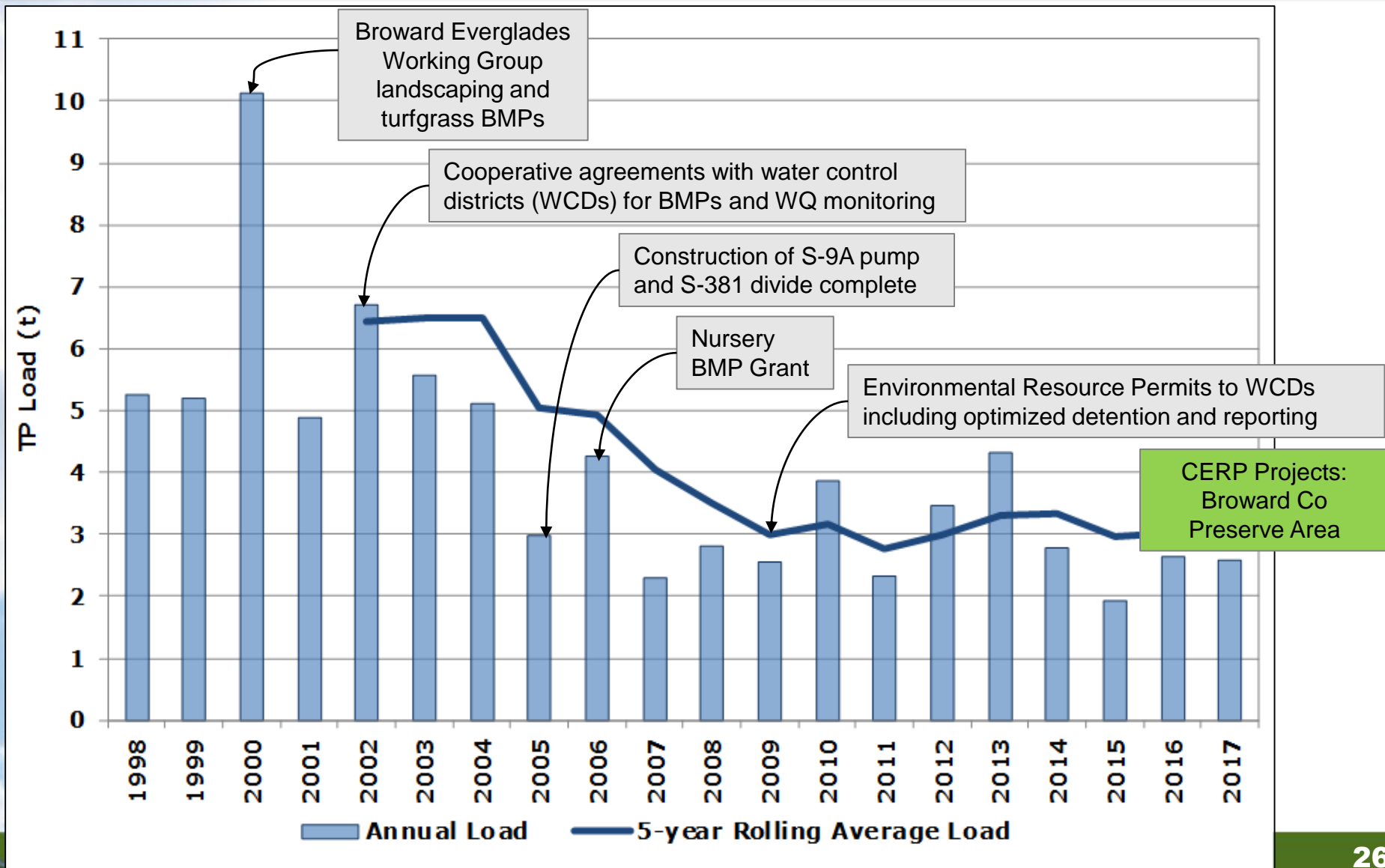
Construction Projects

C-11W Basin - Water Quality

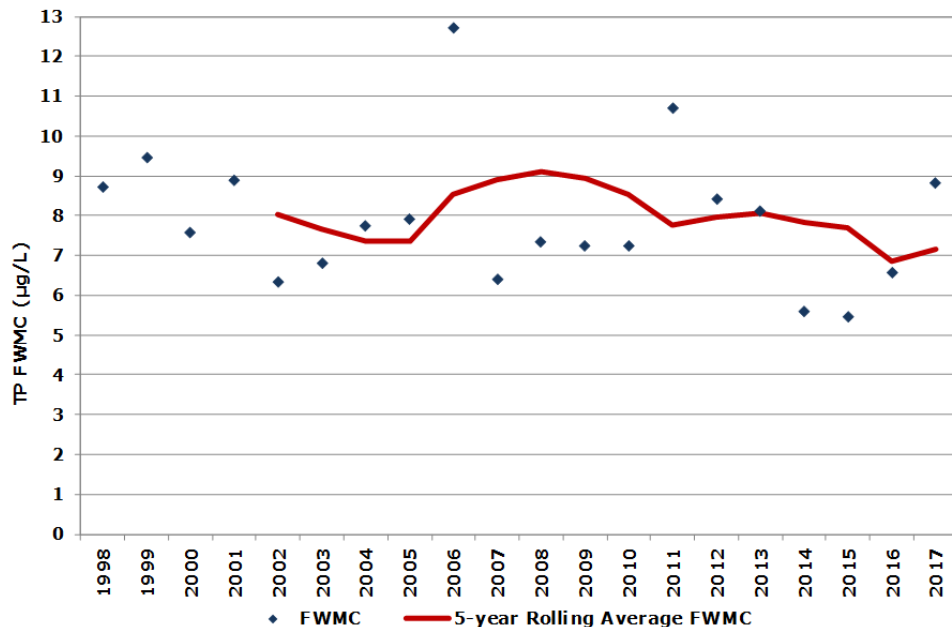
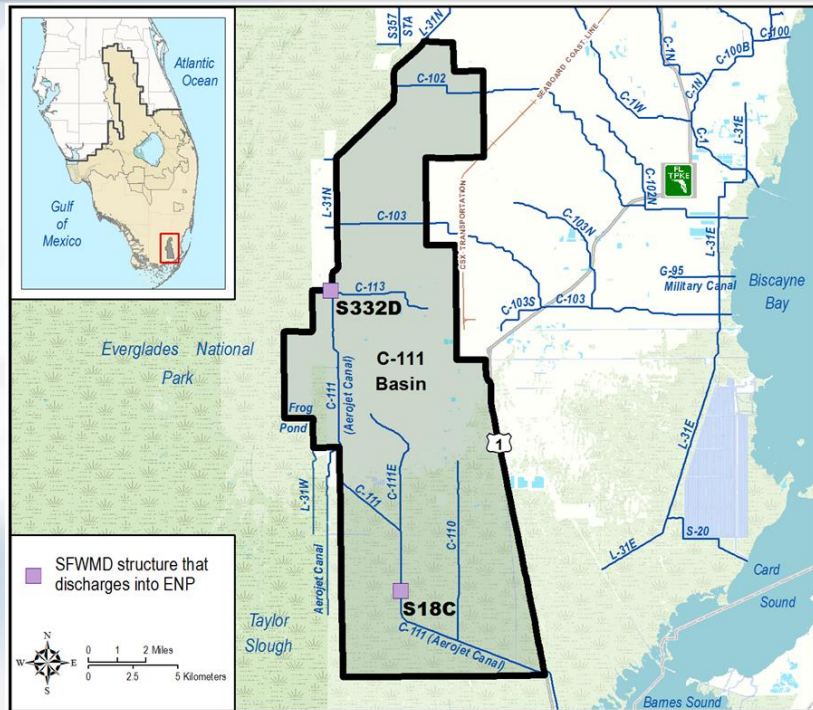


- The Long-term plan projected TP concentration reductions were in the 17 – 28 ppb range

C-11W Basin – WQIP

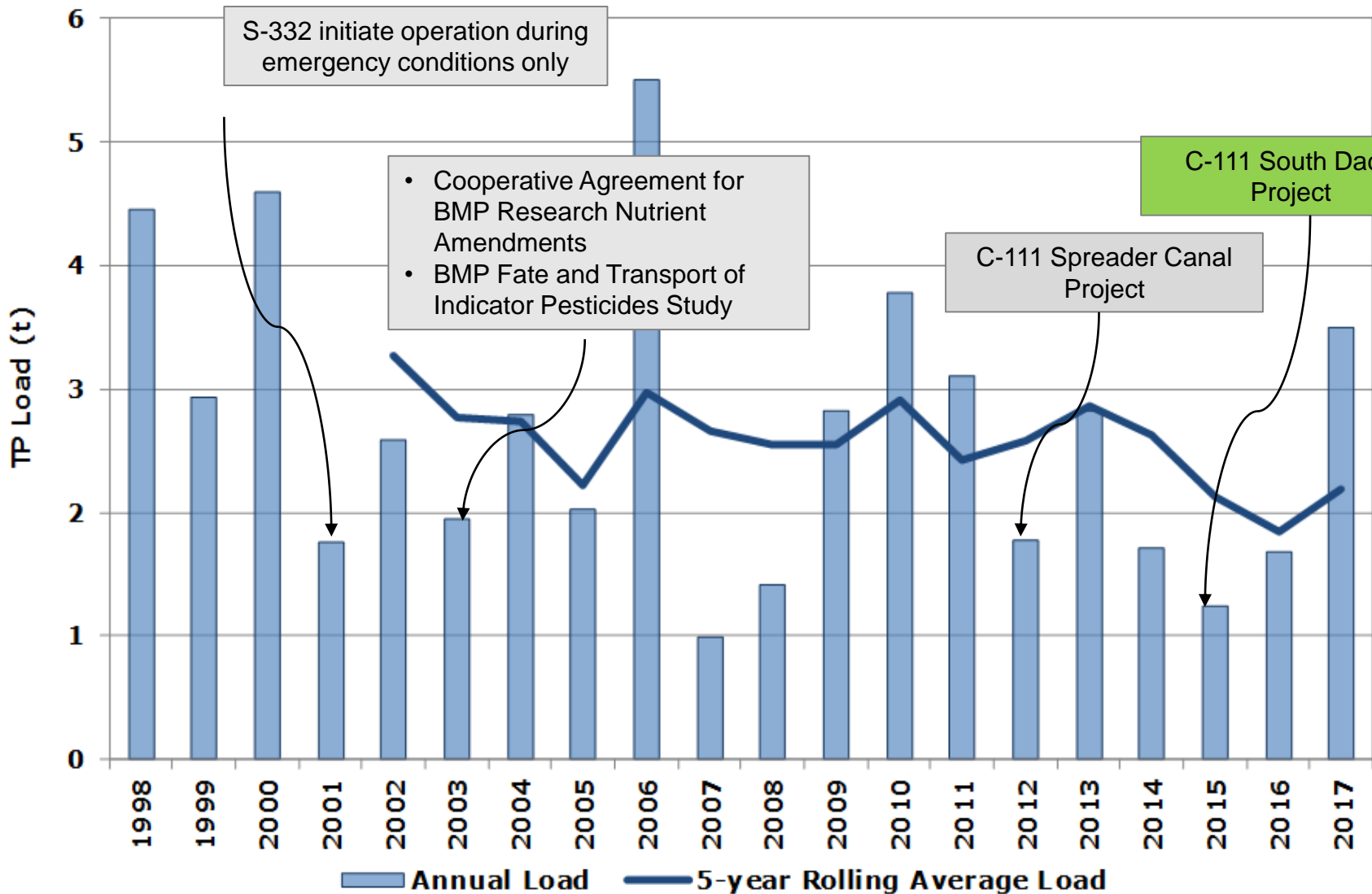


C-111 Basin - Water Quality

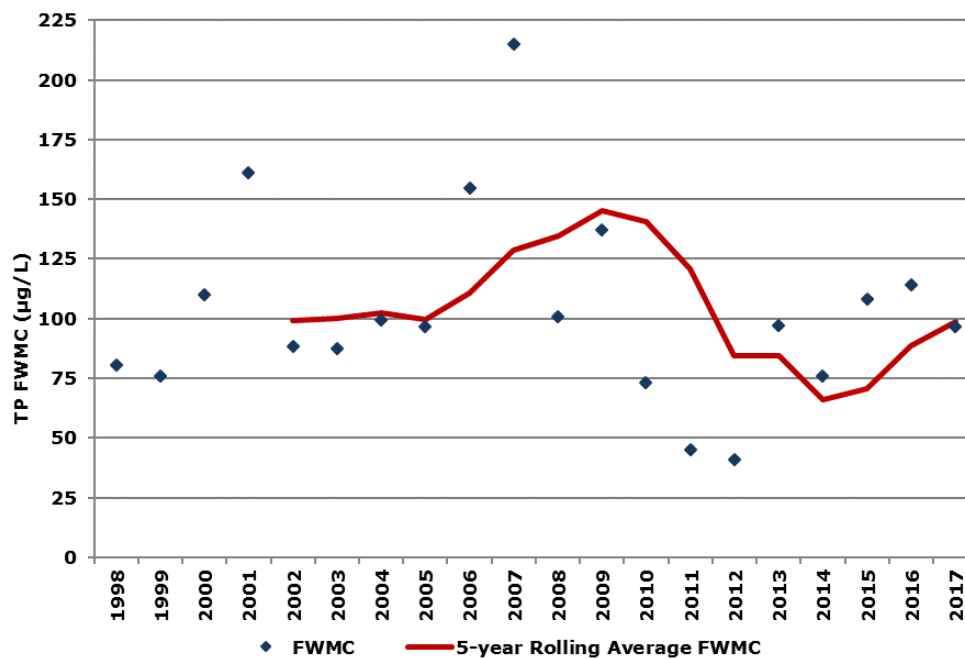
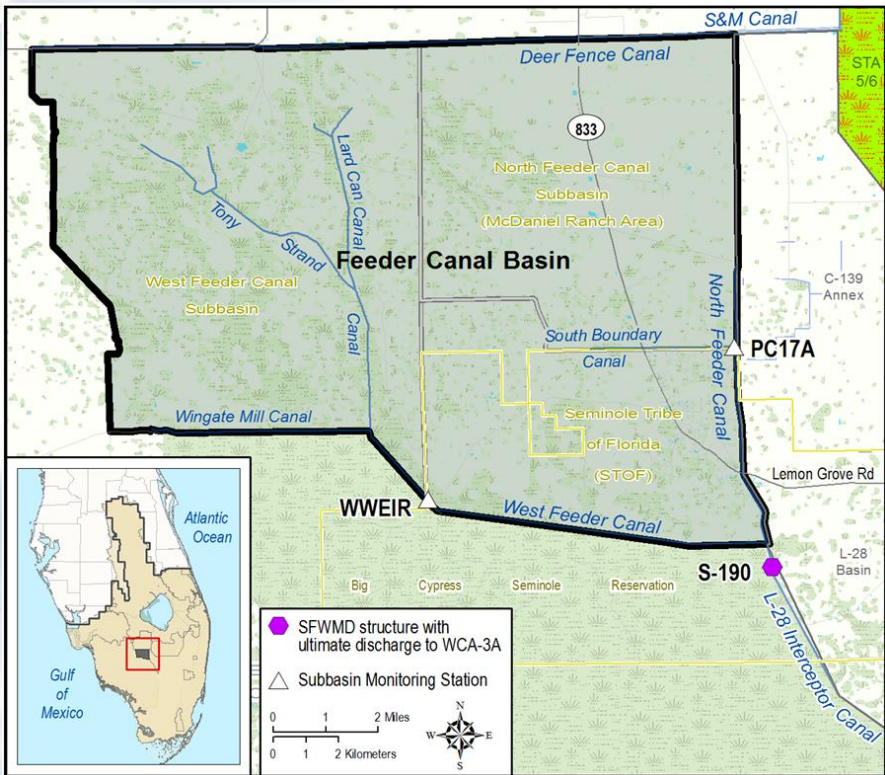


- The C-111 is not included in the Long-term plan. It is covered by other SFWMD and federal projects.
- The Everglades Settlement Agreement establishes a TP concentration limit of 11 ppb.

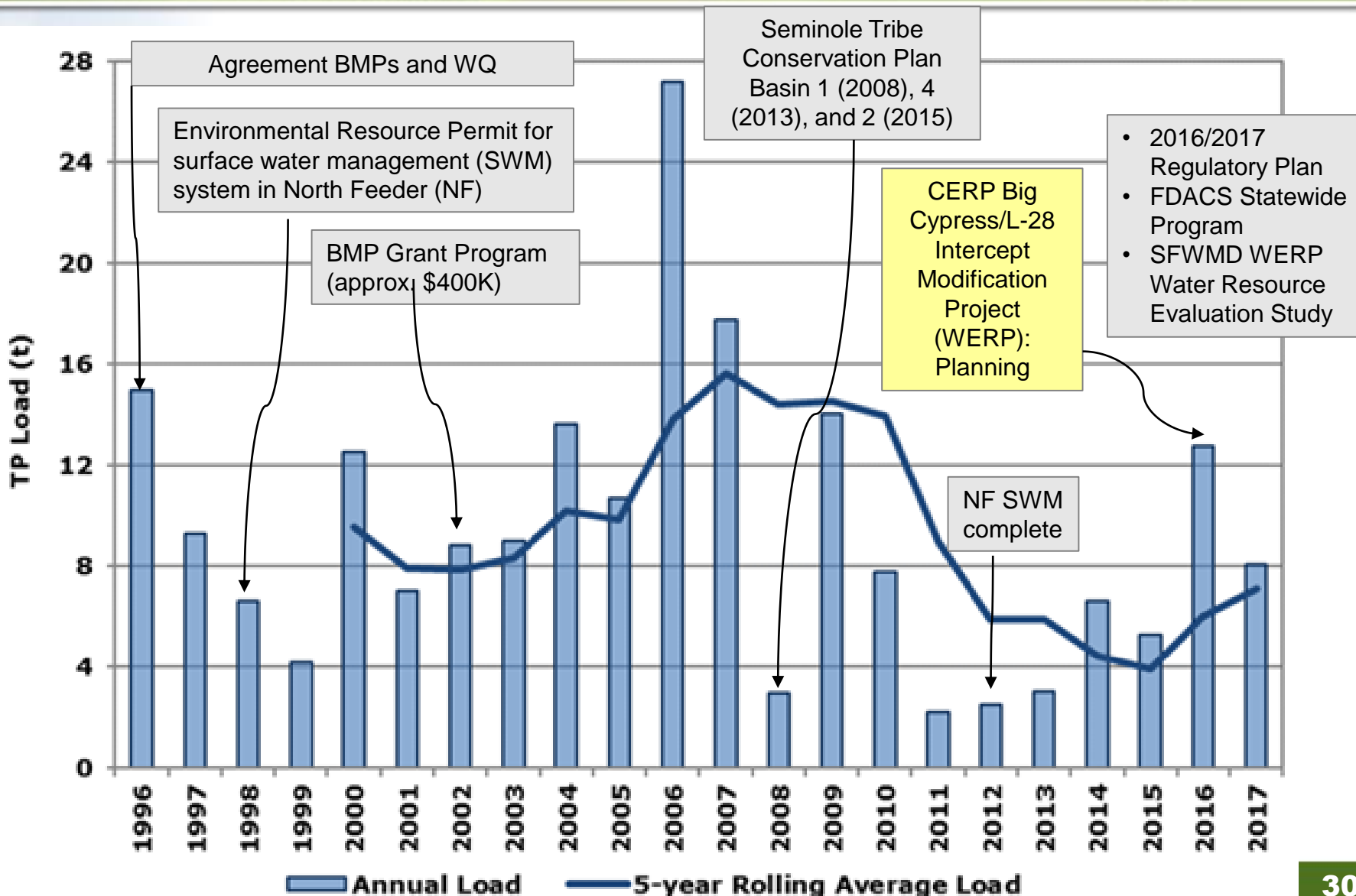
C-111 Basin - WQIP



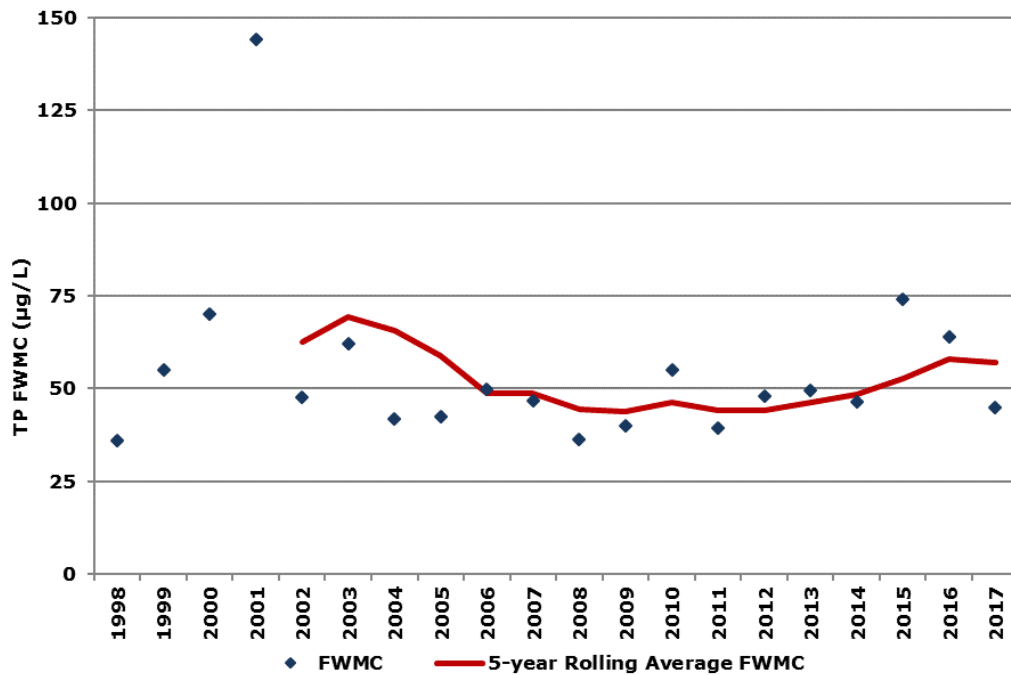
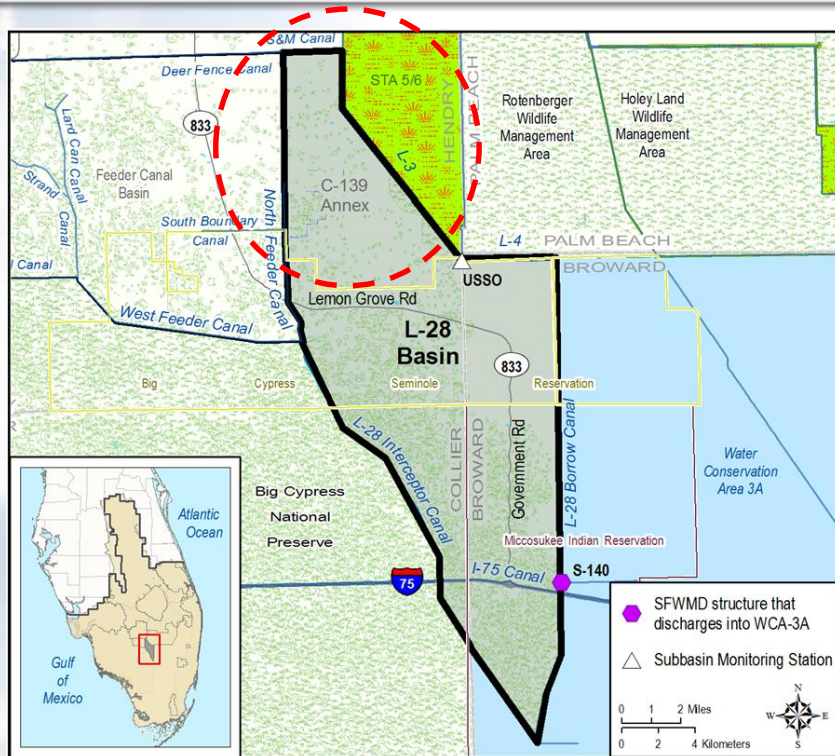
Feeder Canal Basin - Water Quality



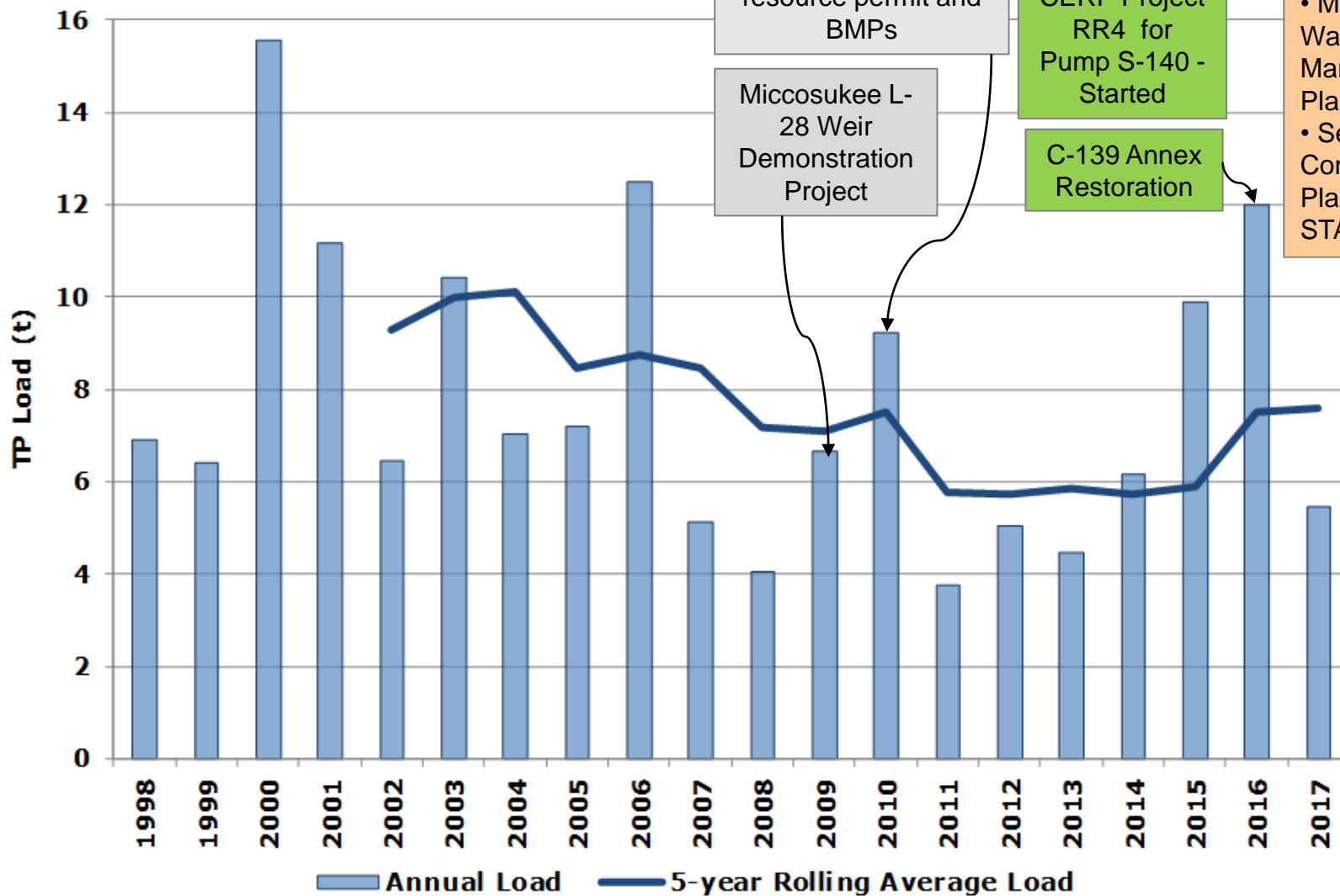
Feeder Canal Basin - Water Quality



L-28 Basin - Water Quality



L-28 Basin - WQIP



CERP WERP Project: Planning

CERP Project RR4 for Pump S-140 - Started

C-139 Annex Restoration

C-139 Annex Environmental resource permit and BMPs

Miccosukee L-28 Weir Demonstration Project

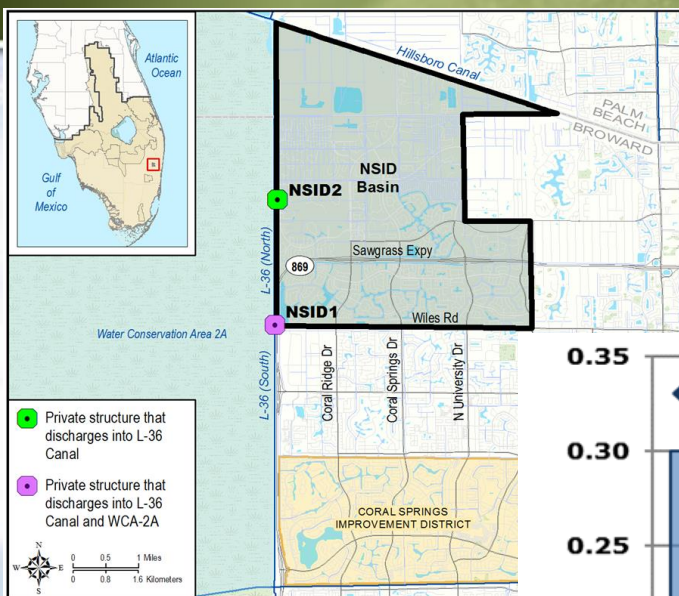
2019 - 2024

- C-139 Annex FEB

Pending:

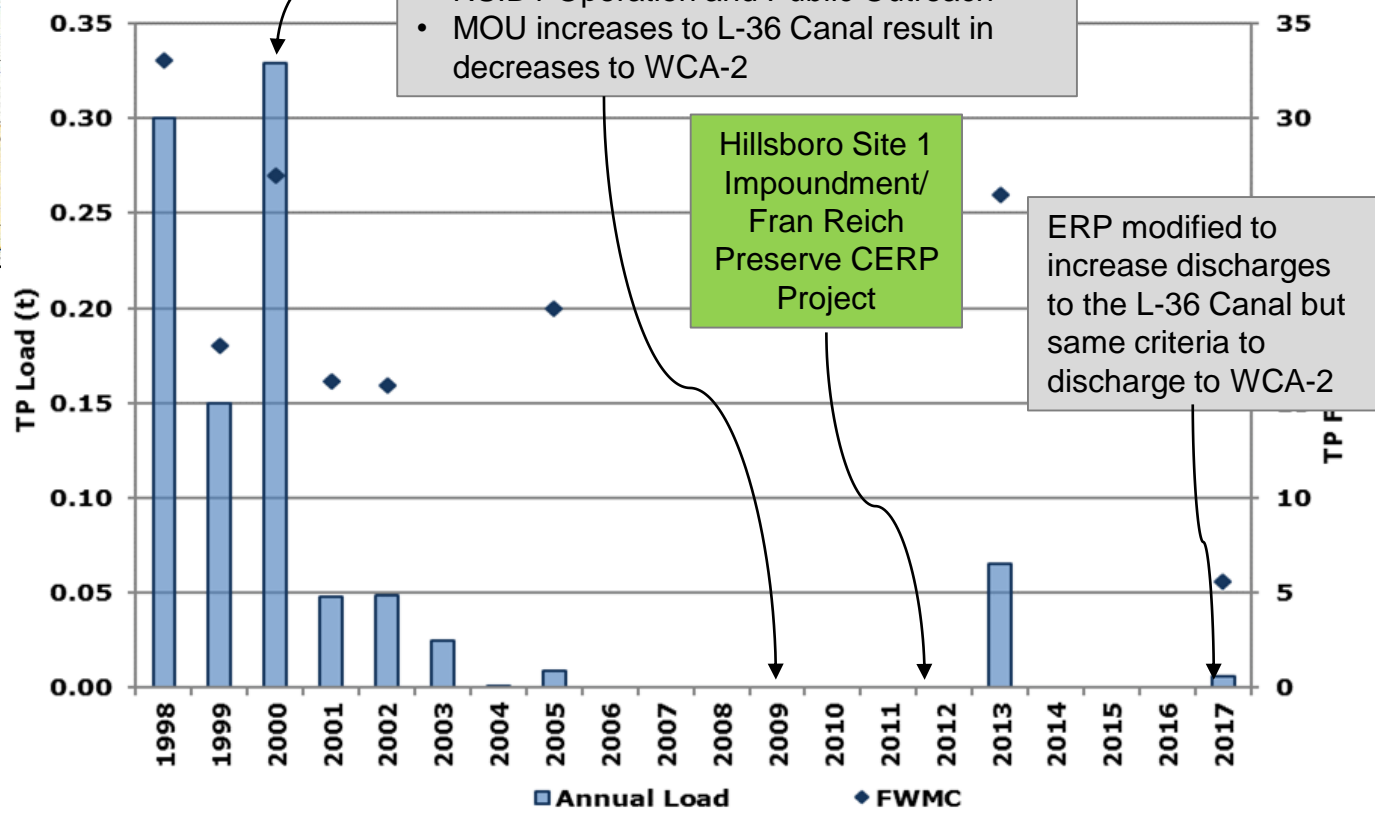
- Miccosukee Water Management Plan
- Seminole Water Conservation Plan (WRA-7 to STA)

NSID Water Quality and WQIP



Cooperative Agreement for water quality monitoring and source controls

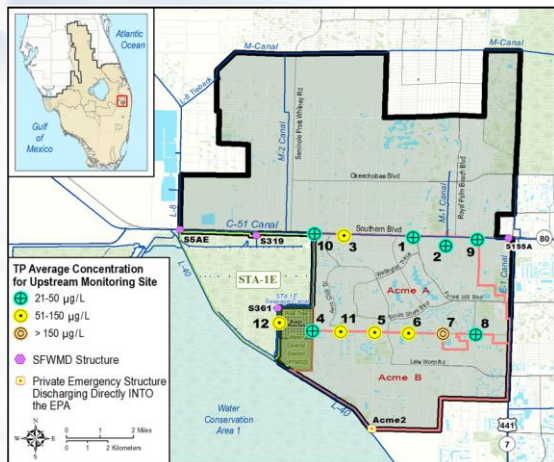
- Environmental Resource Permit (ERP) NSID1 Operation and Public Outreach
- MOU increases to L-36 Canal result in decreases to WCA-2



Hillsboro Site 1 Impoundment/Fran Reich Preserve CERP Project

ERP modified to increase discharges to the L-36 Canal but same criteria to discharge to WCA-2

C-51 West and ACME Basin

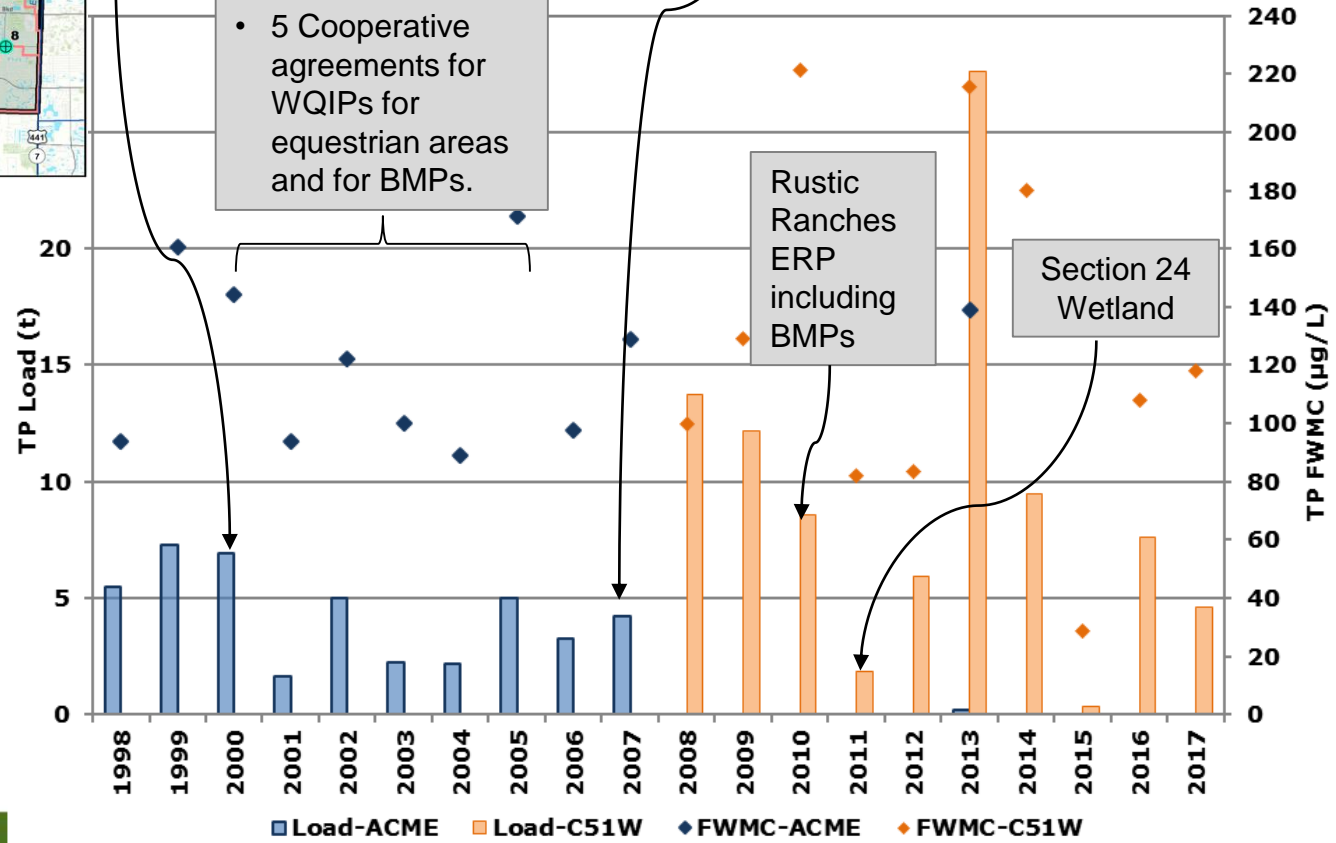


- Ordinance storage, handling, and transport of livestock waste, fertilizer use, irrigation, and a water quality monitoring program.

- CERP ACME Basin B
- Environmental resource permit (ERP) and diversion

RS diversion to L-8 FEB priot to STA 1E

- 5 Cooperative agreements for WQIPs for equestrian areas and for BMPs.



Summary

Continue source control program success

- Regulatory programs
- Cooperative agreements

- Verification of implementation
- Water quality monitoring to ensure effectiveness

- Program improvement

- BMP research and demonstration projects
- Data collection and supplemental evaluations

- Synergize benefits with regional and sub-regional projects

- Restoration Strategies source control projects
- Non-ECP CERP and others

Additional Information

Everglades Technical Support Bureau

Carmela Bedregal, PE., Section Lead

cbedrega@sfwmd.gov, 561-682-2737

www.sfwmd.gov/sourcecontrols

www.sfwmd.gov/sfer

Questions?