

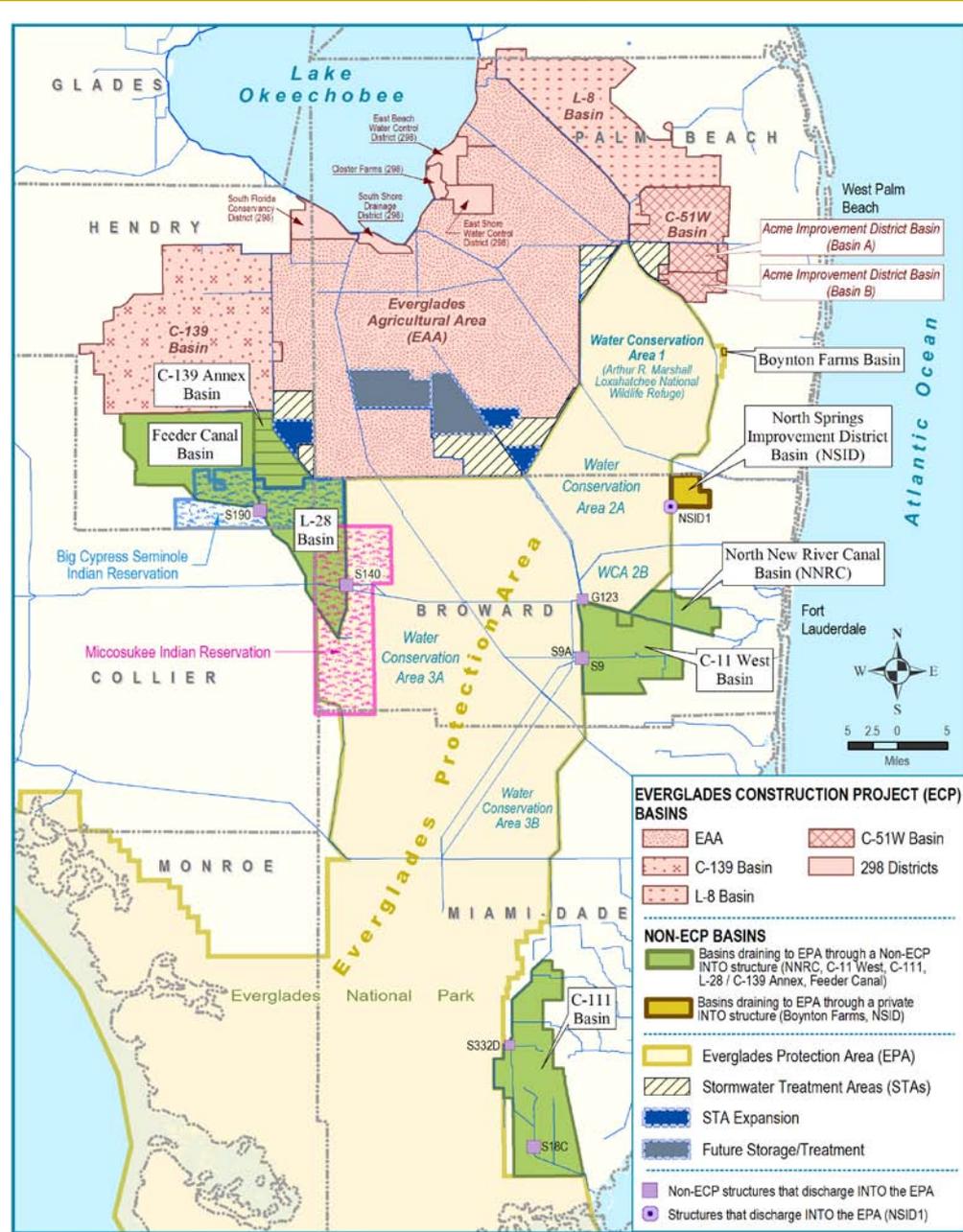


Regulatory Source Controls

**10th Annual Public Meeting on the Long-Term Plan for
Achieving Water Quality Goals**

**Carlos Adoriso and Ximena Pernet, PE
Everglades Regulation Bureau**

February 12, 2013



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



Outline

- EAA and C-139 Basins
 - Regulatory Activities
 - Research and Demonstration Projects
- Non-ECP Basins
 - Regulatory and Cooperative Activities
 - Project Integration



BMP Site Verification

- BMP inspections
 - Verification of Comprehensive BMP Plan
 - Verification of Discharge Monitoring Plan

Nutrient Management



Water Management



Particulate Matter & Sediment Controls



Discharge Monitoring

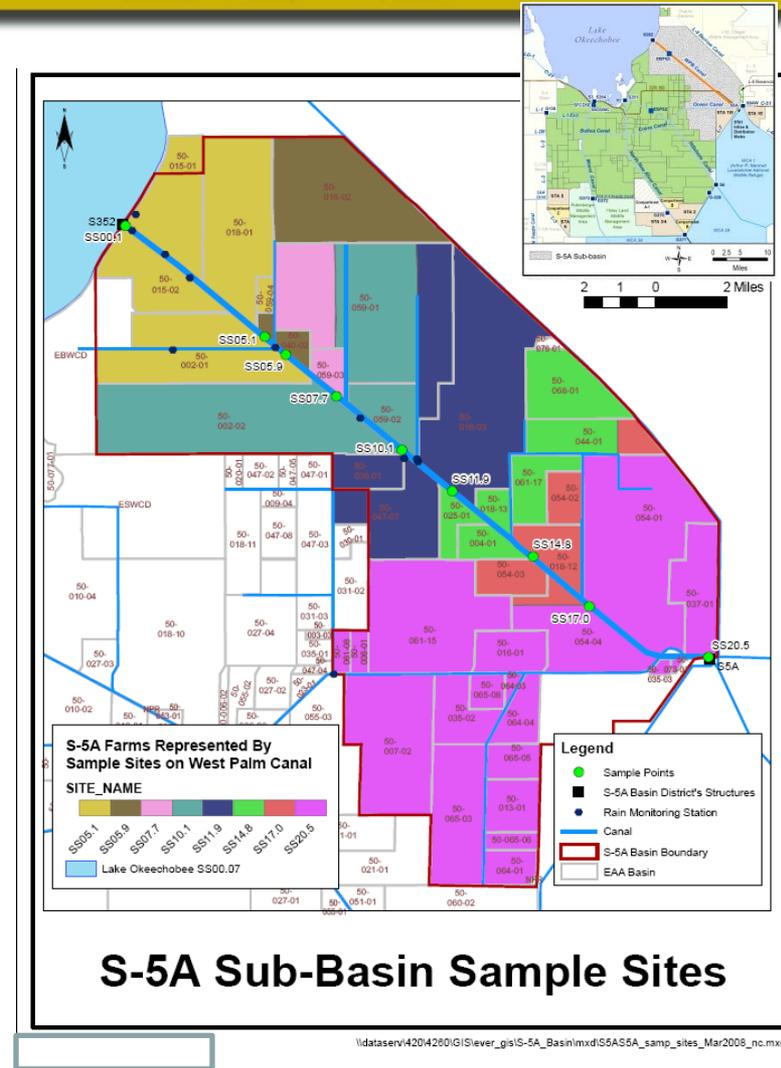


BASIN ID:		26-500-01	CROP TYPE/LAND USE:		RED PEPPERS
STRUCTURE:		DF20.1TN WEST WEIR	FARM NAME:		SOUTH FARM
			MONTH OF:		May 2002
Day	Rainfall (in)	Time (hh:mm)	Water Elevation (feet)	Water Elevation (feet)	Notes
		Start	Inside	Outside	
4	0.8				
5	0.3	1" Rainfall			Start elevation: 14"
6	1.1	7:00	20:00	14.0	CB (4)
		20:00	7:00	13.8	CB
7	0.9	7:00	19:00	13.4	12.0 CB
		19:00	6:30	13.2	12.0 CB
8	1.0	6:30	17:00	12.8	12.0 CB
			17:00	closed	
9					
10					
30	0.4	8:00	20:00	13.8	CB (1)

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

S5A Data Collection

- Water quality sampling and flow measurement along West Palm Beach Canal to support optimization of Everglades Source Control Program and Everglades Restoration Strategies
- Began 3-year Study in November 2012



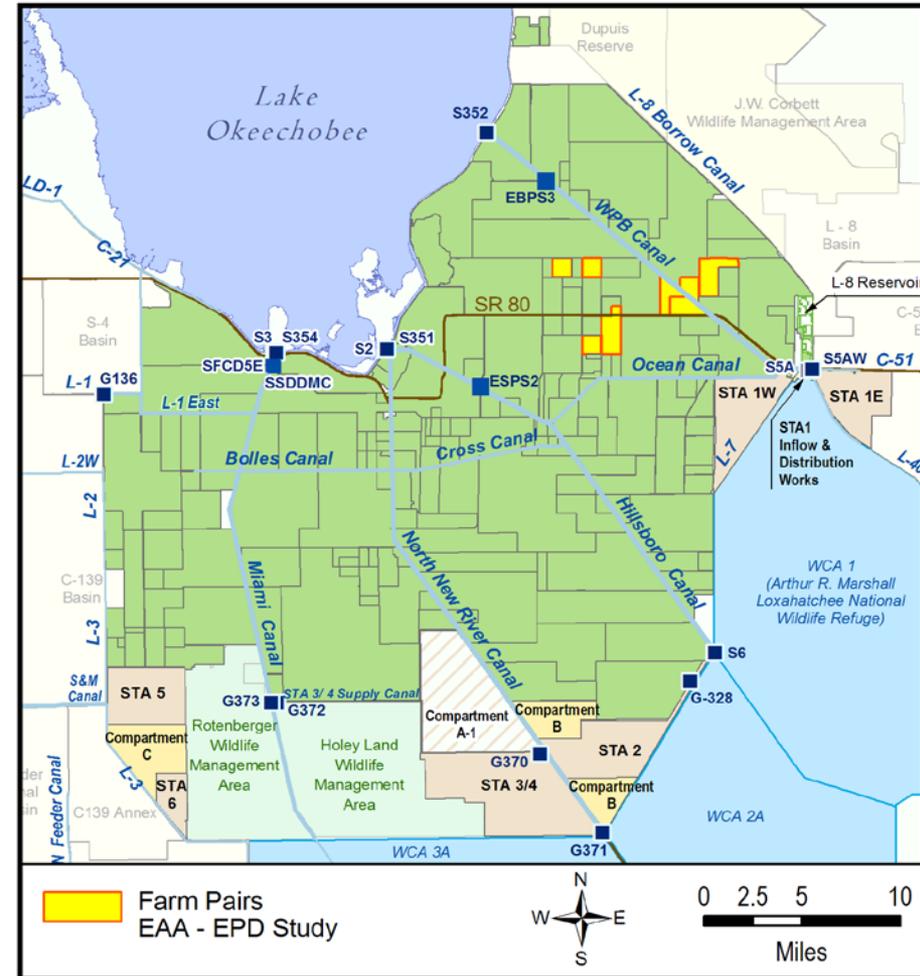
EAA-EPD Research Master Permit Background

- Last modification approved in January 2010 (5 years)
- The updated Scope of Work (SOW) proposes to:
 - Research 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 (UF/IFAS)



EAA-EPD Research Master Permit - Scope

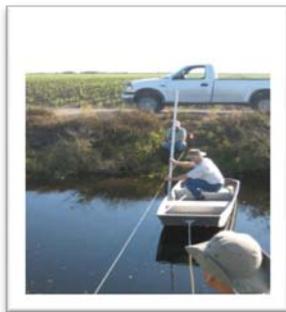
- 4 pairs of farms
- 2 periods: calibration and treatment
- Improved vs. typical
- Determine the BMP effectiveness
- Water quality, sediments, FAV biomass, canal velocity, stage, flow rate and volume



Map Date: 05-FEB-2013 CMESASU \ad_sfwmd.gov\dfsroot\data\er_ga\project\BIE\VG\Other\LP_Long\TermPlan\2013\mxd\XPermet_FarmPairs_EAAEPDStudy_cml.mxd

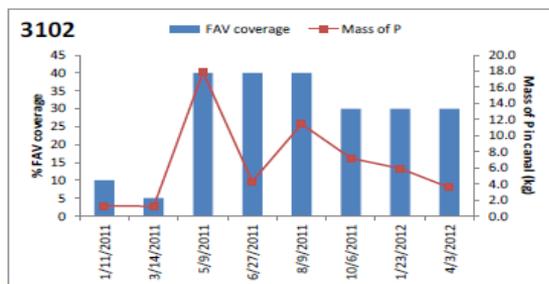
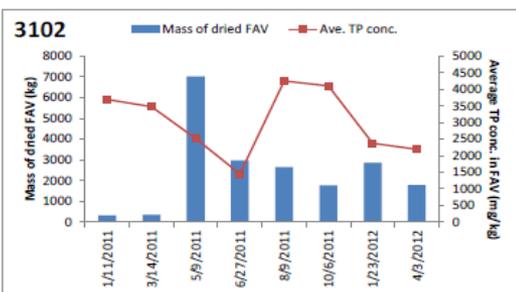
EAA-EPD Research Master Permit - Status

- 2012 Annual Report submitted on July 11, 2012
- Preliminary results presented at the EAA-EPD Annual Meeting on July 13, 2012
- Site verification of participating farms conducted on February 7, 2013

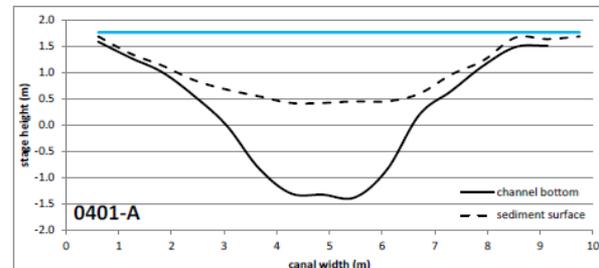


EAA-EPD Research Master Permit - Data

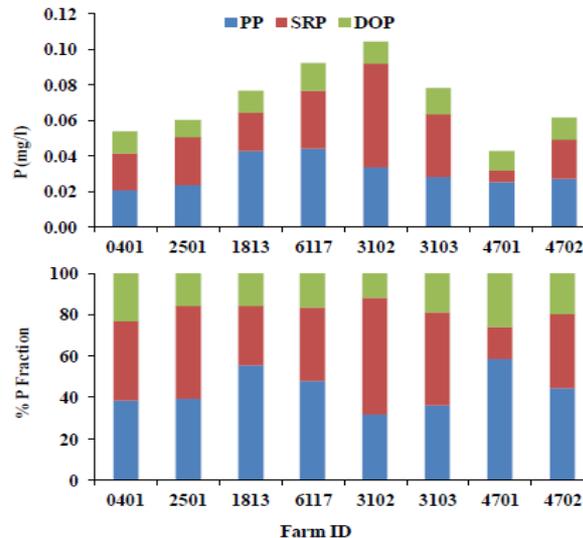
FAV Sampling & Analysis



Sediment Profiles



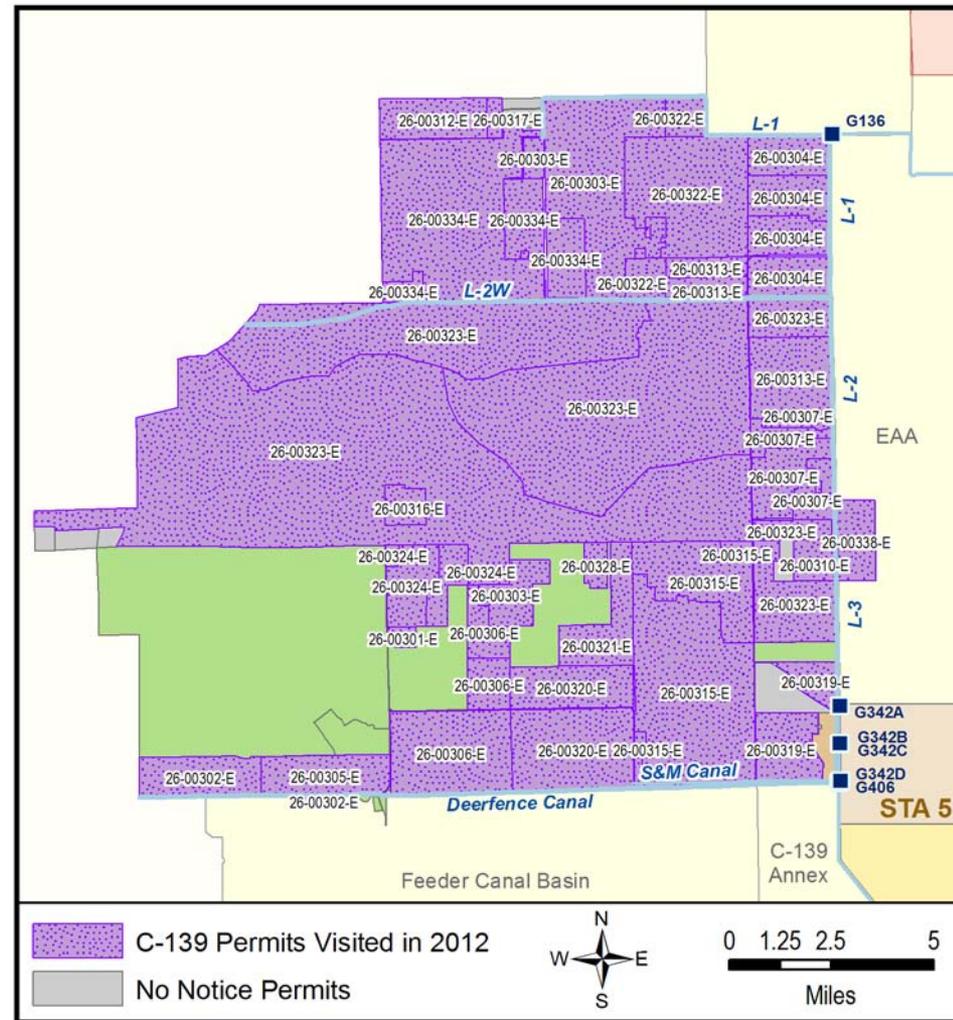
P Speciation & Percentage TP by Farm



C-139 Source Control Program



- BMP Site Verifications
- Voluntary BMP demonstration projects in partnership with interested landowners



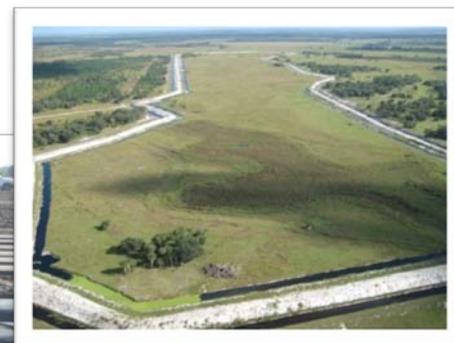
BMP Site Verification

- Annual BMP inspections
 - Verification of Comprehensive BMP Plans

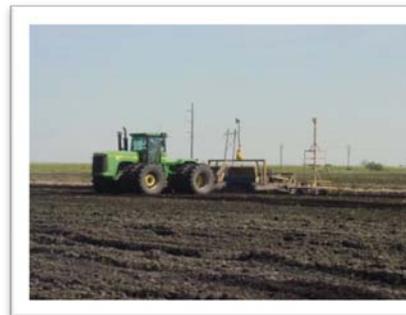
Nutrient Management



Water Management



Particulate Matter & Sediment Controls

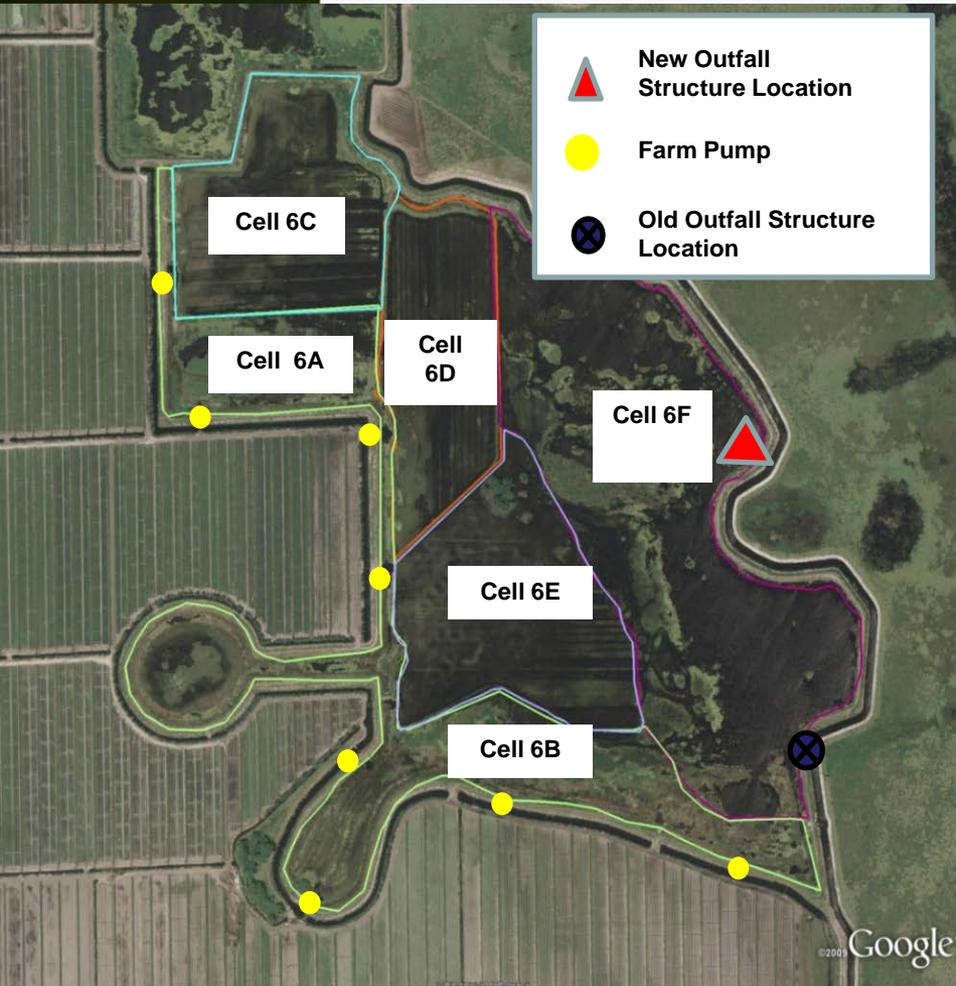


BMP Demonstration Projects

- 2008 – 2012 BMP Demonstration Grant:
 - Above ground impoundment (AGI) optimization
 - Chemical precipitation after AGI
- 2005 – 2012 Vegetable Production Demonstration Project
- 2012 Tracer and Hydrologic Evaluations



BMP Demonstration Projects – AGI Optimization

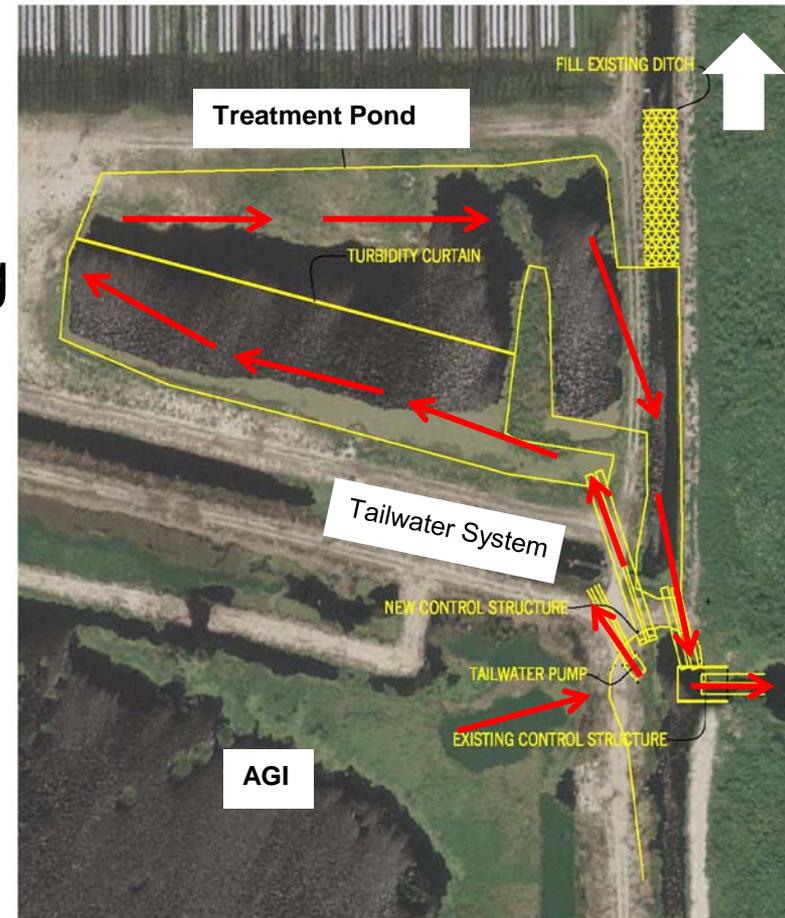


- Structural modifications were made to permitted AGI in vegetable farm
- Project Findings:

Monitoring Period	TP Load Reduction	TP Conc. Reduction
2009 - 2010	68%	51%
Jan. – Nov. 2012	87%	61%

BMP Demonstration Projects – Chemical Precipitation

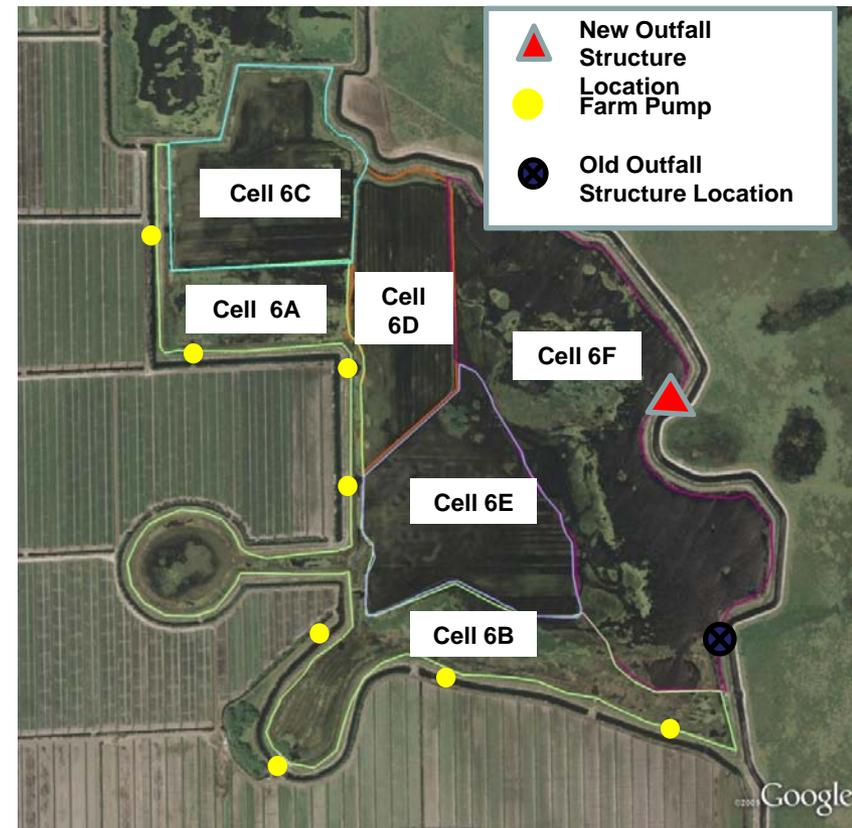
- Phases:
 - I. Laboratory
 - II. Construction
 - III. Operation, monitoring and reporting
- Project Findings:
 - 6 discharge events
 - Average TP reduction: 60%



BMP Demonstration Projects – Tracer and Hydrologic Evaluations

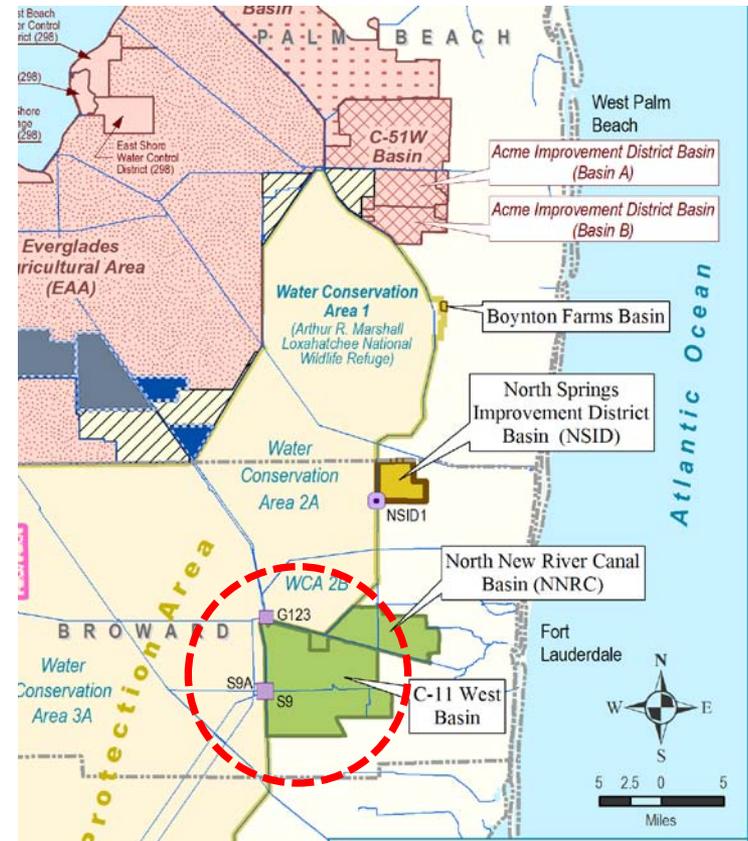
Hydrologic Evaluation of modified AGI

- Survey data (1997, 2009, and 2012)
- Opportunities identified to further improve detention
- Recommendation: Tracer test to focus on a subset of existing cells (6)
 - Option 1: Cells 6C, 6D, and 6F
 - Option 2: Cells 6D and 6F
 - Option 3: Only Cell 6F

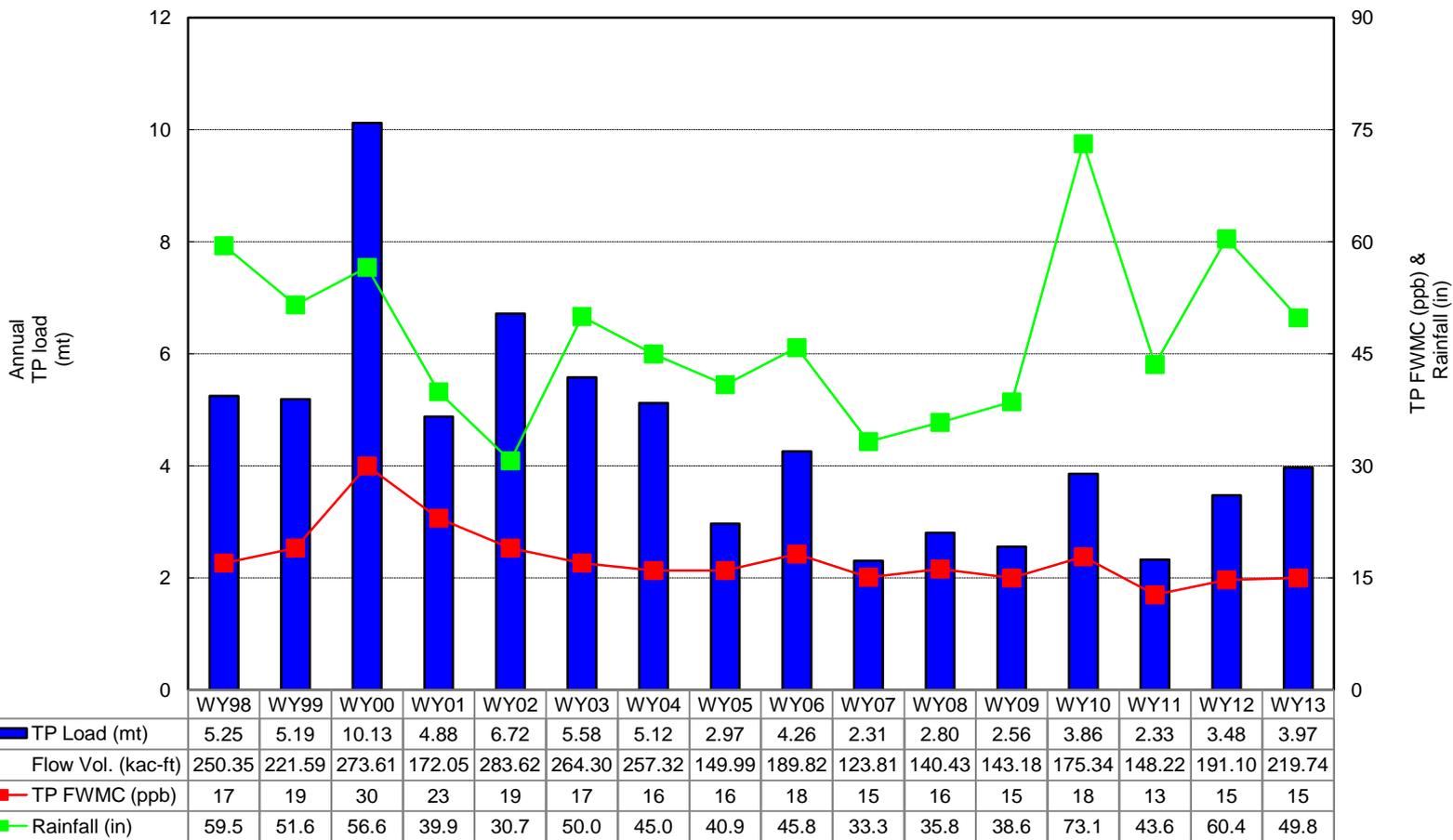


C-11 West Source Control Projects

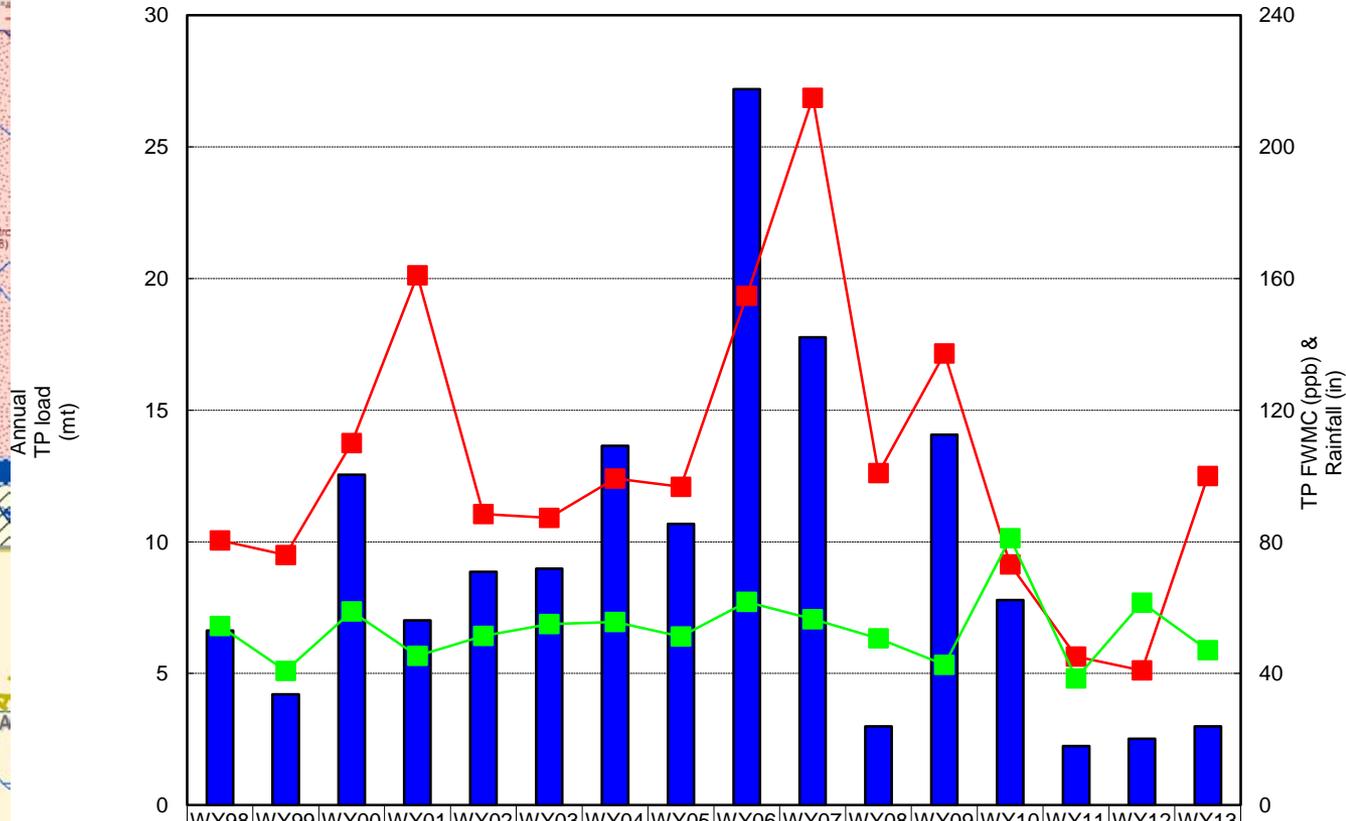
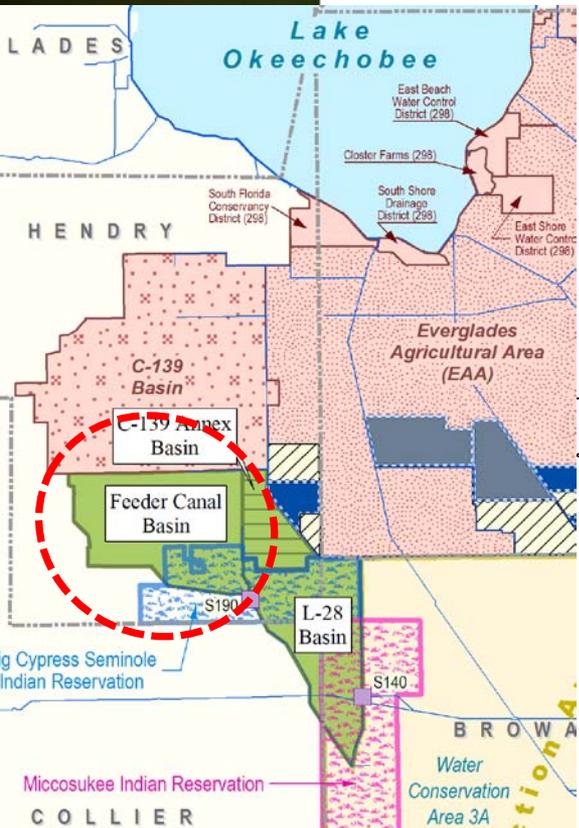
- Broward Everglades Working Group
- Cooperative Agreement with Broward County for public education on control of nutrients



C-11 W Basin - Water Quality Results

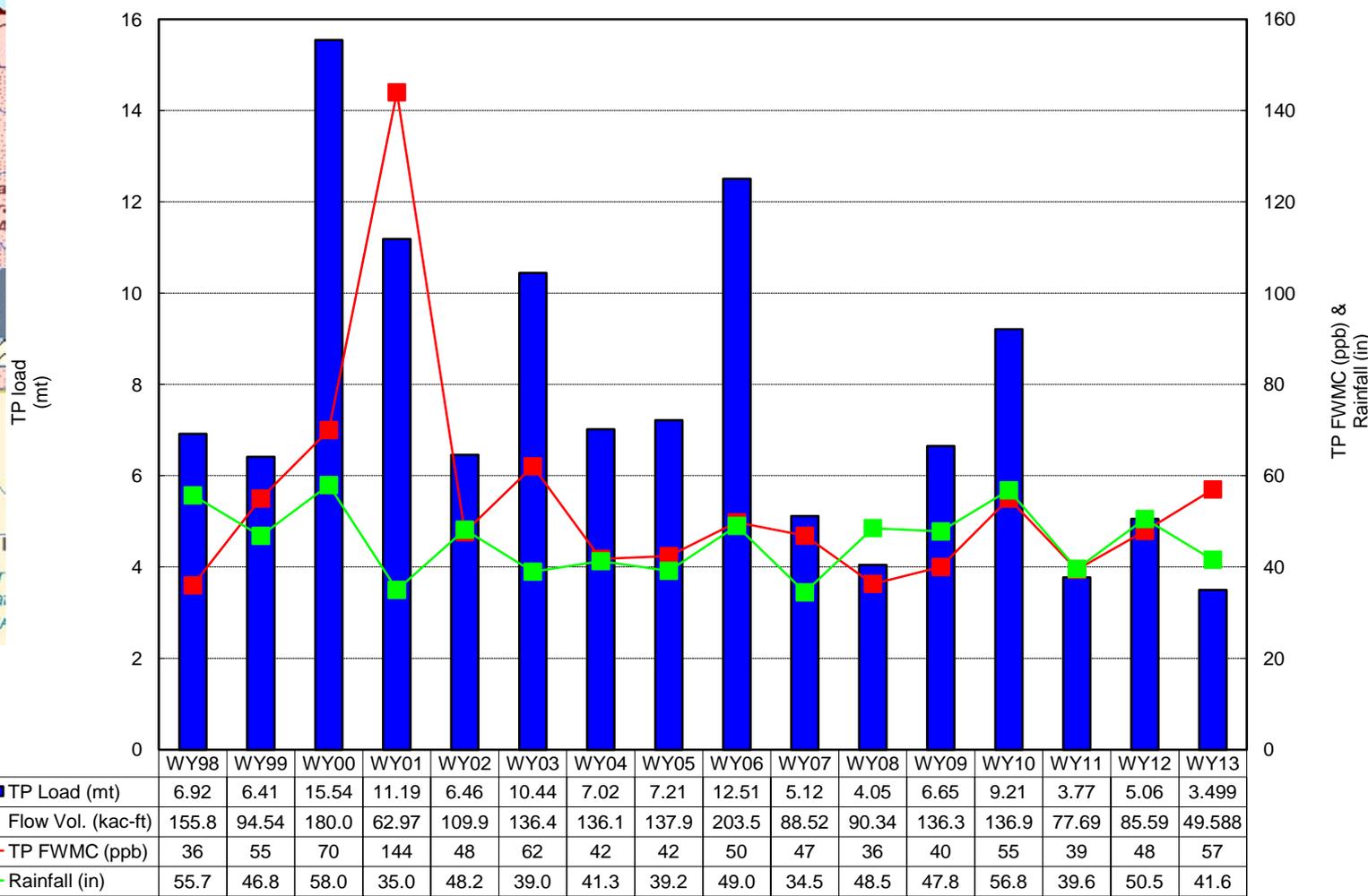
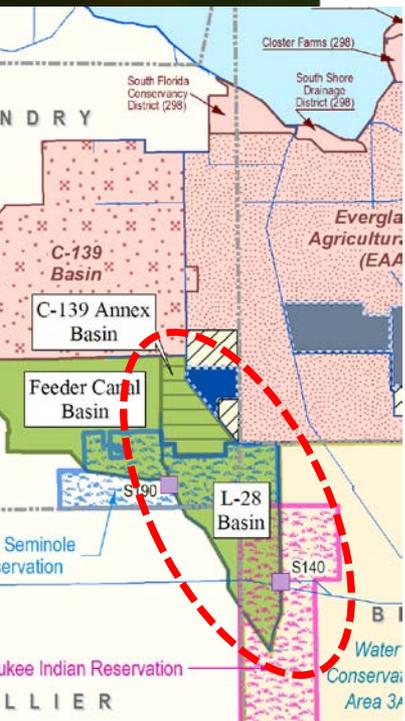


Feeder Canal Source Control Projects



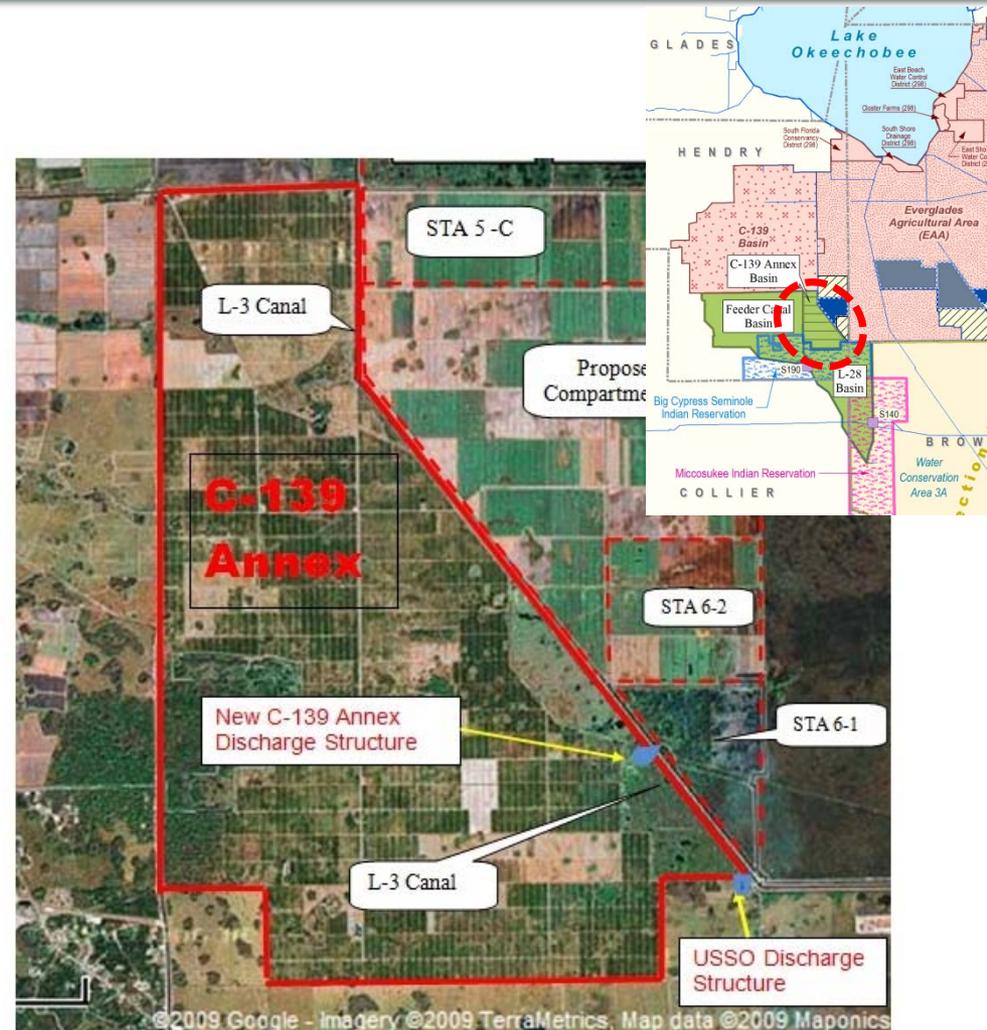
Annual TP Load (mt)	6.64	4.22	12.55	7.01	8.86	8.99	13.65	10.69	27.20	17.77	2.99	14.06	7.79	2.24	2.53	2.99
Flow Vol. (kac-ft)	66.89	44.99	92.47	35.32	81.22	83.47	111.50	89.58	142.47	67.03	24.02	83.09	86.35	40.24	49.99	24.40
TP FWMC (ppb)	80	76	110	161	88	87	99	97	155	215	101	137	73	45	41	100
Rainfall (in)	54.4	40.8	58.9	45.4	51.4	55.0	55.7	51.3	61.8	56.5	50.7	42.6	81.1	38.5	61.5	47.1

L-28 Source Control Projects



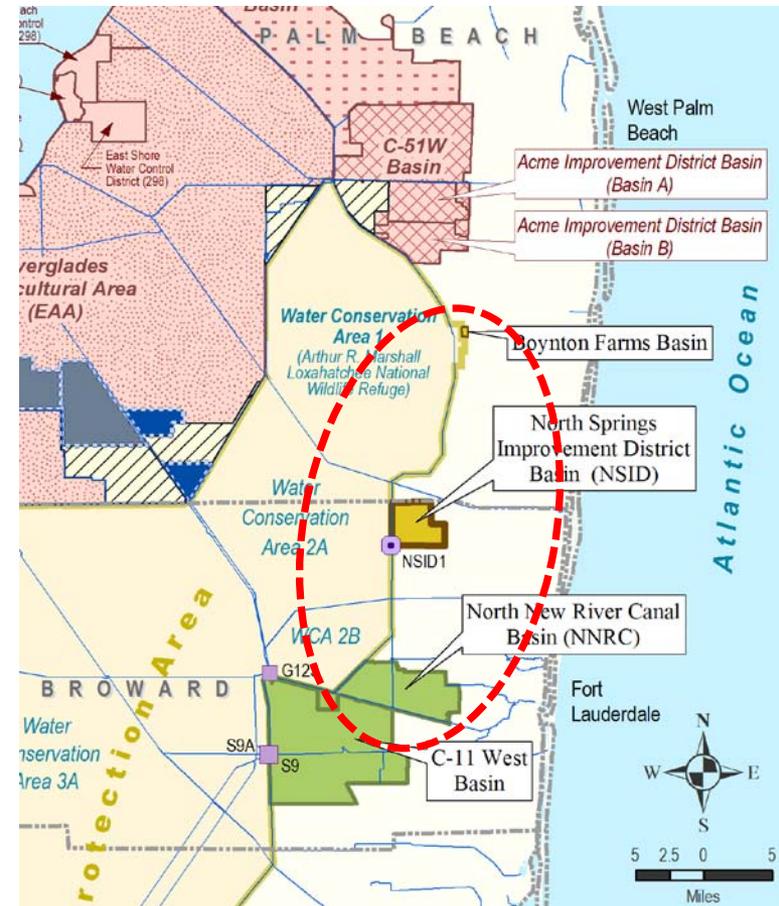
C-139 Annex Source Control Projects

- Property owned by the SFWMD since October 2010
- Citrus grove
- Lease requires Implementation of BMP



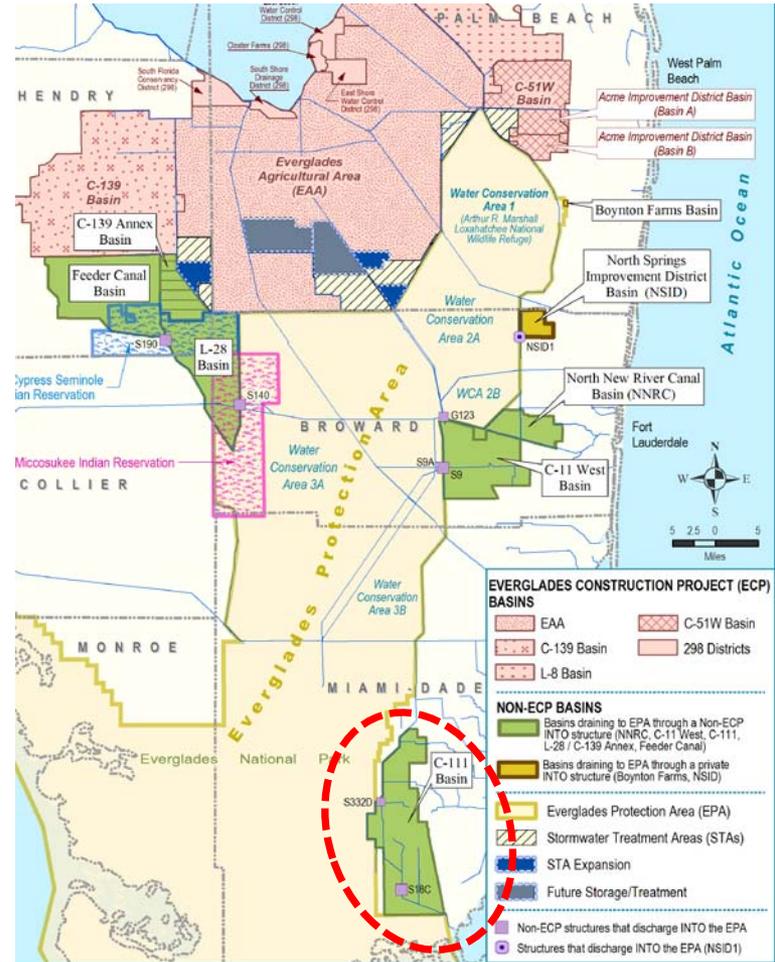
North New River Canal (NNRC), North Springs Improvement District (NSID), and Boynton Farms (BF) Source Control Projects

- NNRC: No flow since WY04
- BF: No flow since WY08
- NSID: Flows to EPA during tropical storm Isaac



C-111 Basin

- C-111 Basin discharges to EPA meet phosphorus requirements of Settlement Agreement



Summary

- Existing source control activities are effective:
 - Water quality monitoring results
 - BMP verifications
 - Demonstration projects





Questions