



Florida Department of Environmental Protection

Water Quality Restoration Program

Indian River Lagoon (IRL) Basin Management Action Plan (BMAP) Annual Meeting May 18, 2016

Yesenia Escribano
Yesenia.Escribano@dep.state.fl.us





Agenda

- Overview of the 2016 IRL BMAP Annual Progress Reports
 - Activities During the Reporting Period
 - Seagrass Compliance Update
 - Water Quality Monitoring Program Update
 - Watershed Information Network (WIN) Update
- Muck Flux
- Next Steps
 - Project Solicitation
 - Compliance
- Comments



IRL Background Info

- Total maximum daily loads (TMDLs) adopted in 2009
 - Total nitrogen (TN) reductions
 - Total phosphorous (TP) reductions
- BMAPs adopted in 2013
 - Banana River Lagoon
 - Project Zone A: No Required Reductions
 - Project Zone B: Required Reductions
 - Central Indian River Lagoon: No Required Reductions
 - North Indian River Lagoon: Required Reductions
- Third set of annual reports compiled
- Reporting period: March 2015–February 2016



Florida Department of Environmental Protection

Overview of the IRL BMAPs 2016 Annual Progress Reports



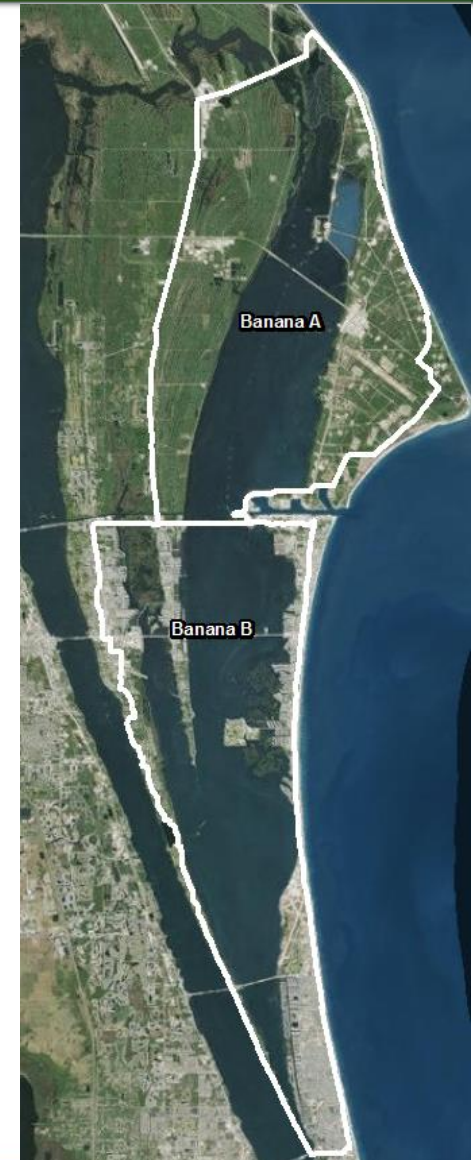


2016 Completed & New Efforts

Banana River Lagoon (BRL)

Entity	Projects Completed During 2015–2016
City of Cape Canaveral	2.5 Million Gallon Reclaimed Water Tank

Entity	New Projects Identified in 2015–2016
City of Cape Canaveral	10
City of Cocoa Beach	1
City of Indian Harbour Beach	19
Patrick Air Force Base	5
Total	35

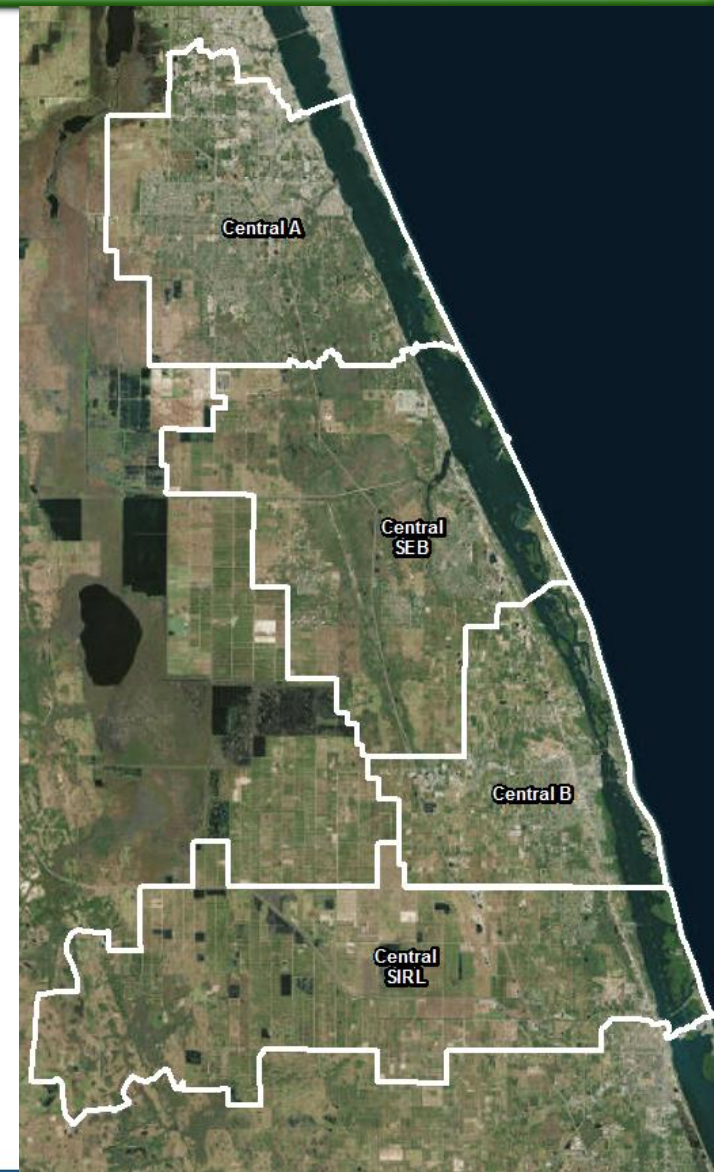




2016 Completed & New Efforts

Central Indian River Lagoon (CIRL)

Entity	Projects Completed During 2015–2016
Brevard County	Wheeler Flemming Grant Wet Detention Pond
	Corey at Road Hall Baffle Box Retrofit
	430 Riverview Baffle Box Retrofit
	C-1 Rediversion
	Micco I Treatment Train
City of Fellsmere	South Regional Lake
Florida Department of Transportation (FDOT) District 4	FM# 228583-2 Wet Detention Pond
	FM#: 413048-1 Onsite Retention
Indian River County	PC South Algal Removal Facility
St. Lucie County	Harmony Heights Dry Retention Pond

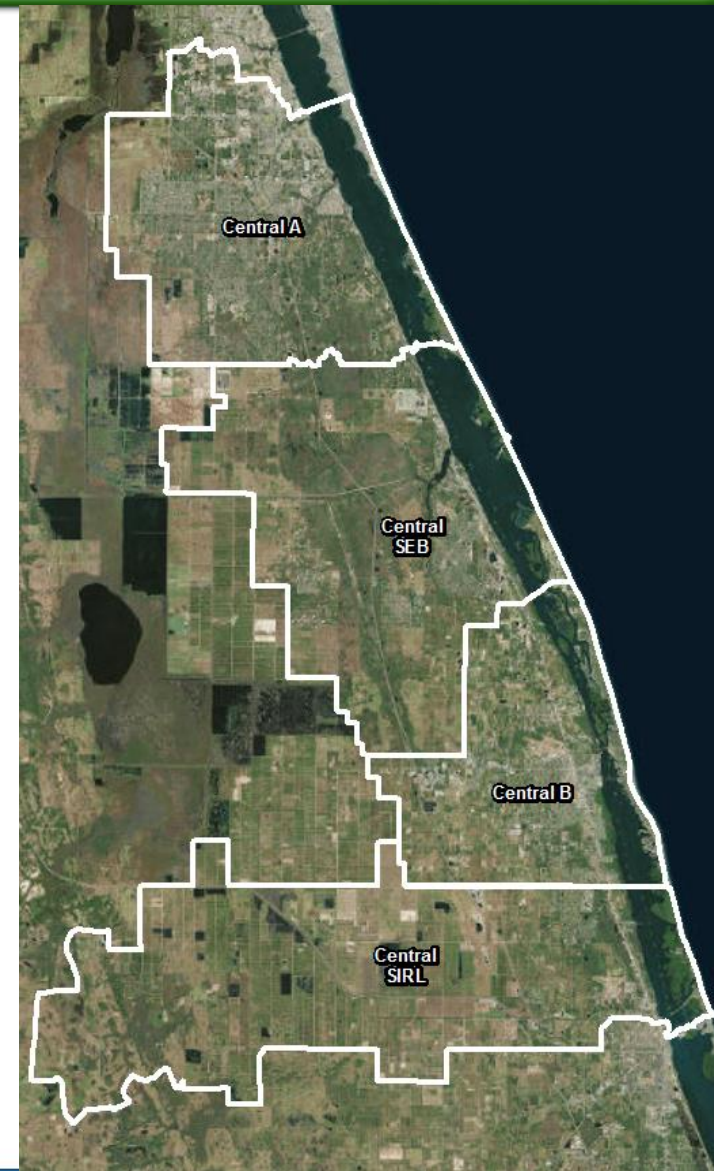




2016 Completed & New Efforts

Central Indian River Lagoon (CIRL)

Entity	New Projects Identified in 2015-2016
Fellsmere Water Control District	1
Indian River County	3
Melbourne Tillman Water Control District	9
St. Lucie County	1
Town of Indialantic	1
Total	15



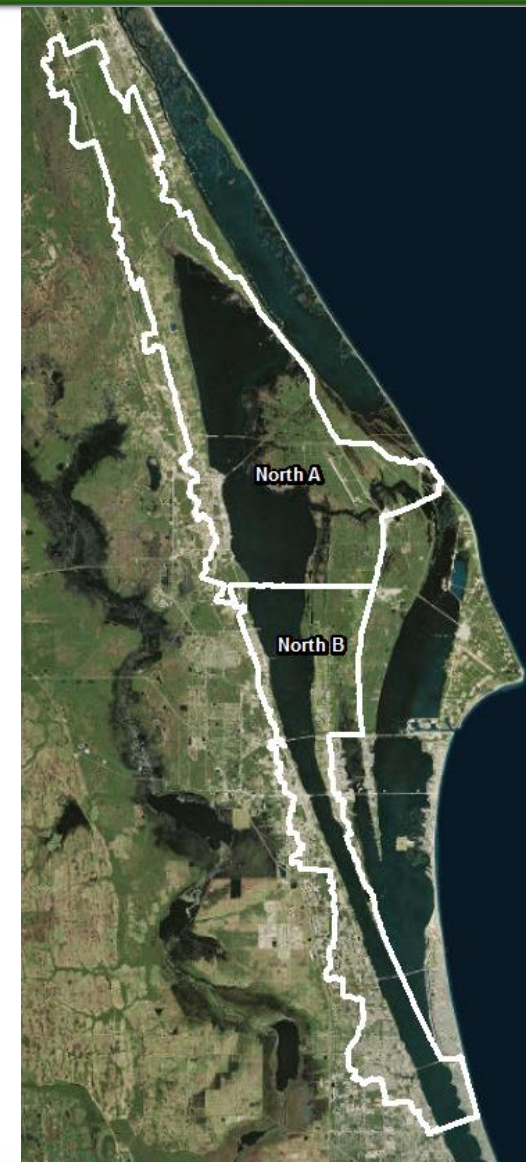


2016 Completed & New Efforts

North Indian River Lagoon (NIRL)

Entity	Projects Completed During 2015–2016
Brevard County	Huntington Road Managed Aquatic Plant System (MAPS)
	Port St. John C. MAPS
City of Melbourne	Croton Road Baffle Box
	Young Street Existing Baffle Box Upgrade
	Melbourne Avenue Baffle Box Upgrade

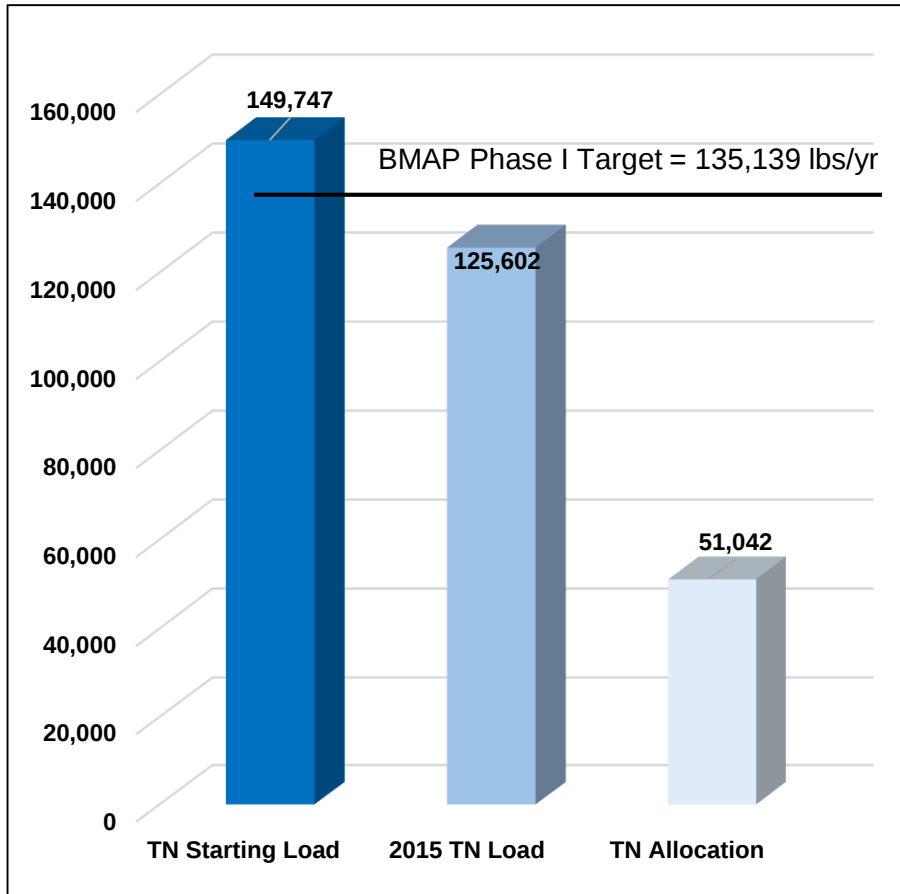
Entity	New Projects Identified in 2015–2016
Brevard County	2
City of Cocoa	5
City of Melbourne	5
City of Rockledge	12
Total	24



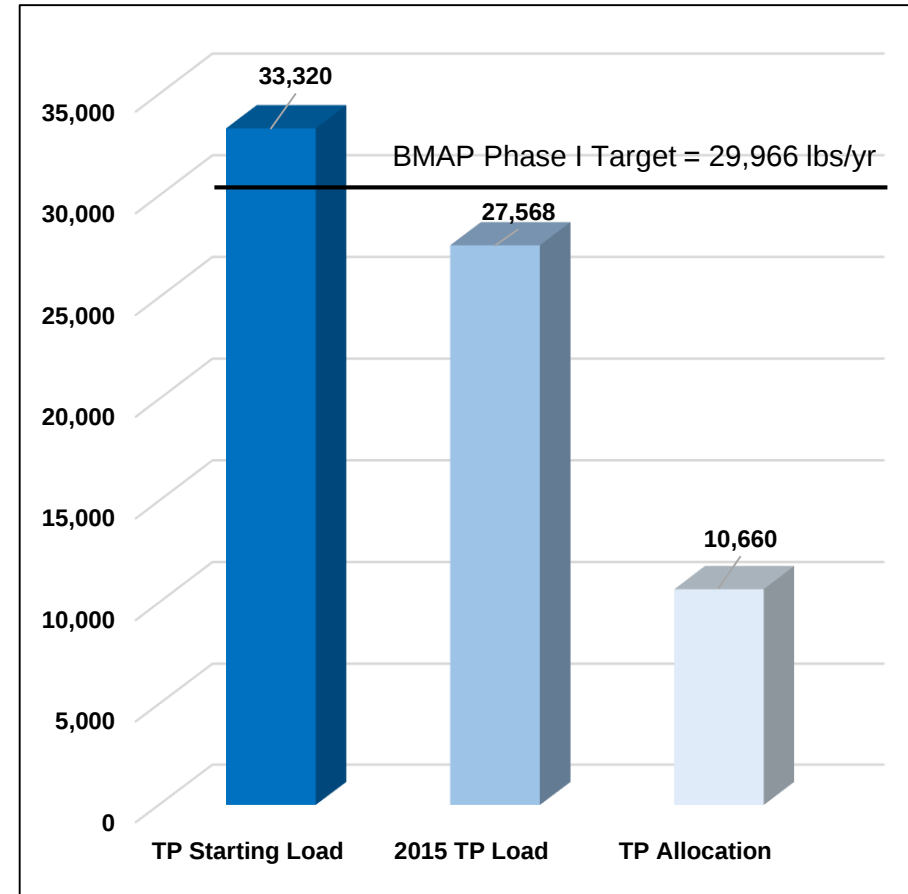


BRL B Progress Toward the TN and TP TMDLs

TN



TP



As of February 2016, 25% of the total necessary TN reductions have been achieved and 26% of the total necessary TP reductions have been achieved.



BRL B Progress Toward the TN and TP TMDLs

Project Zone	Entity	TN Allocation (pounds per year [lbs/year])	Phase I TN Required Reduction (lbs/yr)	Current TN Reduction (lbs/yr)	TP Allocation (lbs/year)	Phase I TP Required Reduction (lbs/yr)	Current TP Reduction (lbs/yr)
B	Brevard County	21,949	6,343	7,482	4,584	1,379	1,973
B	City of Cape Canaveral	2,484	886	2,890	519	220	428
B	City of Cocoa Beach	6,954	1,702	2,801	1,452	354	789
B	City of Indian Harbour Beach	4,482	1,018	2,030	936	175	483
B	City of Satellite Beach	6,206	1,573	2,718	1,296	298	592
B	FDOT District 5	1,930	472	2,017	403	179	350
B	Melbourne - <i>de minimus</i>	16	-	-	3	-	-
B	Patrick Air Force Base	7,037	2,615	4,208	1,470	748	1,138
B	Port Canaveral - <i>de minimus</i>	216	-	-	45	-	-

Reductions listed above are based on completed projects.



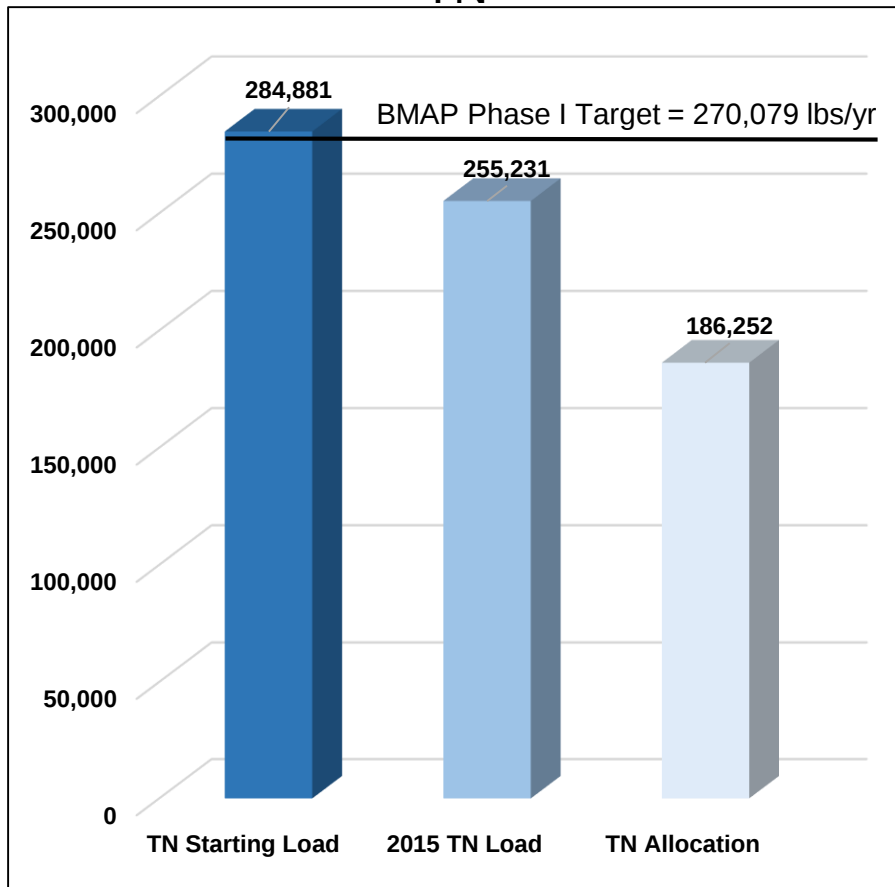
CIRL Progress

Entity	Cancelled	Completed	On Hold	Underway	Grand Total
Brevard County	1	15		2	17
City of Fellsmere		6		3	9
City of Fort Pierce		7		1	8
City of Melbourne		1			1
City of Palm Bay		28		4	32
City of Sebastian	2	10		2	12
City of Vero Beach		18		1	19
City of West Melbourne		22			22
Fellsmere Water Control District (WCD)		5		4	9
Fort Pierce Farms WCD		3			3
Indian River County		9	1	5	15
Indian River Farms WCD		3			3
Melbourne Tillman WCD		10			10
North St. Lucie River WCD		3			3
Sebastian River Improvement District		4		3	7
St. Lucie County		4		4	8
St. Lucie Village		1			1
Town of Indialantic		3		2	5
Town of Melbourne Beach		17			17
Town of Melbourne Village		1			1
Town of Orchid		1			1
Turnpike		1			1
FDOT District 4		35		1	36
FDOT District 5		16			16

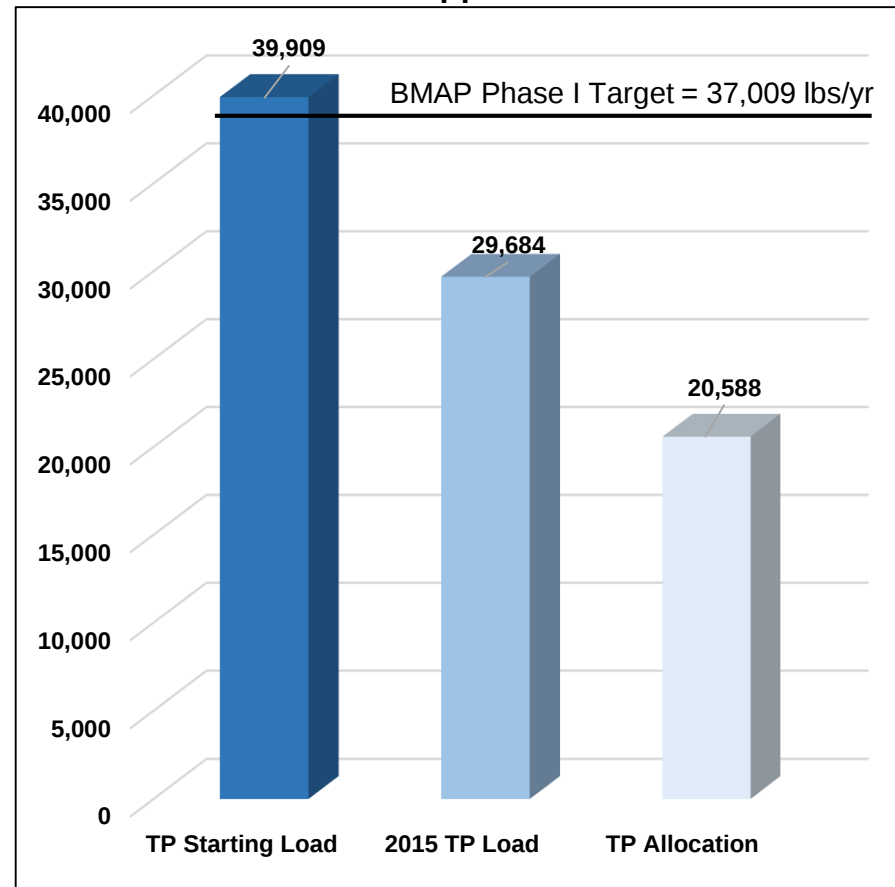


NIRL A Progress Toward the TN and TP TMDLs

TN



TP



As of February 2016, 30% of the total necessary TN reductions have been achieved and 53% of the total necessary TP reductions have been achieved.



NIRL A Progress Toward the TN and TP TMDLs

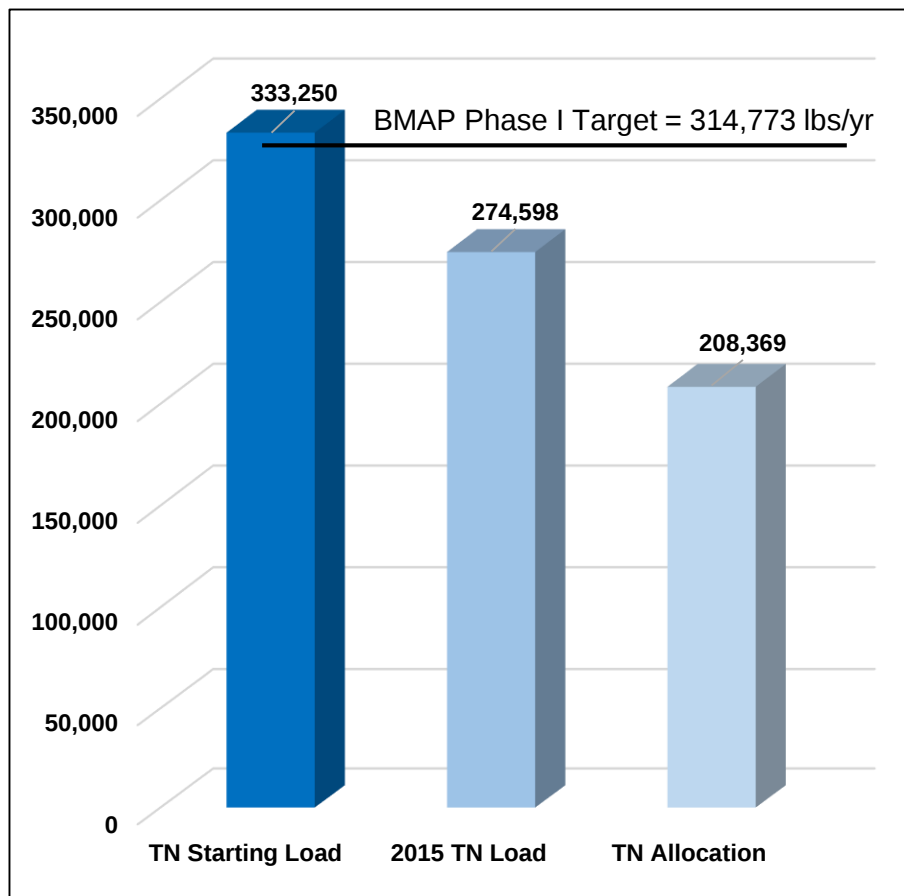
Project Zone	Entity	TN Allocation (lbs/year)	Phase I TN Required Reduction (lbs/yr)	Current TN Reduction (lbs/yr)	TP Allocation (lbs/year)	Phase I TP Required Reduction (lbs/yr)	Current TP Reduction (lbs/yr)
A	Agriculture	17,155	5,597	5,047	1,896	1,029	1,420
A	Brevard County	17,427	2,180	6,812	1,926	282	1,945
A	City of Edgewater	2,513	24	84	278	-	11
A	City of Titusville	12,208	6,605	7,359	1,349	1,448	3,516
A	FDOT District 5	753	397	819	83	142	130
A	Kennedy Space Center	86,281	-	8,941	9,537	-	3,135
A	Oak Hill - <i>De Minimus</i>	271	-	-	30	-	-
A	Volusia County	49,645	-	588	5,488	-	67

Reductions listed above are based on completed projects.

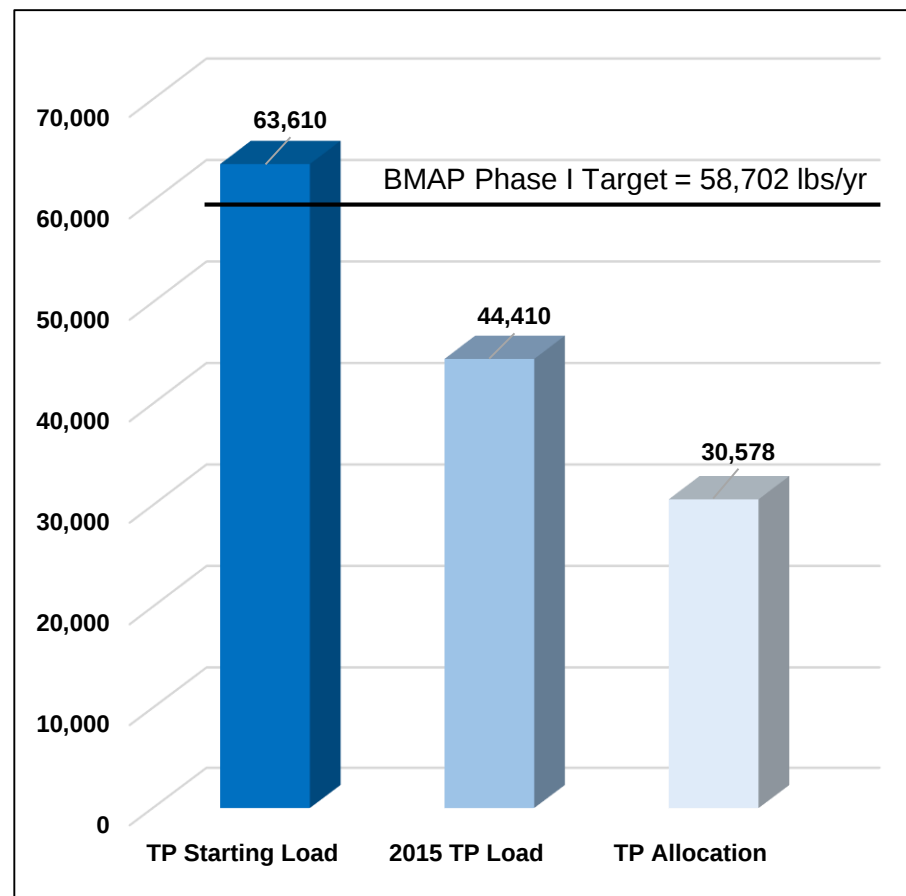


NIRL B Progress Toward the TN and TP TMDLs

TN



TP



As of February 2016, 48% of the total necessary TN reductions have been achieved and 59% of the total necessary TP reductions have been achieved.



NIRL B Progress Toward the TN and TP TMDLs

Project Zone	Entity	TN Allocation (lbs/year)	Phase I TN Required Reduction (lbs/yr)	Current TN Reduction (lbs/yr)	TP Allocation (lbs/year)	Phase I TP Required Reduction (lbs/yr)	Current TP Reduction (lbs/yr)
B	Agriculture	16,253	1,097	4,739	2,385	445	1,029
B	Brevard County	98,597	5,299	27,171	14,469	995	7,379
B	City of Cocoa	9,235	2,410	8,063	1,355	557	3,868
B	City of Melbourne	42,531	6,738	7,294	6,242	1,968	2,391
B	City of Rockledge	16,831	2,095	6,945	2,470	594	2,578
B	City of Titusville	2,589	47	149	380	-	72
B	FDOT District 5	4,076	649	2,647	598	319	633
B	Kennedy Space Center	17,509	-	1,273	2,569	-	1,185
B	Town of Indialantic	741	142	350	109	30	61
B	Town of Indian Harbour Beach - <i>De Minimus</i>	6	-	-	1	-	-
B	Town of Palm Shores - <i>De Minimus</i>	1,165	-	21	171	-	4



Agricultural Best Management Practice (BMP) Enrollment

BMAP	Project Zone	BMAP Phase I Florida Department of Agriculture and Consumer Services (FDACS) Adjusted Acres to Enroll	BMAP Phase I Remaining Acres to Enroll
Banana Indian River Lagoon	---	Notice of intent (NOI) enrollment not tracked within this BMAP as agriculture is <i>de minimus</i>	
Central Indian River Lagoon	Main	23,091	14,308
	South IRL	64,387	0
North Indian River Lagoon	A	2,727	2,503
	B	1,257	1,022



Seagrass Compliance

- Seagrass Depth Limits by Project Zone
 - Aerial photos and Photo Interpretation
- Compliance with the TMDL seagrass depth limit target assessed using latest four years of mapping data
- Two-step Evaluation Process
 - **Step 1:** TMDL union coverage cumulative frequency distribution curve (cfdc) **vs.** assessment year union coverage cfdc
 - **Step 2:** TMDL union coverage median value **vs.** each assessment year median value





Seagrass Compliance

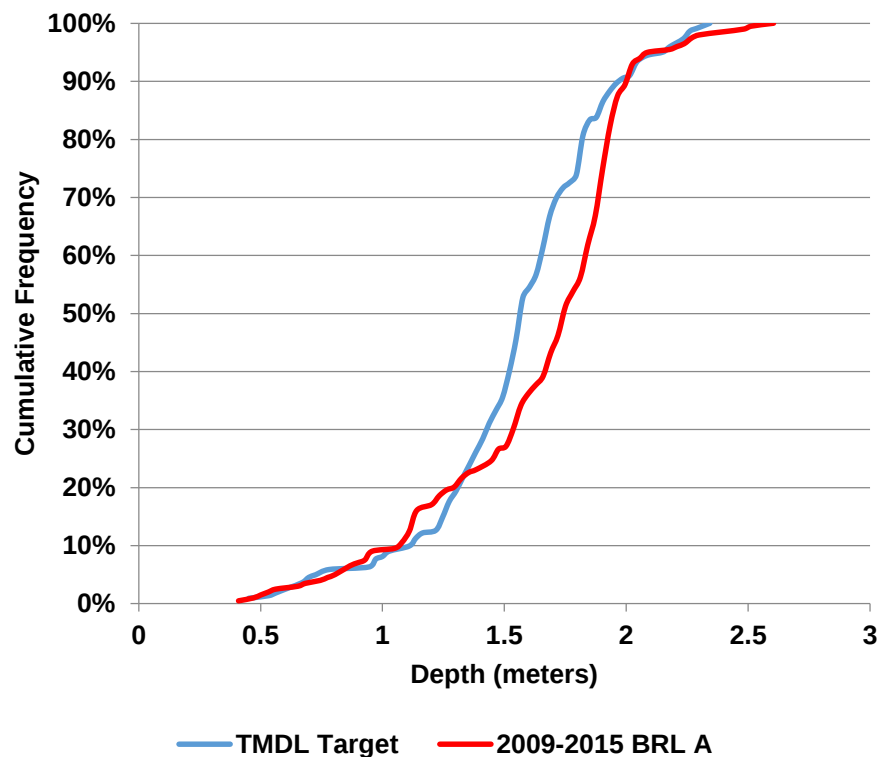
BMAP	Project Zone	Step 1 Compliance	Step 2 Compliance
Banana Indian River Lagoon	A	Yes	No
	B	No	No
Central Indian River Lagoon	A	Yes	No
	SEB	Yes	No
	B	Yes	No
North Indian River Lagoon	A	No	No
	B	No	No

Two-step compliance results listed above are based on seagrass mapping data from 2009-2015.

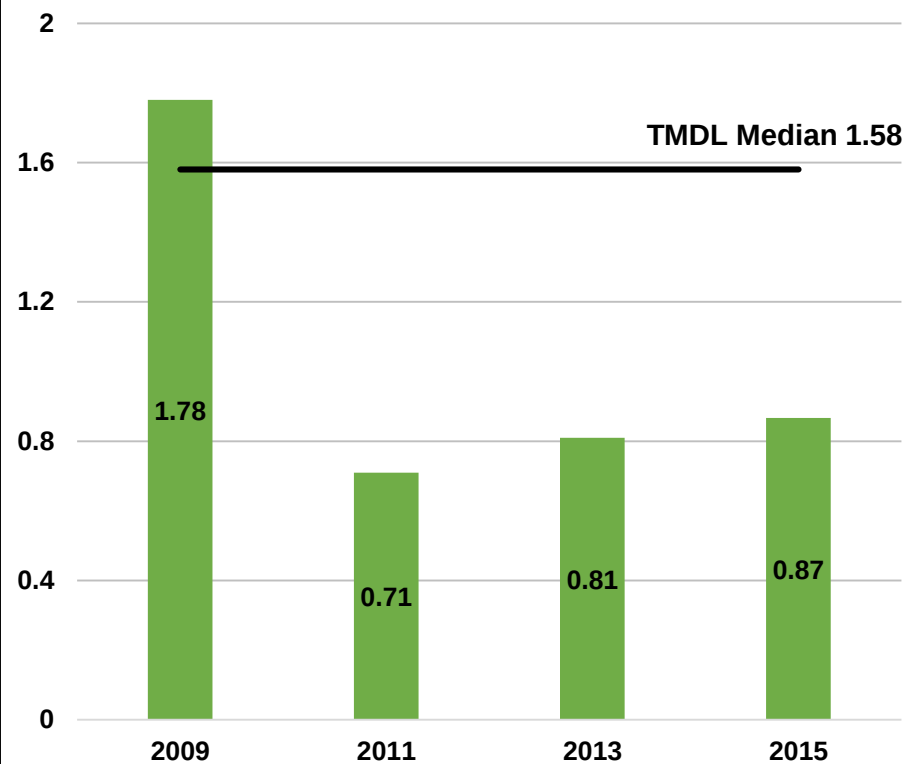


Seagrass Compliance – BRL A

Step 1



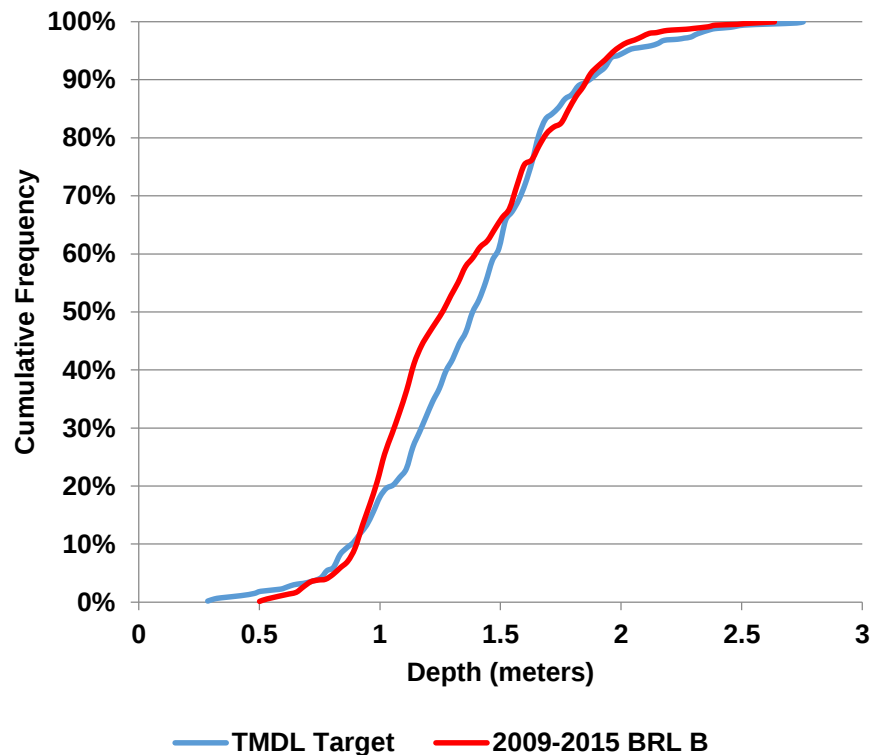
Step 2



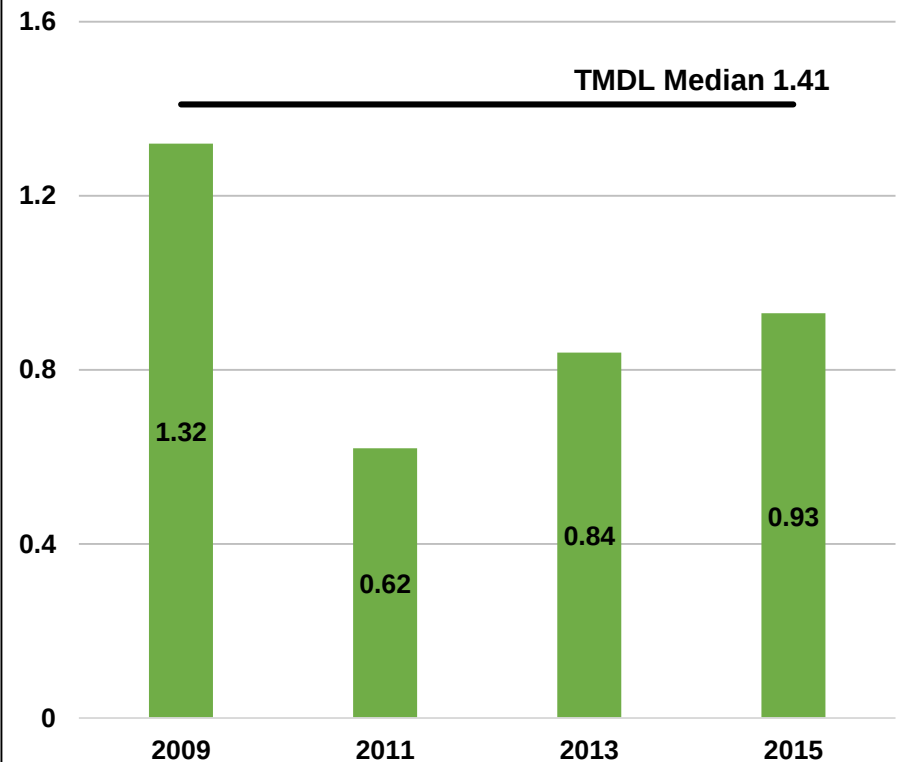


Seagrass Compliance – BRL B

Step 1



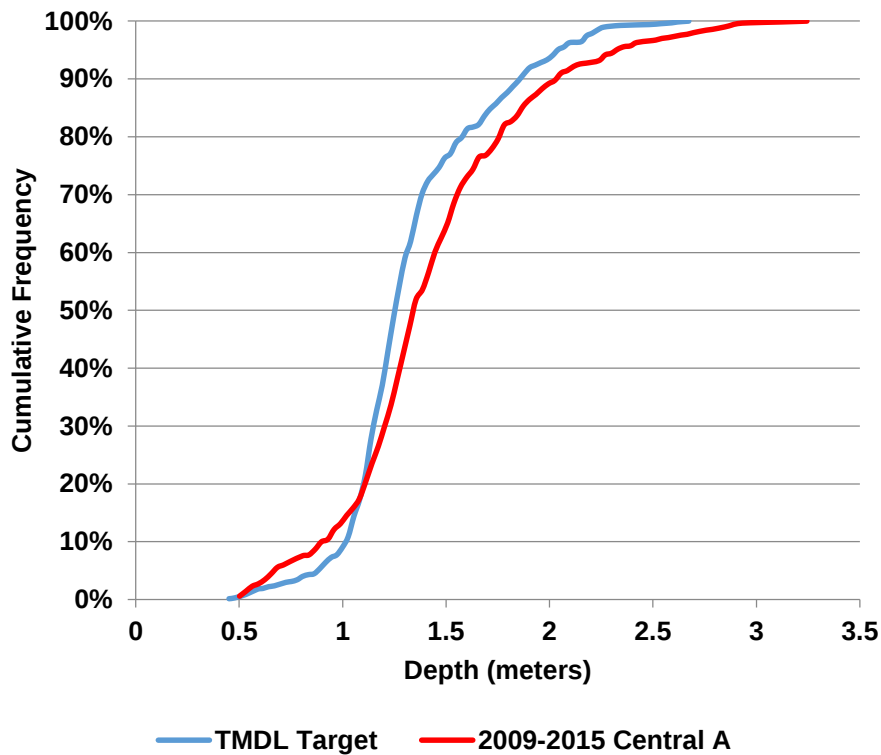
Step 2



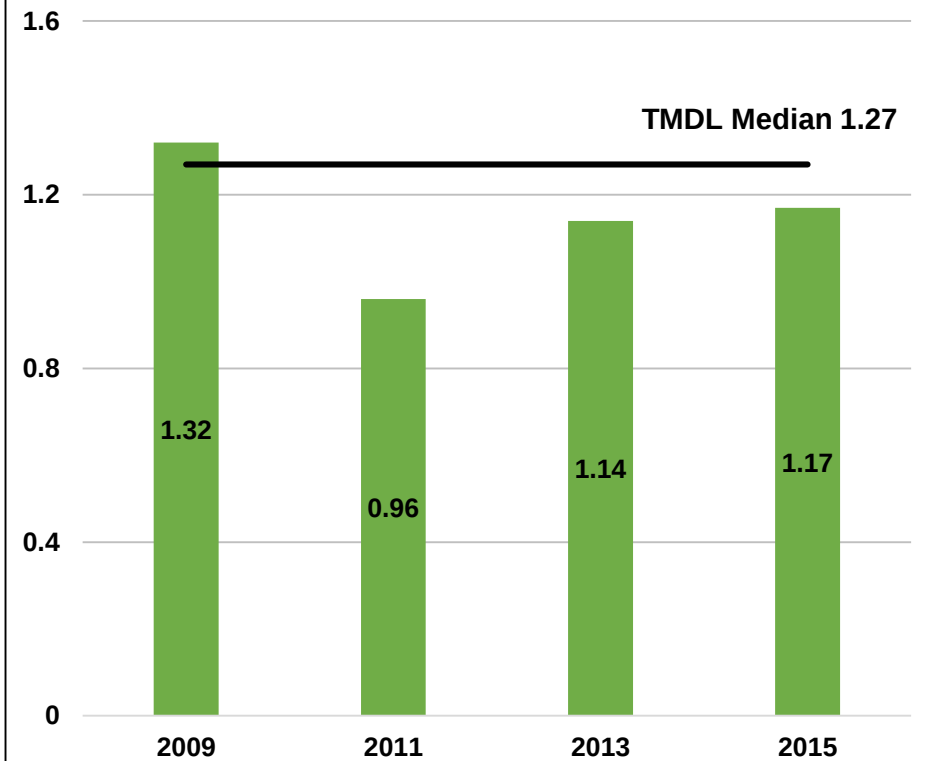


Seagrass Compliance – CIRL A

Step 1



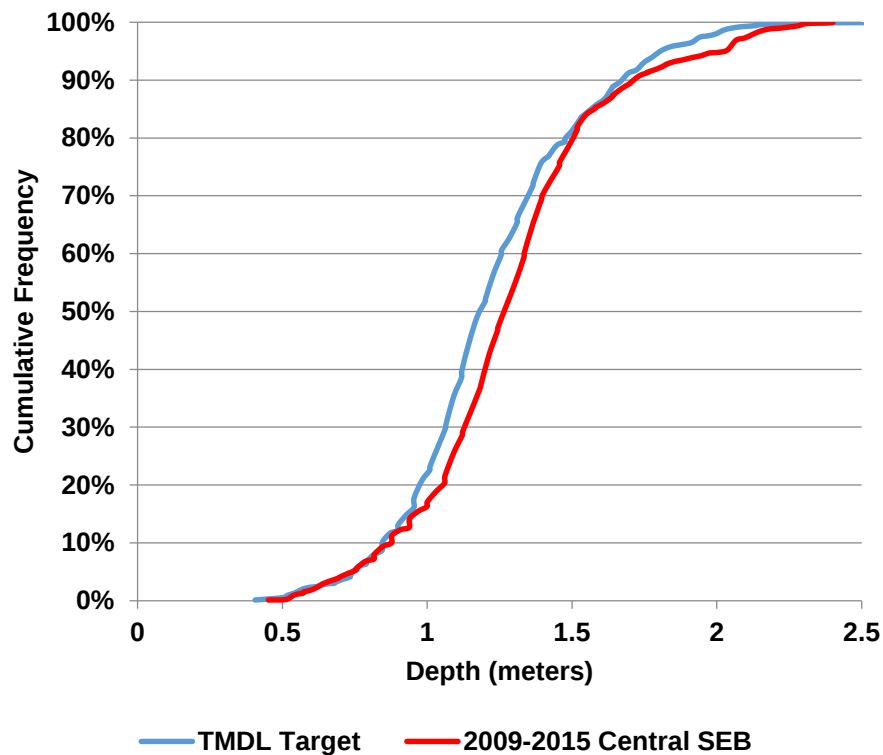
Step 2



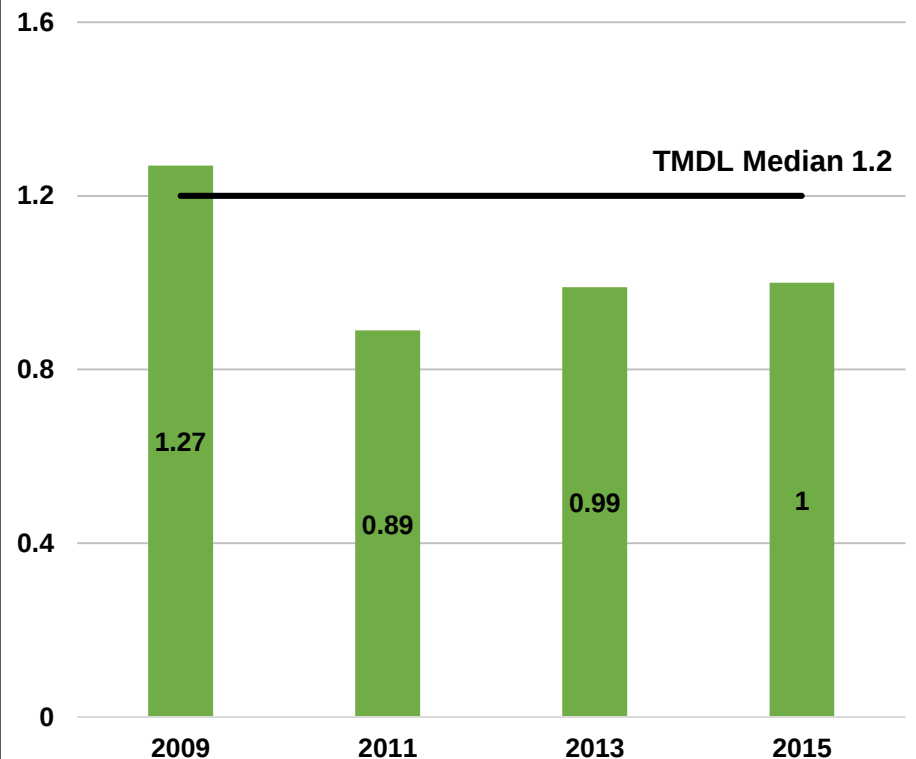


Seagrass Compliance – CIRL SEB

Step 1



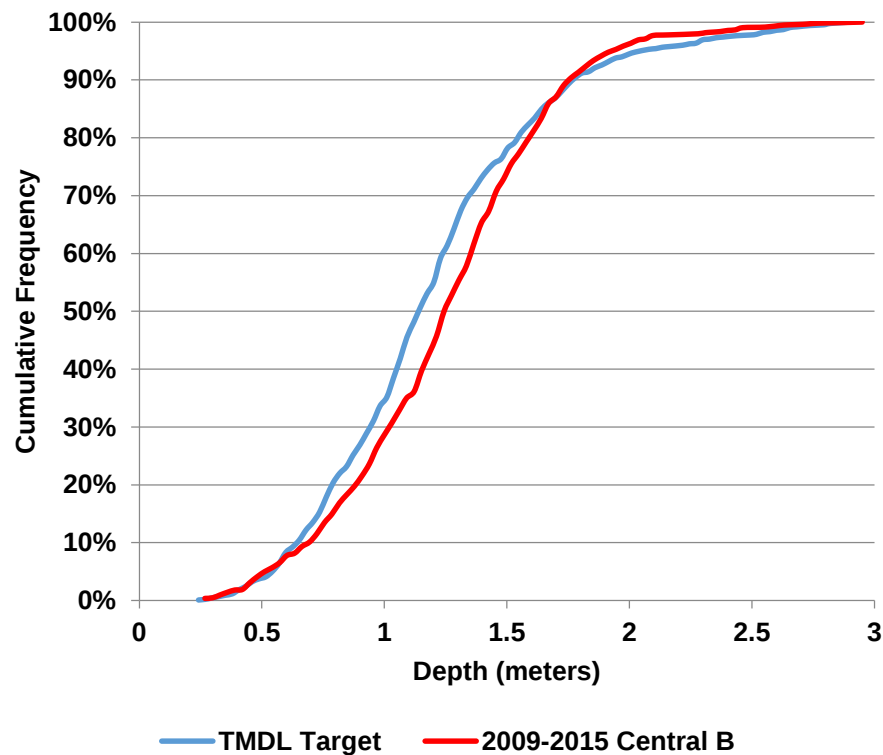
Step 2



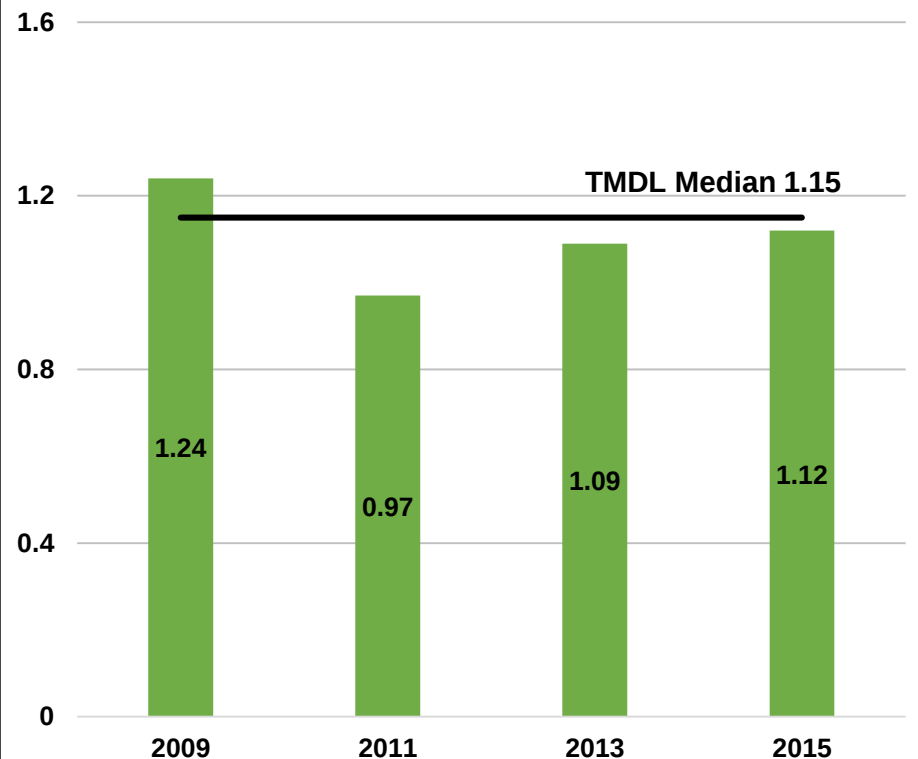


Seagrass Compliance – CIRL B

Step 1



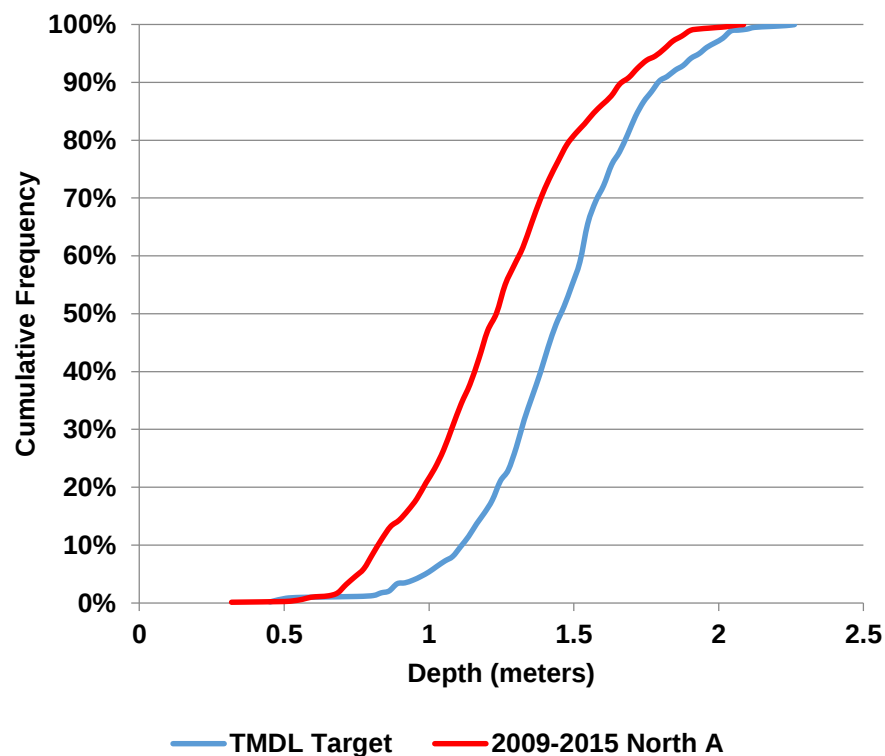
Step 2



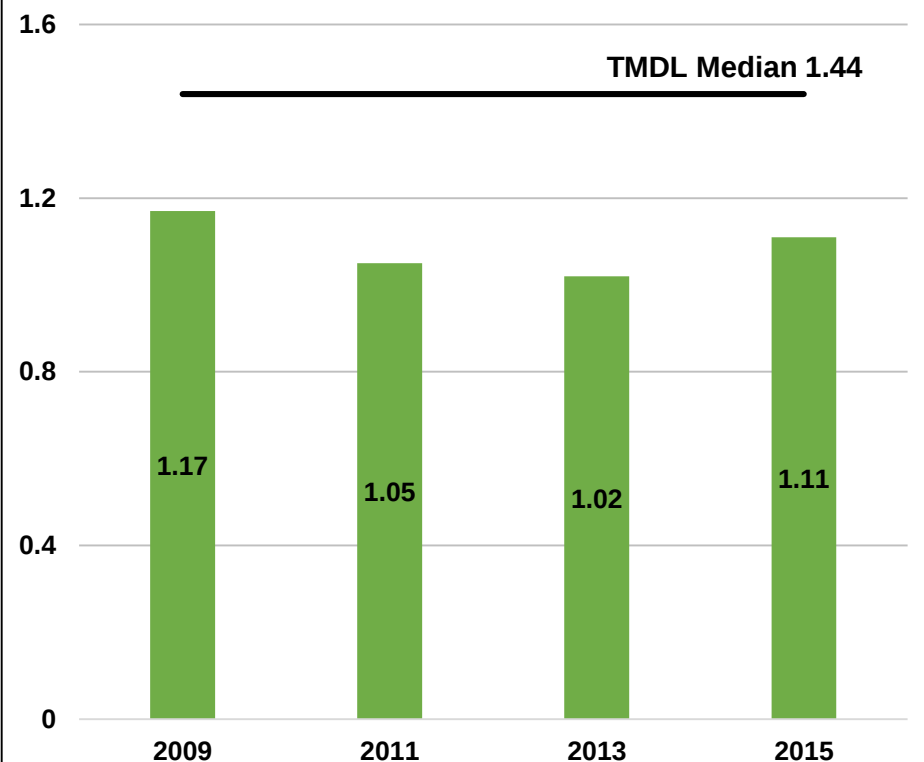


Seagrass Compliance – NIRL A

Step 1



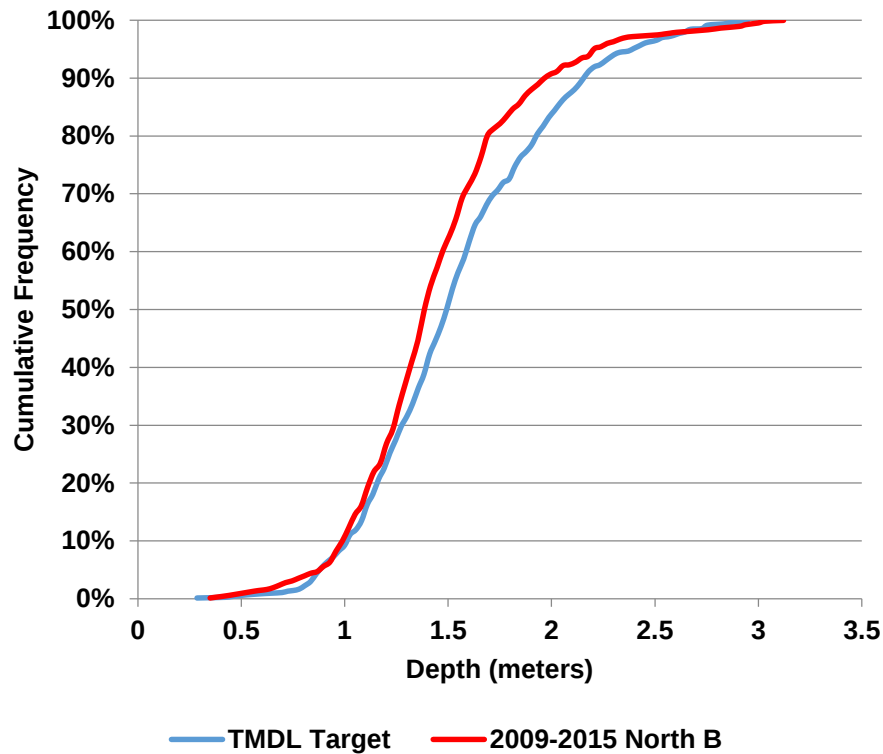
Step 2



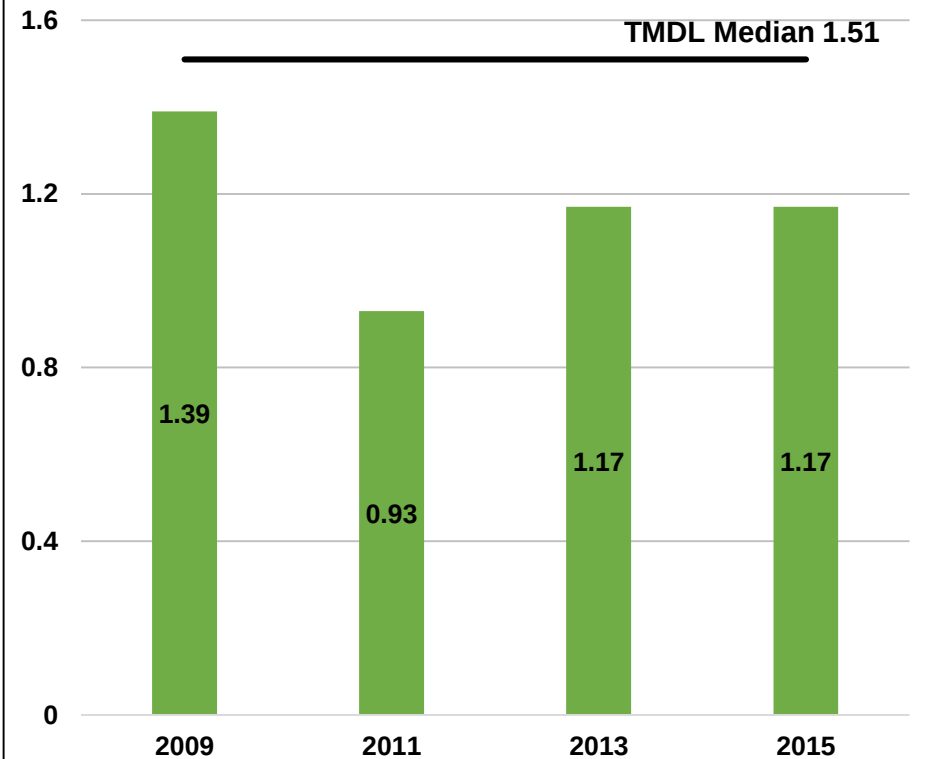


Seagrass Compliance – NIRL B

Step 1



Step 2





Monitoring Entities

- Water quality monitoring is being conducted by the following entities:
 - Indian River Farms WCD
 - Sebastian River Improvement District
 - St. Johns River Water Management District (SJRWMD)
 - Volusia County
 - Fort Pierce Farms WCD*
 - North St. Lucie River WCD*
 - South Florida Water Management District (SFWMD)*
- Monitoring network includes 77 stations



sfwmd.gov



North St. Lucie River Water Control District

Fort Pierce Farms Water Control District
Indian River Farms Water Control District
Sebastian River Improvement District

* Indicates monitoring from this entity is not a BMAP requirement



Florida Department of Environmental Protection

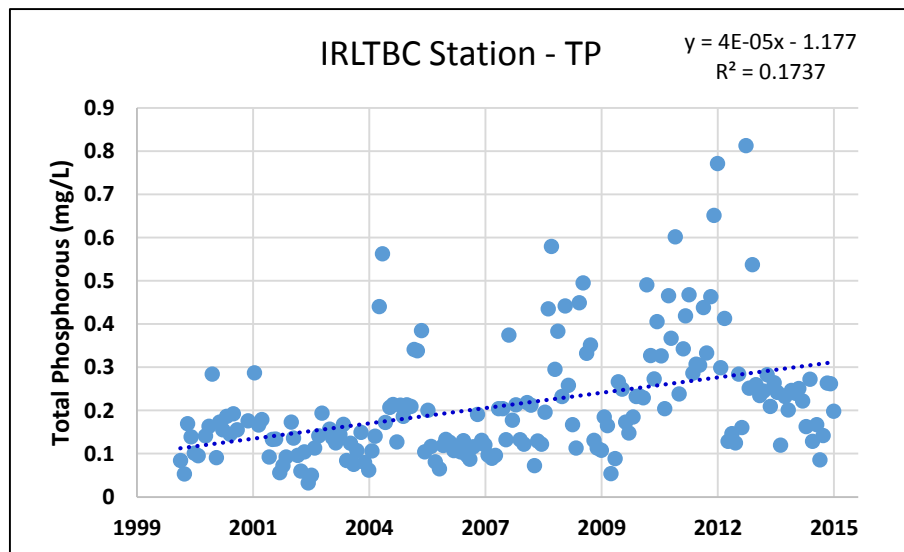
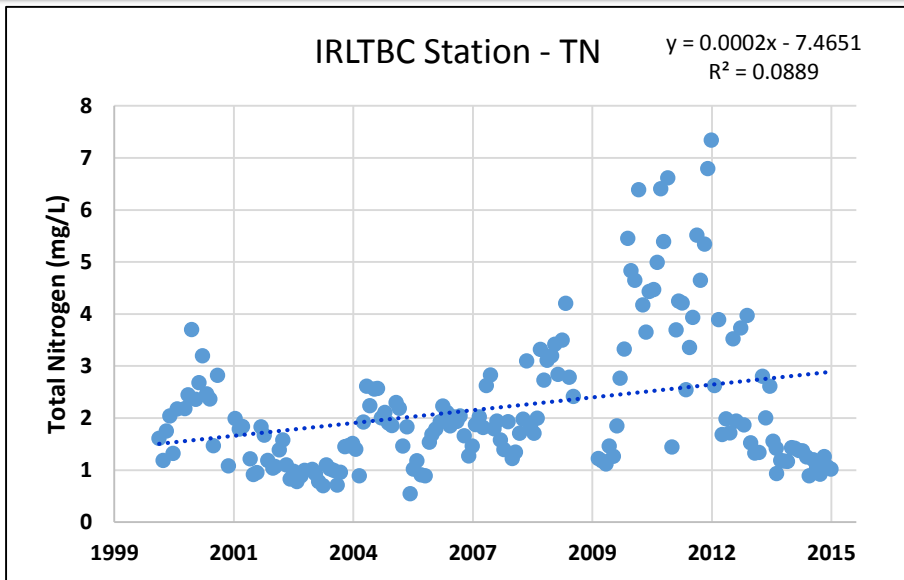
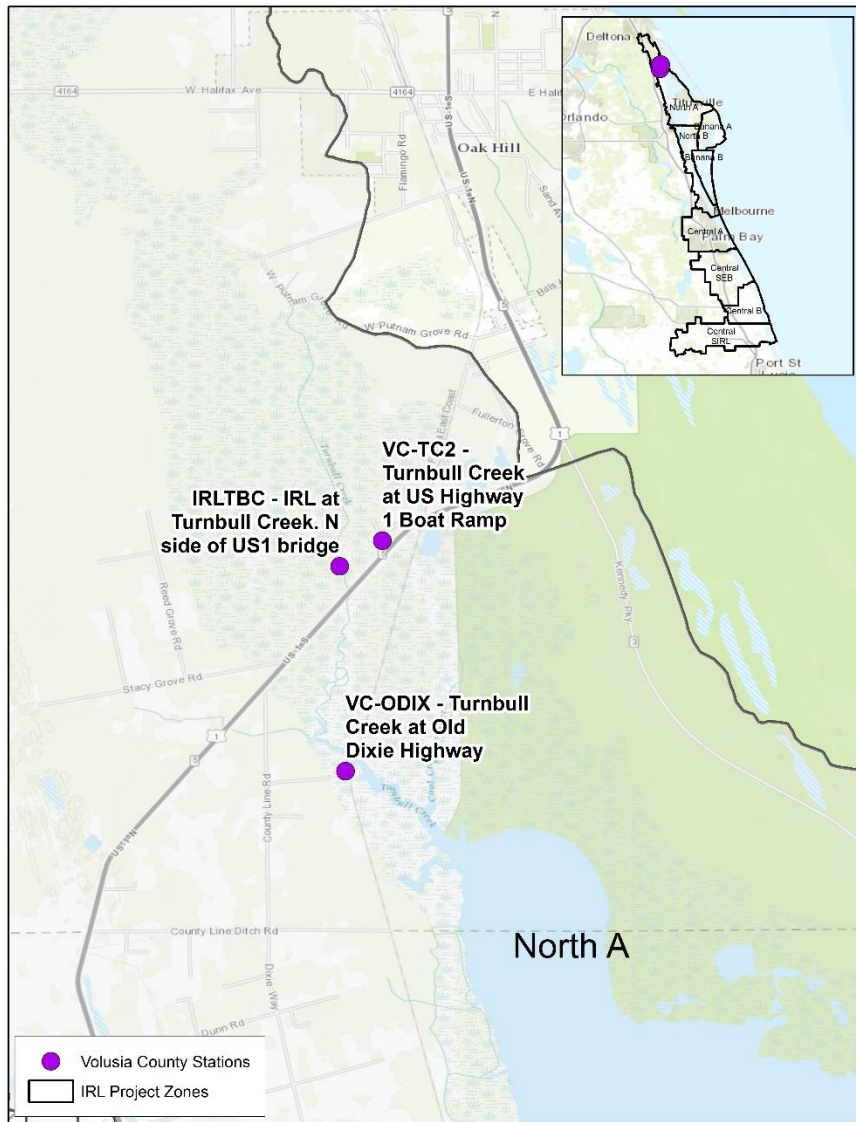
Water Quality Monitoring Update

Lance Lumbard
AMEC Foster Wheeler



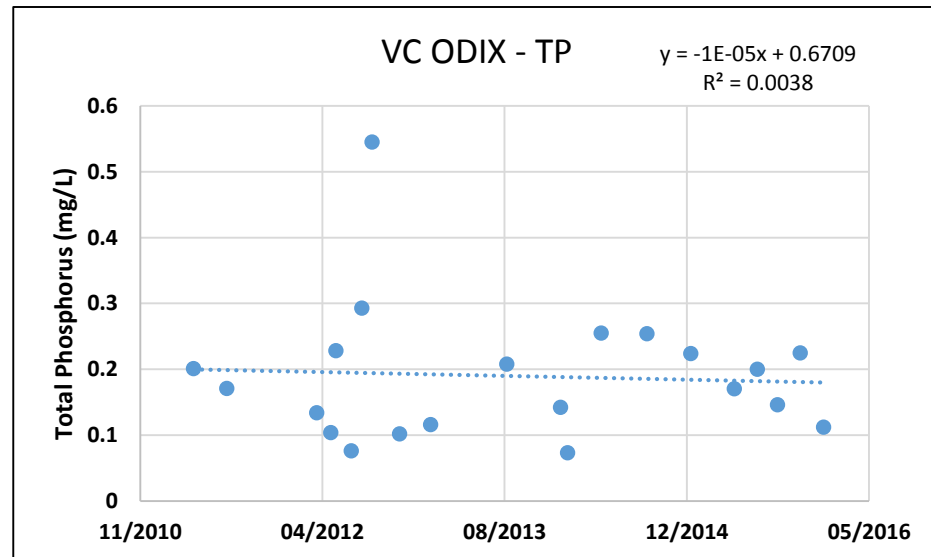
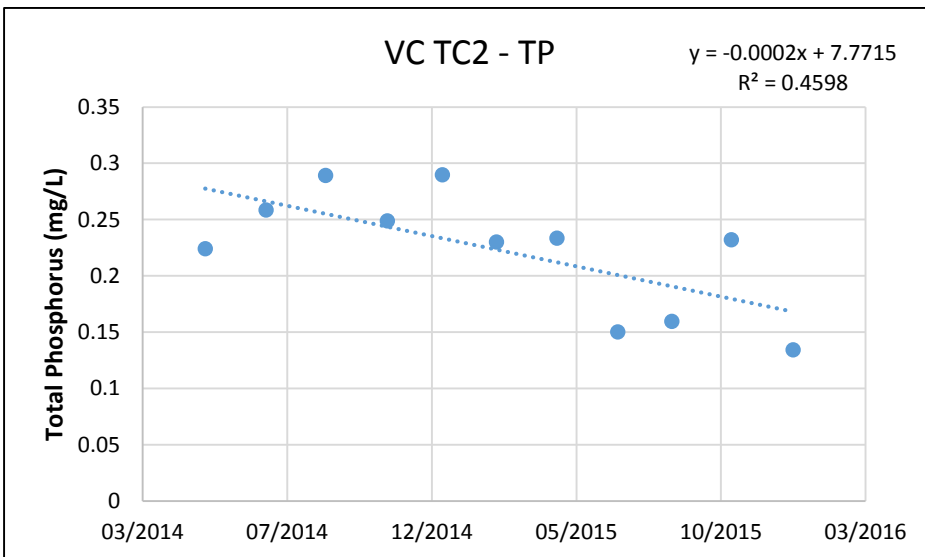
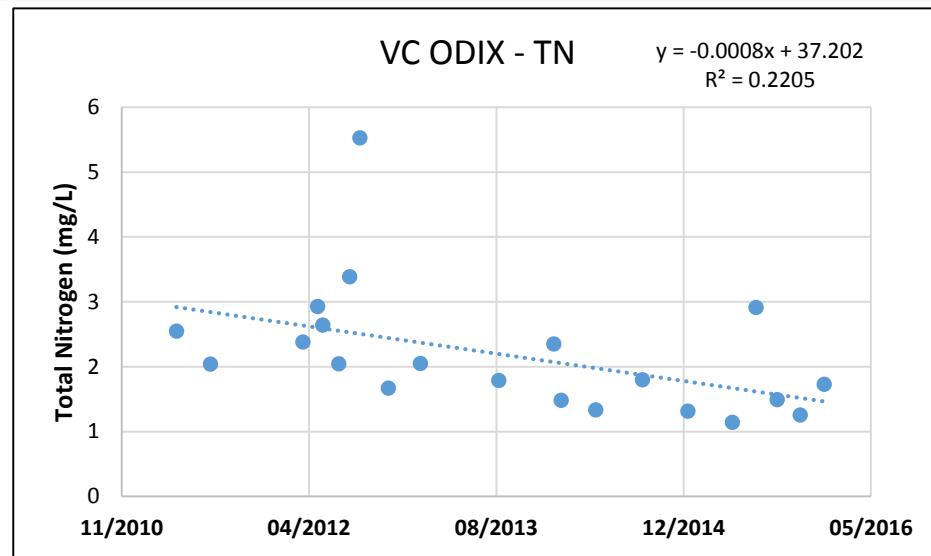
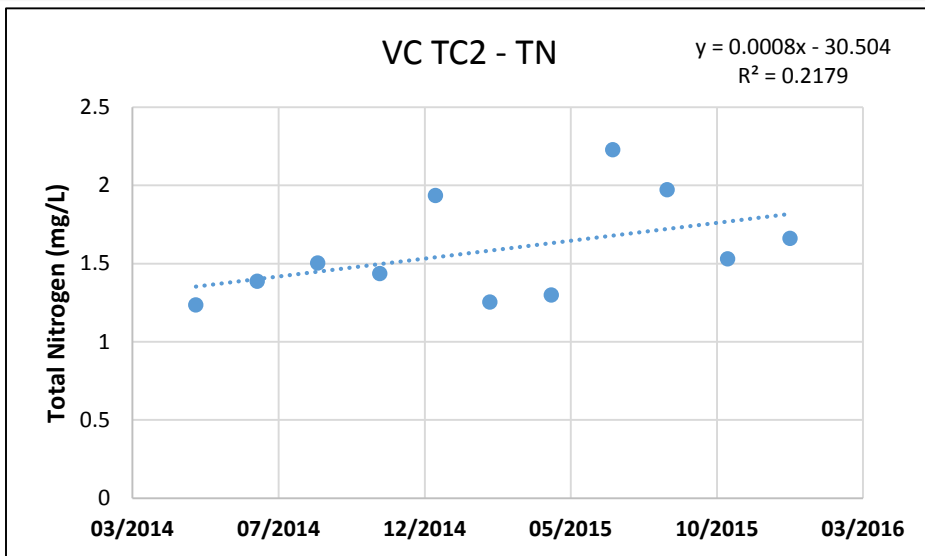


Water Quality Monitoring– Volusia County



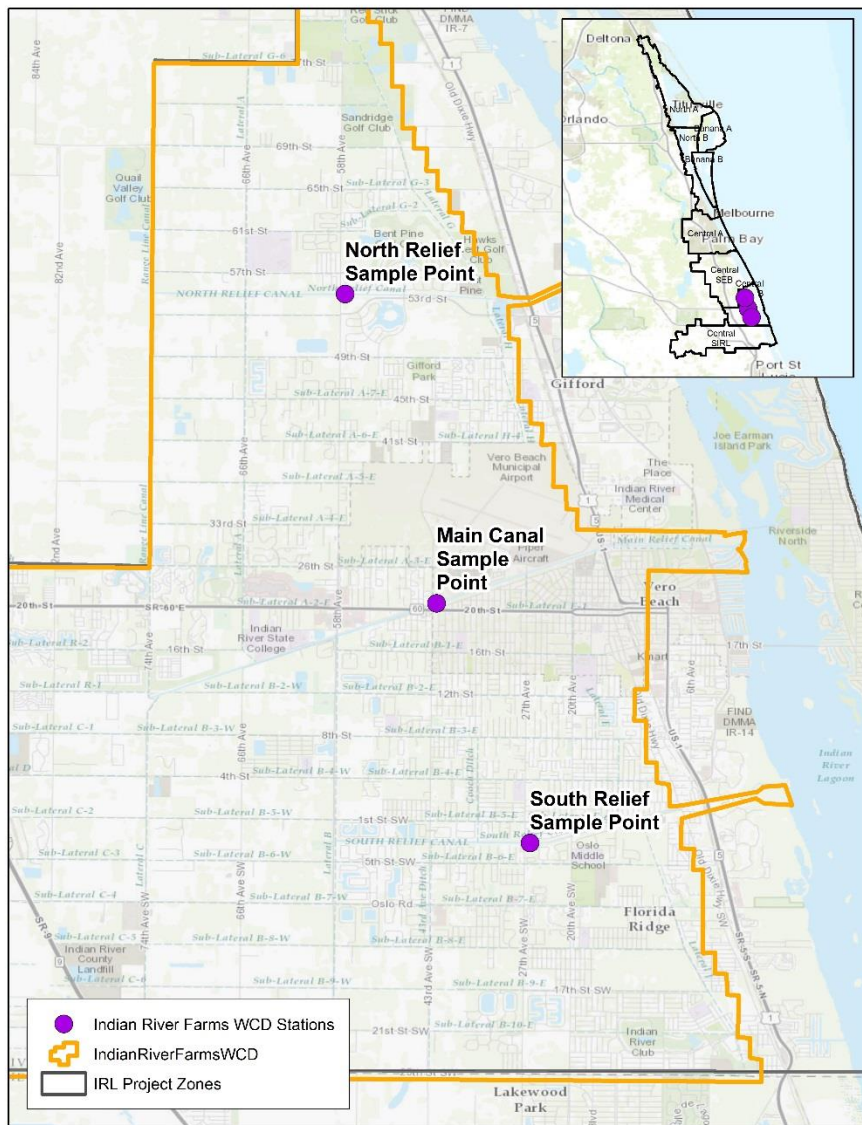


Water Quality Monitoring— Volusia County





Water Quality Monitoring– Indian River Farms WCD

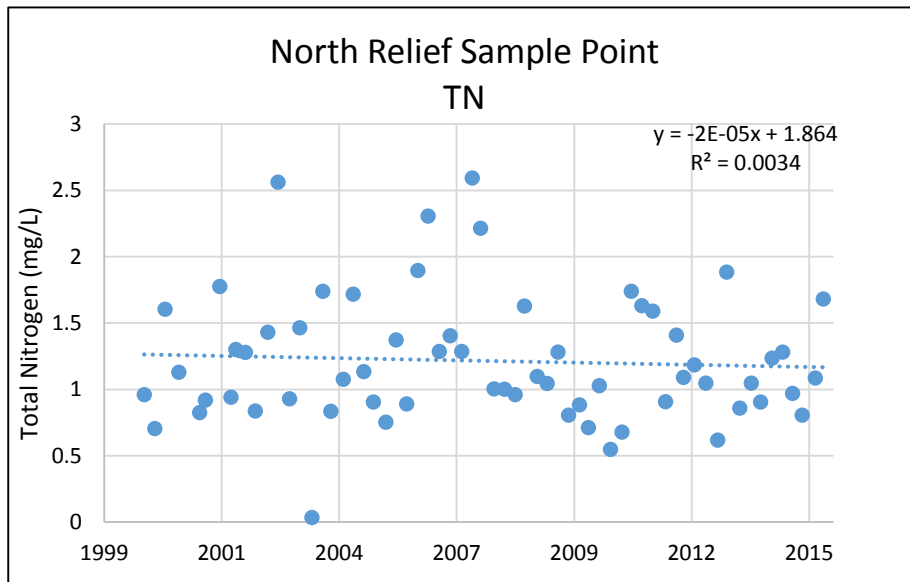


Station Name	Median TN Concentration (mg/L)	Median TP Concentration (mg/L)
North Relief Sample Point	1.088	0.149
Main Relief Sample Point	1.138	0.123
South Relief Sample Point	1.31	0.125

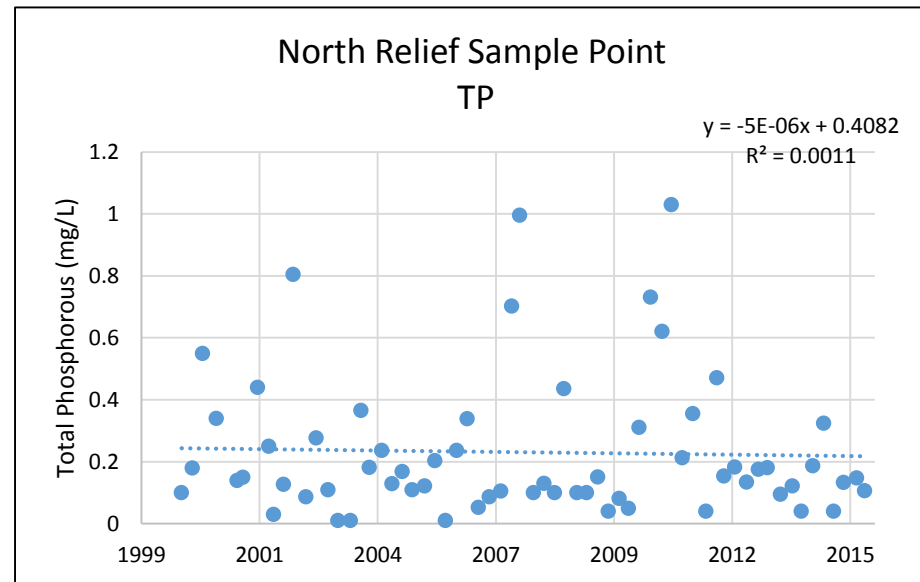


Water Quality Monitoring– Indian River Farms WCD

TN



TP





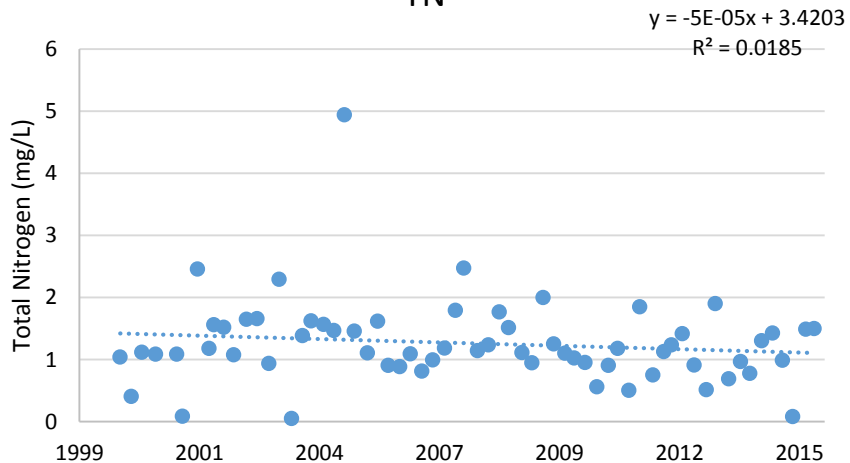
Water Quality Monitoring– Indian River Farms WCD

TN

TP

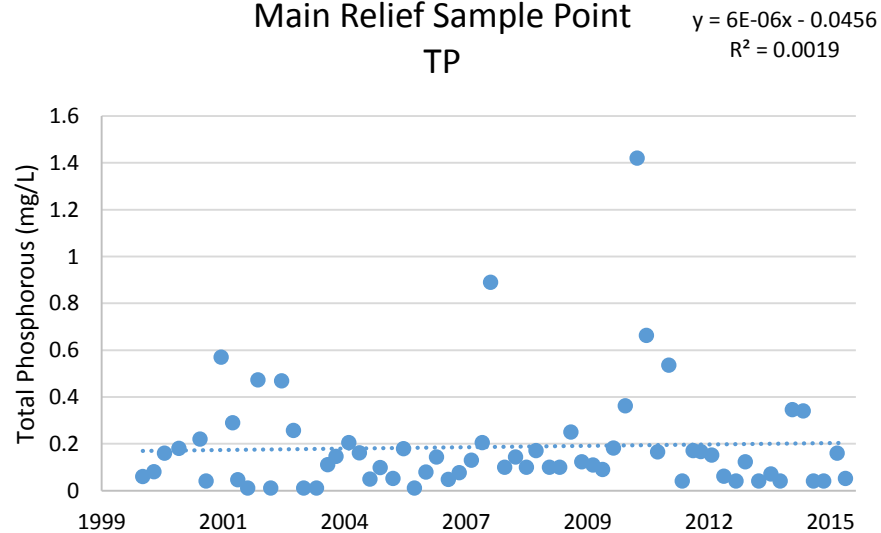
Main Relief Sample Point

TN



Main Relief Sample Point

TP



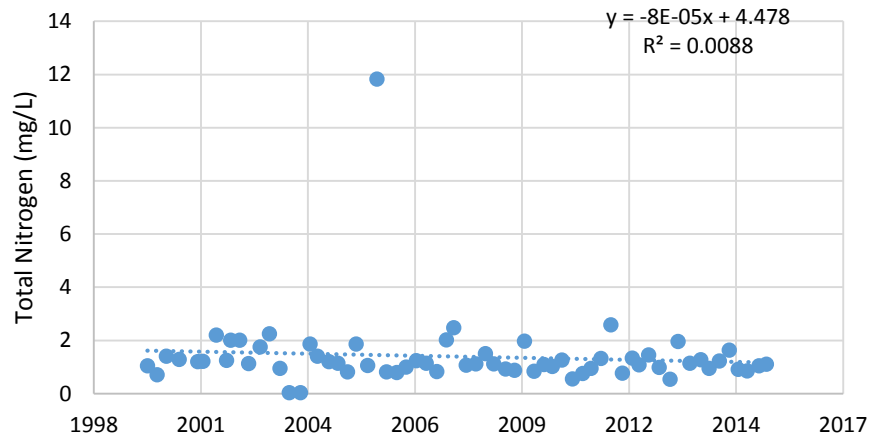


Water Quality Monitoring– Indian River Farms WCD

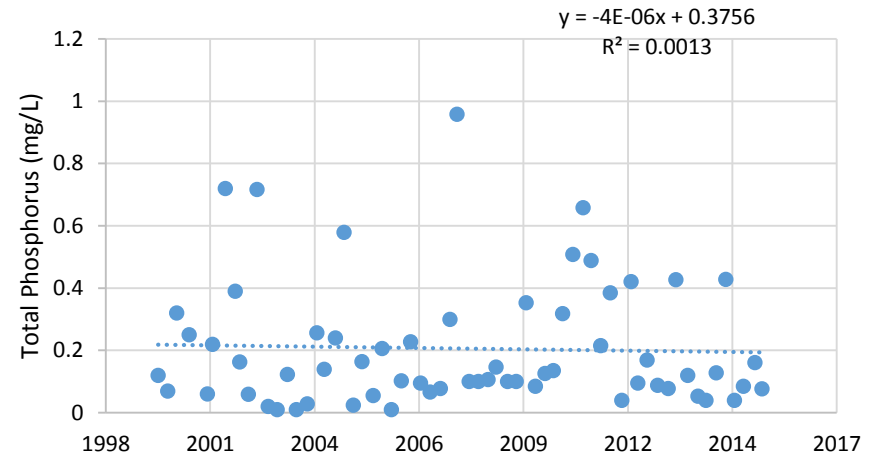
TN

TP

South Relief Sample Point
TN

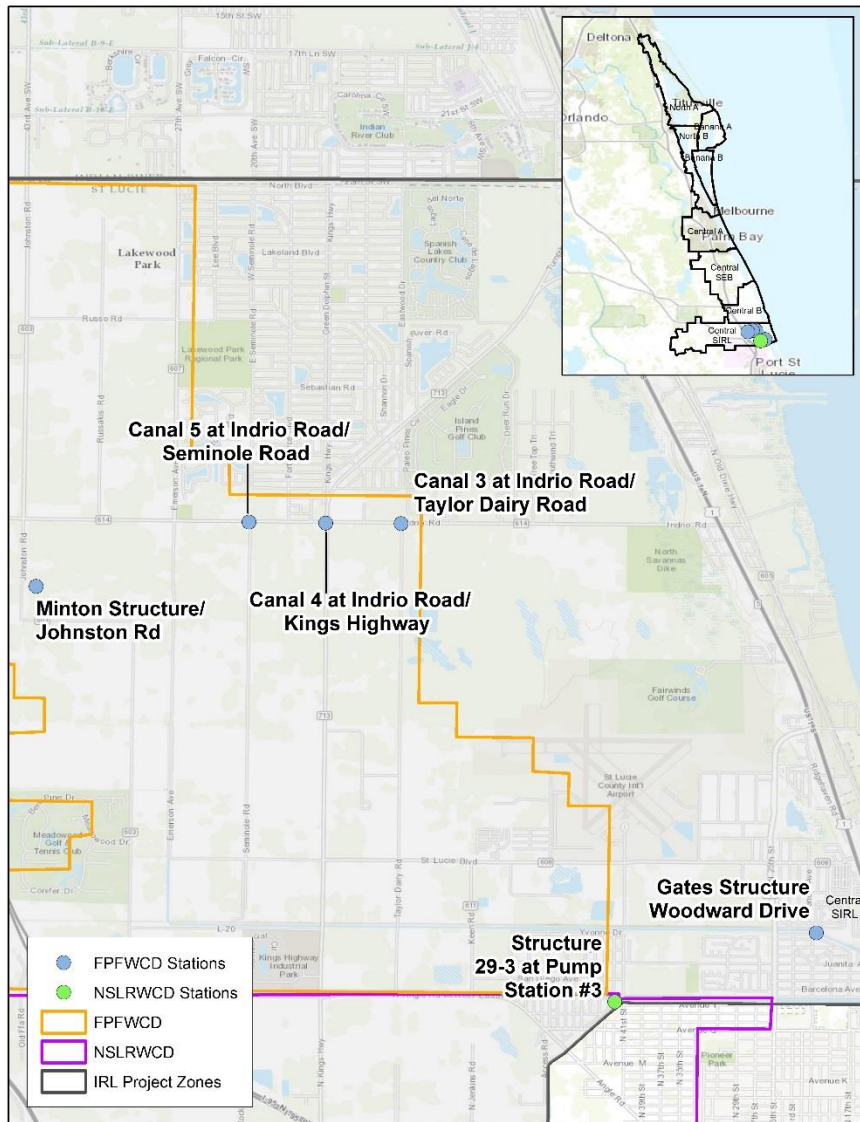


South Relief Sample Point
TP





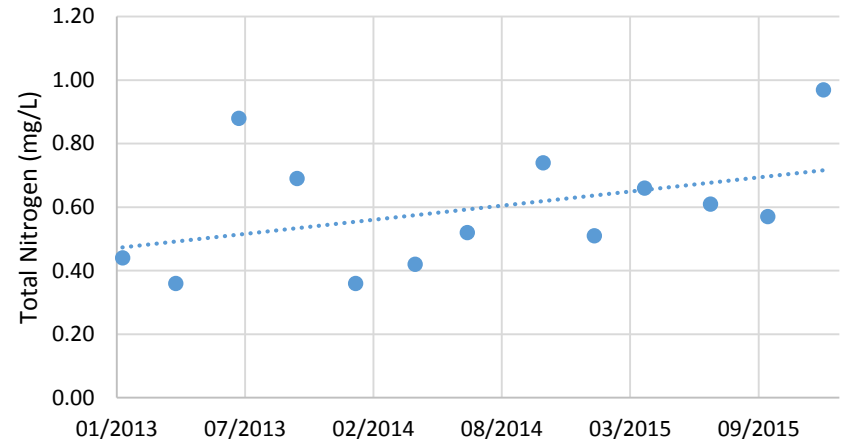
Water Quality Monitoring–Fort Pierce Farms & North St. Lucie River WCDs



Gates Structure - Woodward Drive - TN

$$y = 0.0002x - 8.6845$$

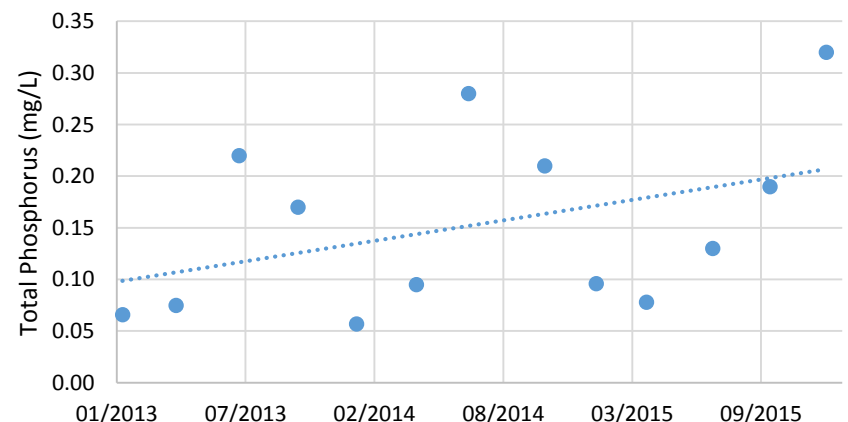
$$R^2 = 0.1728$$



Gates Structure - Woodward Drive - TP

$$y = 1E-04x - 3.9896$$

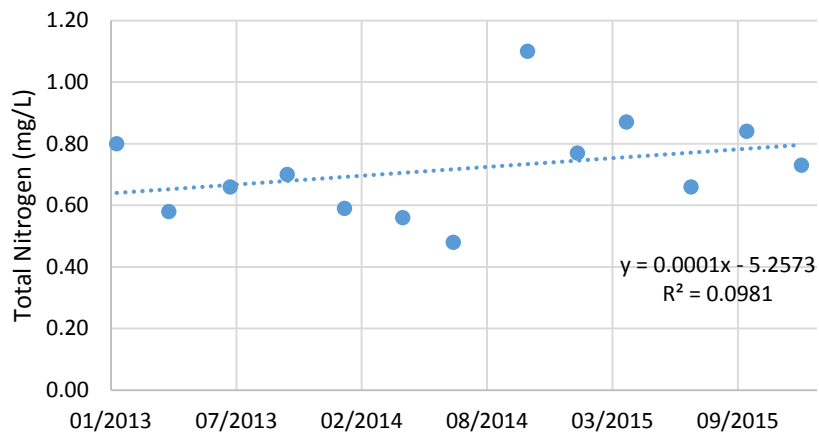
$$R^2 = 0.1682$$



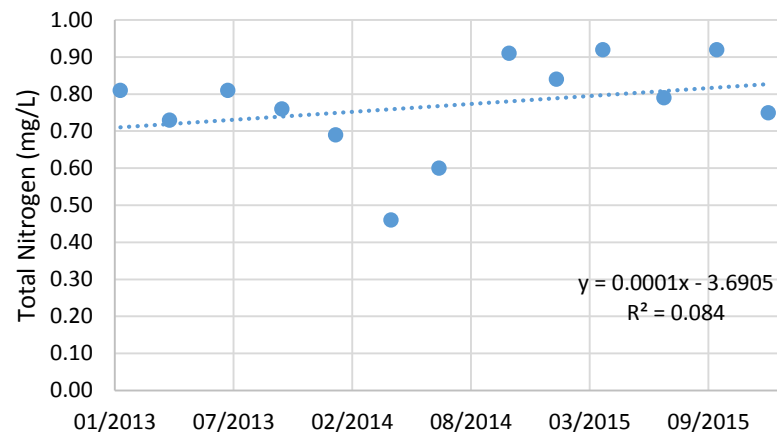


Water Quality Monitoring–Fort Pierce Farms & North St. Lucie River WCDs

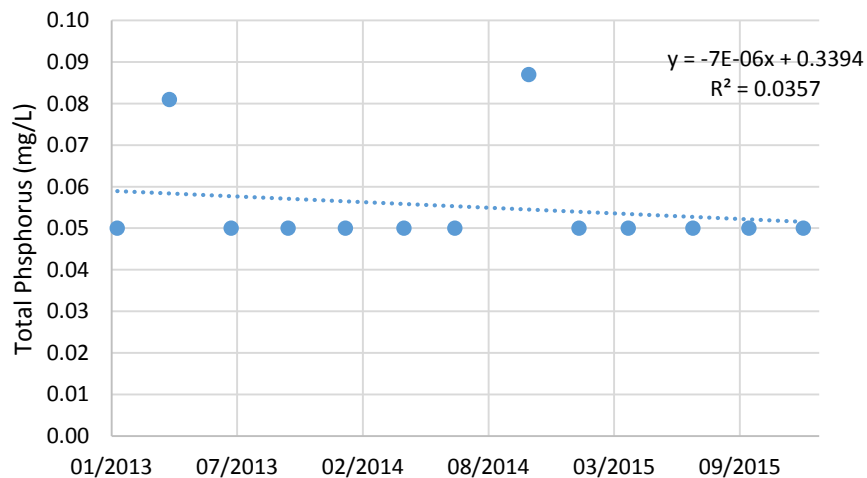
Canal 3 at Indrio Road/Taylor Dairy Road - TN



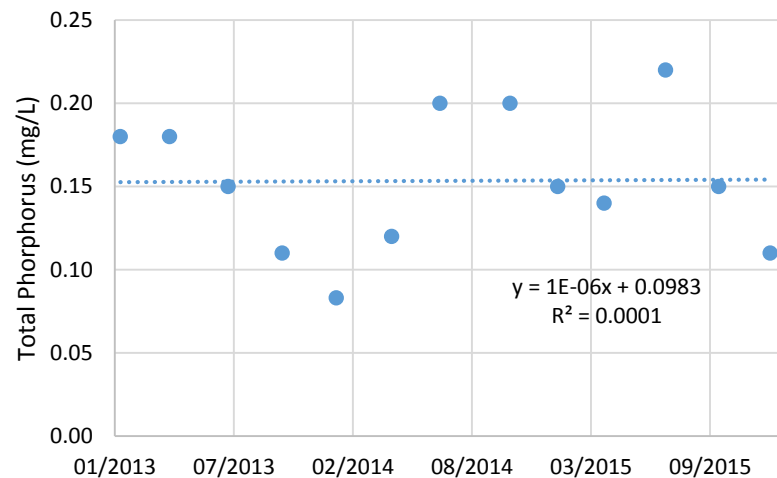
Canal 4 at Indrio Road/Kings Highway - TN



Canal 3 at Indrio Road/Taylor Dairy Road - TP



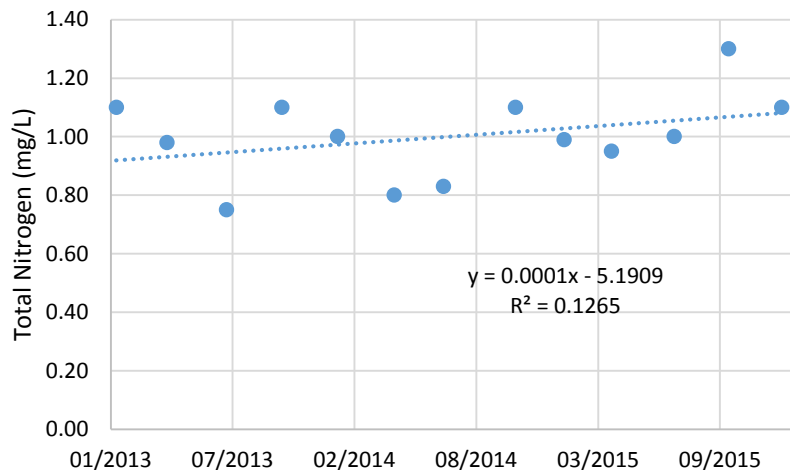
Canal 4 at Indrio Road/Kings Highway - TP



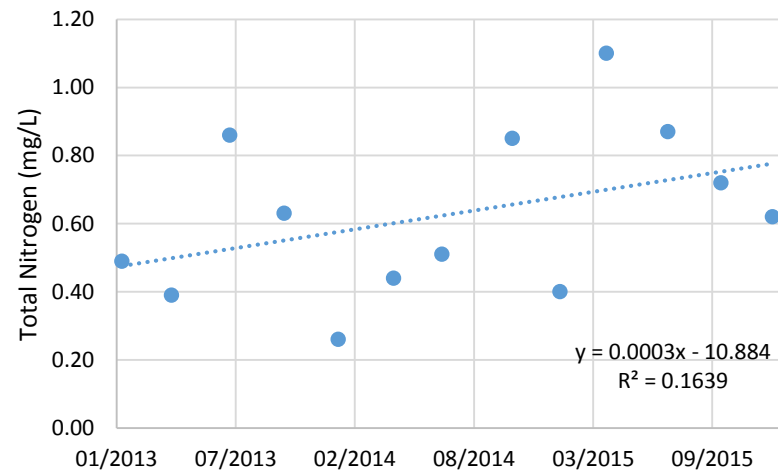


Water Quality Monitoring—Fort Pierce Farms & North St. Lucie River WCDs

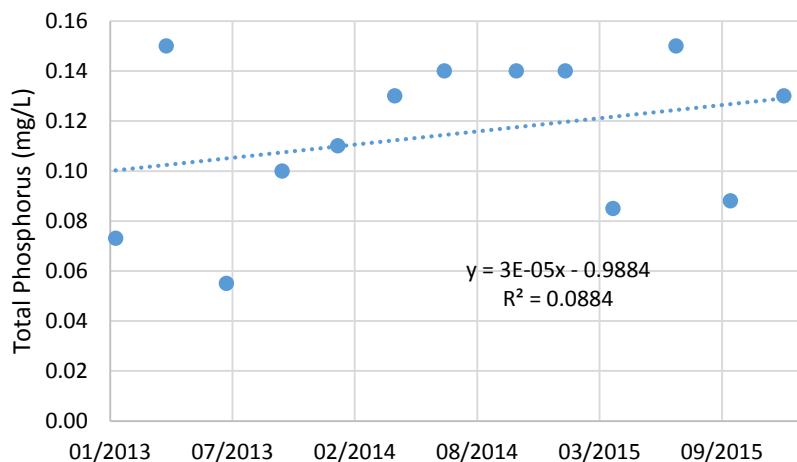
Canal 5 at Indrio Road/Seminole Road - TN



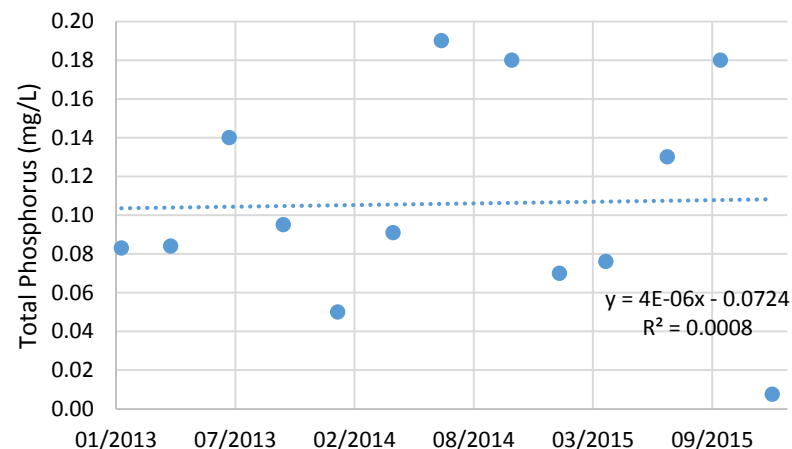
Minton Structure/Johnston Road - TN



Canal 5 at Indrio Road/Seminole Road - TP



Minton Structure/Johnston Road - TP



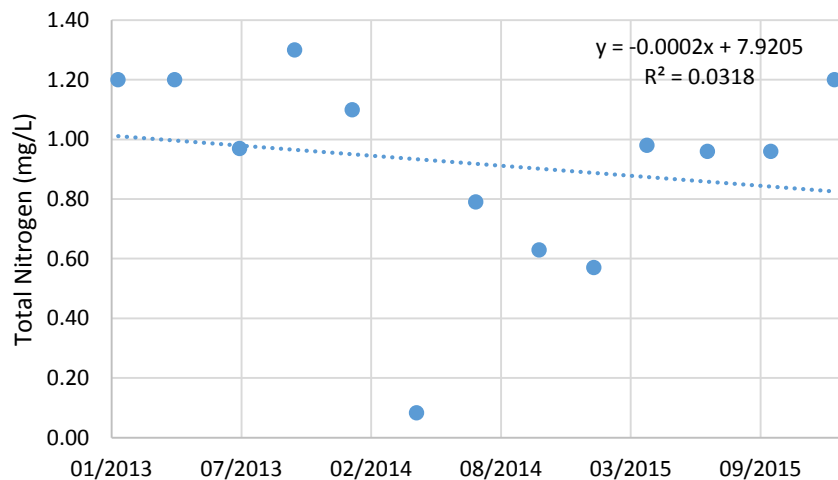


Water Quality Monitoring– North St. Lucie River WCD

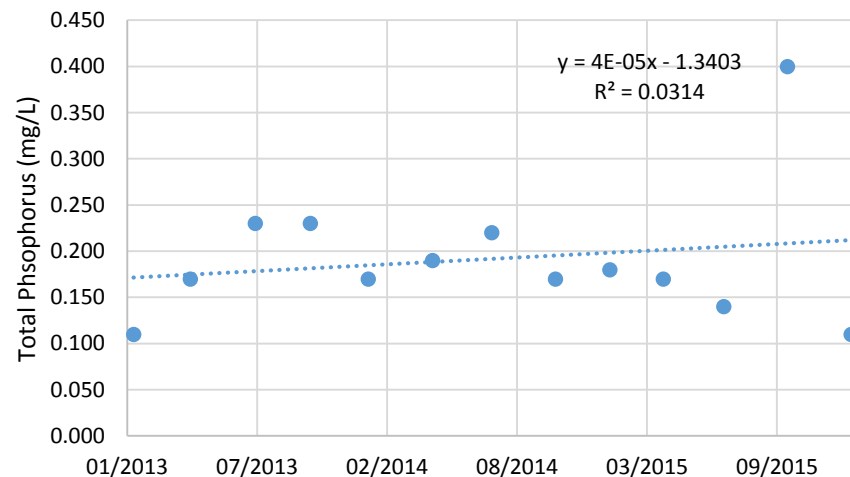
TN

TP

Structure 29-3 at Pump Station #3 - TN

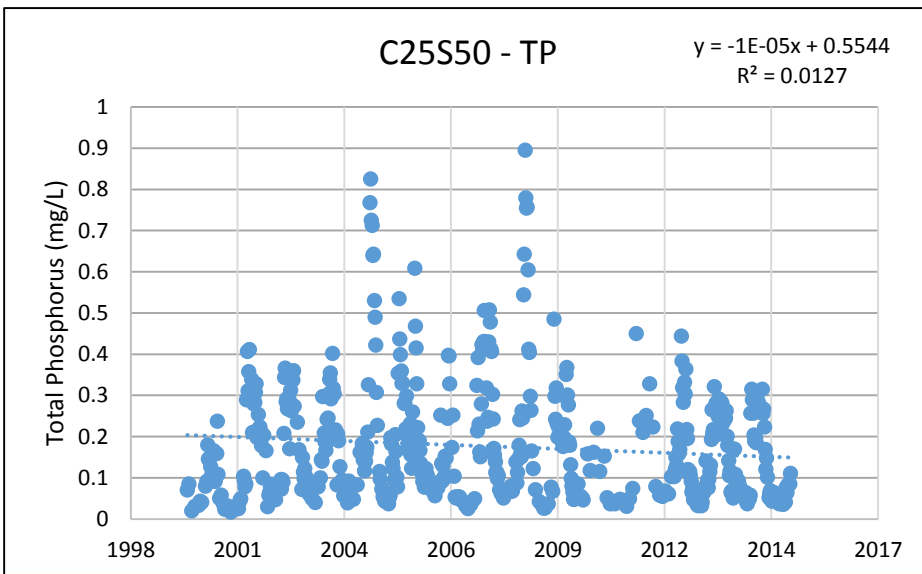
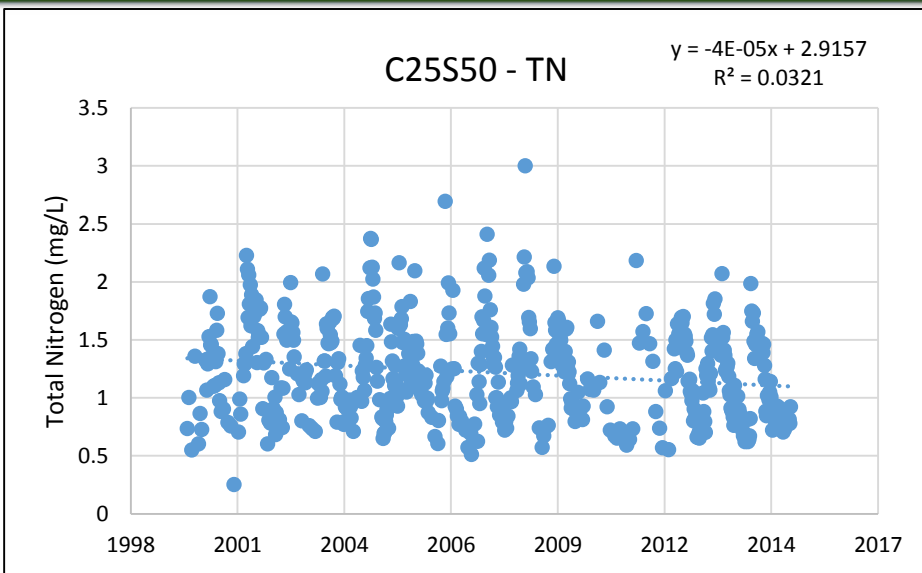
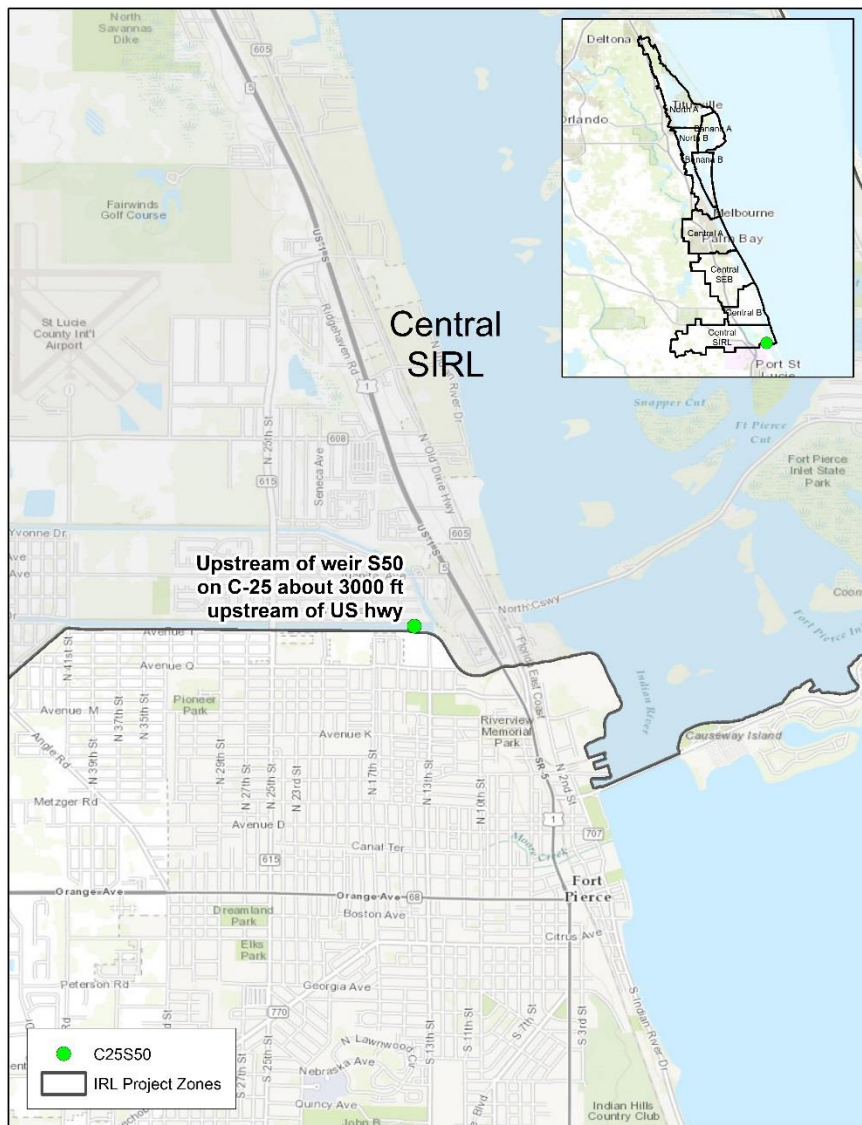


Structure 29-3 at Pump Station #3 - TP





Water Quality Monitoring– SFWMD





Florida Department of Environmental Protection

Water Quality Monitoring Update

Chuck Jacoby
SJRWMD





Questions About Monitoring?

?????



Florida Department of Environmental Protection

WIN Project





WIN Summary

- WIN is the replacement for the Florida Storage and Retrieval (STORET) database
 - Data providers will upload to WIN instead of STORET
 - Old data in STORET will still be accessible
- WIN will be open for uploads in January 2017
 - New data can still be uploaded to STORET until July 2017
 - After that, all data will need to come to WIN
- WIN data must meet minimum quality standards
 - Providers should be making necessary changes now
 - Contact your WIN coordinator for assistance





WIN Contacts

- More information at <ftp://ftp.dep.state.fl.us/pub/outgoing/STORET/WIN> Communication/
- Denise Miller, Environmental Administrator
850-245-8516, denise.miller@dep.state.fl.us
- Julie Zimmerman, Business Lead
850-245-8508, julie.m.zimmerman@dep.state.fl.us
- STORET/WIN Coordinators:

District	Coordinator	Phone	E-mail
Central	Tommy Adams	850-245-8544	thomas.l.adams@dep.state.fl.us
Northeast & Northwest	Justin Nelson	850-245-8510	justin.m.nelson@dep.state.fl.us
South	Kyle Ferris	850-245-8049	kyle.ferris@dep.state.fl.us
Southeast	Vilma Quant	850-245-8544	vilma.quant@dep.state.fl.us
Southwest & Statewide	Lisa Schwenning	850-245-8509	lisa.schwenning@dep.state.fl.us



Florida Department of Environmental Protection

Muck Flux

Mike McGarry
Brevard County



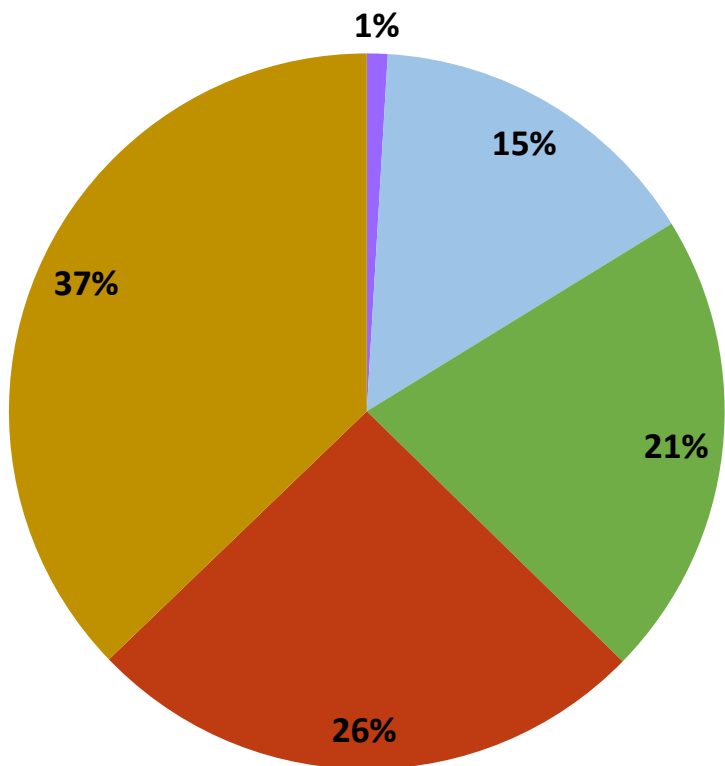


Muck Flux

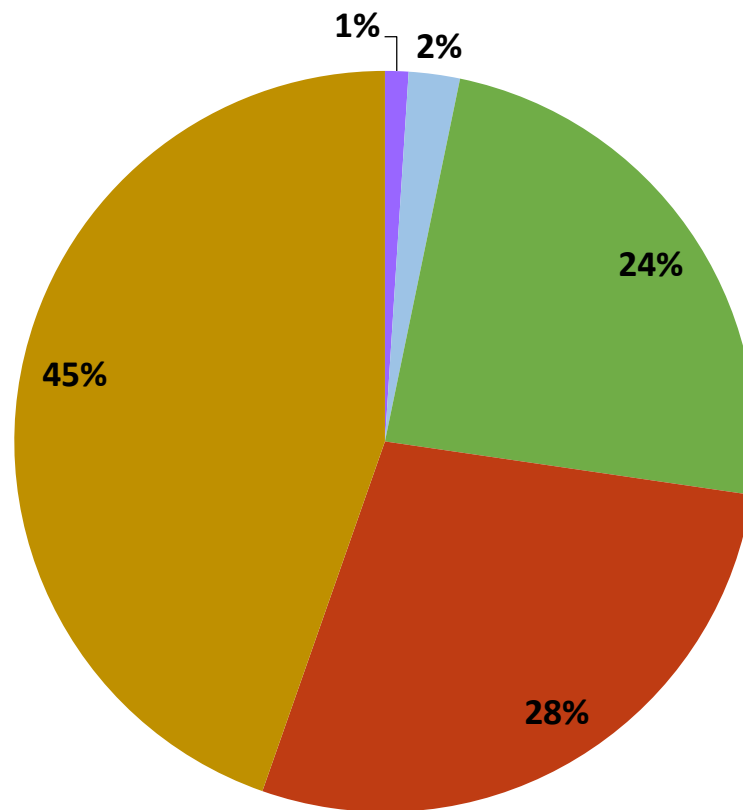
Brevard Indian River Lagoon Average (Banana River, North IRL, Central Zone A)

Point Source Atmospheric SWIL Rainfall Runoff SWIL Base Flow Muck Flux*

TN (Full Year)



TP (Full Year)



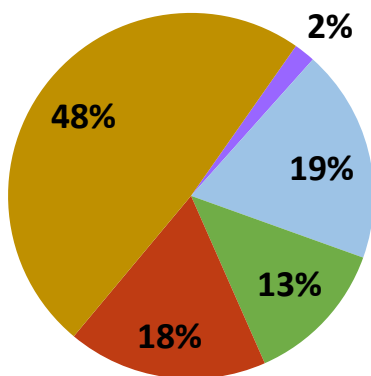


Muck Flux

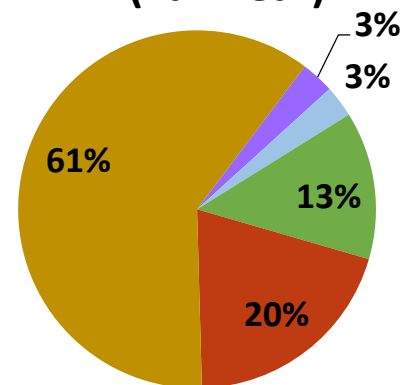
Banana River Lagoon

Point Source Atmospheric SWIL Rainfall Runoff SWIL Base Flow Muck Flux*

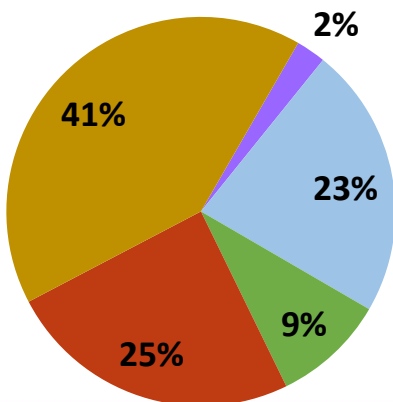
TN (Full Year)



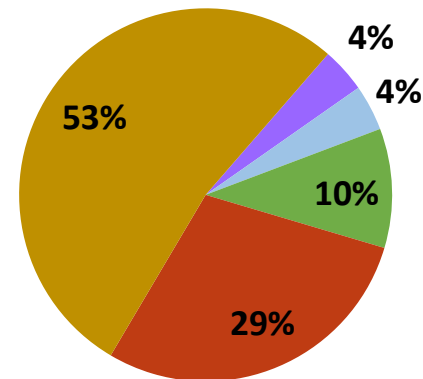
TP (Full Year)



TN (January to May)



TP (January to May)



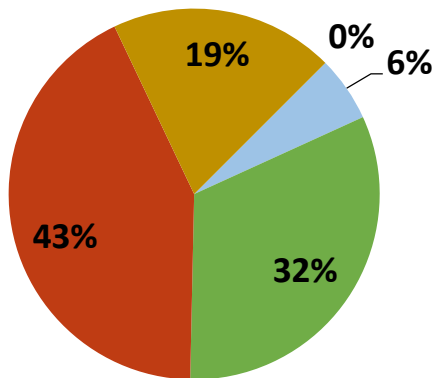


Muck Flux

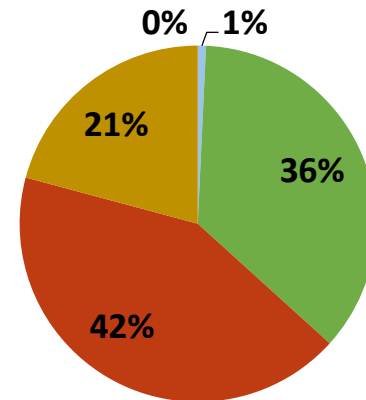
Central Indian River Lagoon

Point Source Atmospheric SWIL Rainfall Runoff SWIL Base Flow Muck Flux*

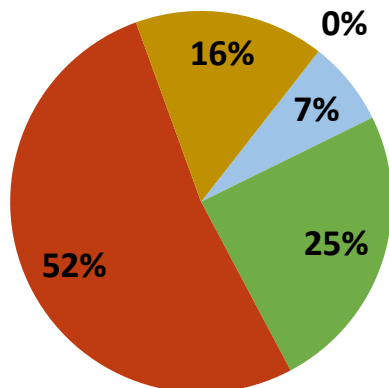
TN (Full Year)



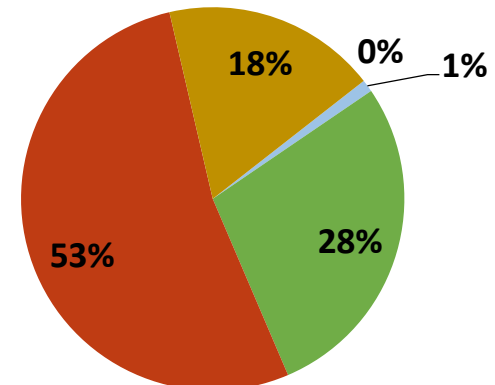
TP (Full Year)



TN (January to May)



TP (January to May)

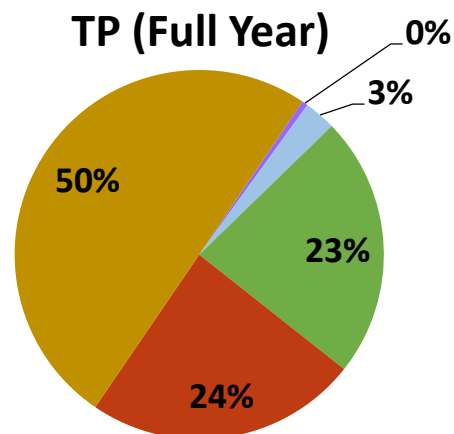
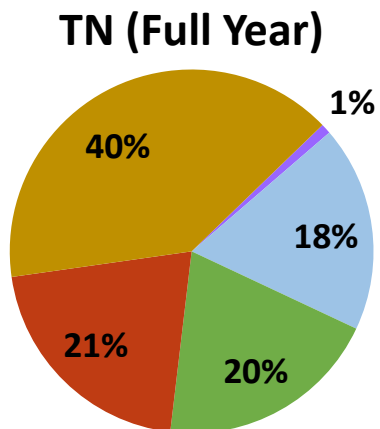




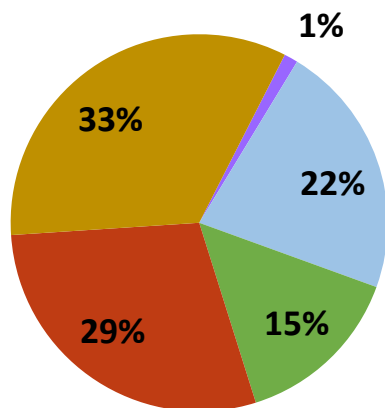
Muck Flux

North Indian River Lagoon TN (Full Year)

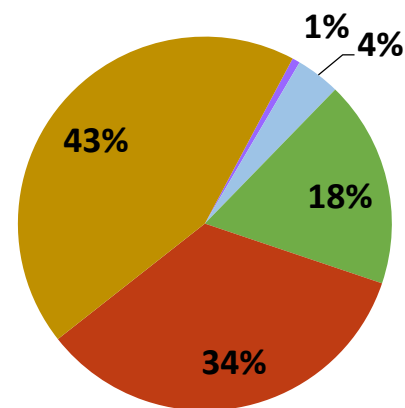
Point Source Atmospheric SWIL Rainfall Runoff SWIL Base Flow Muck Flux*



TN (January to May)



TP (January to May)





Florida Department of Environmental Protection

Next Steps





New Requirements

All New or Revised BMAPs: Revisions to Section 403.067, Florida Statutes

- Priority ranking of projects
- Planning-level estimates
 - Costs
 - Completion dates
 - Expected load reduction
- Source and amount of financial assistance
 - From DEP
 - From water management districts (WMDs)
 - From other entities



Project Compliance - BRL

Entity	Cancelled	Completed	On Hold	Underway	Grand Total
Brevard County	-	25	-	3	28
City of Cape Canaveral	-	12	1	2	15
City of Cocoa Beach	1	37	-	1	39
City of Indian Harbour Beach	-	11	-	1	12
City of Satellite Beach	-	40	-	-	40
Kennedy Space Center	-	19	-	-	19
Patrick Air Force Base	-	6	-	-	6
Cape Canaveral Air Force Station	-	2	-	-	2
FDOT District 5	-	16	-	-	16



Project Compliance - CIRL

Entity	Cancelled	Completed	On Hold	Underway	Grand Total
Brevard County	1	10	-	2	13
City of Fellsmere	-	5	-	1	6
City of Fort Pierce	-	7	-	-	7
City of Melbourne	-	1	-	-	1
City of Palm Bay	-	27	-	-	27
City of Sebastian	-	9	-	1	10
City of Vero Beach	-	4	-	-	4
City of West Melbourne	-	22	-	-	22
Fellsmere WCD	-	5	-	1	6
Fort Pierce Farms WCD	-	3	-	-	3
Indian River County	-	9	1	2	12
Indian River Farms WCD	-	3	-	-	3
Melbourne Tillman WCD	-	1	-	-	1
North St. Lucie River WCD	-	3	-	-	3
Sebastian River Improvement District	-	3	-	2	5
St. Lucie County	-	4	-	2	6
St. Lucie Village	-	1	-	-	1
Town of Indialantic	-	1	-	-	1
Town of Melbourne Beach	-	17	-	-	17
Town of Melbourne Village	-	1	-	-	1
Town of Orchid	-	1	-	-	1
Turnpike	-	1	-	-	1
FDOT District 4	-	17	-	-	17
FDOT District 5	-	15	-	-	15



Project Compliance - NIRL

Row Labels	Completed	Underway	Grand Total
Agriculture	2	-	2
Brevard County	44	8	52
City of Cocoa	10	-	10
City of Edgewater	1	-	1
City of Melbourne	10	1	11
City of Rockledge	23	-	23
City of Titusville	10	-	10
Kennedy Space Center	17	-	17
Town of Indialantic	3	-	3
Town of Palm Shores	1	-	1
Volusia County	1	-	1
FDOT District 5	22	-	22



Project Verification

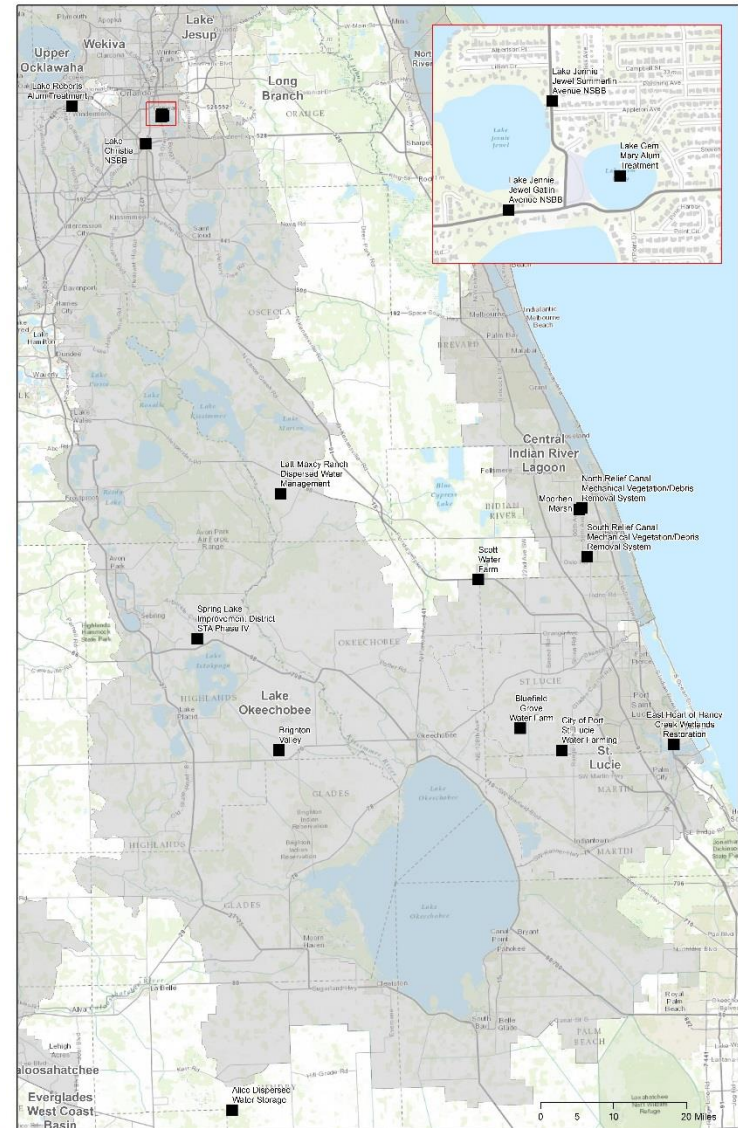
Project Verification Meetings:

- The BMAP Program has been reaching out to stakeholders to collect additional details and clarification
- Verification of the following:
 - Completion dates
 - Expected load reductions
 - Project delineations
 - Project calculations
 - Funding details
- Stakeholders have identified additional reductions from projects that were not previously included, but qualified



Project Solicitation

- Solicitation in January 2016 for projects in South Florida BMAPs
- Contacted >1,000 stakeholders
- Requested Information
 - Sponsor, Partners
 - Project Type
 - Schedule
 - Cost, Annual Operations & Management (O&M)
 - Acres Treated
 - Estimated TN/TP Reductions





Project Solicitation

Projects submitted that are located in the IRL BMAP areas

Project Name	Project Type	Projected Start Date	Projected Completion Date	Sponsor	Partners	Acres Treated	Estimated TN Reductions (lbs/yr)	Estimated TP Reductions (lbs/yr)
Scott Water Farm	Water Farming	Aug-16	Aug-17	Evans Properties Inc	SFWMD	105,472 (C-25 Basin)	105,827	8,564
North Relief Canal Mechanical Vegetation/Debris Removal System	Aquatic Plant Harvesting	Oct-16	Dec-16	Indian River County	None	6,300	2,950	700
South Relief Canal Mechanical Vegetation/Debris Removal System	Aquatic Plant Harvesting	Oct-16	Dec-16	Indian River County	None	7,150	2,950	700
Moorhen Marsh	Managed Aquatic Plant System	Nov-17	Nov-18	Indian River County	None	6,300	20,700	4,000



Action Items

- Comments on the draft annual report(s) due Friday, June 3, 2016
- Florida STORET database uploads completed
- Next annual meeting planned for Spring 2017
- Development of the Phase II BMAPs Spring 2018
- Continue project information collection



Contact Information

For additional information please contact:

Yesenia Escribano, Basin Coordinator

850-245-8446

Yesenia.Escribano@dep.state.fl.us



Seagrass Compliance Step 1

Year	Banana A	Banana B	Central A	Central SEB	Central B	North A	North B
2009	Yes	No	Yes	Yes	Yes	No	No
2011	Yes	No	Yes	Yes	Yes	No	No
2013	Yes	No	Yes	Yes	Yes	No	No
2015	Yes	No	Yes	Yes	Yes	No	No



Seagrass Compliance Step 2

Year	Banana A	Banana B	Central A	Central SEB	Central B	North A	North B
TMDL Median	1.58	1.41	1.27	1.20	1.15	1.44	1.51
2006	1.75*	1.32	1.29*	1.24*	1.21*	1.20	1.45
2007	1.81*	1.32	1.39*	1.27*	1.27*	1.23	1.39
2009	1.78*	1.32	1.32*	1.27*	1.24*	1.17	1.39
2011	0.71	0.62	0.96	0.89	0.97	1.05	0.93
2013	0.81	0.84	1.14	0.99	1.09	1.02	1.17
2015	0.87	0.93	1.17	1	1.12	1.11	1.17
Compliant?	No	No	No	No	No	No	No

* Indicates median is above the TMDL median