

Florida Department of Environmental Protection



St. Lucie River and Estuary Basin Management Action Plan (BMAP)

February 13, 2013





Morning Presentation Overview

- Overview of File Transfer Protocol (FTP) site contents.
- Review of revised allocation model/updated allocations.
- Review of agricultural reductions (FDACS).*
- Review of project credit calculations.
- Review of BMAP outline and document review process.



Overview of FTP Site Contents



FTP Site Contents

- **Address:**
<http://publicfiles.dep.state.fl.us/DEAR/BMAP/StLucie/>
- **Main folders:**
 - GIS
 - Guidance Documents
 - Meetings
 - Model
 - Monitoring
 - Project Collection Information
 - Project Credit Calculations
 - TMDL Document
- Word document with contact information.



FTP Site Contents, Continued

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/ - Windows Internet Explorer

http://publicfiles.dep.state.fl.us/DEAR/BMAP/StLucie/

File Edit View Favorites Tools Help Convert Select

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/

[\[To Parent Directory\]](#)

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Thursday, January 24, 2013 2:31 PM	<dir> GIS
Tuesday, January 22, 2013 2:26 PM	<dir> Guidance Documents
Monday, January 07, 2013 10:31 AM	<dir> Meetings
Thursday, January 17, 2013 3:33 PM	<dir> Model
Wednesday, November 21, 2012 9:47 AM	<dir> Monitoring
Monday, November 19, 2012 3:55 PM	<dir> Project Collection Information
Monday, January 07, 2013 11:03 AM	<dir> Project Credit Calculations
Wednesday, January 02, 2013 4:41 PM	<dir> TMDL Document

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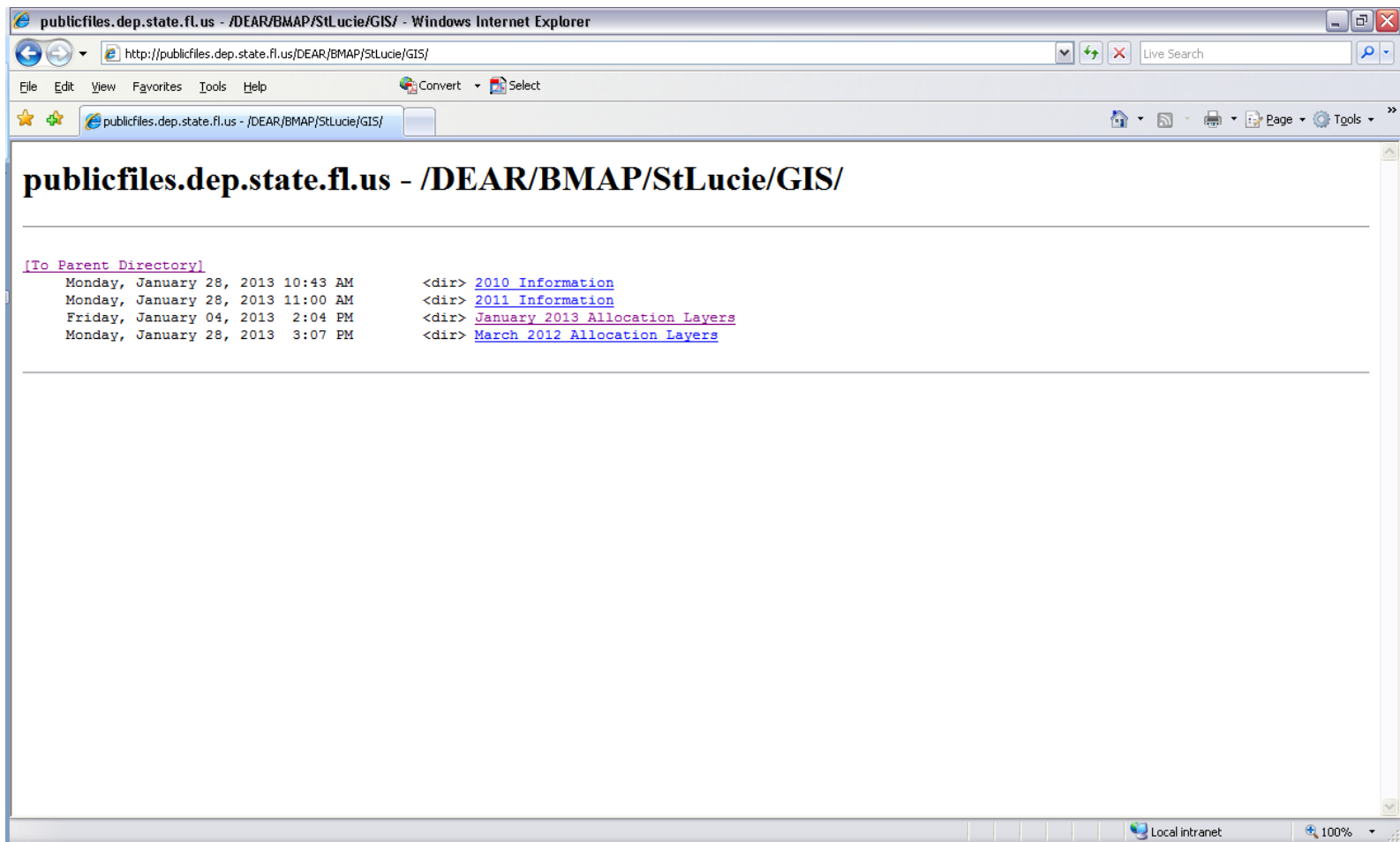


GIS Main Folder

- **2010 Information** (Will be removed from FTP site at end of month.)
- **2011 Information** (Will be removed from FTP site at end of month.)
- **January 2013 Allocation Layers****
 - Base Map
 - Erase Analyses
 - Individual Entity Shapefiles
 - **Information used to develop current allocations.
- **March 2012 Allocation Layers**



GIS Main Folder, Continued





Guidance Documents Main Folder

- Aquatic Plant Harvesting Guidance Document
- Evaluation of Current Stormwater Design Criteria w/in State of Florida (aka Harper Report)
- St. Lucie Muck Removal Guidance Document
- Nutrient Loading Rates, Reduction Factors and Implementation Costs Associated w/BMPs and Technologies (aka Bottcher Report)



Guidance Documents Main Folder, Continued

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/Guidance Documents/ - Windows Internet Explorer

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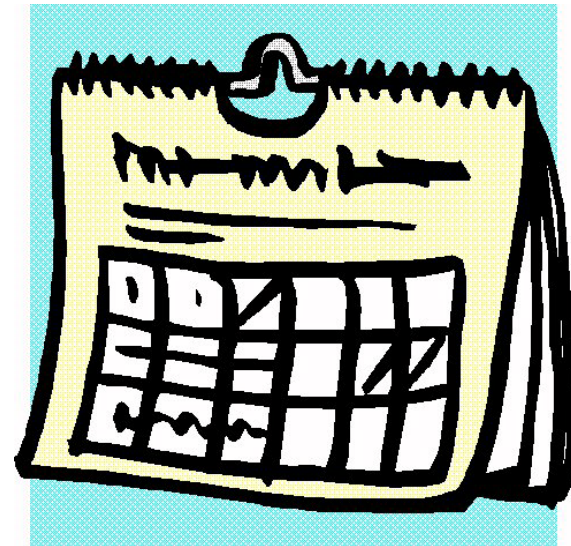
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Tuesday, January 22, 2013 2:25 PM	4523999	EVAL OF CURRENT SW DESIGN CRITERIA WITHIN THE STATE OF FLA-2007.pdf
Friday, November 30, 2012 1:28 PM	168926	St. Lucie Muck Removal Project Credit Guidance 113012.docx
Friday, April 16, 2010 8:33 AM	652363	SWEIRReport_FINAL_07142008.pdf

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Meetings Main Folder

- **2009**
 - July 21, 2009
- **2010**
 - March 25, 2010
 - August 18, 2010
- **2011**
 - March 29, 2011
 - May 24, 2011
 - November 16, 2011
- **2012**
 - March 16, 2012
 - November 29, 2012
 - December 12, 2012
- **2013**
 - January 16, 2013
 - February 13, 2013





Meetings Main Folder, Continued

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/Meetings/ - Windows Internet Explorer

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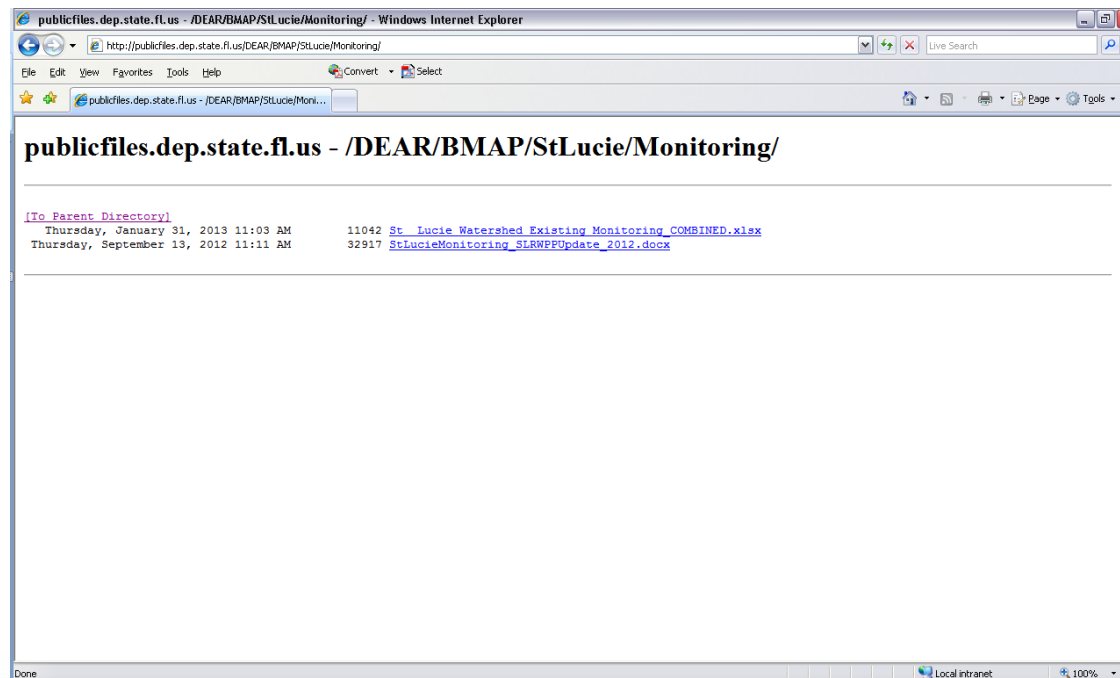
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Monday, January 28, 2013 10:38 AM	<dir> 2013

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Monitoring Main Folder

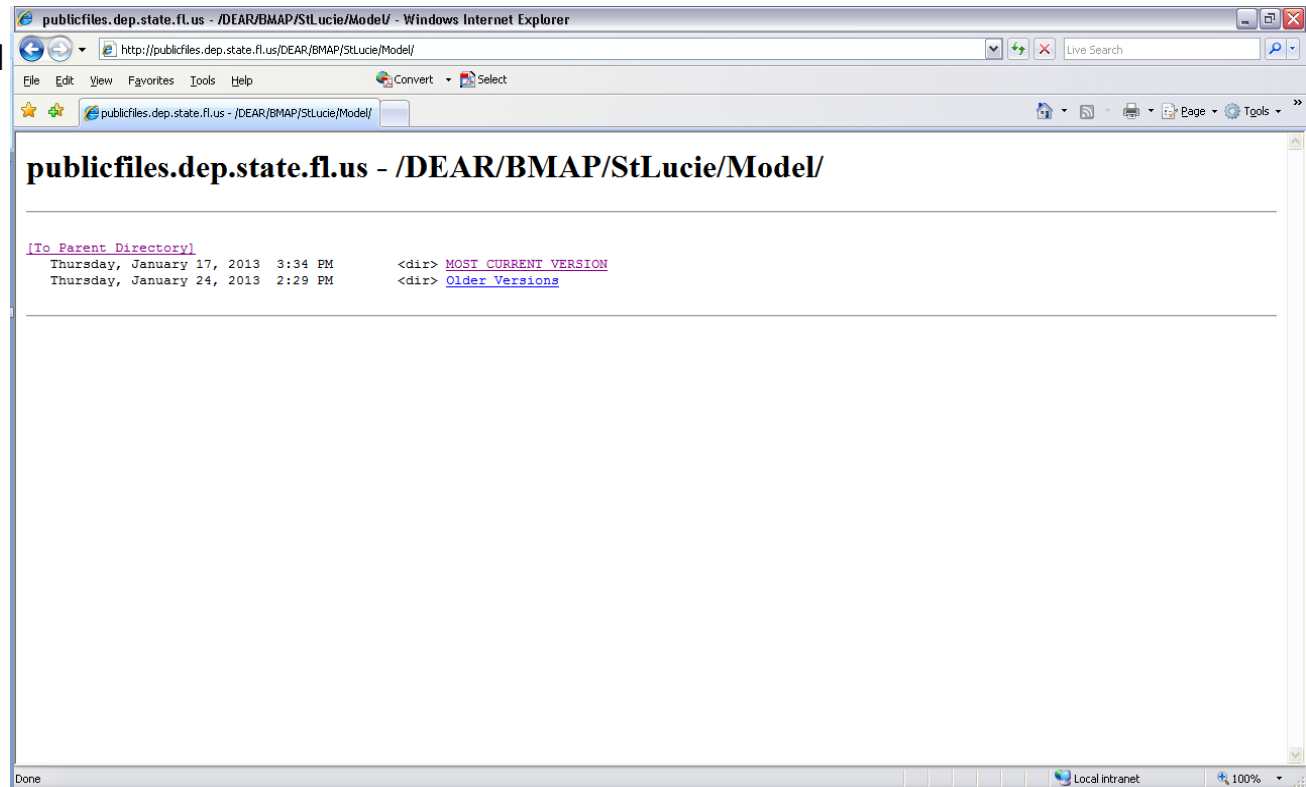
- St. Lucie Watershed Existing Monitoring
- 2012 St. Lucie River Watershed Protection Plan (SLRWPP) Update monitoring table





Model Main Folder

- **Older Versions**
 - March 2011 model
 - March 2012 model
 - November 2012 model
 - January 2013 model
- **MOST CURRENT VERSION**
 - February 2013 model





Project Collection Information Main Folder

- Best Management Practices (BMP) Efficiencies
- Education Efforts Form
- Final Municipal Separate Storm Sewer System (MS4) Tool
- Project Collection Template



Project Collection Information Main Folder, Continued

publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/Project Collection Information/ - Windows Internet Explorer

http://publicfiles.dep.state.fl.us/DEAR/BMAP/StLucie/Project%20Collection%20Information/

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publicfiles.dep.state.fl.us - /DEAR/BMAP/StLucie/Project Collection Information/

[\[To Parent Directory\]](#)

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Monday, November 19, 2012 3:50 PM	69120	Education Efforts Form 112912 Distribution.doc
Monday, November 19, 2012 3:50 PM	169344	FINAL MS4 Load Reduction Tool.xlsx
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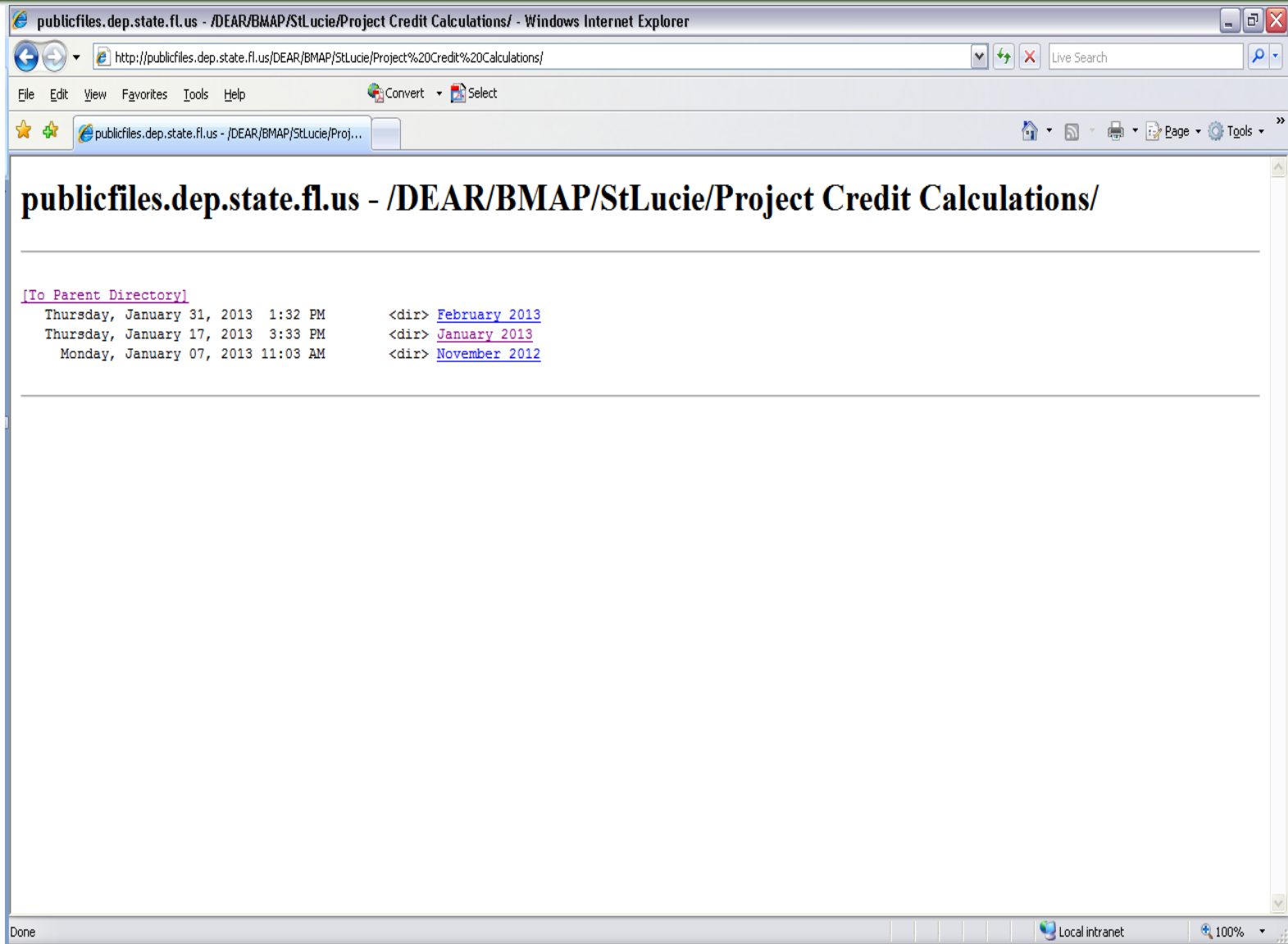


Project Credit Calculations Main Folder

- **Folders:**
 - November 2012
 - January 2013
 - February 2013
- Each entity has its own spreadsheet.
- If an entity has credits for nutrient load reductions from MS4 maintenance activities, it will also have a separate spreadsheet with those credits.



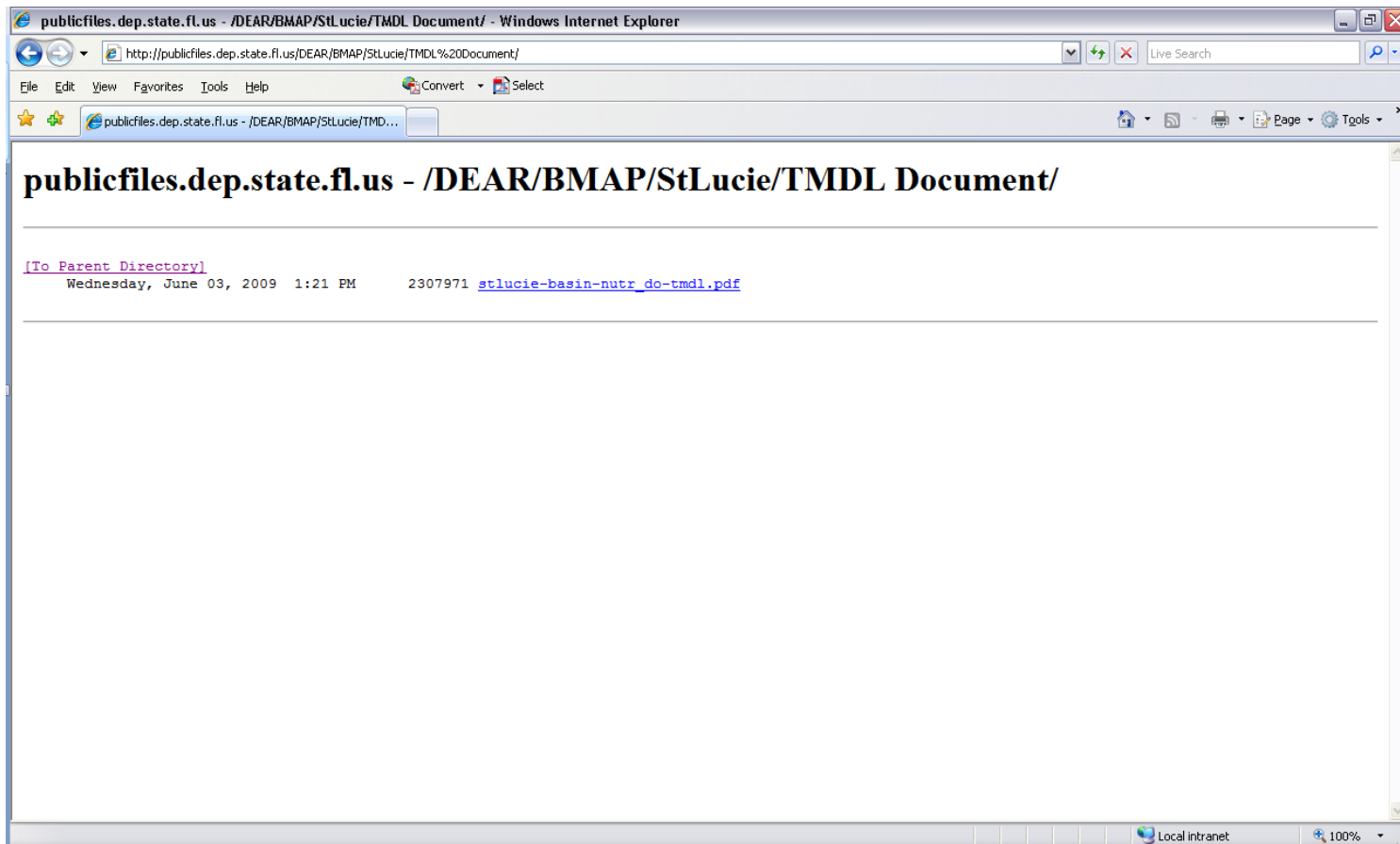
Project Credit Calculations Main Folder, Continued





TMDL Document Main Folder

- Contains total maximum daily load (TMDL) document, which is the basis for the BMAP.



Questions





Review of Revised Allocation Model/Updated Allocations



Allocation Model Updates

- Changes since January 16th meeting:
 - **Rounding Factors**
 - Added rounding factors to target loads per acre, starting loads, acres, allocations, and required reductions.
 - Factors were not included in any older version of model.
 - **Basin Runoff in C-44/S-153 Sub-basin**
 - Measured at S-308 and S-80 structures (1996-2005 data).
 - Per the South Florida Water Management District (SFWMD), 76.5% of the basin runoff actually reaches the estuary. The remaining 23.5% of the runoff enters Lake Okeechobee.
 - We adjusted the flows the C-44/S-153 sub-basin to account for this.
 - This change affected:
 - Target load per acre
 - Natural lands
 - Allocations/reductions for stakeholders in the C-44/S-153 sub-basin
 - Projects/project credits in C-44/S-153 sub-basin



Revised Targets for C-44 S-153

C-44 S-153	TN Target	TP Target
Estimated Concentration (mg/L)	1.36	0.24
Target Concentration (mg/L)	0.72	0.081
Reduction Required (%)	47%	66%
Estimated load per acre (lbs/acre)	5.13	0.98
Target Load per acre (lbs/acre)	2.72	0.33



Revised Total Nitrogen (TN) Allocations

Entity	Basins 4 5 6 (lbs/yr)	C-23 (lbs/yr)	C-24 (lbs/yr)	C-44 S- 153 (lbs/yr)	North Fork (lbs/yr)	South Fork (lbs/yr)	Total (lbs/yr)	Total (MT/yr)
Agriculture	9,218	220,334	267,284	179,349	11,306	62,707	750,198	340.28
FDOT District 4	645	796	577	734	2,462	2,194	7,408	3.36
Fort Pierce MS4	-	-	-	-	10,562	-	10,562	4.79
Hobe St. Lucie Conservancy District	-	-	-	8,021	-	6,710	14,731	6.68
Martin County MS4	18,809	4,519	-	6,068	12,477	26,782	68,655	31.14
North St. Lucie River WCD	-	-	16,598	-	92,599	-	109,557	49.69
Port St. Lucie MS4	-	848	5,296	-	97,236	-	103,380	46.89
St. Lucie County MS4	-	-	-	-	11,386	-	11,386	5.16
St. Lucie County Non-MS4	-	1,984	9,144	-	3,266	-	14,394	6.53
Stuart MS4	-	-	-	-	1,006	8,232	9,238	4.19
Troup-Indiantown WCD	-	-	-	37,125	-	-	37,125	16.84
Copper Creek CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Okeechobee County MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Pal Mar WCD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Sewall's Point MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Tradition CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Turnpike - <i>de minimus</i>	-	-	-	-	-	-	-	-
Verano CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Total	28,672	228,481	299,259	231,297	242,300	106,625	1,136,634	515.57



Revised Total Phosphorus (TP) Allocations

Entity	Basins 4 5 6 (lbs/yr)	C-23 (lbs/yr)	C-24 (lbs/yr)	C-44 S- 153 (lbs/yr)	North Fork (lbs/yr)	South Fork (lbs/yr)	Total (lbs/yr)	Total (MT/yr)
Agriculture	1,051	22,881	29,204	21,759	1,269	7,089	83,253	37.76
FDOT District 4	74	83	63	89	276	248	833	0.38
Fort Pierce MS4	-	-	-	-	1,186	-	1,186	0.54
Hobe St. Lucie Conservancy District	-	-	-	973	-	759	1,732	0.79
Martin County MS4	2,145	469	-	736	1,401	3,028	7,779	5.23
North St. Lucie River WCD	-	-	1,853	-	10,397	-	12,250	5.56
Port St. Lucie MS4	-	88	579	-	10,918	-	11,585	5.25
St. Lucie County MS4	-	-	-	-	1,278	-	1,278	0.58
St. Lucie County Non-MS4	-	206	999	-	367	-	1,572	0.71
Stuart MS4	-	-	-	-	113	931	1,044	0.47
Troup-Indiantown WCD	-	-	-	4,504	-	-	4,504	2.04
Copper Creek CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Okeechobee County MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Pal Mar WCD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Sewall's Point MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Tradition CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Turnpike - <i>de minimus</i>	-	-	-	-	-	-	-	-
Verano CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Total	3,270	23,727	32,698	28,061	27,205	12,055	127,016	57.61



Revised TN Reductions

Entity	Basins 4 5 6 (lbs/yr)	C-23 (lbs/yr)	C-24 (lbs/yr)	C-44 S- 153 (lbs/yr)	North Fork (lbs/yr)	South Fork (lbs/yr)	Total (lbs/yr)	Total (MT/yr)
Agriculture	7,833	249,747	307,568	171,354	13,049	63,373	812,924	368.74
FDOT District 4	307	714	373	442	1,815	1,455	5,106	2.32
Fort Pierce MS4	-	-	-	-	6,479	-	6,479	2.94
Hobe St. Lucie Conservancy District	-	-	-	5,353	-	4,109	9,462	4.29
Martin County MS4	7,585	1,428	-	2,175	7,329	13,641	32,158	14.59
North St. Lucie River WCD	-	-	20,293	-	67,553	-	87,846	39.85
Port St. Lucie MS4	-	667	2,979	-	49,455	-	53,101	24.09
St. Lucie County MS4	-	-	-	-	6,728	-	6,728	3.05
St. Lucie County Non-MS4	-	-	7,613	-	2,143	-	9,756	4.23
Stuart MS4	-	-	-	-	608	4,152	4,760	2.16
Troup-Indiantown WCD	-	-	-	25,094	-	-	25,094	11.38
Copper Creek CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Okeechobee County MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Pal Mar WCD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Sewall's Point MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Tradition CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Turnpike - <i>de minimus</i>	-	-	-	-	-	-	-	-
Verano CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Total	15,725	252,556	338,826	204,418	155,159	86,730	1,053,414	477.82



Revised TP Reductions

Entity	Basins 4 5 6 (lbs/yr)	C-23 (lbs/yr)	C-24 (lbs/yr)	C-44 S- 153 (lbs/yr)	North Fork (lbs/yr)	South Fork (lbs/yr)	Total (lbs/yr)	Total (MT/yr)
Agriculture	2,869	127,374	107,267	45,050	4,719	19,780	307,059	139.28
FDOT District 4	126	381	163	86	542	411	1,709	0.78
Fort Pierce MS4	-	-	-	-	2,693	-	2,693	1.22
Hobe St. Lucie Conservancy District	-	-	-	1,716	-	1,804	3,520	1.60
Martin County MS4	3,785	1,781	-	695	2,938	5,391	14,590	6.78
North St. Lucie River WCD	-	-	7,210	-	26,424	-	33,634	12.26
Port St. Lucie MS4	-	430	1,627	-	21,374	-	23,431	10.63
St. Lucie County MS4	-	-	-	-	2,849	-	2,849	1.29
St. Lucie County Non-MS4	-	632	2,962	-	906	-	4,500	2.04
Stuart MS4	-	-	-	-	266	1,796	2,062	0.94
Troup-Indiantown WCD	-	-	-	8,119	-	-	8,119	3.68
Copper Creek CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Okeechobee County MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Pal Mar WCD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Sewall's Point MS4 - <i>de minimus</i>	-	-	-	-	-	-	-	-
Tradition CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Turnpike - <i>de minimus</i>	-	-	-	-	-	-	-	-
Verano CDD - <i>de minimus</i>	-	-	-	-	-	-	-	-
Total	6,780	130,598	119,229	55,666	62,711	29,182	404,166	183.23

Questions





Review of Agricultural Reductions (FDACS)



Review of Project Credit Calculations



Revised Project Credit Calculations

- Received comments/revisions from:
 - Martin County
 - St. Lucie County
 - Stuart
 - Port St. Lucie/St. Lucie West Services District
 - Florida Department of Transportation (FDOT)
- If you have any additional comments or changes, please submit them to Katie.Hallas@dep.state.fl.us and to Marcy.Policastro@wildwoodconsulting.net by **Thursday, February 28th.**



Revised TN Project Credit Calculations

Entity	TN Reduction Required (lbs/yr)	Project TN Credit (lbs/yr)	% TN Reduction Achieved
Agriculture	812,924.0	144,858.6	17.8%
FDOT District 4	5,106.0	2,026.2	39.7%
Fort Pierce MS4	6,479.0	10,724.6	165.5%
Hobe St. Lucie Conservancy District	9,462.0	10,097.2	106.7%
Martin County MS4	32,158.0	14,623.9	45.5%
North St. Lucie River WCD	87,846.0	51,391.9	58.5%
Port St. Lucie MS4	53,101.0	24,983.9	47.0%
St. Lucie County MS4	6,728.0	5,277.3	78.4%
St. Lucie County Non-MS4	9,756.0	4,175.1	42.8%
Stuart MS4	4,760.0	3,916.3	82.3%
Troup-Indiantown WCD	25,094.0	23,199.0	92.4%
Copper Creek CDD*	0.0	0.0	100.0%
Okeechobee County MS4*	0.0	0.0	100.0%
Pal Mar WCD*	0.0	0.0	100.0%
Sewall's Point MS4*	0.0	198.9	100.0%
Tradition CDD*	0.0	0.0	100.0%
Turnpike*	0.0	23.2	100.0%
Verano CDD*	0.0	0.0	100.0%

Note: *de minimus* stakeholders are marked with a “*.”



Revised TP Project Credit Calculations

Entity	TN Reduction Required (lbs/yr)	Project TN Credit (lbs/yr)	% TN Reduction Achieved
Agriculture	307,059.0	46,706.9	15.2%
FDOT District 4	1,709.0	1,074.1	62.8%
Fort Pierce MS4	2,693.0	6,532.8	242.6%
Hobe St. Lucie Conservancy District	3,520.0	3,272.6	93.0%
Martin County MS4	14,590.0	5,135.8	35.2%
North St. Lucie River WCD	33,634.0	14,444.7	42.9%
Port St. Lucie MS4	23,431.0	8,903.9	38.0%
St. Lucie County MS4	2,849.0	2,032.1	71.3%
St. Lucie County Non-MS4	4,500.0	1,484.3	33.0%
Stuart MS4	2,062.0	1,652.7	80.2%
Troup-Indiantown WCD	8,119.0	7,496.7	92.3%
Copper Creek CDD*	0.0	0.0	100.0%
Okeechobee County MS4*	0.0	0.0	100.0%
Pal Mar WCD*	0.0	0.0	100.0%
Sewall's Point MS4*	0.0	62.6	100.0%
Tradition CDD*	0.0	0.0	100.0%
Turnpike*	0.0	3.4	100.0%
Verano CDD*	0.0	0.0	100.0%

Note: *de minimus* stakeholders are marked with a “*.”

Questions





Review of BMAP Outline and Document Review Process



Overview of BMAP Contents

DRAFT

BASIN MANAGEMENT ACTION PLAN

**for the Implementation of Total Maximum Daily Loads for Nutrients
and Dissolved Oxygen Adopted by the Florida Department of
Environmental Protection**

in the

St. Lucie River and Estuary Basin

developed by the

St. Lucie River and Estuary Basin Technical Stakeholders

in cooperation with the

Florida Department of Environmental Protection

Division of Environmental Assessment and Restoration

Bureau of Watershed Restoration

Tallahassee, Florida 32399

January 2013



Draft BMAP Sections

- Acknowledgements Section
- List of Acronyms
- List of Figures
- List of Tables
- Executive Summary
- Chapters
- Appendices



Draft BMAP Chapters

- Chapter 1: Context, Purpose, and Scope of Plan
- Chapter 2: St. Lucie River and Estuary Basin Setting
- Chapter 3: Pollutant Sources and Anticipated Outcomes
- Chapter 4: Detailed Allocations
- Chapter 5: Management Actions
- Chapter 6: Assessing Progress and Making Changes
- Chapter 7: Commitment to Plan



Draft BMAP Appendices

- Appendix A: TMDL Basin Rotation Schedule
- Appendix B: Summary of Statutory Provisions Guiding BMAP Development and Implementation
- Appendix C: Summary of EPA Recommended Elements of a Comprehensive Watershed Plan
- Appendix D: Projects to Achieve the TMDL
- Appendix E: Glossary of Terms
- Appendix F: Bibliography of Key References and Websites



Review Process

- Review of draft BMAP contents at next meeting (**March 13th**).
 - The draft BMAP will be provided about one week before this meeting.
- Comments will be due on **March 27th**.
- Comments will be incorporated and discussed at **April 10th** meeting.
- Additional comments will be due **April 24th**.



Review Process, Continued

- A single policymaker meeting for all identified policymakers will be held.
 - Purpose will be to review the allocations and BMAP.
- A public meeting on the final draft BMAP will be held.
- The BMAP will then be presented to the FDEP Secretary for signing and adoption.

Questions





BREAK



Afternoon Presentation Overview

- Discuss monitoring plan objectives.
- Discuss parameters and sampling frequency.
- Discuss existing stations, and identify key existing stations/gaps in network.
- Discuss additional monitoring needs.



Monitoring Plan Objectives



Monitoring Plan Objectives

- **Example Primary Objective**

- Track trends in TN, TP, and BOD loads in major canals and tributaries in the basin.

- **Example Secondary Objectives**

- Measure reductions in watershed loadings of the total maximum daily load (TMDL) target pollutant(s).
- Measure effectiveness of individual or collective projects in reaching TMDL target-pollutant loadings.



Parameters and Sampling Frequency



Possible Parameters and Frequencies

Core Parameters	Supplemental Parameters
TP	Total Suspended Solids/Turbidity
Orthophosphate as P	Alkalinity
Nitrate/Nitrite as Nitrogen (N)	
N, Ammonia	
Total Kjeldahl Nitrogen (TKN)	
Dissolved Oxygen (DO)	
pH	
Temperature	
Specific Conductance	
BOD	
Chlorophyll- <i>a</i>	

Frequency (Depending on parameter):

- Monthly
- Biweekly



Review of Existing/Historical Monitoring in Watershed



St. Lucie County

Station Name	Start Date	End Date	Primary Type	Data Available
Platt's Creek Influent	1/21/2008	Present	Grab	Tri-weekly: TP, TN, BOD
Platt's Creek Effluent	1/21/2008	Present	Grab	Tri-weekly: TP, TN, BOD
Indian River Estates Influent	3/2/2009	Present	Grab	Tri-weekly: TP, TN, BOD
Indian River Estates Effluent	3/2/2009	Present	Grab	Tri-weekly: TP, TN, BOD



St. Lucie West Services District

Station Name	Other Name	Start Date	End Date	Primary Type	Data Available
Gate 1	1E	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 2	2C	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 3	3B	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 4	4E	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 5	5	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 6	6B	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 7	7B	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 8	7A	8/1/2011	1/4/2013	Outfall Structure	TN as N, TKN as N, TP as P, NO3 as N, NO2 as N, Copper, BOD-5
Gate 9	N1/Lake Charles Canal	8/1/2011	1/4/2013	Outfall Structure	Fecal Coliform
C-108 Canal	N/A	8/1/2011	1/4/2013	Outfall Structure	Fecal Coliform



SFWMD

Station Name	Other Name	Data Available
IRL06	IRL	Grab 7X/Yr Ammonia-N, Chlorophyll- <i>a</i> , Chlorophyll- <i>b</i> , Color, Total Depth, DO, TKN, NO _x as N, NO ₃ as N, NO ₂ as N, pH, Pheophytin, Orthophosphate as P, TP as P, S, Secchi Disk Depth, Specific Conductance, Temperature, Total Suspended Solids (TSS), Turbidity, Volatile Suspended Solids
IRL08B	IRL	
IRL11B	IRL	
IRL12B	IRL	
IRL15B	IRL	
IRL17	IRL	
IRL18B	IRL	
IRL22	IRL	
IRL27	IRL	
IRL31B	IRL	
IRL34B	IRL	
IRL36	IRL	
IRL39	IRL	
HR1	SE	



SFWMD

Station Name	Other Name	Data Available
SE 01	SE	Grab Monthly, Ammonia-N, TOC, Chlorophyll- <i>a</i> , Color, DO, TKN, NO _x as N, NO ₂ , PAR (only at SE01, SE02, SE03, SE11, HR1), pH, Pheophytin, Orthophosphate as P, TP as P, S, Secchi Disk Depth, Specific Conductance, Temperature, Turbidity, VSS
SE 02	SE	
SE 03	SE	
SE 08B	SE	
SE 09	SE	
SE 11	SE	
SE06B	SE	
SE12B	SE	
SE13B	SE	



SFWMD

Station Name	Other Name	Data Available
SLT-1	SLT	Grab Biweekly, Ammonia-N, TKN, NOx as N, Orthophosphate as P, TP, Specific Conductance
SLT-10A	SLT	
SLT-10B	SLT	
SLT-11	SLT	
SLT-17	SLT	
SLT-19	SLT	
SLT-2A	SLT	
SLT-21	SLT	
SLT-22A	SLT	
SLT-26	SLT	



SFWMD

Station Name	Other Name	Data Available
SLT-3	SLT	Grab Biweekly, Ammonia-N, TKN, NOx as N, Orthophosphate as P, TP, Specific Conductance
SLT-30A	SLT	
SLT-31	SLT	
SLT-34A	SLT	
SLT-35	SLT	
SLT-36	SLT	
SLT-37A	SLT	
SLT-38	SLT	
SLT-38A	SLT	
SLT-39	SLT	



SFWMD

Station Name	Other Name	Data Available
SLT-4	SLT	Grab Biweekly, Ammonia-N, TKN, NOx as N, Orthophosphate as P, TP, Specific Conductance
SLT-40	SLT	
SLT-40A	SLT	
SLT-42B	SLT	
SLT-44	SLT	
SLT-45	SLT	
SLT-5	SLT	
SLT-6	SLT	
SLT-7	SLT	
SLT-9	SLT	



SFWMD

Station Name	Other Name	Data Available
C23S48	WQM	Grab, Monthly, Ammonia-N, Calcium, Total Organic Carbon, Color, Total Copper, Hardness as CaCO ₃ , Magnesium, Nitrate-N, Nitrite-N, Orthophosphate as P, Total Suspended Solids, Turbidity
C24S49	WQM	
C44S80	WQM	
GORDYRD	WQM	Grab, Weekly, Dissolved Oxygen, Total Kjeldahl Nitrogen, Nitrate+Nitrite-N, pH, Total Phosphate as P, Specific Conductivity, Temperature
C23S48	WQM	
C24S49	WQM	
C44S80	WQM	
GORDYRD	WQM	
C25S50	WQM	
C23S48	WQM	Grab, Quarterly, Silica
C24S49	WQM	
C44S80	WQM	
GORDYRD	WQM	
C25S50	WQM	
G81	WQM	
C25S50	WQM	Grab, Monthly, Ammonia-N, Total Organic Carbon, Color, Nitrate-N, Nitrite-N, Orthophosphate as P, Total Suspended Solids, Turbidity
G81	WQM	Grab, Weekly, Dissolved Oxygen, pH, Specific Conductivity, Temperature
G81	WQM	Grab, Monthly, Calcium, Total Organic Carbon, Color, Total Copper, Hardness as CaCO ₃ , Magnesium, Nitrate-N, Nitrite-N, Total Suspended Solids, Turbidity
G81	WQM	Grab, Biweekly, Total Kjeldahl Nitrogen, Nitrate+Nitrite-N, Total Phosphate as P, Ammonia-N, Orthophosphate as P
C23S48	WQM	Autosampler Time Proportional, Weekly, Total Kjeldahl Nitrogen, Total Phosphate as P
C44S80	WQM	
C24S49	WQM	Autosampler Time Composite if Flowing, Weekly, Total Kjeldahl Nitrogen, Total Phosphate as P
GORDYRD	WQM	Autosampler Flow Proportional, Weekly, Total Kjeldahl Nitrogen, Total Phosphate as P
S308C	X	Grab, Biweekly, Orthophosphate as P, Chlorophyll-a (LC), Total Organic Carbon, Nitrate+Nitrite-N, Total Kjeldahl Nitrogen, Total Alkalinity as CaCO ₃ , Dissolved Oxygen, Ammonia-N, Total Suspended Solids, Total Iron, Specific Conductance, pH, Temperature, Total Phosphate as P, Turbidity



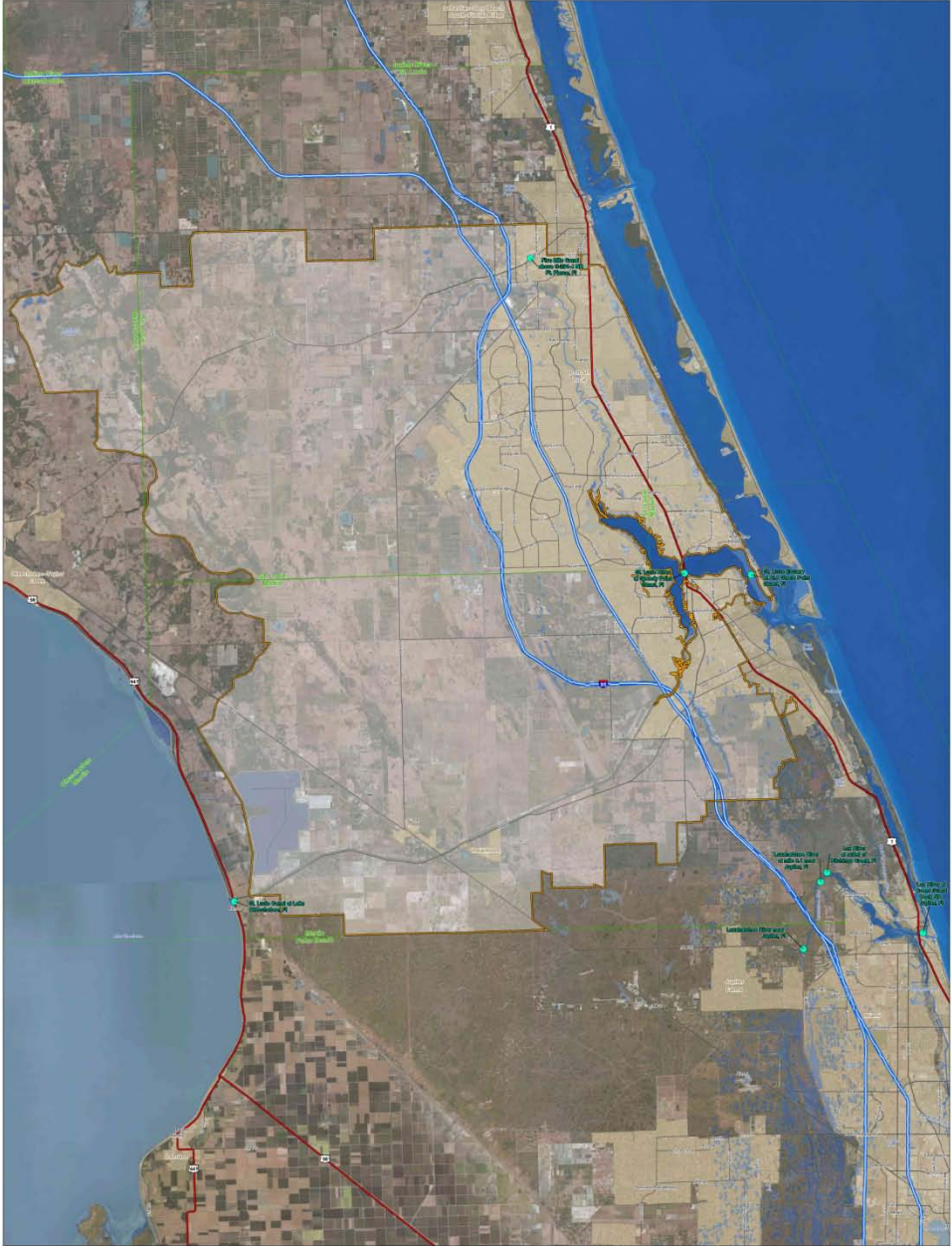
U.S. Geological Survey

Station Name	Other Name	Data Available
272524080221800	Five Mile Canal above S-29-1-4 nr Ft Pierce	Gage height, water temp, discharge
2276870	St Lucie Canal at Lake Okeechobee	Discharge, gage height
2277600	Loxahatchee River nr Jupiter	Discharge, gage height, stream water level
2277100	St Lucie River at Speedy Point, Stuart, FL	Gage height, water temp, specific conductance, salinity
2277110	St Lucie River at A1A (Steele Point), Stuart, FL	Gage height, water temp, stream level, specific conductance, salinity
265906080093500	Loxahatchee River at Mile 9.1 nr Jupiter	Gage height, water temp, specific conductance, salinity
265929080091800	Loxahatchee River at Outlet of Kitchens Creek	Water temp, gage height, specific conductance, salinity
265651080045500	Lox River at Coast Guard Dock nr Jupiter	Water temp, gage height, specific conductance, salinity



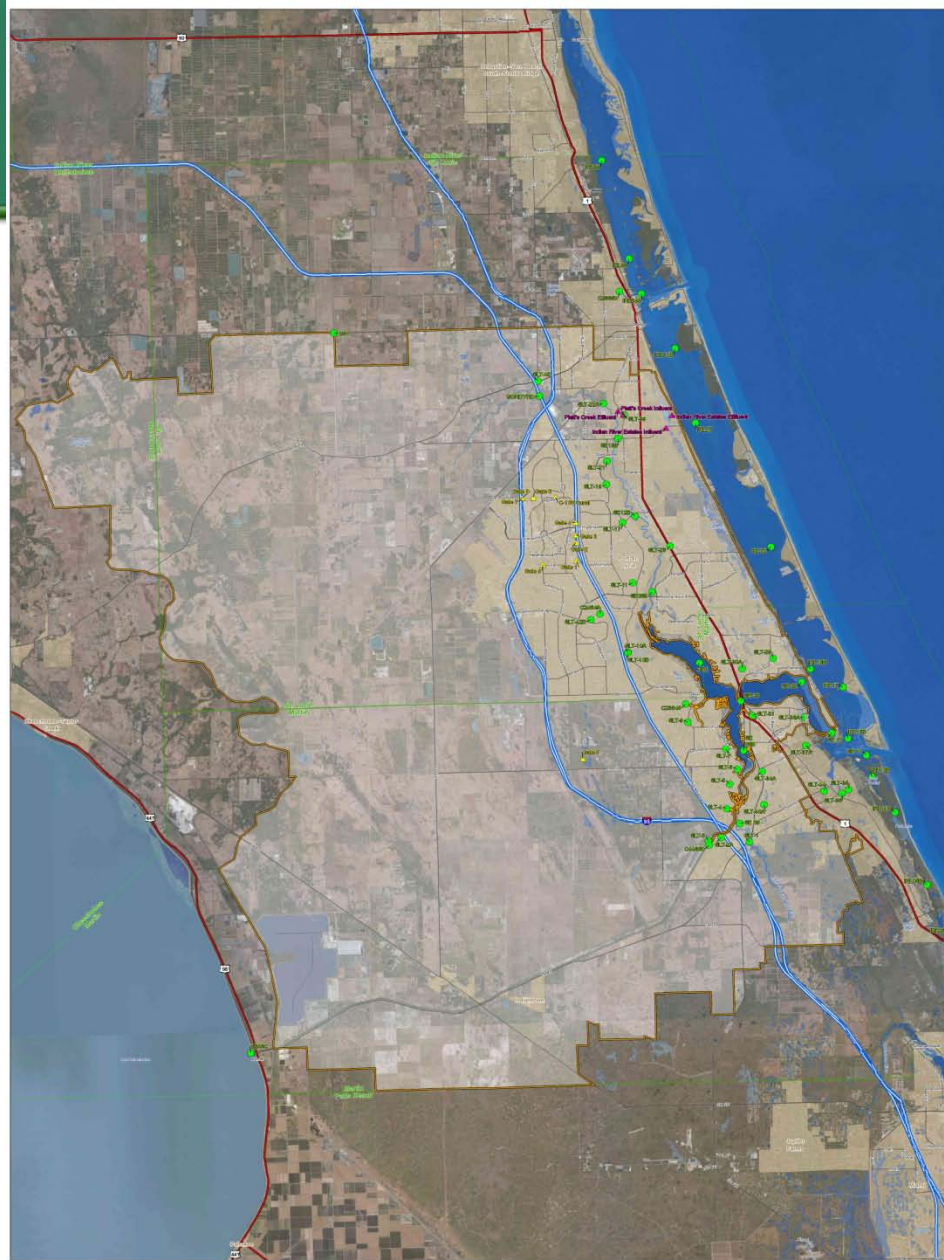
Existing Aquatic Program Monitoring

Organization	Number of Stations	Location	Frequency	Period	Analyte
Seagrass Mapping & Monitoring	80+	Transect locations represent all segments of the lagoon	Semiannually	1994–present	Species composition, epiphytes, coverage, abundance, drift algae, light extinction, salinity, temperature, DO
Seagrass Mapping & Monitoring	Lagoon-wide maps	Entire lagoon including SLE upstream to Roosevelt Bridge (US 1)	Every 2–5 years	1986–present	Seagrass distribution & density
Seagrass Mapping & Monitoring	10	Southern Indian River Lagoon	Bi-monthly	2008–present	Seagrass canopy height, seagrass percent cover, macroalgae percent cover, spatial distribution of seagrass species, physical parameters.
			(3 sites near SLE are monitored monthly)		
CERP Oyster Monitoring & Mapping: FWC	9	SLE	Semiannually	2005–present	Oyster spat recruitment, oyster condition, reproductive, & disease monitoring. Water quality (salinity, temperature, pH, DO, Secchi depth) is monitored monthly. Juvenile growth & mortality were measured in 2005–2007 & added into the 2011 monitoring plan.



Map prepared by the Bureau of Watershed Restoration,
this map is not for legal decision making purposes.
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BMAP: Katie Hallas (850) 245-8432
Map ID: FlowStations_MM
Created: 02-11-2013

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St. Lucie BMAP Existing Monitoring Stations

Map prepared by the Bureau of Watershed Restoration,
this map is not for legal decision making purposes.

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Map ID: WaterQuality_MM
Created: 02-11-2013



0 2 4 6 Miles

- St. Lucie Co Monitoring Stations
- St. Lucie West Service District Monitoring Stations
- SFWMD Active Monitoring Stations
- Interstate
- Primary Highways
- Secondary Highways

- River / Stream
- Waterbodies
- Urban Areas
- St. Lucie BMAP Boundary
- Florida Counties



Historical Water Quality Monitoring

Organization	Type	Number of Stations	Location	Frequency	Period	Analyte
Blue-green Algae Interagency Coordination Committee	Chlorophyll	As required by the Blue-Green Algae Interagency Coordination Committee	SLE when	As required by the Blue-Green Algae Interagency	2005–2006	Chla
			Blue-green algae is present	Coordination Committee		



Historical Aquatic Program Monitoring

Organization	Number of Stations	Location	Frequency	Analyte	Summary
American Recovery & Reinvestment Act (ARRA) Project Oyster Monitoring & Mapping: FFWCC and Mapping: Florida Fish and Wildlife Conservation Commission (FWC)	2 natural sites	SLE	summer 2009 –	Oyster spat recruitment, oyster condition, reproduction, & disease monitoring. Water quality (salinity, temperature, pH, DO, Secchi depth) is monitored monthly.	Adult oysters are sampled twice per year from replicate stations within the SLE establishing an oyster baseline. Oyster monitoring includes reproduction, recruitment, & disease patterns.
	4 restoration reefs		summer 2011		



Additional Monitoring Needs



Additional Monitoring/Research Needs

- What are the monitoring needs that should be included in the BMAP monitoring plan?
- What about research needs?
 - e.g., nutrient flux study, further hotspot analysis, legacy loads

Questions

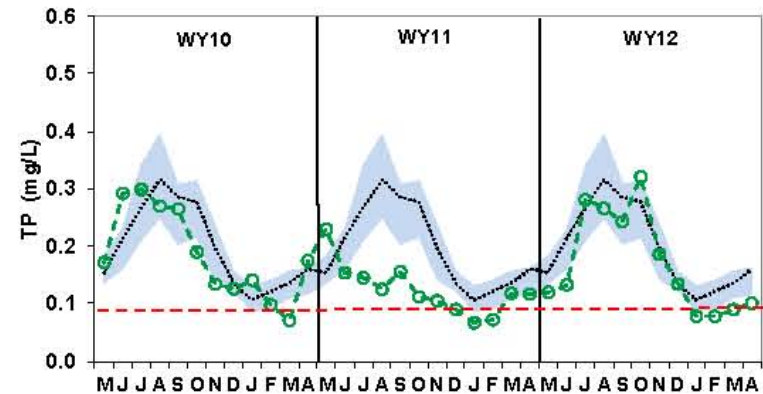
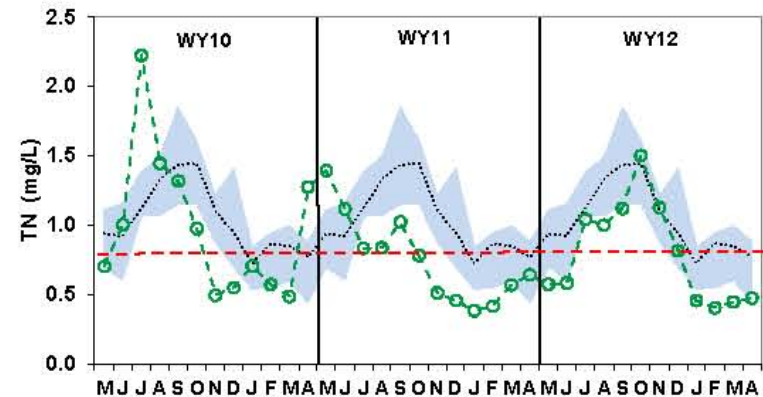




Roosevelt Bridge Station Data

- TN fluctuated seasonally from 0.5 to 1.5 mg/L.
- Annual and long-term average TN concentrations exceeded the TMDL target of 0.72 mg/L.
- TP concentrations generally were less than the long-term medians.
- The annual and long-term mean concentrations were elevated relative to the TMDL target of 0.081 mg/L.

SE03



Source: Draft 2013 South Florida Environmental Report

Questions

