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June 26, 2017

Mr. Jonathan Turner
Florida Department of Environmental Protection
Mail Station 2500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: **FDOT District One**
Sarasota County NPDES Phase I MS4 Annual Report (Term 4 – Year 3)
Permit Number FLS000004-004
E Sciences Project No. 1-1999-013

Dear Mr. Turner:

Attached is the annual report form for the Sarasota County NPDES Phase I Municipal Separate Storm Sewer System (MS4) Permit, Permit Number FLS000004-004, for Florida Department of Transportation (FDOT) District One. The form is for annual report Term 4 – Year 3, a reporting time period of January 1, 2016 through December 31, 2016.

Additionally, as required for the Year 3 annual report, a summary of the ambient water quality monitoring data analysis and a copy of the Year 3 Pollutant Load Estimates Report for Sarasota County have also been included for your review and use. If you need any other information, please do not hesitate to contact us.

Sincerely,
E SCIENCES, INCORPORATED

Teayann Duclos
Project Scientist

Robert Potts
Project Manager

Attachment

cc: Steven Kelly, FDOT District One
File

E Sciences, INCORPORATED
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Sarasota County NPDES Phase I MS4 Annual Report

Term 4 – Year 3

Permit No. FLS000004-004

June 2017

Prepared for:

Florida Department of Transportation - District One
801 North Broadway Avenue
Bartow, Florida 33831

ANNUAL REPORT FORM FOR INDIVIDUAL NPDES PERMITS FOR MUNICIPAL SEPARATE STORM SEWER SYSTEMS (RULE 62-624.600(2), F.A.C.)

- This Annual Report Form must be completed and submitted to the Department to satisfy the annual reporting requirements established in Rule 62-621.600, F.A.C.
- Submit this fully completed and signed form and any REQUIRED attachments by email to the NPDES Stormwater Program Administrator or to the MS4 coordinator. Their names and email addresses are available at: http://www.dep.state.fl.us/water/stormwater/npdes/contacts.htm. If files are larger than 10mb, materials may be placed on the NPDES Stormwater ftp site at: ftp://ftp.dep.state.fl.us/pub/NPDES_Stormwater/. After uploading the ANNUAL REPORT files, an email must be sent to the MS4 coordinator or the NPDES program administrator notifying them the report is ready for downloading
- Refer to the Form Instructions for guidance on completing each section.
- **Please print or type information in the appropriate areas below**

SECTION I. BACKGROUND INFORMATION

A.	Permittee Name: FDOT District One		
B.	Permit Name: Sarasota County Municipal Separate Storm Sewer System		
C.	Permit Number: FLS000004-004 (Cycle 4)		
D.	Annual Report Year: ☐ Year 1 ☐ Year 2 ☒ Year 3 ☐ Year 4 ☐ Year 5 ☐ Other, specify Year:		
E.	Reporting Time Period (month/year): January 1, 2016 through December 31, 2016		
F.	Name of the Responsible Authority: Sharon L. Harris, P.E.		
	Title: District Maintenance Administrator		
	Mailing Address: 801 N. Broadway Ave., MS 1-7		
	City: Bartow	Zip Code: 33830	County: Polk
	Telephone Number: (863) 519-2314	Fax Number: (863) 534-7045	
	E-mail Address: Sharon.Hedrickharris@dot.state.fl.us		
G.	Name of the Designated Stormwater Management Program Contact (if different from Section I.F above): Steven Kelly		
	Title: District Maintenance Environmental Specialist		
	Department: Maintenance		
	Mailing Address: 801 N. Broadway Ave., MS 1-7		
	City: Bartow	Zip Code: 33831	County: Polk
	Telephone Number: (863) 519-2762	Fax Number: (863) 534-7045	
	E-mail Address: Steven.Kelly@dot.state.fl.us		

SECTION II. MS4 MAJOR OUTFALL INVENTORY (Not Applicable In Year 1)

A.	Number of outfalls ADDED to the outfall inventory in the current reporting year (insert "0" if none): 0 (Does this number include non-major outfalls? ☐ Yes ☐ No ☒ Not Applicable)
B.	Number of outfalls REMOVED from the outfall inventory in the current reporting year (insert "0" if none): 0 (Does this number include non-major outfalls? ☐ Yes ☐ No ☒ Not Applicable)
C.	Is the change in the total number of outfalls due to lands annexed or vacated? ☐ Yes ☐ No ☒ Not Applicable

SECTION III. MONITORING PROGRAM

A.	Provide a brief statement as to the status of monitoring plan implementation: The monitoring plan has been developed and implemented by Sarasota County on behalf of the co-permittees. The County's monitoring program is available for review on the Sarasota Water Atlas website: (*http://www.sarasota.wateratlas.usf.edu/coastal/conditions-overview.aspx*)
B.	Provide a brief discussion of the monitoring results to date: FDOT District One's monitoring plan is carried out through an inter-local agreement with Sarasota County. The County's monitoring program includes analysis of seventeen (17) tributaries and six (6) coastal bays. The health of the bays is being used as the overall indicator of the success of the water quality and stormwater management programs being implemented throughout the County by the Sarasota County MS4 co-permittees, including FDOT. Below is a summary of the bay conditions analysis for Chlorophyll a, Total Nitrogen, and Total Phosphorous. All 6 bays were in the Caution category of the Bay Conditions Index. The following is the summary for each parameter: **Chlorophyll a Summary**: Two (2) bay received a good to excellent rating. Four (4) bays received a caution rating. **Total Nitrogen Summary**: Four (4) bays received a good to excellent rating. Two (2) bays received a caution rating. **Total Phosphorous Summary:** Four (4) bays received a good to excellent rating. Two (2) bays received a caution rating. A summary of the results of the Year 3 Annual Pollutant Loading and Event Mean Concentrations analysis to further document the effectiveness of District One's stormwater management program in Sarasota County is attached as well. *DEP Note: See Part V of the permit for the monitoring requirements. Each permittee must discuss the monitoring results as it relates to the implementation and effectiveness of their SWMP.*
C.	Attach a monitoring data summary, as required by the permit.

SECTION IV. FISCAL ANALYSIS

A.	Total expenditures for the NPDES stormwater management program for the current reporting year: $2,008,347.00 FY16 *DEP Note: If program resources have decreased from the previous year, attach a discussion of the impacts on the implementation of the SWMP as per Part II.F of the permit.*
B.	Total budget for the NPDES stormwater management program for the subsequent reporting year: $2,044,456.00 FY17

SECTION V. MATERIALS TO BE SUBMITTED WITH THIS ANNUAL REPORT FORM

Only the following materials are to be submitted to the Department along with this fully completed and signed Annual Report Form (check the appropriate box to indicate whether the item is attached or is not applicable):

Attached	N/A	***DEP Note: Please complete Checklists A & B at the end of the tailored form.***
☐	☒	Any additional information required to be submitted in this current annual reporting year in accordance with Part III.A of your permit that is not otherwise included in Section VII below.
☒	☐	A monitoring data summary as directed in Section III.C above and in accordance with Rule 62-624.600(2)(c), F.A.C.
☐	☒	Year 1 ONLY: An inventory of all known major outfalls and a map depicting the location of the major outfalls (hard copy or CD-ROM) in accordance with Rule 62-624.600(2)(a), F.A.C.
☒	☐	Year 3 ONLY: The estimates of pollutant loadings and event mean concentrations for each major outfall or each major watershed in accordance with Rule 62-624.600(2)(b), F.A.C.
☐	☒	Year 4 ONLY: Permit re-application information in accordance with Rule 62-624.420(2), F.A.C.

DO NOT SUBMIT ANY OTHER MATERIALS

(such as records and logs of activities, monitoring raw data, public outreach materials, etc.)

SECTION VI. CERTIFICATION STATEMENT AND SIGNATURE

The Responsible Authority listed in Section I.F above must sign the following certification statement, as per Rule 62-620.305, F.A.C:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Responsible Authority (type or print): Sharon L. Harris, P.E.

Title: District Maintenance Administrator

Signature: 

Date: 6/23/17

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE						
A.	**B.**		**C.**	**D.**	**E.**	**F.**
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**		**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
Part III.A.1	**Structural Controls and Stormwater Collection Systems Operation**					
	Maintain an up-to-date inventory of the structural controls and roadway stormwater collection structures operated by the permittee, including, at a minimum, all of the types of control structures listed in Table II.A.1.a of the permit. Report the current known inventory. *<u>DEP Note</u>: The permittee needs to "customize" this section by adding any structural controls to the list below that are part of the permittee's MS4 currently or are planned for the future. The permittee may remove any structural controls listed that it does not have currently or will likely not have during this permit cycle. Please see the attached description of each type of structure. In addition, the permittee may choose its own unit of measurement for each structural control to be consistent with the unit of measurement in the documentation. Unit options include: miles, linear feet, acres, etc.* Provide an inventory of all known major outfalls covered by the permit and a map depicting the location of the major outfalls (hard copy or CD-ROM). Provide the outfall inventory and map with the Year 1 Annual Report. Report the number of inspection and maintenance activities conducted for each type of structure included in Table II.A.1.a, and the percentage of the total inventory of each type of structure inspected and maintained. If the minimum inspection frequencies set forth in Table II.A.1.a or the revised and approved FDOT Statewide Stormwater Management Program (SSWMP) that specifies minimum inspection frequencies were not met, provide as an attachment an explanation of why they were not and a description of the actions that will be taken to ensure that they will be met. *<u>DEP Note</u>: If the minimum inspection frequencies set forth in Table II.A.1.a, or the revised and approved SSWMP, were not met for one or more type of structure, the permittee must provide as an attachment an explanation of why they were not and a description of the actions that will be taken to ensure that they will be met. Please provide the title of the attached explanation in Column D and the name of the entity who finalized the explanation in Column E.*					

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.							C.	D.	E.	F.
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**							**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
	Type of Structure		**Number of Activities Performed**						**Documentation / Record**	**Entity Performing the Activity**	**Comments**
		Total Number of Structures	**Number of Inspections**	**Percentage Inspected**	**Number of Maintenance Activities Based on Inspections**	**Number of Routine Maintenance Activities**	**Percentage Maintained**				
	Dry retention systems	14	10	71.4%	0	0	100%		NPDES Database and Contract Number: E1L100-R1 (North Port Mowing and Litter Removal)	Consultant and FDOT Personnel	FDOT follows the inspection and maintenance schedules in the approved 2012 Statewide Stormwater Management Plan. Stormwater treatment facility inspection frequencies are based on Southwest Florida Water Management District ERP criteria. The number of routine maintenance activities are not tracked by structure type; therefore, they are reported as zero. However 100% are routinely maintained through the MMS program.
	Grass treatment swales	6	3	50%	0	0	100%			Consultant and FDOT Personnel	
	Dry detention systems	3	2	67%	0	0	100%			Consultant and FDOT Personnel	
	Wet detention systems	55	31	56%	4	0	100%				
	Ditch block systems	8	2	25%	0	0	100%		NPDES Database	Consultant and FDOT Personnel	

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	Major stormwater outfalls	24	19	79%	0	18,166 linear feet	0%	Sarasota County Major Outfalls spreadsheet and MMS 464.	Consultant and FDOT Personnel	Major outfalls are inspected once per permit cycle, consistent with District One's Standard Operating Procedures (SOPs). Major outfall inspections started in 2015 (5 inspections) and were completed in January 2016 (19 inspections). Routine maintenance is performed through MMS. The percentage of maintenance completed for major stormwater outfalls cannot be determined as the inventory is reported as per unit items and maintenance is reported as linear feet.

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE										
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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity					Number of Activities Performed		Documentation / Record	Entity Performing the Activity	Comments
	Weirs or other control structures	58	33	57%	0	0	0%	NPDES Database	Consultant and FDOT Personnel	Weirs and other control structures are inspected concurrently with the stormwater detention facilities with which they are associated. FDOT follows the inspection and maintenance schedules in the approved 2012 Statewide Stormwater Management Plan. Stormwater treatment facility inspection frequencies are based on Southwest Florida Water Management District (SWFWMD) ERP criteria. Maintenance was not required for any of the weirs or control structures inspected.

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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity					Number of Activities Performed		Documentation / Record	Entity Performing the Activity	Comments
	MS4 pipes / culverts (linear feet)	46,646	50,045.6	100%	0	50,045.6	100%	RCI Feature 241 and MMS 451	FDOT Personnel	When maintenance activities are performed on MS4 pipes / culverts, the pipe is also inspected by video for structural and functional integrity. Maintenance activities for pipe cleaning and inlets/catch basins/grates are grouped together in MMS (Activity 451).
	Inlets / catch basins / grates	3,643	66	0.02%	0	50,045.6 linear feet	0%	RCI Feature 242, Maintenance Rating Program, and MMS 451	FDOT Personnel	The inspections of collection and conveyance structures are addressed through the FDOT MRP. A maintenance percentage for inlets/catch basins/grates cannot be determined as the inventory is reported as per unit items and maintenance is reported as linear feet. Maintenance activities of inlets/catch basins/grates and pipe cleaning are

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										grouped together in MMS (Activity 451).
	Ditches / conveyance swales (miles)	264.34	126 each	0%	0	7.53	0.03%	RCI Feature 245 and 421, Maintenance Rating Program, and MMS 461 and 464.	FDOT Personnel	The inspections of collection and conveyance structures are addressed through the FDOT MRP. A percentage of inspections for ditches / conveyance swales cannot be determined as the inventory is reported in miles and the inspections in MRP are reported as unit items.
	ATTACH explanation if any of the minimum inspection frequencies in Table II.A.1.a, or in the revised and approved SSWMP, were <u>not</u> met							Not applicable.		
	Year 1 ONLY: Attach a map of all known major outfalls									
Part III.A.2	**Areas of New Development and Significant Redevelopment**									
	Continue to employ the FDOT Drainage Connection Permit (DCP) to ensure that appropriate stormwater treatment and permitting occurs prior to discharge into the FDOT system. FDOT shall refer connecting entities failing to meet the DCP requirements or maintain the discharge of acceptable water quality, after sufficient warning by FDOT to DEP and/or the South Florida Water Management District, as appropriate, to regulate the stormwater quality through local or State rules, ordinances, and codes. Report the number of enforcement referrals completed.									

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A. Permit Citation/ SWMP Element	B. Permit Requirement/Quantifiable SWMP Activity		C. Number of Activities Performed	D. Documentation / Record	E. Entity Performing the Activity	F. Comments
	Number of enforcement referrals		0	3/28/2017 Email from Francisco Walle, FDOT Field Operations Manager	FDOT Personnel	No enforcement referrals occurred during the reporting period.
Part III.A.3	**Roadways**					
	Annually review (and revise, as needed) and implement the permittee's written procedures for the litter control program(s) for public streets, roads, and highways, including rights-of-way, employed within the permittee's jurisdictional area and properly dispose of collected material. Implement the program on a monthly, or on an as needed, basis. Report on the litter control program, including the frequency of litter collection, an estimate of the total number of road miles cleaned or amount of area covered by the activities, and an estimate of the quantity of litter collected. *<u>DEP Note:</u> Please provide an explanation in Column F for any "0" reported in Column C. In addition, the permittee may choose its own units of measurement for the reporting items. Unit options for the amount of litter include: bags, cubic yards, pounds, tons. Unit options for the amount of area covered by the activity include: square feet, linear feet, yards, miles, acres. If all litter collection is performed by staff or by contractors, but not by both, please remove the non-applicable reporting items.*					
	PERMITTEE Litter Control Program: Frequency of litter collection		0	3/28/2017 Email from Francisco Walle, FDOT Field Operations Manager		Litter collection is performed by Contractors as reported below. In Sarasota County, FDOT staff no longer performs in-house litter collection.
	PERMITTEE Litter Control Program: Estimated amount of area maintained (linear feet)		0			
	PERMITTEE Litter Control Program: Estimated amount of litter collected (pounds)		0			
	CONTRACTOR Litter Control Program: Frequency of litter collection		12/ year	Litter and Street Sweeping Collection Report Manatee Operations Center document	FDOT Maintenance Contractors	We plan to work with our contractors to improve performance and reduce underreporting
	CONTRACTOR Litter Control Program: Estimated amount of area maintained (acres)		190.88			
	CONTRACTOR Litter Control Program: Estimated amount of litter collected (pounds)		9,414			
	If an Adopt-A-Road or similar program is implemented, report the total number of road miles cleaned and an estimate of the quantity of litter collected. *<u>DEP Note:</u> The permittee may choose its own unit of measurement for the amount of litter collected. Unit options include: bags, cubic yards, pounds, tons. If an Adopt-A-Road or similar program is not implemented by the permittee, please note that in Column F but do <u>not</u> remove the Adopt-A-Road Program reporting items.*					

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	Adopt-A-Road Program: Total miles cleaned	5.6	Sarasota County Adopt-A-Highway Report, Joshua Funk FDOT	Volunteer Groups	
	Adopt-A-Road Program: Estimated amount of litter collected (pounds)	267			
	Report on the street sweeping program, including the frequency of the sweeping, total miles swept, an estimate of the quantity of sweepings collected, and the total nitrogen (TN) and total phosphorus (TP) loadings that were removed by the collection of sweepings. If no street sweeping program is implemented, provide the explanation of why not in the Year 1 Annual Report. *DEP Note: Please provide an explanation in Column F for any "0" reported in Column C. Also, the permittee may choose its own unit of measurement for the amount of sweeping material collected. Unit options include: cubic yards, pounds, tons.* *DEP Note: If the permittee has curbs and gutters but no street sweeping program is implemented, the permittee must provide an explanation of why not in the Year 1 Annual Report. Refer to Part III.A.3 of the permit for the information that must be included in the explanation (including the alternate BMPs used or planned in lieu of street sweeping). Please provide the title of the attached explanation in Column D and the name of the entity who finalized the explanation in Column E.*				
	Frequency of street sweeping	12 / year	Litter and Street Sweeping Collection Report Manatee Operations Center document; 10/27/16 email from Wayne Jackson FDOT Manatee Operations	FDOT Personnel and Maintenance Contractors	
	Total miles swept (per year)	2,391			
	Estimated quantity of sweeping material collected (pounds)	241,900			
	Total nitrogen loadings removed (pounds)	136	FSA MS4 Load Reduction Toolkit for Sarasota County Street Sweeping Data		
	Total phosphorus loadings removed (pounds)	87			

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	Year 1 ONLY: If have curbs and gutters, attach explanation of why no street sweeping program and the alternate BMPs used or planned			Not applicable		
	Annually review (and revise, as needed) and implement the permittee's written standard practices to reduce the pollutants in stormwater runoff from areas associated with road repair and maintenance, and from permittee-owned or operated equipment yards and maintenance shops that support road maintenance activities. Report the number of applicable facilities and the number of inspections conducted for each facility. *DEP Note: The permittee needs to "customize" this section by listing the names of the applicable facilities in Column B and the number of inspections of each facility in Column C. Add more rows if necessary. If "0" is reported in Column C for the number of inspections conducted and the permittee has one or more applicable facilities, please provide an explanation in Column F for why no inspections were conducted. In addition, if the same facility is applicable under both Parts III.A.3 and III.A.5 of the permit, the same site inspection can count towards both inspection requirements as long as it covers the applicable waste area(s). Be sure to report the site inspection under both Parts III.A.3 and III.A.5.*					
			Number of Inspections			
	Name of facility #1: Manatee Operations Center		1	Manatee OPS HazMat Inspection Report 9/15/16	The District Hazardous Material Team	
Part III.A.4	**Flood Control Projects**					
	Report the total number of flood control projects that were constructed by the permittee during the reporting period and the number of those projects that did NOT include stormwater treatment. The permittee shall provide a list of the projects where stormwater treatment was not included with an explanation for each of why it was not. Report on any stormwater retrofit planning activities and the associated implementation of retrofitting projects to reduce stormwater pollutant loads from existing drainage systems that do not have treatment BMPs. *DEP Note: A "stormwater retrofit project" is one implemented primarily to provide stormwater treatment for areas currently without treatment.* *DEP Note: The status of the flood control and retrofit projects should be reported as of the last day of the applicable reporting period. Therefore, there should be no duplication for those reported as planned, for those reported as under construction and for those reported as completed.* *DEP Note: If applicable, please provide the title of the attached list of flood control projects that did not include stormwater treatment in Column D and the name of the entity who finalized the list in Column E.*					
	Flood control projects completed during the reporting period		0	FDOT's Adopted Five Year Work Program (July 1, 2016 thru June 30, 2021)	FDOT Personnel	FDOT does not construct flood control or stormwater retrofit projects. FDOT adheres to water quality and attenuation criteria based on ERP requirements for new roadway and widening projects.
	Flood control projects completed during the reporting period that did not include stormwater treatment		0			
	ATTACH a list of the flood control projects that did not include stormwater treatment and an explanation for each of why it was not					
	Stormwater retrofit projects planned		0			
	Stormwater retrofit projects under construction during the reporting period		0			
	Stormwater retrofit projects completed during the reporting period		0			

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Part III.A.5	**Municipal Waste Treatment, Storage, and Disposal Facilities Not Covered by an NPDES Stormwater Permit**					
	Annually review (and revise, as needed) and implement written procedures for inspections and the implementation of measures to control discharges from the following facilities that are not otherwise covered by an NPDES stormwater permit: • FDOT waste transfer stations; • FDOT waste fleet maintenance facilities; and • Any other FDOT waste treatment, waste storage, and waste disposal facilities. Report the number of applicable facilities and the number of the inspections conducted for each facility. *DEP Note: The permittee needs to "customize" this section by listing the names of the applicable facilities in Column B and the number of inspections of each facility in Column C. Add more rows if necessary. If "0" is reported in Column C for the number of inspections conducted and the permittee has one or more applicable facilities, please provide an explanation in Column F for why no inspections were conducted.* ***An applicable facility under Part III.A.5 includes, but is not limited to, those facilities/yards where street sweeping material and/or yard waste are temporary stockpiled.*** *In addition, if the same facility is applicable under both Parts III.A.3 and III.A.5 of the permit, the same site inspection can count towards both inspection requirements as long as it covers the applicable waste area(s). Be sure to report the site inspection under both Parts III.A.3 and III.A.5.*					
		Number of Inspections				
	FDOT Waste Treatment, Waste Storage and Waste Disposal (TSD) – N/A	0		3/28/2016 Email from Francisco Walle, FDOT Field Operations Manager		There are no FDOT TSD facilities in Sarasota County which meet these criteria.
Part III.A.6	**Pesticides, Herbicides, and Fertilizer Application**					
	Continue to require proper certification and licensing by the Florida Department of Agriculture and Consumer Services (FDACS) for all applicators contracted to apply pesticides, herbicides, or fertilizers on permittee-owned property, as well as any permittee personnel employed in the application of these products. Report the number of permittee personnel applicators and contracted commercial applicators of pesticides and herbicides who are FDACS certified / licensed. Report the number of permittee personnel and contractors who have been trained through the Green Industry BMP Program, and the number of contracted commercial applicators of fertilizer who are FDACS certified / licensed. *DEP Note: If "0" is reported in Column C for any of the reporting items, please include in Column F an explanation of why training was not provided to / obtained by personnel and contractors during the applicable reporting year, the most recent year that training / certification was previously provided / obtained, and the names of the personnel and contractors previously trained / certified*.					
	PERSONNEL: Florida Department of Agriculture and Consumer Services (FDACS) certified applicators of pesticides and herbicides		1	Florida Department of Agriculture and Consumer Services Pesticide Certification Office Commercial Applicator License # PB11511	FDOT Personnel	

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	CONTRACTORS: FDACS certified / licensed applicators of pesticides and herbicides		26	Florida Department of Agriculture and Consumer Services Pesticide Certification Office Commercial Applicator License # CM15528, CM22296, CM195598, CM18097, CM16111, CM17066, CM1559, CM14634, CM10001, CM20949, CM21547, CN20682, CM12109, CM11950, CM16092, CM21735, CM21521, CM20816, CM188809, CM14153, CM17973, CM20792, CM19601, CM20467, CM20333 and CM22644	FDOT Contractors	
	CONTRACTORS: FDACS certified / licensed applicators of fertilizer		0	3/15/2017 Email from Francisco Walle, FDOT Manatee Operations	FDOT Contractors	FDOT does not have any fertilizer contracts. No fertilizer was applied during the reporting period. No

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						certifications are required.
	PERSONNEL: Green Industry BMP Program training completed		7	FDEP Certificate # GV398974-1, GV30212-1, GV398973-1, GV36379-1, GV31246-1, GV30234-1 and GV31904-1	FDOT Personnel	
	CONTRACTORS: Green Industry BMP Program training completed		0	3/28/2017 Email from Francisco Walle, Field Operations Manager for Manatee Operations	FDOT Contractors	There is no fertilizer application listed in the contracts.
Part III.A.7.a	**Illicit Discharges and Improper Disposal — Inspections, Ordinances, and Enforcement Measures**					
	{Not Applicable to FDOT}					
Part III.A.7.c	**Illicit Discharges and Improper Disposal — Investigation of Suspected Illicit Discharges and/or Improper Disposal**					
	During Year 1 of the permit, develop and implement a written proactive inspection program plan for identifying and eliminating sources of illicit discharges, illicit connections, or dumping to the MS4. Beginning with the Year 2 Annual Report, report on the proactive inspection program, including the number of inspections conducted, the number of illicit activities found, and the number of referrals completed. *<u>DEP Note:</u> If "0" is reported in Column C for the first reporting item, please include an explanation in Column F for why no proactive inspections were performed.* *<u>DEP Note:</u> Refer to Part III.A.7.c of the permit for what must be included in the written proactive inspection program plan. Please provide the title of the attached plan in Column D and the name of the entity who finalized the plan in Column E.* *<u>DEP Note:</u> Sarasota County is to report the proactive inspections it performed in the unincorporated areas <u>separately</u> from the proactive inspections it performed in the co-permittees' jurisdictions. Each co-permittee is to report the Lee County proactive inspections in their jurisdiction separately from the proactive inspections that the co-permittee performs itself.*					

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A. Permit Citation/ SWMP Element	B. Permit Requirement/Quantifiable SWMP Activity		C. Number of Activities Performed	D. Documentation / Record	E. Entity Performing the Activity	F. Comments
	Proactive inspections performed by Sarasota County on behalf of a co-permittee for suspected illicit discharges / connections / dumping		0			There were no proactive inspections performed by Sarasota County on behalf of FDOT.
	Proactive inspections performed by the permittee for suspected illicit discharges / connections / dumping		254	Daily Crew Work Report and NPDES database	FDOT Personnel	There were no illicit discharges / connections / dumping found during a proactive inspection and therefore no enforcements referrals were required.
	Illicit discharges / connections / dumping found during a proactive inspection		0	5/12/2016 Email from Steven Kelly, FDOT Maintenance Environmental Specialist		
	Number of enforcement referrals		0			
	Year 1 ONLY: Attach the written proactive inspection program plan					
	Annually review (and revise, as needed) and implement the permittee's written procedures to conduct reactive investigations to identify and eliminate the source(s) of illicit discharges, illicit connections or improper disposal to the FDOT MS4 within the FDOT right-of-way, based on reports received from permittee personnel, contractors, citizens, or other entities regarding suspected illicit activity. Report on the reactive investigation program as it relates to responding to reports of suspected illicit discharges, including the number of investigations conducted, the number of illicit activities found, and the number of enforcement referrals completed. If a permittee relies on Lee County to conduct these activities on its behalf, the permittee shall obtain (and, upon request, Lee County shall make available) the necessary annual report information from the County.					
	Reactive investigations of reports of suspected illicit discharges/ connections / dumping		1	11/4/16 IDDE Inspection Report	FDOT Personnel	
	Illicit discharges / connections / dumping found during a reactive investigation		0			
	Number of enforcement referrals		0			
	During Year 1 of the permit, develop and implement a written plan for the training of all appropriate permittee personnel (including field crews, fleet maintenance staff, and inspectors) and contractors to identify and report conditions in the stormwater facilities that may indicate the presence of illicit discharges / connections / dumping to the MS4. Refresher training shall be provided annually. Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training). *DEP Note: If "0" is reported for either reporting item, please include in Column F an explanation of why training was not provided to / obtained by personnel and contractors during the applicable reporting year, the most recent year that training was previously provided / obtained, and the names of the personnel and contractors previously trained*.					
		Initial Training	**Refresher Training**			

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE								
A.	**B.**				**C.**	**D.**	**E.**	**F.**
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**				**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
	Personnel trained	83	6			TRESS report for 2015, Course Enrollments spreadsheet, September 29, 2016, October 19, 2016 and October 26, 2016 sign-in sheets	FDOT Personnel	FDOT provides annual illicit discharge training.
	Contractors trained	22	14			Certificates of Completion, 3/27/2017 Email from Angela Corbisell, Office Manager for Shenandoah General Construction,3/27/2017 Letter from Scott Griffin, President for GBHS and October 26, 2016 sign-in sheet		
Part III.A.7.d	**Illicit Discharges and Improper Disposal — Spill Prevention and Response**							
	Annually review (and revise, as needed) and implement the permittee's written spill-prevention/spill-response plan and procedures to prevent, contain, and respond to spills that discharge into the MS4. Report on the spill prevention and response activities, including the number of spills addressed. If a permittee relies on a Sarasota County Fire District to conduct these activities on its behalf, the permittee shall obtain (and, upon request, Sarasota County Fire District shall make available) the necessary annual report information from the County. *DEP Note: The permittee may report the number of hazardous material spills separately from the number of non-hazardous material spills, or report one combined number, to more accurately reflect its tracking of these spills.*							
	Hazardous and non-hazardous material spills responded to				4	FDOT Permit Tracking System (PITS) Database	FDOT Personnel and Contractors	

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE							
A.	**B.**			**C.**	**D.**	**E.**	**F.**
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**			**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
	During Year 1 of the permit, develop and implement a written plan for the training of all appropriate permittee personnel (including field crews, firefighters, fleet maintenance staff and inspectors) and contractors on proper spill prevention, containment, and response techniques and procedures. Refresher training shall be provided annually. Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training). *DEP Note: If "0" is reported for either reporting item, please include in Column F an explanation of why training was not provided to / obtained by personnel and contractors during the applicable reporting year, the most recent year that training was previously provided / obtained, and the names of the personnel and contractors previously trained.*						
		Initial Training	**Refresher Training**				
	Personnel trained	1	1			Certificate of Completion in Emergency Response to Hazardous Materials Incidents and HAZWOPER 8-Hour Refresher Course certification	FDOT Personnel	FDOT provides annual spill response training.
	Contractors trained	1	13			Certificate of Completion and 4/20/16 HSE Training sign-in sheet		
Part III.A.7.e	**Illicit Discharges and Improper Disposal — Public Reporting**						
	{Not Applicable to FDOT}						
Part III.A.7.f	**Illicit Discharges and Improper Disposal — Oils, Toxics, and Household Hazardous Waste Control**						
	Continue to include a notice with each FDOT Drainage Connection Permit with information on used oil recycling, proper hazardous waste disposal, stormwater regulations, and spill reporting. Report the number of notices distributed. *DEP Note: If "0" is reported in Column C, please include in Column F an explanation for why no notices were distributed. If the number of notices distributed is different than the number of DCPs issued, please include in Column F an explanation for this difference.*						
	Number of notices distributed			11	FDOT Permit Tracking System (PITS) Database	FDOT Personnel	NPDES Flyers are distributed with approved Drainage Connection Permits.
Part III.A.7.g	**Illicit Discharges and Improper Disposal — Limitation of Sanitary Sewer Seepage**						
	Advise the appropriate utility owner of a violation if constituents common to wastewater contamination are discovered in FDOT's MS4. Report the number of violations referred to the appropriate utility owner and the name of the utility owner.						

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE						
A.	**B.**		**C.**	**D.**	**E.**	**F.**
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**		**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
	Number of violations referred to the appropriate utility owner		0	3/28/2017 Email from Francisco Walle, Field Operations Manager for Manatee Operations	FDOT Personnel	No SSOs or sanitary seepage incidents were observed or discovered.
	Name of owner of the sanitary sewer system		Not applicable			
Part III.A.8.a	**Industrial and High-Risk Runoff — Identification of Priorities and Procedures for Inspections**					
	Continue to maintain an up-to-date inventory of all existing high risk facilities discharging into the permittee's MS4. The inventory shall identify the outfall and surface water body into which each high risk facility discharges. For the purposes of this permit, high risk facilities include: • Operating municipal landfills; • Hazardous waste treatment, storage, disposal and recovery facilities; • Facilities that are subject to EPCRA Title III, Section 313 (also known as the Toxics Release Inventory (TRI) maintained by the U.S. EPA); and • Any other industrial or commercial discharge that the permittee determines is contributing a substantial pollutant loading to the permittee's MS4. This could include facilities identified through the proactive inspection program as per Part III.A.7.c of the permit. Report on the high risk facilities inventory, including the type and total number of high risk facilities and the number of facilities newly added each year. If a permittee relies on Sarasota County to conduct these activities on its behalf, the permittee shall obtain (and, upon request, Sarasota County shall make available) the necessary annual report information from the County. *DEP Note: The TRI is updated every spring / summer by the U.S. EPA at www.epa.gov/triexplorer. Select "Facility" on the left, chose your Geographic Location, and then select "Generate Report." Please indicate in Column F when (month / year) you last checked EPA's TRI for applicable facilities.* *DEP Note: The total number of high risk facilities reported needs to equal the sum of the numbers of the four types of applicable facilities.* During Year 1 of the permit, develop and implement a written plan for conducting inspections of high risk facility outfalls to the FDOT/Florida Turnpike Enterprise MS4 to determine compliance with all appropriate aspects of the stormwater program. While the permittee may determine the order and frequency of the inspections, the permittee shall inspect each identified facility's outfall(s) at least once during the permit term; however, facilities identified as high risk due to the findings of the proactive inspection program as per Part III.A.7.c of the permit shall be inspected annually. Report on the high risk facility inspection program, including the number of outfall inspections conducted and the number of enforcement referrals completed. If a permittee relies on Sarasota County or other permittee to conduct these activities on its behalf, the permittee shall obtain (and, upon request, Sarasota County or the other Permittee shall make available) the necessary annual report information from them. *DEP Note: If "0" is reported for the number of outfall inspections conducted and the permittee has one or more high risk facilities, please provide an explanation in Column F for why no inspections were conducted.*					

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.				C.	D.	E.	F.
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**				**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
		Number of Facilities	**Number of Inspections**	**Number of Enforcement Referrals**				
	Total high risk facilities	0	0	0		EPA Toxic Release Inventory (TRI) 2015 and PITS database	FDOT Personnel	359 Approved DCPs were screened. No High Risk facilities were identified during the screening process in 2016.
	New high risk facilities added to the inventory during the current reporting period	0	0	0				
	Operating municipal landfills	0	0	0				
	Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities	0	0	0				
	EPCRA Title III, Section 313 facilities (that are not landfills or HWTSDR facilities)	0	0	0				
	Facilities determined as high risk by the permittee through the proactive inspections as per Part III.A.7.c	0	0	0				
	Other facilities determined as high risk by the permittee (that are <u>not</u> facilities identified through the proactive inspections)	0	0	0				
Part III.A.8.b	**Industrial and High-Risk Runoff — Monitoring for High Risk Industries**							
	{Not Applicable to FDOT}							
Part III.A.9.a	**Construction Site Runoff — Site Planning and Non-Structural and Structural Best Management Practices**							
	Employ FDOT Drainage Connection Permit (DCP) conditions that include the use of stormwater, erosion, and sedimentation control BMPs during construction to reduce pollutants to the MS4 and receiving waters. Report the number of permits issued.							
	Number of DCPs/Special Permits issued				11	FDOT Permit Tracking System (PITS) Database	FDOT Personnel	
Part III.A.9.b	**Construction Site Runoff — Inspection and Enforcement**							
	As an attachment to the Year 1 Annual Report, the permittee shall submit a written plan that details the standard operating procedures for implementation of the stormwater, erosion and sedimentation inspection program for construction sites discharging stormwater to the MS4. The permittee shall implement the plan for inspecting construction sites <u>immediately upon written approval by the Department</u>. Prior to Department approval, the permittee shall continue to perform inspections in accordance with its previously developed construction site inspection procedures. Report on the inspection program for privately-operated and permittee-operated							

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE						
A.	**B.**		**C.**	**D.**	**E.**	**F.**
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**		**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
	construction sites, including the number of active construction sites during the reporting year, the number of inspections of active construction sites, the percentage of active construction sites inspected, and the number and type of enforcement actions / referrals taken. *DEP Note: For FDOT, privately-operated sites are those sites within FDOT's right-of-way that were issued a DCP and the inspections are outfall inspections, not site inspections. In addition, FDOT should re-word the "Corrective action notices issued" reporting item to more accurately reflect its particular initial action taken when violations are found at FDOT-operated construction sites, if necessary.* *DEP Note: If "0" is reported in Column C for the number of inspections conducted, please provide an explanation in Column F of why no inspections were conducted. If the number of inspections reported is equal to or less than the number of active construction sites, or the percentage inspected is less than 100%, please provide an explanation in Column F.* *DEP Note: Refer to Part III.A.9.b of the permit for what must be included in the construction site inspection program plan. Please provide the title of the attached plan in Column D and the name of the entity who finalized the plan in Column E.*					
	PERMITTEE SITES: Active construction sites		10	NPDES SWPPP Status spreadsheets and Contract Information Monitoring (CIM)	FDOT Personnel	Construction inspections are conducted based on FDOT D1's Standard Operating Procedures.
	PERMITTEE SITES: Inspections of active construction sites for proper stormwater, erosion and sedimentation BMPs		18			
	PERMITTEE SITES: Percentage of active construction sites inspected		100			
	PERMITTEE SITES: Corrective action notices issued		6	Deficiency Letter / Warnings Detail Report spreadsheet		3 Deficiency Letters (DL), 2 Deficiency Warning Letters (DWL) and 2 Verbal Warnings (VW) were issued to contractors.
	PRIVATE SITES: Active construction sites		8	FDOT Permit Tracking System (PITS Database) 06/222017 email from Kevin Morrisey, FDOT District Permit Engineer		
	PRIVATE SITES: Inspections of active construction sites for proper stormwater, erosion and sedimentation BMPs		11			
	PRIVATE SITES: Percentage of active construction sites inspected		100%			
	PRIVATE SITES: Number of enforcement referrals		0	3/28/2017 Email from Francisco Walle, FDOT Field Operations Manager		
	Year 1 ONLY: Attach the written construction site inspection program plan					

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.		C.	D.	E.	F.
Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**		**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
Part III.A.9.c	**Construction Site Runoff — Site Operator Training**					
	During Year 1 of the permit, develop and implement a written plan for stormwater training / outreach for construction site plan reviewers, site inspectors and site operators. Provide training for permittee personnel (employed by or under contract with the permittee) involved in the site plan review, inspection or construction of stormwater management, erosion, and sedimentation controls. Also provide training for private construction site operators that perform work for the permittee. All permittee inspectors (employed by or under contract with the permittee) of construction sites shall be certified through the Florida Stormwater, Erosion and Sedimentation Control Inspector Training program, or an equivalent program approved by the Department. Refresher training shall be provided annually. Report the type of training activities, the number of inspectors, site plan reviewers and site operators trained (both in-house and outside training), and the number of private construction site operators trained by the permittee. *DEP Note: If "0" is reported for any of these reporting items, please include in Column F an explanation of why training was not provided to / obtained by the permittee's staff and private construction site operators during the applicable reporting year.* *DEP Note: The permittee should report only the number of staff and private construction site operators trained / certified during the applicable reporting year, and then note in Column F the number of staff who were previously trained / certified. Private site operator training can include pre-construction meetings.*					

	Certification Training	**Initial Training (non-certification)**	**Refresher Training**					
Permittee construction site inspectors / site plan reviewers and site operators training	0	0	8			Pre-construction sign-in sheet 1/5/16	FDOT Personnel and Contractors	FDOT continues to promote staff and contractor training for erosion and sediment controls.
Private construction site operators	0	0	25					

SECTION VIII. EVALUATION OF THE STORMWATER MANAGEMENT PROGRAM (SWMP)		
	Permit Citation/ SWMP Element	**SWMP EVALUATION**
A.	**Part II.A.1 Structural control inspection and maintenance**	Strengths: FDOT District One has a comprehensive inspection and maintenance program for stormwater treatment and conveyance structures. FDOT District One implements a routine stormwater treatment facility inspection program, consistent with WMD ERP inspection criteria. Stormwater conveyance structures are inspected and maintained consistent with the Department's Maintenance Rating Program (MRP) as detailed in the approved 2012 FDOT Statewide Stormwater Management Plan. FDOT District One's inspection and maintenance program is designed to be proactive at identifying and correcting deficiencies to ensure treatment and conveyance systems continue to function as designed and permitted in order to reduce pollutant loading to waters of the state.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.2 Significant redevelopment	Strengths: FDOT District One continues to implement Chapter 14-86 FAC to ensure off-site facilities connecting to FDOT's right-of-way through Drainage Connection Permits (DCPs) meet existing water quality standards.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.3 Roadways	Strengths: FDOT District One maintains an active roadway management program. This program includes: litter pick-up, Adopt-A-Highway, street sweeping and annual inspections of its maintenance yards. The roadway management program ensures litter and potential pollutants are removed from the MS4 minimizing impacts to waters of the state.
		Weaknesses: We collected less litter and less sweepings than in previous years. FDOT experienced difficulties with the contractors involved in these operations. We plan to work with the contractors to improve performance and to reduce underreporting.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.4 Flood control	Strengths: FDOT District One does not construct flood control or stormwater retrofit projects. FDOT District One continues to adhere to state water quality and attenuation criteria for new roadway and road widening projects based on ERP requirements.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.5 Waste TSD Facilities	Strengths: There are no applicable FDOT facilities in Sarasota County which meet the criteria listed. Currently, FDOT does not temporarily stockpile street sweeping material and/or yard waste at its maintenance yards.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.6 Pesticide, herbicide, fertilizer application	Strengths: FDOT District One requires personnel to be knowledgeable and able to implement a safe and effective chemical weed and grass control program. FDOT requires proper certification and licensing from Florida Department of Agriculture and Consumer Services (FDACS) for all personnel and contractors applying pesticides or herbicides on FDOT property or rights-of-way. It is FDOT's intention to reduce the amount of fertilizer used. FDOT required all necessary FDOT personnel and contractors to complete the FDOT Green Industry BMP Program by January 2014, pursuant to the permit and the approved 2012 Statewide Stormwater Management Plan.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.

SECTION VIII. EVALUATION OF THE STORMWATER MANAGEMENT PROGRAM (SWMP)		
	Part II.A.7 Illicit Discharge Detection and Elimination	Strengths: FDOT District One implements its Maintenance Rating Program (MRP) / (Maintenance Management System) MMS program, which provides significant coverage of the FDOT MS4 for inspection and maintenance. As such, the fundamental component of a proactive illicit discharge program, that is, inspectors visiting all areas of the MS4, is achieved through the MRP/MMS program. FDOT staff are trained annually regarding illicit discharges and connections, the proper reporting procedure and spill prevention and response. At a minimum, one trained FDOT field staff is in the field each day to be observant for illicit discharges and/or spills.
		Weaknesses: None noted at this time
		SWMP Revisions to address deficiencies: None noted at this time
	Part II.A.8 High Risk Industry Runoff	Strengths: FDOT District One screens all approved Drainage Connection Permits (DCP) against the most recent EPA Toxic Release Inventory (TRI). Any facility that has an approved DCP and also listed on EPA's TRI list is added to FDOT's high risk inventory and is then inspected for any potential illicit discharges or connections. In addition, non-high risk facilities found to be discharging non-stormwater to FDOT District One's MS4 are also added to the high risk inventory and will be inspected in subsequent permit years.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.
	Part II.A.9 Construction Site Runoff	Strengths: FDOT has a standard operating procedure in place to ensure that FDOT construction sites are being inspected on a routine basis. All FDOT construction projects that require NPDES CGP coverage will be prioritized and the inspection frequency will be associated with its priority level. The intent of this procedure is to ensure that construction activities are not negatively impacting adjacent properties, receiving waters or sensitive areas. The drainage connection permit requires that all construction projects draining to the Department's MS4 meet water quality treatment criteria. FDOT inspects the proposed outfall / drainage connection during construction. Any observed water quality violations will be reported to the appropriate agency or local municipality.
		Weaknesses: None noted at this time.
		SWMP Revisions to address deficiencies: None noted at this time.

SECTION IX. CHANGES TO THE STORMWATER MANAGEMENT PROGRAM (SWMP) ACTIVITIES (Not Applicable In Year 4)		
A.	**Permit Citation/ SWMP Element**	**Proposed Changes to the Stormwater Management Program Activities Established as Specific Requirements Under Part III.A of the Permit (Including the Rationale for the Change) — REQUIRES DEP APPROVAL PRIOR TO CHANGE IF PROPOSING TO REPLACE OR DELETE AN ACTIVITY.** *DEP Note: There may be changes deemed necessary after developing / reviewing your plans and SOPs as per Part III.A of the permit, after completing your SWMP evaluation as per Part VI.B.2 of the permit, or due to a TMDL / BMAP as per Part VIII.B of the permit.*
	Part III.A.9.b / Construction Site Runoff – Inspection and Enforcement	FDOT District One is requesting a change to the annual report form to be consistent with the permit language in Part IIII.A.9.b. Construction Site Runoff – Inspection and Enforcement under Private Sites. Part III.9(b) of the permit states: *"For FDOT District One, privately-operated sites are those sites within FDOT's right-of-way that were issued a Drainage Connection Permit (DCP), in accordance with Rule 14-86, F.A.C., and the inspections are outfall inspections, not site inspections."* FDOT requests that the following be changed: Existing text to be deleted is in ~~strikethrough~~. New text to be added is underlined.
		PRIVATE SITES: ~~Active construction sites~~ Active construction sites issued a DCP
		PRIVATE SITES: ~~Inspections of active construction sites for proper stormwater, erosion and sedimentation BMPs~~ Inspections of active outfall connections to FDOT's MS4
		PRIVATE SITES: ~~Percentage of active construction sites inspected~~ Percentage of outfall connections to FDOT's MS4 inspected
B.	**Permit Citation/ SWMP Element**	**Changes to the Stormwater Management Program Activities NOT Established as Specific Requirements Under Part III.A of the Permit (Including the Rationale for the Change)** *DEP Note: There may be changes deemed necessary after developing / reviewing your plans and SOPs as per Part III.A of the permit, after completing your SWMP evaluation as per Part VI.B.2 of the permit, or due to a TMDL / BMAP as per Part VIII.B of the permit.*
		None.

CHECKLIST A: ATTACHMENTS TO BE SUBMITTED WITH THE ANNUAL REPORTS

Below is a list of items required by the permit that may need to be attached to the annual report. Please check the appropriate box to indicate whether the item is attached or is not applicable for the current reporting period. Please provide the number and the title of the attachments in the blanks provided.

Attached	N/A	Rule / Permit Citation	Required Attachment	Attachment Number	Attachment Title
☐	☒	Part II.F	**EACH ANNUAL REPORT:** If program resources have decreased from the previous year, a discussion of the impacts on the implementation of the SWMP.		
☐	☒	Part III.A.1	**EACH ANNUAL REPORT:** An explanation of why the minimum inspection frequency in Table II.A.1.a or in a revised/approved FDOT SSWMP, was not met, if applicable.		
☐	☒	Part III.A.4	**EACH ANNUAL REPORT:** A list of the flood control projects that did not include stormwater treatment and an explanation for each of why it did not, if applicable.		
☒	☐	Part V.B.9	**EACH ANNUAL REPORT:** Reporting and assessment of monitoring results. **[Also addressed in Section III of the Annual Report Form]**	1	Supplement 1 - Water Quality Analysis
☒	☐	Part VI.B.2	**EACH ANNUAL REPORT:** An evaluation of the effectiveness of the SWMP in reducing pollutant loads discharged from the MS4 that, at a minimum, must include responses to the questions listed in the permit.		See Section VIII of the annual report form
☐	☒	Part VIII.B.3.e	**EACH ANNUAL REPORT:** A status report on the implementation of the requirements in this section of the permit and on the estimated load reductions that have occurred for the pollutant(s) of concern.		
☐	☒	Part VIII.B.4.f	**EACH ANNUAL REPORT after approval of the BPCP:** The status of the implementation of the Bacterial Pollution Control Plan (BPCP).		
☐	☒	Part III.A.1	**YEAR 1:** An inventory of all known major outfalls and a map depicting the location of the major outfalls (hard copy or CD-ROM).		
☐	☒	Part III.A.3	**YEAR 1:** If have curbs and gutters but no street sweeping program, an explanation of why no street sweeping program and the alternate BMPs used or planned.		
☐	☒	Part III.A.7.c	**YEAR 1:** A proactive illicit discharge / connection / dumping inspection program plan.		
☐	☒	Part III.A.9.b	**YEAR 1:** A construction site inspection program plan. **[For approval by DEP]**		
☒	☐	Part V.A.2	**YEAR 3:** Estimates of annual pollutant loadings and EMCs, and a table comparing the current calculated loadings with those from the previous two Year 3 ARs.		Supplement 2 – Year 3 Pollutant Load Estimates
☐	☒	Part V.A.3	**YEAR 4:** If the total annual pollutant loadings have not decreased over the past two permit cycles, revisions to the SWMP, as appropriate.		
☐	☒	Part V.B.3	**YEAR 4:** The monitoring plan (with revisions, if applicable).		
☐	☒	Part VII.C	**YEAR 4:** An application to renew the permit.		
☐	☒	Part VIII.B.3.d	**YEAR 4:** A TMDL Implementation Plan / Supplemental SWMP.		

CHECKLIST B: THE REQUIRED ANNUAL REVIEWS OF WRITTEN STANDARD OPERATING PROCEDURES (SOPs) & PLANS

The permit requires annual review, and revision if needed, of written Standard Operating Procedures (SOPs) and plans (e.g., public education and outreach, training, inspections). Please indicate your review status below. **If you have made revisions that need DEP approval, you must complete Section VIII.A of the annual report.**

Did not complete review of existing SOP / Plan	Developed new written SOP / Plan	Reviewed & no revision needed to existing SOP / Plan	Reviewed & revised existing SOP / Plan	Permit Citation	Description of Required SOPs / Plans
☐	☐	☒	☐	Part III.A.1	SOP and/or schedule of inspections and maintenance activities of the structural controls and roadway stormwater collection system.
☐	☐	☒	☐	Part III.A.3	SOP for the litter control program.
☐	☐	☒	☐	Part III.A.3	SOP for the street sweeping program.
☐	☐	☒	☐	Part III.A.3	SOP for inspections of equipment yards and maintenance shops that support road maintenance activities.
☐	☐	☒	☐	Part III.A.5	SOP for inspections of waste treatment, storage, and disposal facilities not covered by an NPDES stormwater permit.
☐	☐	☒	☐	**Part III.A.7.c**	**Plan for proactive illicit discharge / connections / dumping inspections.***
☐	☐	☒	☐	Part III.A.7.c	SOP for reactive illicit discharge / connections / dumping investigations.
☐	☐	☒	☐	Part III.A.7.c	Plan for illicit discharge training.
☐	☐	☒	☐	Part III.A.7.d	SOP for spill prevention and response efforts.
☐	☐	☒	☐	Part III.A.7.d	Plan for spill prevention and response training.
☐	☐	☒	☐	Part III.A.8	SOP for inspections of high risk industrial facility outfalls.
☐	☐	☒	☐	**Part III.A.9.b**	**Plan for inspections of construction sites.***
☐	☐	☒	☐	Part III.A.9.c	Plan for stormwater, erosion and sedimentation BMPs training.

*** Revisions to these plans require DEP approval – please complete Section VIII.A of the annual report.**

REMINDER LIST OF THE TMDL / BMAP REPORTS TO BE SUBMITTED SEPARATELY FROM AN ANNUAL REPORT		
Rule / Permit Citation	**Report Title**	**Due Date**
Part VIII.B.3.a	**6 MONTHS from effective date of permit:** TMDL Prioritization Report.	6/1/2013
Part VIII.B.3.b	**12 MONTHS from effective date of permit:** TMDL Monitoring and Assessment Plan.	11/4/2015
Part VIII.B.3.c	**6 MONTHS from receiving analyses from the lab:** TMDL Monitoring Report.	7/30/2017
Part VIII.B.4	**30 MONTHS from start date per TMDL Prioritization Report:** A Bacterial Pollution Control Plan (BPCP).	2/12/2015

BMAP Reporting

MS4 permittees are NOT required to submit the annual report required by any BMAP that applies to them since the NPDES Stormwater Staff can obtain them from the department's Watershed Planning and Coordination staff. However, to assure that the stormwater staff are aware of which BMAPs apply to the MS4 permittees and when the latest BMAP annual report was submitted, please complete the information below, if applicable:

Rule/Permit Citation	BMAP Title	Date BMAP Annual Report Submitted to DEP
Part VIII.B.2	There are no active BMAPs in Sarasota County at this time.	NA
Part VIII.B.2		
Part VIII.B.2		
Part VIII.B.2		

END OF REVISED TAILORED MS4 AR FORM – CYCLE 3 PERMIT

LIST OF SUPPLEMENTS

1 Analysis of the Monitoring Program (Permit Section III.A and B)

2 Year 3 Pollutant Load Estimates (Part V.A.2)

SUPPLEMENT 1

Analysis of the Monitoring Program
(Permit Section III.A and B)

- **FDOT District One Sarasota County Water Quality Monitoring Program Summary**
- **Water Quality Analysis – Sarasota County NPDES MS4 2016 Annual Report Monitoring Data Summaries**

FDOT District One Sarasota County Water Quality Monitoring Program

FDOT District One's monitoring plan is carried out through an inter-local agreement with Sarasota County. The County's monitoring program includes analysis of seventeen (17) tributaries and six (6) coastal bays. The health of the bays is being used as the overall indicator of the success of the water quality and stormwater management programs being implemented throughout the County by the Sarasota County MS4 co-permittees, including FDOT. The FDOT outfalls in Sarasota County and the correlating coastal bay segments are listed below:

FDOT District One Major Outfalls in Sarasota County	Sarasota County Bay Segments	Total Nitrogen Index	Total Phosphorus Index	Chlorophyll a Index
OF17040-3508-01	Sarasota Bay	Excellent	Excellent	Caution
OF-SA-02-01826				
OF-SA-23-01104				
Sarasota5				
OF-SA-23-01092				
OF17020-3572-02	Roberts Bay	Caution	Excellent	Caution
Sarasota1				
OF17040-3516-04				
OF17040-3518-01				
OF17040-3518-02				
OF17070-3525-02	Little Sarasota Bay	Good	Excellent	Caution
OF17070-3525-05				
OF-SC-24-01734	Blackburn Bay	Good	Excellent	Caution
Sarasota2	Dona-Roberts Bay	Caution	Excellent	Caution
Sarasota3				
Sarasota4				
OF17010-3533-01				
OF17010-3533-02				
OF17010-3528-01	Lemon Bay	Caution	Excellent	Caution
OF17010-3528-02				
OF17050-3511-01				
OF17050-3511-04				
OF17050-3511-05				
OF17050-3505-06				

FDOT uses the pollutant load analysis of the major outfalls in FDOT's MS4 as its primary assessment tool for evaluating effectiveness. The pollutant load analysis gives a more refined look at the FDOT system and what FDOT is doing to reduce stormwater pollutant loadings in their MS4. The pollutant load analysis also takes into account the various structural and non-structural best management practices (stormwater treatment facilities, fertilizer reduction, street sweeping, education, and illicit discharge programs) being used by FDOT in each outfall drainage area. Ambient water quality monitoring data from Sarasota County will be used as a secondary evaluation for FDOT. Due to the many sources, in addition to the MS4, that may contribute pollutants to a receiving water (i.e., atmospheric deposition, groundwater, non-point sources such as septic and agricultural processes, and internal loading), FDOT cannot rely on ambient water quality monitoring as a primary indicator of the effectiveness of the Department's SWMP and BMPs in reducing pollutant loads to receiving waters.

Section III Monitoring Part A & B

Part A.

1. *Ambient Water Quality of Bays.*
   http://www.sarasota.wateratlas.usf.edu/bay-conditions/
   http://www.sarasota.wateratlas.usf.edu/water-quality-trends/
2. *Ambient Water Quality of Watersheds*
   http://www.sarasota.wateratlas.usf.edu/creek-conditions/
   http://www.sarasota.wateratlas.usf.edu/water-quality-trends/
3. *Biological Monitoring – Oysters*
   http://www.sarasota.wateratlas.usf.edu/oysters/
4. *Biological Monitoring – Seagrass*
   http://www.sarasota.wateratlas.usf.edu/seagrass/#sarasota-seagrass
5. *Biological Monitoring – Scallops*
   http://www.sarasota.wateratlas.usf.edu/upload/documents/2016-Scallop-Update-051117.pdf
6. *Pollutant Load Modeling*
   http://www.sarasota.wateratlas.usf.edu/upload/documents/PLM-Full-Report-NPDES-03May2017-corrected.pdf
7. *Rainfall*
   http://www.sarasota.wateratlas.usf.edu/rainfall/
   http://www.sarasota.wateratlas.usf.edu/datamapper/

Part B.

1. All 6 bays were in the Caution category of the Bay Conditions Index. The Index is based on chlorophyll, nitrogen and phosphorus.
2. Nine of 17 creeks passed the Creek Condition Index and 8 were in the Caution category. The index is based on chlorophyll, nitrogen, phosphorus and dissolved oxygen
3. Oysters: fourteen stations ranked excellent with greater than 75% live oysters. Eight stations fell into the "good" category (50%-75% live oysters). Two stations were in the caution category with less than 50% live.
4. Seagrass: Three of 6 bays had increased acreage of seagrass and three had declines. As compared to 2015, there were increases in seagrass abundance, blade length, and percent Halodule. There were decreases in drift algae, and percent Thalassia.
5. Scallop monitoring sites throughout the county had significantly less spat landings in 2016. The county experienced concentrated rainfall events and persistent redtide blooms, each of these conditions have shown to have a negative affect scallop populations.
6. Pollutant Load Modeling was completed for 2001, 2006, 2010 and 2016. It showed increases from pollutant sources like land development, septic systems, and wastewater, plus decreases from stormwater projects and wastewater and septic improvements.
7. Rain for the year was 5 inches above average primarily because of two wet months – January and August. Unusually dry months were September, November and December.

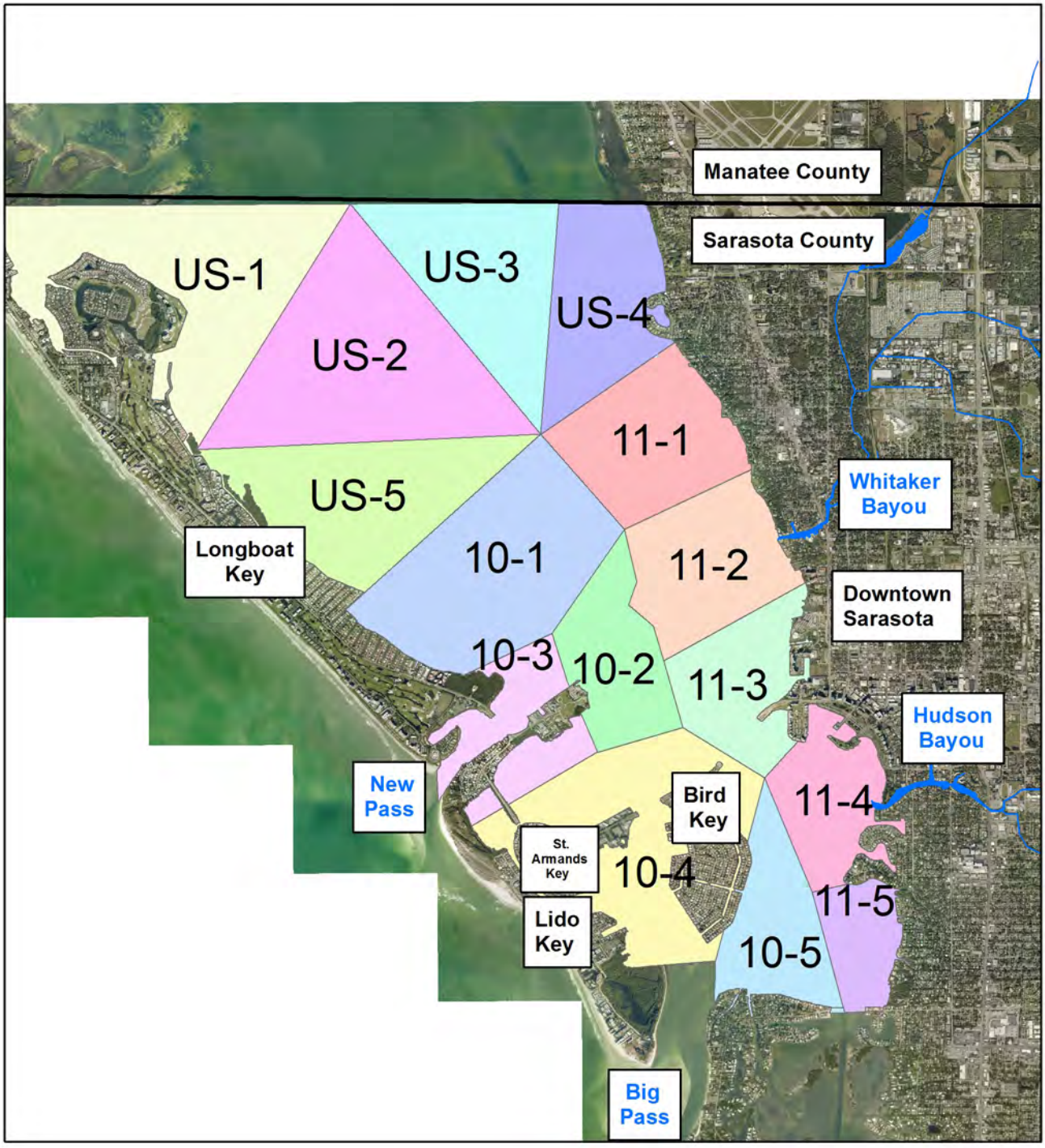
Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summaries

1. Ambient Water Quality of Bays
2. Ambient Water Quality of Watersheds
3. Biological Monitoring – Oysters
4. Biological Monitoring – Seagrass
5. Biological Monitoring – Scallops
6. Pollutant Load Modeling
7. Rainfall
8. TMDL Status Report
9. Sarasota County Monitoring Plan

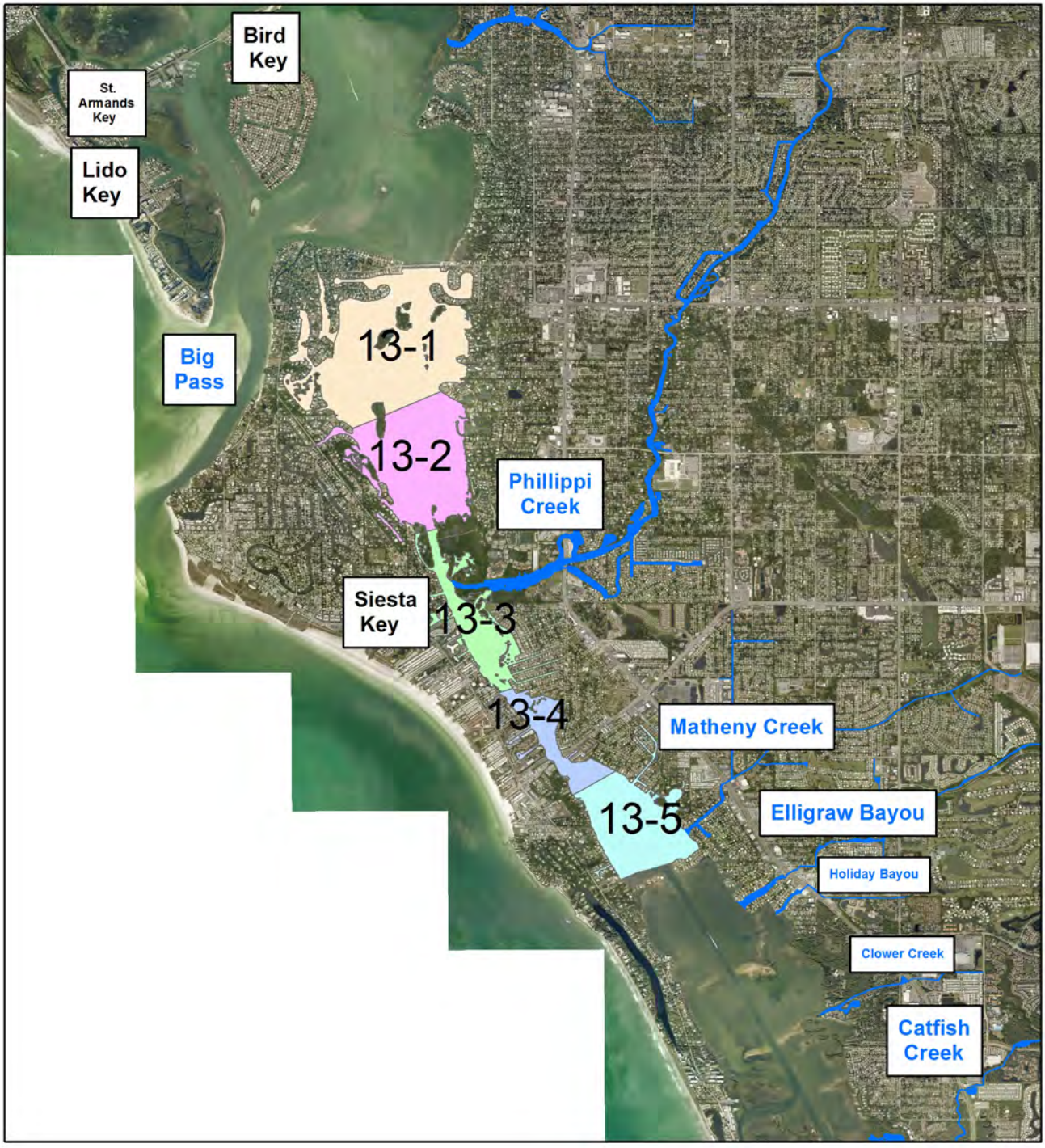
Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

1. Ambient Water Quality of Bays

Sarasota Bay Segments



Roberts Bay Segments



N

1 0.5 0 1

Miles

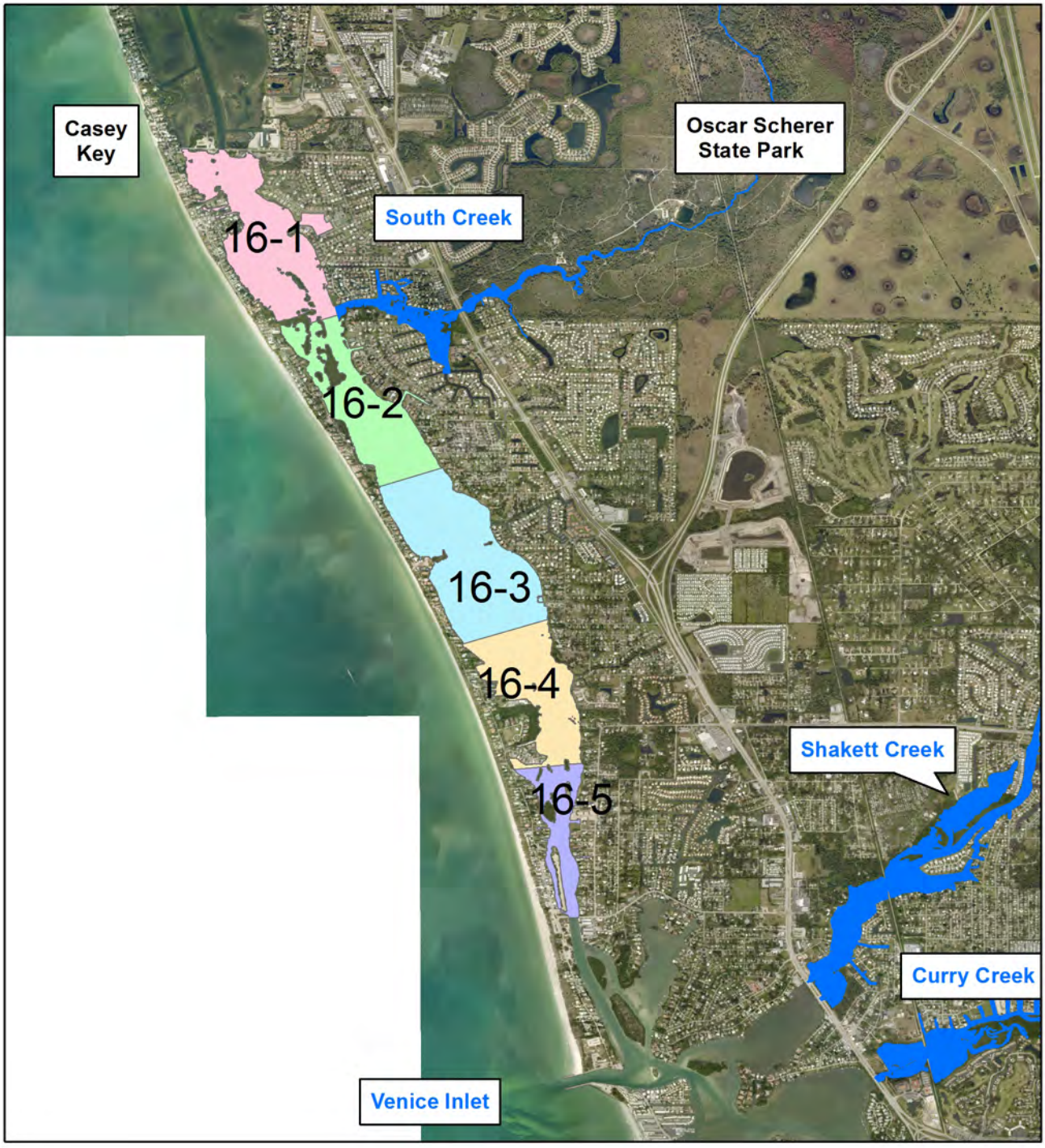
Little Sarasota Bay Segments

N

1 0.5 0 1

Miles

Blackburn Bay Segments

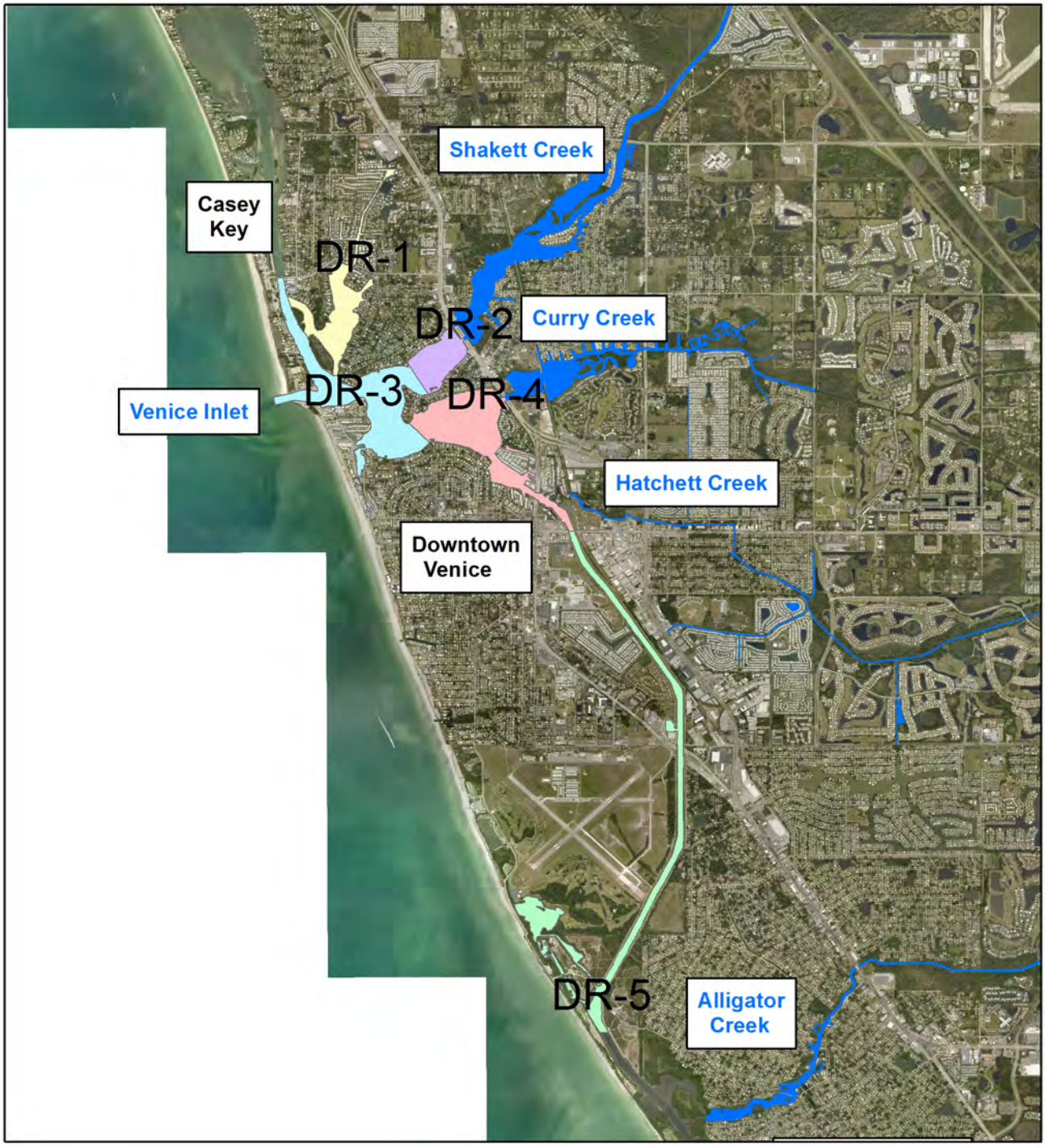


N

1 0.5 0 1

Miles

Dona - Roberts Bay Segments



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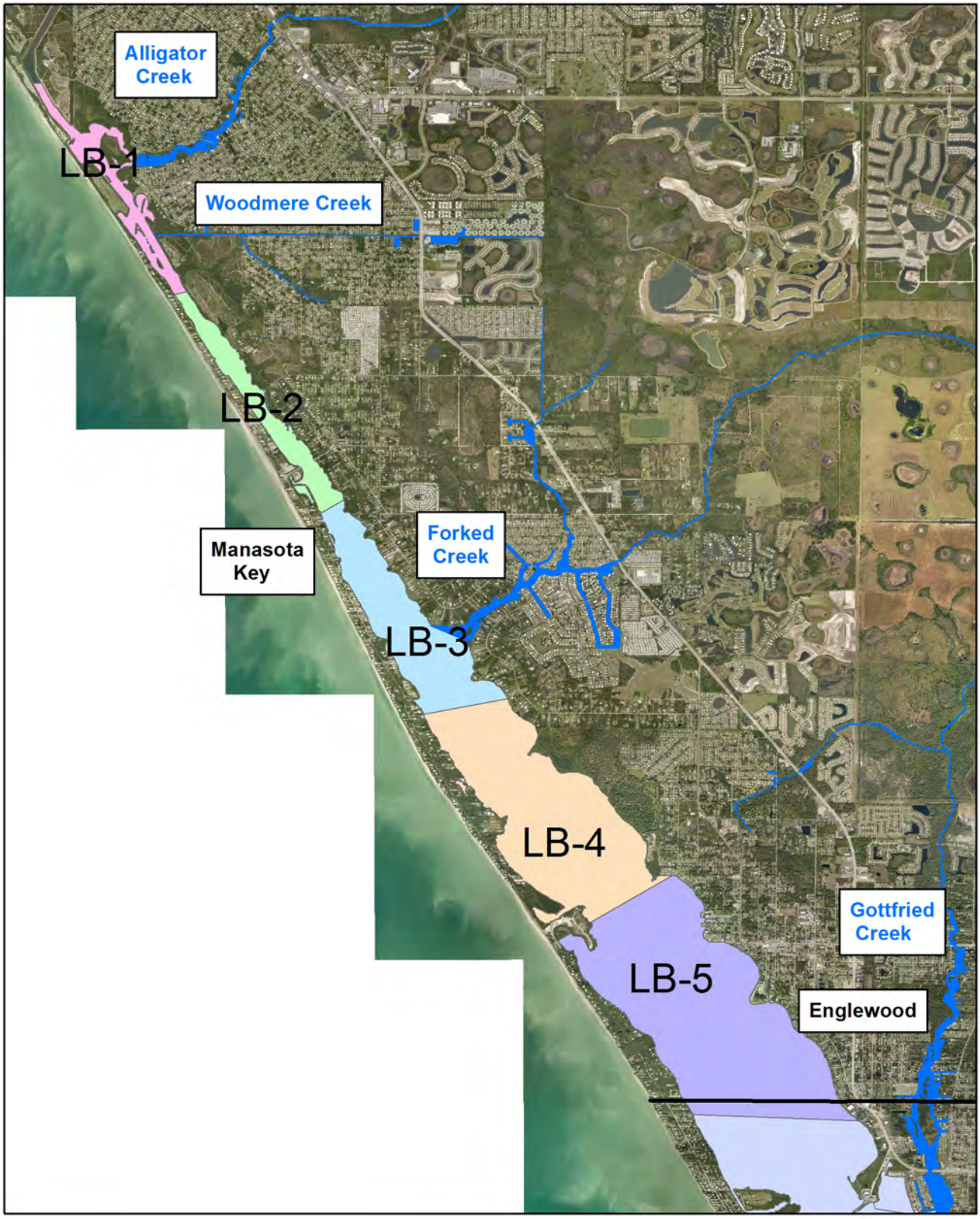
1 0.5 0 1

Miles

Lemon Bay Segments



Ambient Water Quality of Bays
Reporting and Assessment of Monitoring Results

Healthy bays have intrinsic value to marine life, human quality of life, and the local economy. As a monitoring tool, water quality of bays integrates the cumulative effects of watershed management. The foremost example of this is the use of seagrass as an integrated measure for managing nitrogen that comes from the watersheds. This relationship is the foundation of estuarine standards throughout Southwest Florida.

Summary of Monitoring Data from 2016 Reporting Year

Data is summarized on the Sarasota Water Atlas website on the Bay Conditions Pages and on the new Water Quality Trends Pages. Data can also be downloaded.

Long Term Assessment

Six bays were assessed for Bay Conditions using chlorophyll, nitrogen and phosphorus parameters and the information is available at (http://www.sarasota.wateratlas.usf.edu/bay-conditions/). Phosphorus targets were met in all bays and nitrogen targets were met for half of the bays. Results from 2016 show caution levels for all bays, meaning that a passing grade was not met for at least one parameter. None of the bays met the threshold for chlorophyll and three did not meet the nitrogen threshold – Roberts Bay, Dona/Roberts Bays, and Lemon Bay. There is no known pollution source throughout the County that would cause elevated chlorophyll in every bay. It is thought that this may be from a regional effect such as atmospheric deposition or weather and bay circulation patterns. This pattern highlights the necessity for watershed management to protect the highly valued bays of Sarasota County.

Bay Conditions Time Series 2010-2016

Bay Conditions	Sarasota Bay	Roberts Bay	Little Sarasota Bay	Blackburn Bay	Dona / Roberts Bay	Lemon Bay
2010	Pass	Caution	Caution	Pass	Caution	Caution
2011	Pass	Pass	Pass	Pass	Caution	Pass
2012	Pass	Pass	Pass	Pass	Caution	Caution
2013	Pass	Pass	Pass	Pass	Caution	Caution
2014	Pass	Pass	Pass	Pass	Caution	Caution
2015	Pass	Caution	Caution	Pass	Caution	Caution
2016	Caution	Caution	Caution	Caution	Caution	Caution
Chlorophyll	**Sarasota Bay**	**Roberts Bay**	**Little Sarasota Bay**	**Blackburn Bay**	**Dona / Roberts Bay**	**Lemon Bay**
2010	Pass	Caution	Caution	Pass	Caution	Caution
2011	Pass	Pass	Pass	Pass	Caution	Pass
2012	Pass	Pass	Pass	Pass	Pass	Caution
2013	Pass	Pass	Pass	Pass	Caution	Caution
2014	Pass	Pass	Pass	Pass	Caution	Pass
2015	Pass	Caution	Caution	Pass	Caution	Caution
2016	Caution	Caution	Caution	Caution	Caution	Caution
Nitrogen	**Sarasota Bay**	**Roberts Bay**	**Little Sarasota Bay**	**Blackburn Bay**	**Dona / Roberts Bay**	**Lemon Bay**
2010	Pass	Pass	Pass	Pass	Caution	Caution
2011	Pass	Pass	Pass	Pass	Caution	Pass
2012	Pass	Pass	Pass	Pass	Caution	Caution
2013	Pass	Pass	Pass	Pass	Caution	Caution
2014	Pass	Pass	Pass	Pass	Caution	Caution
2015	Pass	Pass	Pass	Pass	Caution	Caution
2016	Pass	Caution	Pass	Pass	Caution	Caution
Phosphorus	**Sarasota Bay**	**Roberts Bay**	**Little Sarasota Bay**	**Blackburn Bay**	**Dona / Roberts Bay**	**Lemon Bay**
2010	Pass	Pass	Pass	Pass	Pass	Pass
2011	Pass	Pass	Pass	Pass	Pass	Pass
2012	Pass	Pass	Pass	Pass	Pass	Pass
2013	Pass	Pass	Pass	Pass	Pass	Pass
2014	Pass	Pass	Pass	Pass	Pass	Pass
2015	Pass	Pass	Pass	Pass	Pass	Pass
2016	Pass	Pass	Pass	Pass	Pass	Pass

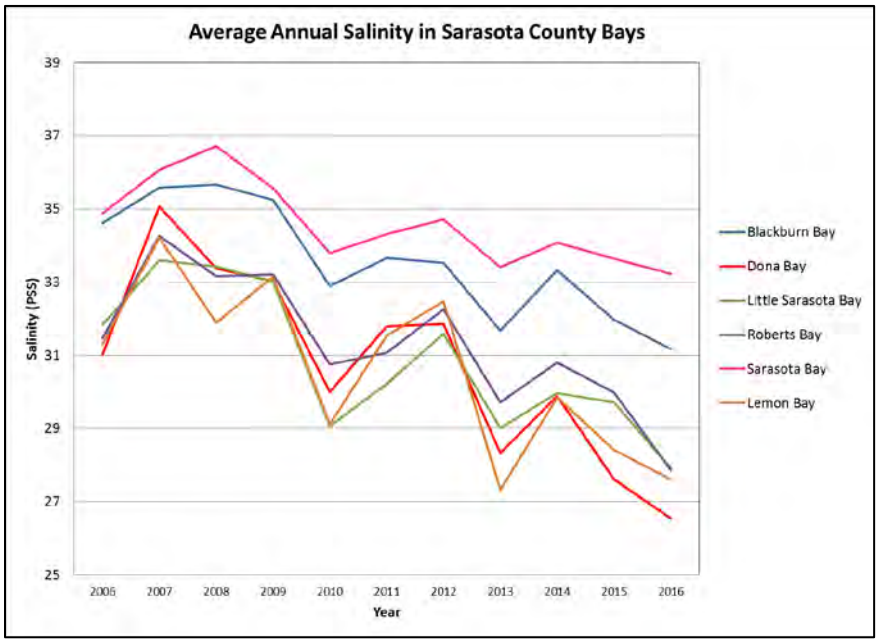
The Bay Conditions pages also provide five year trend graphs for dissolved oxygen, light attenuation, salinity, and turbidity plus information about seagrass acreage and land use. The table below is simply observations of apparent trends as seen on the graphs online. Seagrass declines in Little Sarasota Bay and Blackburn Bay may be related to increased light attenuation, declines in salinity, and increased turbidity in Blackburn Bay.

	Sarasota Bay	Roberts Bay	Little Sarasota Bay	Blackburn Bay	Dona / Roberts Bay	Lemon Bay
Dissolved Oxygen	Flat	Flat	Flat	Flat	Flat	Flat
Light Attenuation	Up	Flat	Up	Up	Up	Up
Salinity	Flat	Down	Down	Down	Down	Down
Turbidity	Up	Flat	Flat	Up	Flat	Flat
Seagrass	Up	Up	Down	Down	Flat	Flat
Urban Land Use in Watershed	62.1%	62.1%	43.1%	43.1%	40.4%	40.4%
	This is just a visual assessment, not a statistical trend test, and is intended to provide an sense of changes to water quality conditions.					

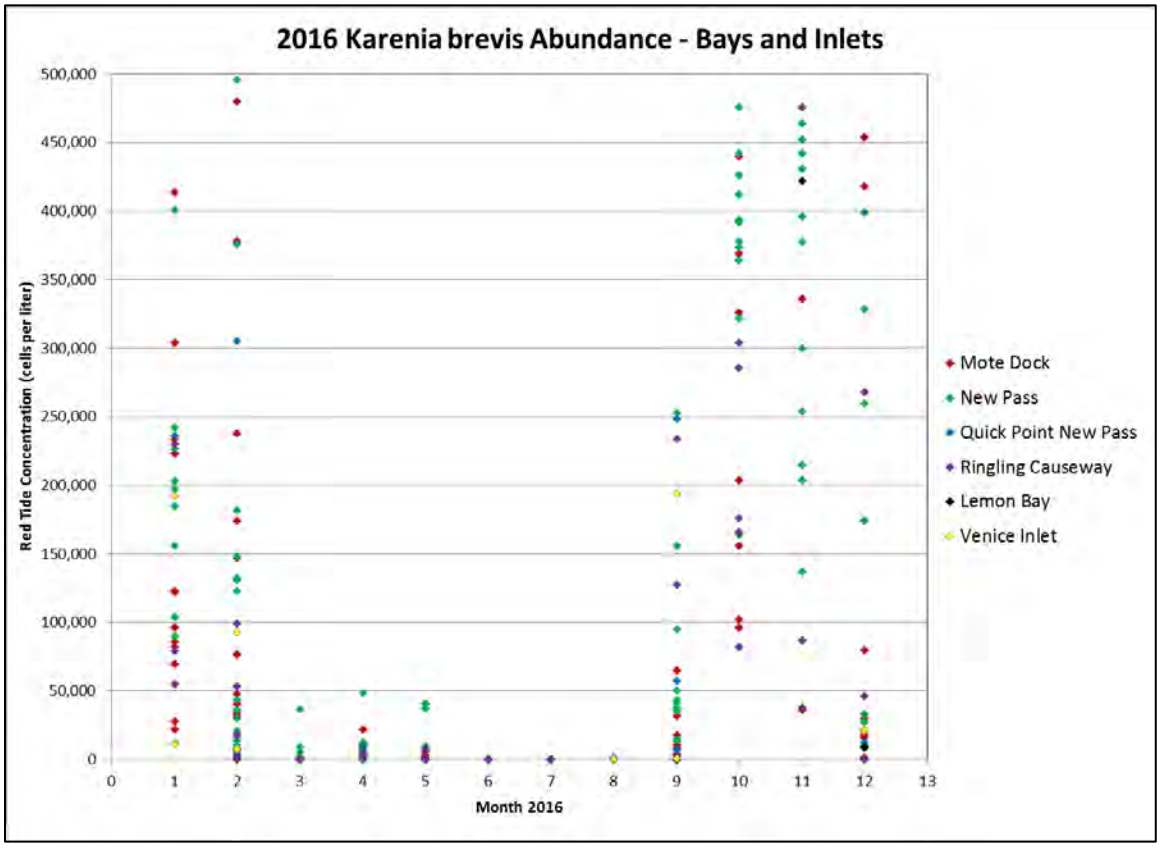
Statistically significant trend analysis for Nitrogen, Chlorophyll-a, and Dissolved Oxygen for both the period of record (POR) and the preceding 10 years is on the Sarasota Water Atlas (http://www.sarasota.wateratlas.usf.edu/water-quality-trends/). Each station is characterized as no trend, or positive or negative trends at a smaller rate or larger rate.

	Sarasota Bay	Roberts Bay	Little Sarasota Bay	Blackburn Bay	Dona / Roberts Bays	Lemon Bay
Total Nitrogen Period of Record 1998-2016	15 of 15 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate
Total Nitrogen 10 Year 2007-2016	15 of 15 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate
Chlorophyll-A Period of Record 1998-2016	6 of 15 sample sites negative trend, smaller rate; 9 of 15 sample sites no trend	4 of 5 sample sites negative trend, smaller rate; 1 of 5 sample sites not trend	1 of 5 sample sites negative trend, smaller rate; 4 of 5 sample sites no trend	5 of 5 sample sites no trend	5 of 5 sample sites negative trend, smaller rate	2 of 5 sample sites negative trend, smaller rate; 3 of 5 sample sites no trend
Chlorophyll-A 10 Year 2007-2016	7 of 15 sample sites negative trend, smaller rate; 8 of 15 sample sites no trend	5 of 5 sample sites negative trend, smaller rate	4 of 5 sample sites negative trend, smaller rate; 1 of 5 sample sites no trend	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate	5 of 5 sample sites negative trend, smaller rate
Dissolved Oxygen Period of Record 1998-2016	15 of 15 sample sites no trend	1 of 5 sample sites positive trend,smaller rate; 4 of 5 sample sites no trend	4 of 5 sample sites positive trend, smaller rate; 1 of 5 sample sites no trend	4 of 5 sample sites negative trend, smaller rate; 1 of 5 sample sites no trend	1 of 5 sample sites negative trend, smaller rate; 4 of 5 sample sites no trend	5 of 5 sample sites no trend
Dissolved Oxygen 10 Year 2007-2016	4 of 15 sample sites negative trend, smaller rate; 1 of 15 positive trend smaller rate; 10 of 15 sample sites no trend	5 of 5 sample sites no trend	1 of 5 sample sites positive trend smaller rate; 4 of 5 sample sites no trend	5 of 5 sample sites no trend	3 of 5 sample sites negative trend, smaller rate; 2 of 5 sample sites not trend	5 of 5 sample sites no trend

The statistical summary above corroborates the bay conditions assessment. All bays have nitrogen increases but some bays are better in terms of chlorophyll and dissolved oxygen – Sarasota Bay, Little Sarasota Bay and Lemon Bay. Again, there is no evidence of widespread increases in pollution discharges so this phenomenon is most likely a result of natural forces like rainfall or salinity. The graph below indicates that salinity appears to be declining in the bays.



Red Tide was present during much of 2016. Data from the Florida Fish and Wildlife Conservation Commission and Mote Marine Laboratory illustrates an abundance of red tide early and late in the year. Blooms are known to reduce dissolved oxygen concentrations, increase chlorophyll concentrations, and decaying fish release nutrients into the water. The chlorophyll data was examined and it was found that chlorophyll in the bays is generally higher in mid-year, which does not correspond with red tide blooms, so Karenia cannot explain the increased chlorophyll in the bays.



Red Tide Sampling Locations

Map published using ArcGIS 10.x by plooma on Wednesday, April 19, 2017

Path: N:\Environmental Water Quality\Sampling\Red Tide\SamplingLocations_8.5 x 11.mxd

Sarasota County
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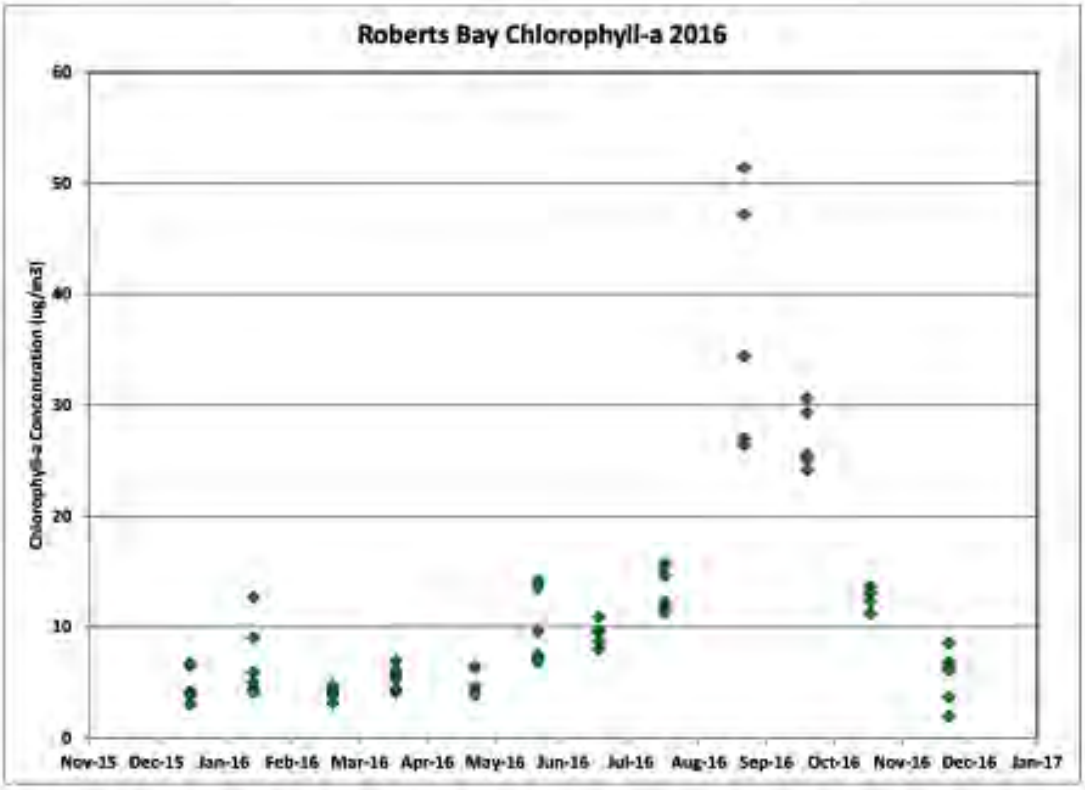
Aerial Imagery Provided by Pictometry International
Sarasota County, FL
January 2016 6.6" Resolution
N.A.D. 1983 HARN State Plane Florida West FIPS 0902
(U.S. Survey Feet)

0 1.5 3 6 Miles

This map is produced from Sarasota County GIS, and is representative information only. The County does not warrantee, guarantee, or assume any responsibility for geographic information completeness and/or accuracy. This map should not be used as guide for navigation.



Relationship of Data to Stormwater Management Plan (SWMP)

The bay water quality monitoring program highlights which bays are relatively more impacted by pollutants. When coupled with other elements of the monitoring plan, the results point out where additional focus is needed for the update to the SWMP that will be submitted with the year four annual report. Monitoring data indicates that some negative trends have been found in bay water quality.

The nine elements of the SWMP have been successfully fulfilled since 1995. Capital projects such as the Celery Fields, Dona Bay Project, sediment sumps, the Catfish Creek Stormwater Facility, and the Briarwood Stormwater Treatment Facility reduce pollutant loading. Documentation for projects is on the Sarasota Water Atlas Projects Catalog Pages at http://www.sarasota.wateratlas.usf.edu/projects-catalog/. These pages are a work in progress and additional projects by the County, permit co-permittees, National Estuary Programs and others will be regularly added.

Sarasota County

Dona Bay
Watershed Restoration Program

OBJECTIVES

1. Provide a more natural freshwater/ saltwater regime in the tidal portions of Dona Bay.
2. Provide a more natural freshwater flow regime pattern for the Dona Bay watershed.
3. Protect existing and future property owners from flood damage.
4. Protect existing water quality.
5. Develop potential alternative surface water supply options that are consistent with and support other plan objectives.

Construction of Phase I Control Structure.

BACKGROUND

Comprehensive Watershed Management

The Dona Bay watershed has grown significantly over the past 100 years from a natural slough that meandered south and east toward the Myakka River to an engineered canal system. In the 1960s the United States Department of Agriculture's Natural Resource Conservation Service embarked on one of the most significant drainage projects in the history of Sarasota County. A large canal system with water level control structures was constructed from Shakett Creek, through Cow Pen Slough and north toward Manatee County. This canal system introduced excessive amounts of freshwater to Dona Bay and enlarged the watershed from 15 square miles to almost 75 square miles. Excess fresh water altered the salinity and brought increased nutrients that disrupted the estuary.

Estuaries need an appropriate mix of salt and fresh water for many species, including juvenile commercial and sportfish.

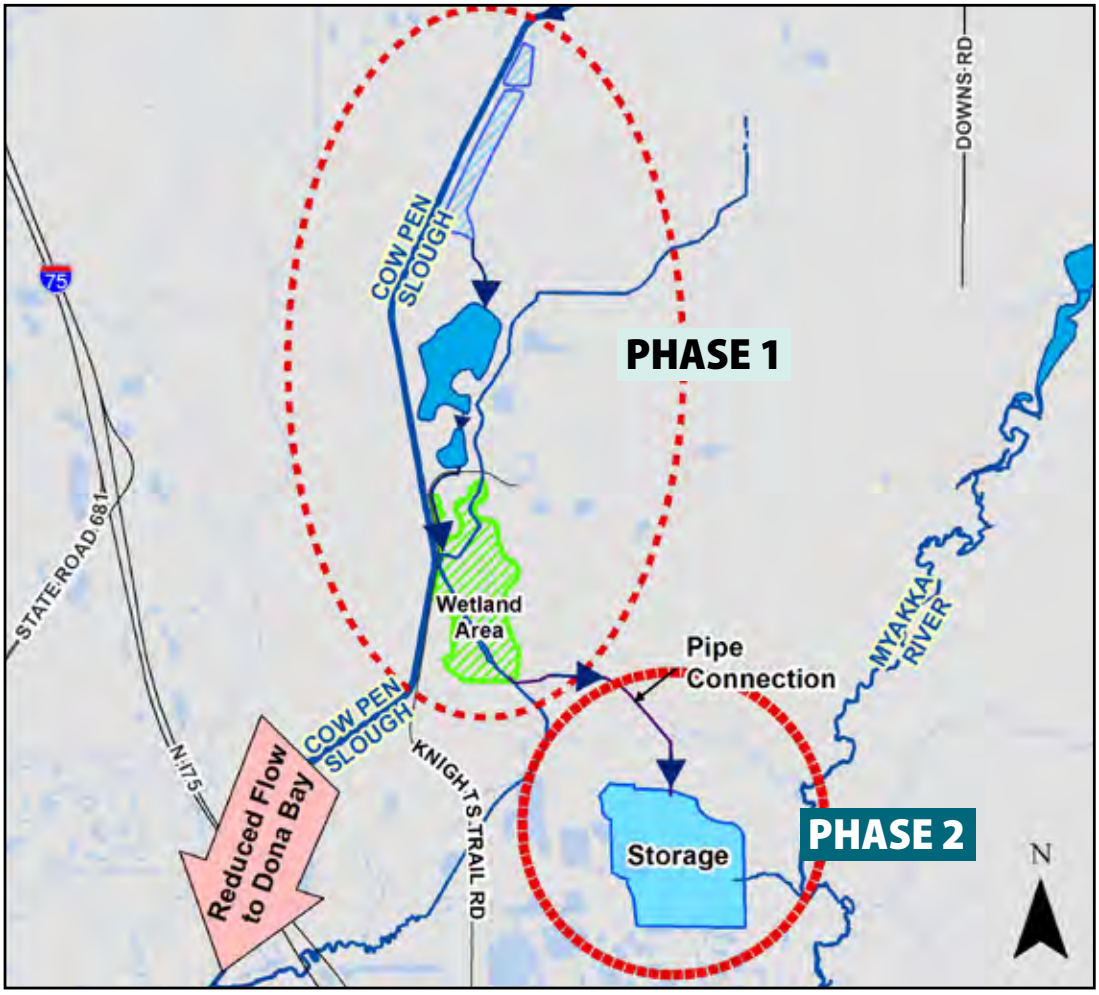
Sarasota County completed a watershed management plan for Dona Bay in 2007 that identified phased projects to restore the natural systems.

PHASING AND STATUS

In 2015, through cooperative funding from the Southwest Florida Water Management District and state appropriations, Sarasota County began construction of the first phase of a series of projects that will meet the watershed management plan objectives. Future phases will be implemented as funding becomes available to restore Dona Bay back to a healthy estuary.

PHASE	IMPROVEMENTS	WATERSHED BENEFITS	COST	SCHEDULE
1	150-acre wetland enhancement by diverting Cow Pen Slough through a new control structure; 1,000-acre storage creation.	Reintroduces historic floodplain; helps to restore natural fresh/saltwater flow regime in Dona Bay; removes 18,000 pounds of nitrogen annually.	$12 million*	Construction began in summer 2015 and will be complete in spring 2017.
2	Divert water to restore some historic flow to the Myakka River. Construct pipeline and reinforce a 380-acre storage facility.	More natural flow regime in Dona Bay by diverting water to the Myakka River; moves towards balancing fresh/saltwater mix; flood protection; removes an additional 7,000 pounds of nitrogen per year.	$8 million	90 percent design and permitting complete in January 2017; construction start fall 2017.
3	Investigate alternative water supply options such as aquifer storage or using excess Cow Pen Slough water.	Decrease fresh water going into Dona Bay; improve salinity and water quality in the estuary.	$6.7 million	Planning, design, permitting January 2017 – September 2019, construction October 2019 – October 2021.
4	Replacement/reconfiguration of the Kingsgate Weir.	Increases ability to control wet season timing and volumes of fresh water entering the estuary.	$2 million	TBD
5	Blackburn Canal Project	Further reduces excess fresh water to the estuary.	$2 million	TBD
6	Habitat Restoration	Oyster, seagrass and wetland restoration and monitoring.	$2 million	TBD

*Cooperatively funded by Sarasota County, Southwest Florida Water Management District, and Florida Department of Environmental Protection.



For more information,
call **941-861-5000**
or visit **www.scgov.net**
(keywords Dona Bay)

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CD/1.17

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

2. Ambient Water Quality of Watersheds

Ambient Water Quality of Watersheds
Reporting and Assessment of Monitoring Results

Creeks receive stormwater from the watersheds and transport it to the bays. Healthy creeks are nurseries for fisheries and other aquatic life, they add to the human quality of life, and support local property values. Nutrients, bacteria, sediments, and oxygen-demanding substances have been identified as priority pollutants.

Summary of Monitoring Data from 2016 Reporting Year

Data is summarized on the Sarasota Water Atlas website on the Creek Conditions Pages and the new Water Quality Trends Pages. Data can also be downloaded.

Long Term Assessment

Seventeen Creeks were assessed for Creek Conditions using chlorophyll, nitrogen, phosphorus, and dissolved oxygen data and the information is available at (http://www.sarasota.wateratlas.usf.edu/creek-conditions/). The data shows notable differences among creeks with 7 creeks with perfect or excellent grades contrasted with 4 that have a preponderance of Caution grades. The timeline below suggests negative trends for Alligator, Phillippi and Gottfried Creeks, and positive trends for Forked, Hudson, Whitaker, and Phillippi.

Creek Conditions	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
2011	Pass	Caution	Caution	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Caution	Pass
2012	Caution	Caution	Pass	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Pass	Caution	Caution	Caution	Caution	Caution	Pass
2013	Caution	Pass	Pass	Pass	Caution	Caution	Caution	Caution	Pass	Pass	Pass	Pass	Caution	Caution	Pass	Caution	Pass
2014	Caution	Pass	Caution	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Caution	Caution	Caution	Pass
2015	Pass	Pass	Pass	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Caution	Pass	Caution	Caution	Caution	Caution	Pass
2016	Pass	Pass	Caution	Pass	Caution	Caution	Caution	Caution	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Caution	Pass

Chlorophyll	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
2011	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Pass	Pass
2012	Caution	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass
2013	Caution	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
2014	Caution	Pass	Pass	Pass	Caution	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
2015	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Caution	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Pass
2016	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass

Nitrogen	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
2011	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
2012	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2013	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass
2014	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass
2015	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Caution	Pass
2016	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Pass	Caution	Pass

Phosphorus	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
2011	Pass	Caution	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2012	Pass	Caution	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2013	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2014	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2015	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass
2016	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Caution	Pass

Dissolved Oxygen	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
2011	Pass	Caution	Pass	Pass	Pass	Caution	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Caution	Pass
2012	Caution	Caution	Pass	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Pass	Caution	Caution	Caution	Pass	Caution	Pass
2013	Caution	Pass	Pass	Pass	Caution	Caution	Caution	Caution	Pass	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Pass
2014	Pass	Pass	Caution	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Caution	Caution	Caution	Pass
2015	Pass	Pass	Pass	Pass	Caution	Caution	Pass	Caution	Pass	Pass	Caution	Pass	Caution	Caution	Caution	Caution	Pass
2016	Pass	Pass	Caution	Pass	Pass	Caution	Pass	Caution	Pass	Pass	Pass	Pass	Caution	Pass	Caution	Caution	Pass
Pass/Fail	5/24	4/24	3/24	0/24	10/24	6/24	2/24	9/24	0/24	0/24	2/24	1/24	11/24	4/24	6/24	16/24	0/24

The Creek Conditions pages also provide five year trend graphs for dissolved oxygen, rainfall, and salinity for fresh and marine reaches plus impervious surface and land use characteristics for each basin. These graphs appear to show salinity changes in some creeks. Dissolved oxygen apparently declined in five creeks and rose in two others.

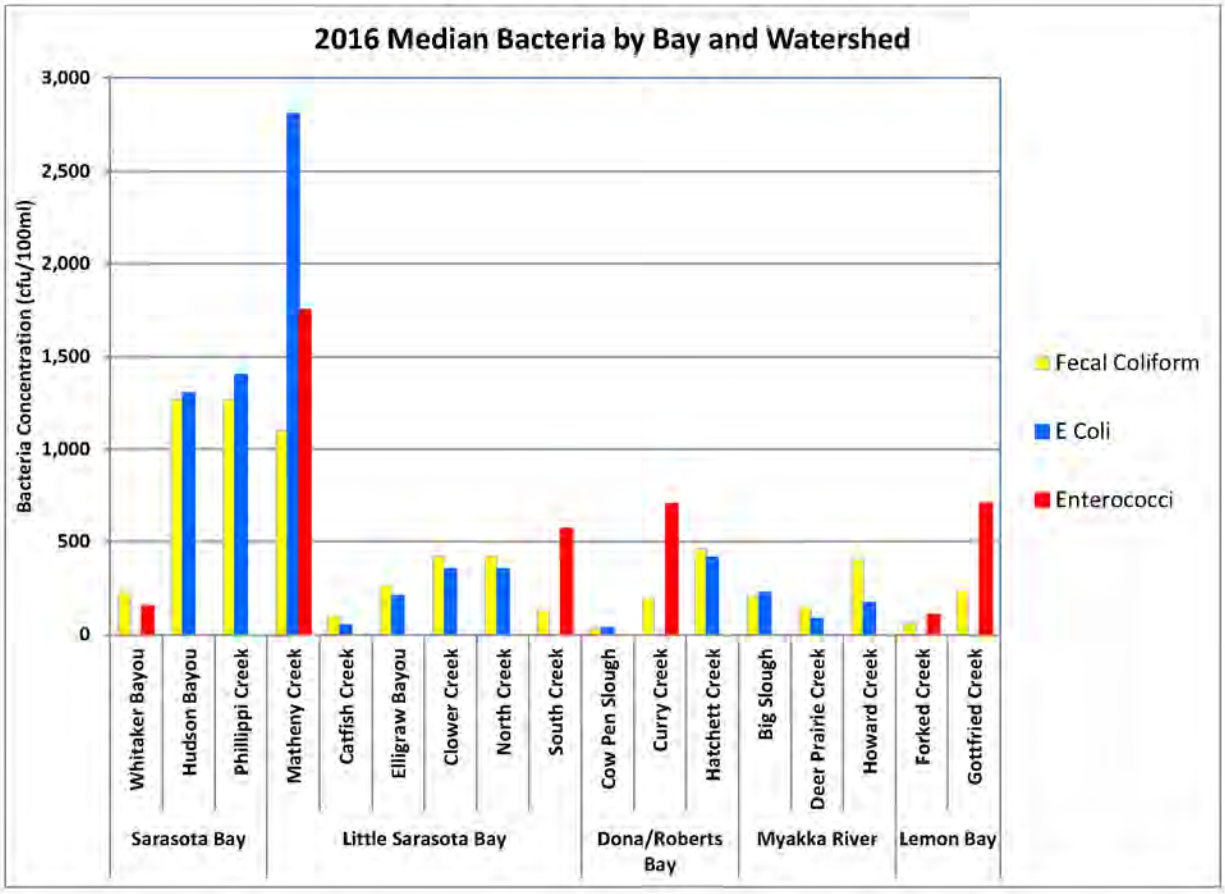
2016		Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
Freshwater Portion of the Creek	Dissolved Oxygen Saturation	Flat	Flat	Down	Flat	No Data	No Data	Flat	No Data	Down	Flat	Down	Down	Flat	No Data	No Data	Flat	No Data
	Salinity	Flat	Flat	Down	Up	No Data	No Data	Flat	No Data	Up	Flat	Flat	Flat	Flat	No Data	No Data	Up	No Data
	Turbidity	Down	Down	Up	Flat	No Data	No Data	Down	No Data	Up	Flat	Down	Flat	Up	No Data	No Data	Flat	No Data
Tidal Portion of the Creek	Dissolved Oxygen	Down	No Data	Down	No Data	Up	Flat	Up	Flat	No Data	No Data	No Data	No Data	Flat	Flat	Down	Flat	No Data
	Salinity	Flat	No Data	Down	No Data	Down	Flat	Flat	Flat	No Data	No Data	No Data	No Data	Down	Flat	Flat	Flat	Flat
	Turbidity	Flat	No Data	Flat	No Data	Flat	Flat	Flat	Flat	No Data	No Data	No Data	No Data	Flat	Flat	Flat	Flat	Flat
Basin Qualities	Impervious Surface Coverage 2013	27%	46%	20%	35%	30%	52%	24%	14%	6%	2%	12%	27%	23%	21%	6%	7%	1%
	Urban Land Use in Basin 2011	80%	94%	73%	92%	86%	77%	68%	73%	20%	25%	57%	73%	71%	81%	37%	29%	28%
	Basin Acreage	4,967	2,406	35,771	1,724	473	284	3,984	2,327	12,630	47,518	6,399	3,342	6,789	1,475	5,863	7,209	6,366
		This is just a visual assessment, not a statistical trend test, and is intended to provide an sense of changes to water quality conditions.																

Statistically significant trend analysis for Nitrogen, Chlorophyll-a, and Dissolved Oxygen for both the period of record (POR) and the preceding 10 years is on the Sarasota Water Atlas at (http://www.sarasota.wateratlas.usf.edu/water-quality-trends/). Each station is characterized as no trend, or positive or negative trends at a smaller rate or larger rate.

	Whitaker Bayou	Hudson Bayou	Phillippi Creek	Matheny Creek	Elligraw Bayou	Clower Creek	Catfish Creek	North Creek	South Creek	Cowpen Slough	Curry Creek	Hatchett Creek	Alligator Creek	Woodmere Creek	Forked Creek	Gottfried Creek	Ainger Creek
Total Nitrogen Period of Record 1998-2016	2 of 2 sample sites negative trend, smaller rate	2 of 2 sample sites negative trend, smaller rate	7 of 8 sample sites negative trend, smaller rate; 1 no trend	2 of 2 sample sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 of 1 samples sites no trend	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 sample site negative trend smaller rate; 1 no trend; 1 negative	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	No Data
Total Nitrogen 10 Year 2007-2016	2 of 2 sample sites negative trend, smaller rate	2 of 2 sample sites negative trend, smaller rate	7 of 8 sample sites negative trend, smaller rate; 1 no trend	2 of 2 sample sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 of 1 samples sites no trend	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	1 sample site negative trend smaller rate; 1 no trend; 1 negative	2 of 2 samples sites negative trend, smaller rate	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites negative trend, smaller rate	No Data
Chlorophyll-A Period of Record 1998-2016	1 of 2 sample sites negative trend, smaller rate; 1 no trend	1 of 2 sample sites positive trend, smaller rate; 1 no trend	8 of 8 sample sites no trend	1 of 2 sample sites negative trend smaller rate; 1 no trend	1 of 1 sample sites positive trend, smaller rate	1 of 1 sample sites no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 1 sample sites negative trend, smaller rate	1 of 2 samples sites positive trend, smaller rate; 1 no trend	2 of 2 samples sites no trend	1 of 1 sample sites no trend	1 of 3 sample sites positive trend smaller rate; 2 no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 2 sample sites positive trend, larger rate; 1 no trend	No Data
Chlorophyll-A 10 Year 2007-2016	1 of 2 sample sites negative trend, smaller rate; 1 no trend	1 of 2 sample sites positive trend, smaller rate; 1 no trend	8 of 8 sample sites no trend	1 of 2 sample sites negative trend smaller rate; 1 no trend	1 of 1 sample sites positive trend, smaller rate	1 of 1 sample sites no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 1 sample sites negative trend, smaller rate	1 of 2 samples sites positive trend, larger rate; 1 no trend	2 of 2 samples sites no trend	1 of 1 sample sites no trend	1 of 3 sample sites positive trend smaller rate; 2 no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 2 sample sites positive trend, larger rate; 1 no trend	No Data
Dissolved Oxygen Period of Record 1998-2016	2 of 2 sample sites no trend	1 of 2 sample sites positive trend, smaller rate; 1 no trend	7 of 8 sample sites no trend; 1 negative trend smaller rate	2 of 2 sample sites no trend	1 of 1 samples sites no trend	1 of 1 samples sites positive trend smaller rate	1 of 2 sample sites negative trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 1 sample sites no trend	2 of 2 samples sites no trend	2 of 2 samples sites no trend	1 of 1 sample sites positive trend, smaller rate	1 of 3 sample sites positive trend smaller rate; 2 no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites positive trend, smaller rate	No Data
Dissolved Oxygen 10 Year 2007-2016	2 of 2 sample sites no trend	1 of 2 sample sites positive trend, smaller rate; 1 no trend	2 of 8 sample s sites negative trend smaller rate; 1 positive trend smaller rate, 5 no trend	2 of 2 sample sites no trend	1 of 1 samples sites no trend	1 of 1 samples sites positive trend smaller rate	1 of 2 sample sites negative trend smaller rate; 1 no trend	1 of 1 sample sites no trend	1 of 1 sample sites no trend	2 of 2 samples sites no trend	2 of 2 samples sites no trend	1 of 1 sample sites positive trend smaller rate	1 of 3 sample sites positive trend smaller rate; 2 no trend	1 of 2 sample sites positive trend smaller rate; 1 no trend	1 of 1 sample sites negative trend, smaller rate	2 of 2 samples sites positive trend, smaller rate	No Data

The graph above shows that nitrogen increases in the creeks are common except for Clower Creek. The majority of creeks (7) showed chlorophyll decreases, with 6 unchanged, and increases found in 3 creeks - Whitaker, Matheny and South Creek. Dissolved oxygen was static in 7 creeks, improving in 5 and declining in 3 – Phillippi, Catfish and Forked. There are no known pollution sources that increased in every basin of the County so it is thought that the increasing nitrogen levels may be related to atmospheric deposition or are somehow rainfall related.

Bacteria data was graphed by basin (below). Problem areas with high values (Matheny, Phillippi and Hudson) are in contrast to areas with low values (Catfish, Cowpen, Deer Prairie, and Forked).



Relationship of Data to Stormwater Management Plan

The results of comprehensive creek monitoring highlights the problem areas that are suitable for further investigation. Data suggests that negative trends for Alligator, Phillippi and Gottfried Creeks may be suitable for additional pollutant removal measures to be incorporated into the Stormwater Management Plan in the year four annual report.

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

3. Biological Monitoring - Oysters

2016 Biological Monitoring – Oyster Monitoring
Reporting and Assessment of Monitoring Results

Oysters have long been recognized as key bio-indicators of the ecological health of marine and estuarine ecosystems. Changes in oyster health can provide an early warning of potential adverse impacts associated with hydrological alterations occurring throughout the watershed. Monitoring the changes in percent live oyster coverage is a simple, cost-effective tool to document changes and allow watershed managers to minimize impacts.

Summary of Monitoring Data from 2016 Reporting Year

In 2016 fourteen stations ranked excellent with greater than 75% live oysters. Eight stations fell into the "good" category (50%-75% live oysters). Two stations were in the caution category with less than 50% live

Below is the current and historic percent live oyster monitoring data.

Percent Live Oysters by Year
Excellent (>75%), **Good** (50-75%), **Caution** (<50%)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AL1					63	68	61	62	69		43	49	65	**81**
AL2					78	84	66	69	80		21	49	73	**49**
ANG1					75	75	46	80	79		75	74	72	**80**
ANG2					85	72	55	80	72		52	85	73	76
CAT1				76	88	94	70	2	0		0			
CC1	0	41	59	59	71	80	68	76	71	61	61	68	45	53
CC2			13	51	74	91	47	59	77	55	21	33	38	35
DB1	22	58	76	64	73	77	67	84	82	74	77	71	79	70
FRK1					64	50	36	48	33		0	84	81	82
FRK1A											44			
FRK2					77	79	69	73	85		72	86	85	87
GOT1					72	75	68	84	84		80	72	86	80
GOT2					79	70	63	70	76		46	79	75	78
GOT3					81	55	55	64	60		69	75	55	64
HUD1				78	75	77	71	79	87		59	85	87	88
HUD2				54	66	63	67	67	70		68	71	63	70
LYB1	80	79	80	77	63	71	78	74	73	75	68	83	84	77
NC1				82	76	69	77	77	85		82			
NC2				0	85	47	59	50	0		0			
NC2A											72			
NO1												86	85	81
PH1				56	76	54	77	78	77		72	56	79	85

Percent Live Oysters by Year
Excellent (>75%), **Good** (50-75%), **Caution** (<50%)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
PH2				60	81	75	72	78	80		67	64	83	88
PH3				21	84	75	66	70	46		23	68	67	55
RB1	79	78	73	73	76	79	80	83	89	87	80	86	77	74
SC1				57	54	62	64	78	80		69	56	67	82
SC2	0			58	85	78	68	73	80		66	75	62	69
SKC1	8	79	89	72	86	82	82				86	78	88	83
SKC2		76	55	56	80	81	81	84	81	78	62	87	65	74
SKC3			36	37	16									

Long Term Assessment

Most oyster stations on Sarasota County creeks followed typical patterns that they have through the years. Some of the upstream stations experienced some die off during the wet season. Sarasota County did experience higher than average rainfall in August 2016. This higher than normal rainfall likely contributed to upstream stations being too fresh for too long causing some oyster die off. This is particularly evident in the Shakett Creek and Dona Bay watershed. This watershed is highly altered and upstream sites have experienced die off in the past during heavy rainfall years.

Relationship of Data to Stormwater Management Plan (SWMP)

The percent live oysters generally drop in the wet season and in certain watersheds with excessive runoff, the die off in up-stream stations is more pronounced. This allows the county to identify areas in which to focus water retention efforts.

A recent watershed restoration effort was completed during the winter of 2016-1017 in the Dona Bay watershed. It is anticipated that upstream die offs in the Dona Bay watershed will decrease in the future due to restoration efforts.

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

4. Biological Monitoring - Seagrass

Biological Monitoring – Seagrass Monitoring
Reporting and Assessment of Monitoring Results

Seagrass is the response variable that was used to develop nutrient management criteria for bays in Southwest Florida. The SW Florida Water Management District maps seagrass from aerial photography every other winter. Results from 2016 show an overall increase in seagrass throughout Sarasota County but increases in Sarasota, Roberts and Dona/Roberts Bays were offset by losses in Little Sarasota, Blackburn and Lemon Bays. This data is for Sarasota County only and does not include the portions of Sarasota and Lemon Bay that are beyond the County borders.

Year	*Sarasota Bay*	*Roberts Bay*	*Little Sarasota Bay*	*Blackburn Bay*	*Dona Roberts Bay*	*Lemon Bay*
2014	3,479	321	884	461	99	1,354
2016	3,719	356	772	415	101	1,340

Summary of Monitoring Data from 2016 Reporting Year

Sarasota County monitors the quality of seagrass by monitoring species, percent cover of the bay bottom (abundance), blade length, drift algae, epiphyte coverage and other characteristics. The premise is that healthy seagrass beds will grow densely, be climax species, and be tall. When extremely abundant, drift algae and epiphytes are known to be harmful to the health of seagrass. In 2016, 40 fixed and 130 random sites were sampled throughout all of the bays in Sarasota County.

Long Term Assessment

The SWFWMD Sarasota Bay Surface Water Improvement and Management Plan established that there is a negative correlation between nitrogen and seagrass biomass in Sarasota Bay (Tomasko et al., 1992).

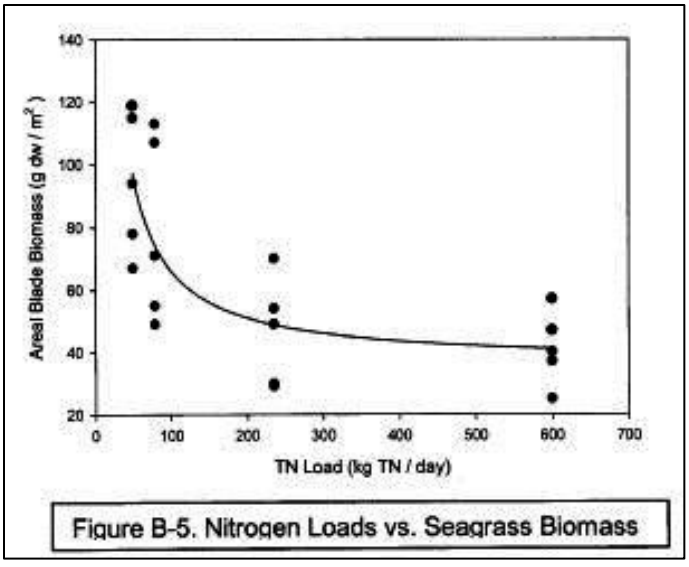
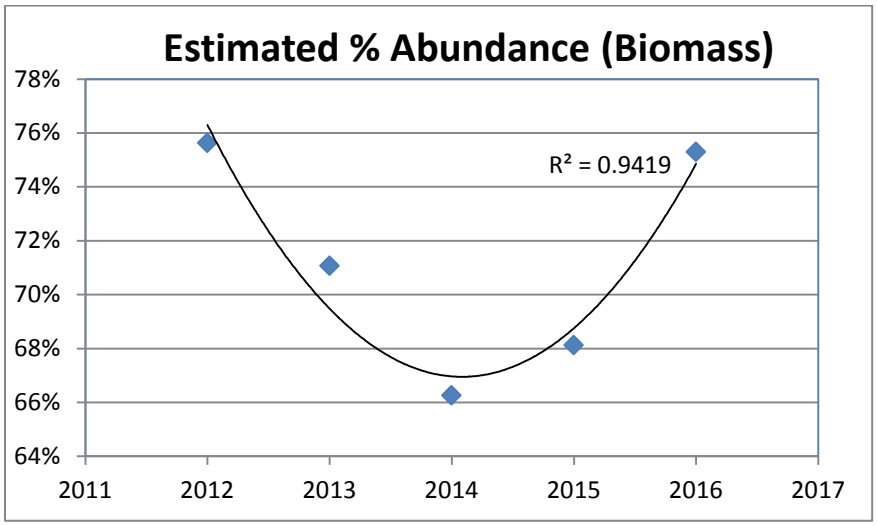


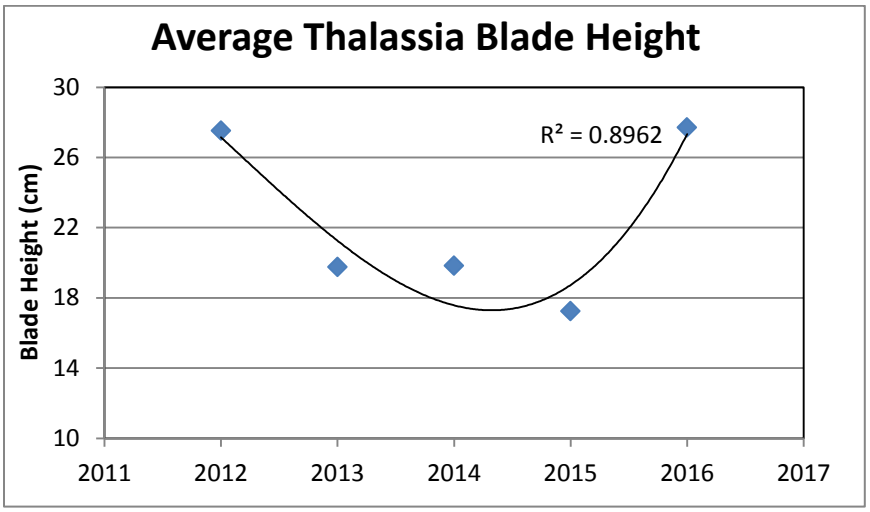
Figure B-5. Nitrogen Loads vs. Seagrass Biomass

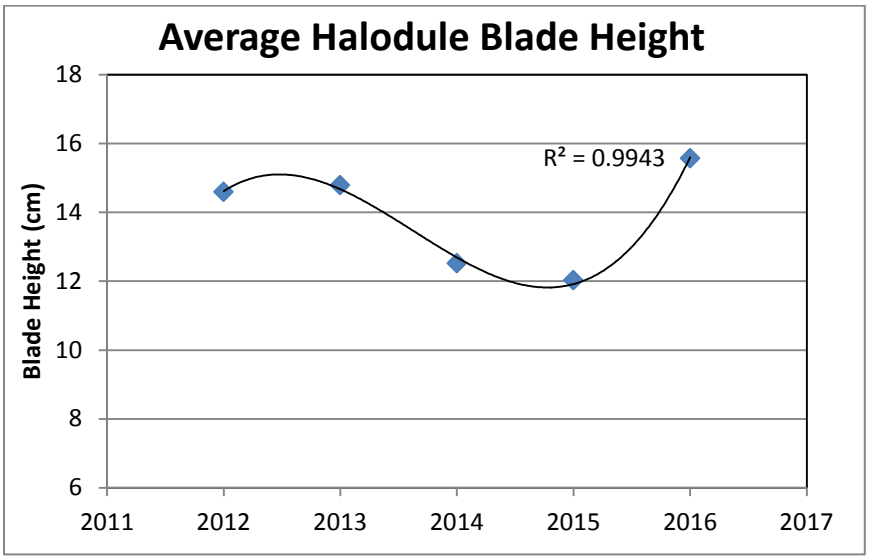
Five-year trends in the majority of the water bodies in Sarasota show evidence of an increase in nitrogen between 2013 and 2014. This correlates with the overall decline in biomass and robustness found by the Sarasota County Seagrass Monitoring Program in those years and subsequent recovery. 2013 demonstrates evidence of slightly higher than rainfall average which may also contribute to increased nitrogen levels.

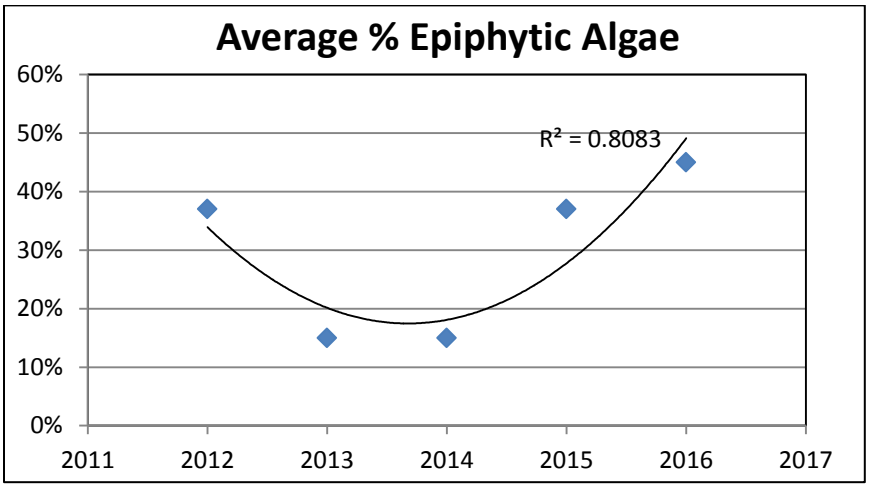
Year	Tot. Abundance	Avg. Thalassia Cover	Avg. Halodule Cover	Avg. Thalassia Blade Height (cm)	Avg. Halodule Blade Height (cm)	Avg. Drift Algae	Avg. Epiphytic Algae
2012	76%	74%	85%	27.52	14.59	6%	37%
2013	71%	70%	89%	19.76	14.78	23%	15%
2014	66%	62%	75%	19.83	12.52	18%	15%
2015	68%	65%	75%	17.23	12.03	18%	37%
2016	75%	58%	99%	27.71	15.57	10%	45%

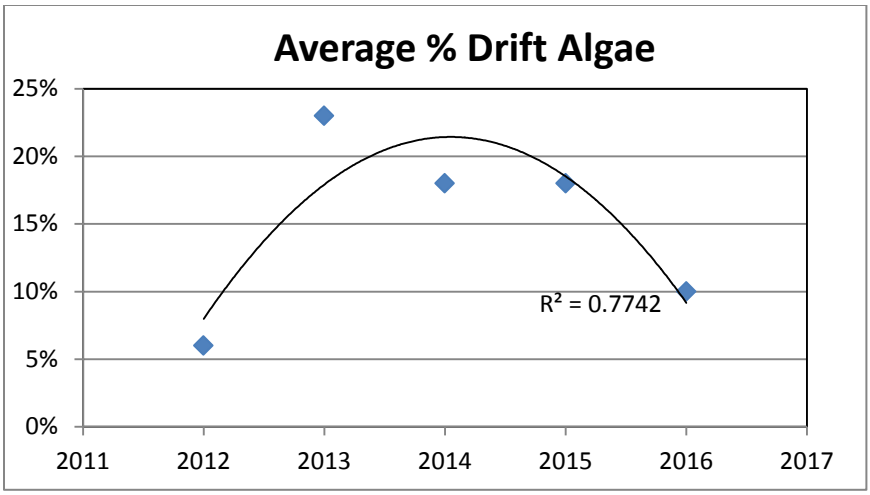
In 2016, increases were seen in abundance, blade length, and epiphytes; drift algae was down, as was the relative abundance of Thalassia. Halodule is a pioneer species and will recover more quickly than Thalassia which is a climax seagrass bed community. The mix of negative and positive characteristics may be analyzed spatially for each bay and bay segment and be correlated to water quality characteristics such as nitrogen and chlorophyll.

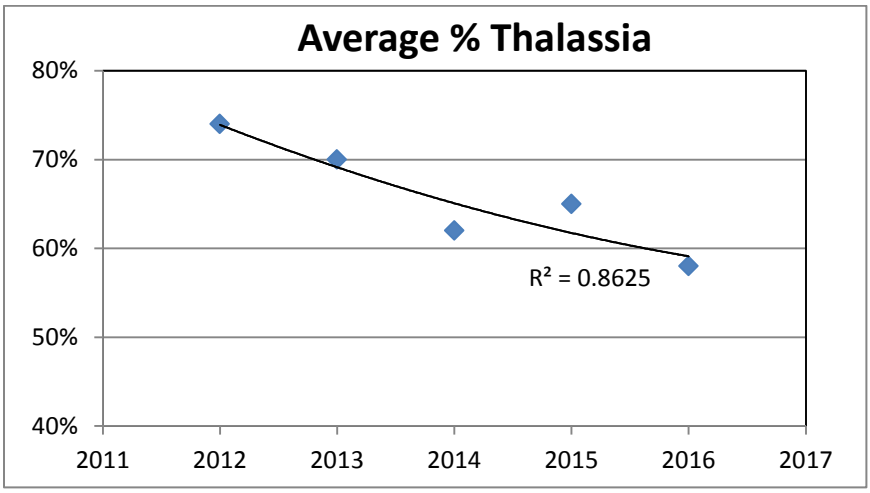


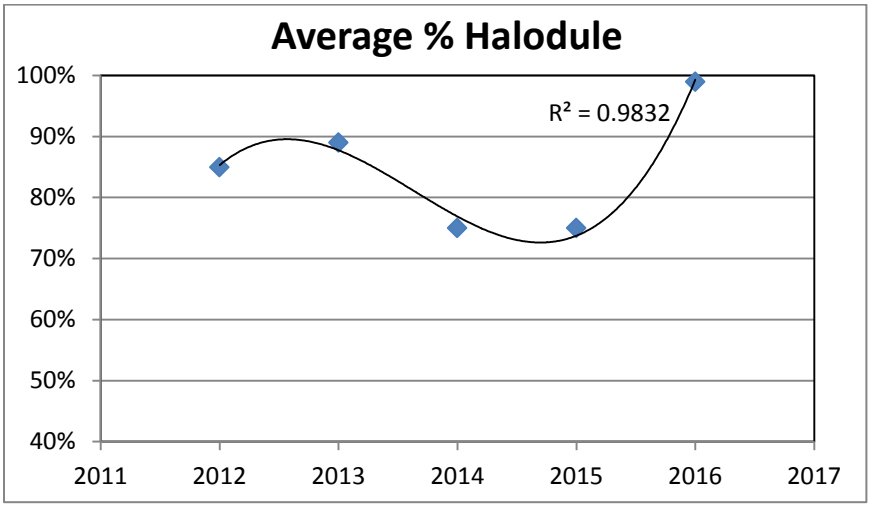

Average Thalassia Blade Height
Blade Height (cm)
30
26
22
18
14
10
2011
2012
2013
2014
2015
2016
2017
R² = 0.8962


Average Halodule Blade Height
Blade Height (cm)
18
16
14
12
10
8
6
2011
2012
2013
2014
2015
2016
2017
R² = 0.9943


Average % Epiphytic Algae
60%
50%
40%
30%
20%
10%
0%
2011
2012
2013
2014
2015
2016
2017
R² = 0.8083


Average % Drift Algae
25%
20%
15%
10%
5%
0%
2011
2012
2013
2014
2015
2016
2017
R² = 0.7742


Average % Thalassia
80%
70%
60%
50%
40%
2011
2012
2013
2014
2015
2016
2017
R² = 0.8625


Average % Halodule
100%
90%
80%
70%
60%
50%
40%
2011
2012
2013
2014
2015
2016
2017
R² = 0.9832

Relationship of Data to Stormwater Management Plan (SWMP)

The County Seagrass Monitoring Program does not just measure the presence of seagrass but also measures the health of seagrass. Note that Halodule is about 60% as tall as Thalassia so having climax species like Thalassia is beneficial as habitat, for sediment control and for grazing by manatees, turtles and other marine life. Seagrass species are sensitive to salinity so have an inherent relationship to stormwater management. It is expected that the Dona Bay Project, which was completed in 2017, will provide measurable benefits to seagrass in the downstream estuary by reducing salinity, color and nutrient levels in the bays.

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

5. Biological Monitoring - Scallops

Scallop Monitoring Program
Reporting and Assessment of Monitoring Results

Since 2008, Sarasota County has been monitoring the scallop populations of our bays. The Scallop Program is part of a monitoring plan to help measure the effectiveness of the County's Stormwater Management Plan on our watersheds. The bay scallop (*Argopecten irradians)* is an indicator species that is particularly sensitive to freshwater influences and poor water quality. The county scallop monitoring program includes spat collection, adult surveys and survival rates of caged adults. These efforts are in partnership with the Florida Fish and Wildlife Research Institute (FWRI), Mote Marine Laboratory, and Sarasota Bay Watch.

<u>Summary of Monitoring Data from 2016 Reporting Year</u>

A. SPAT MONITORING

Figure 1: Monthly Scallop Spat Landings

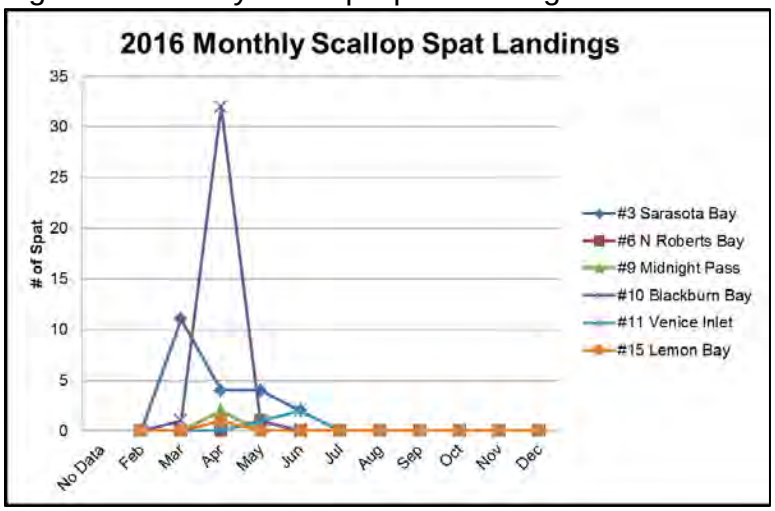
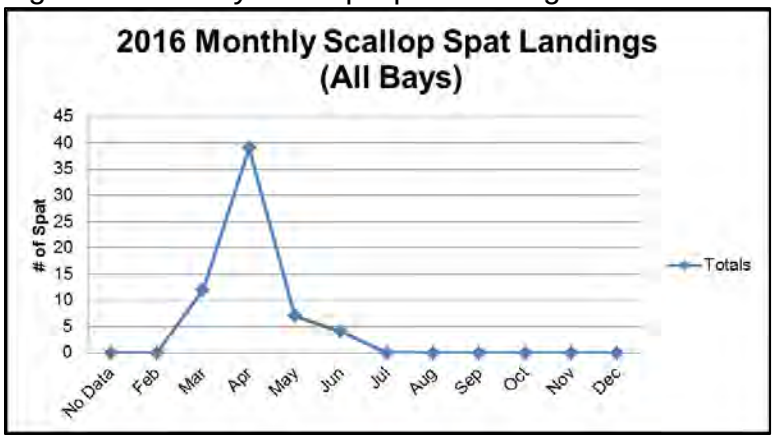
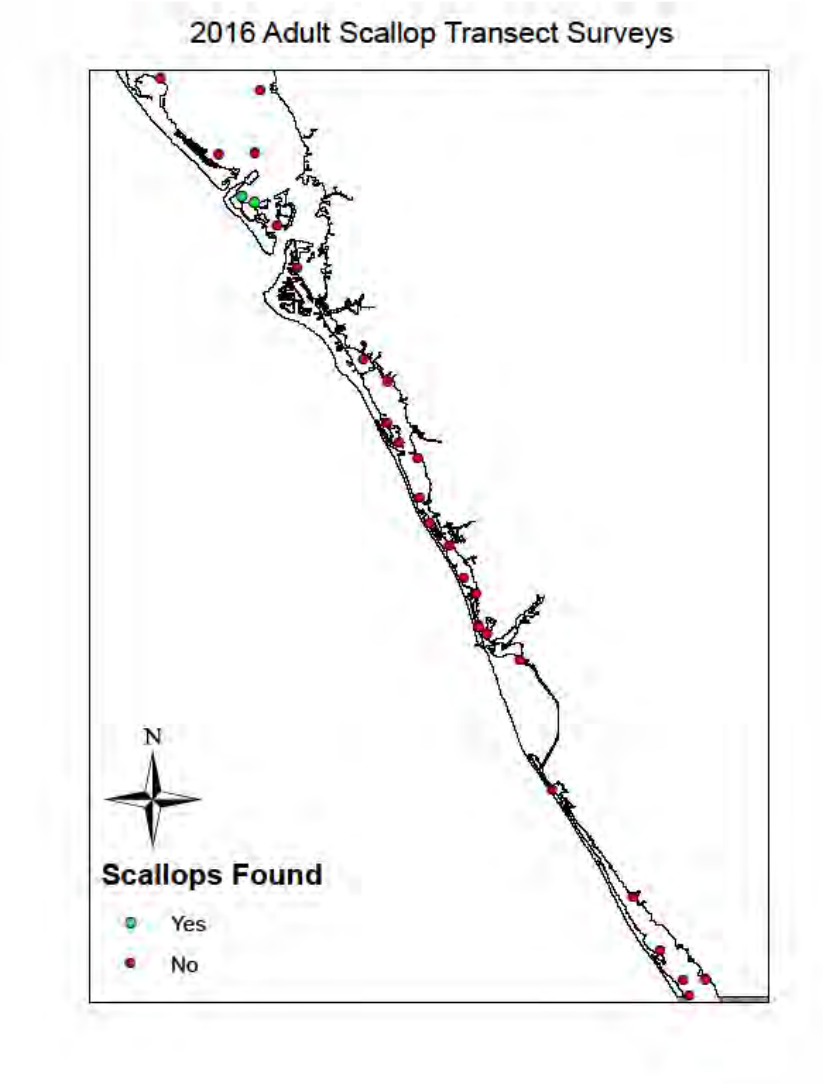


Figure 2: Monthly Scallop Spat Landings



Historical patterns in our spat monitoring program have consistently shown elevated landings from March through May with a peak occurring in April. The 2016 data shows a similar pattern (see figures 1 & 2). Significant countywide rainfall typically starts in June and remains persistent through September. The drop in spat landings follows the increasing rainfall patterns. This increase in fresh water causes decreases in salinity, which can have a negative effect on scallop populations.

B. ADULT SCALLOP TRANSECT SURVEY SITES



During the month of August staff, conducted 26 transect surveys throughout the county's bays searching for scallops. These surveys resulted in four live and eight recently dead scallops. No adult scallops were found during the 2015 survey.

C. CAGE PROGRAM

Figure 3: Caged Scallops Growth Rates

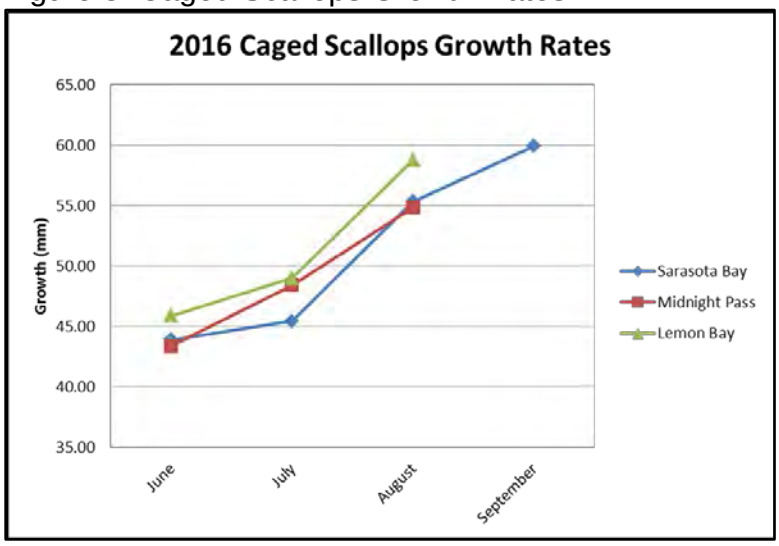
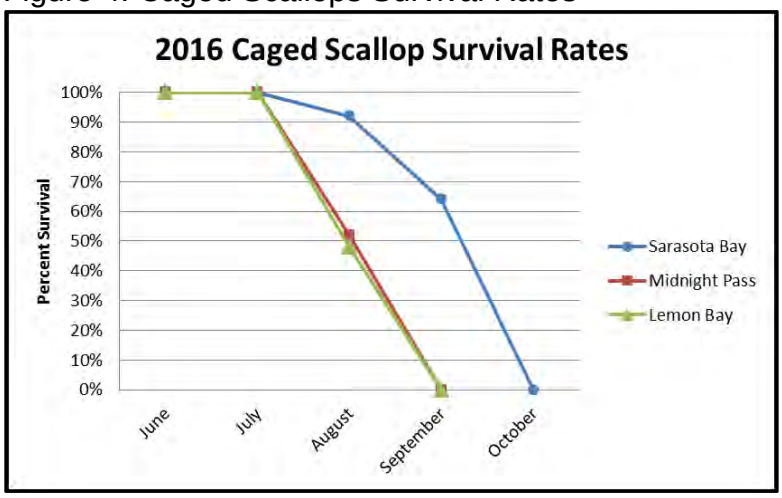


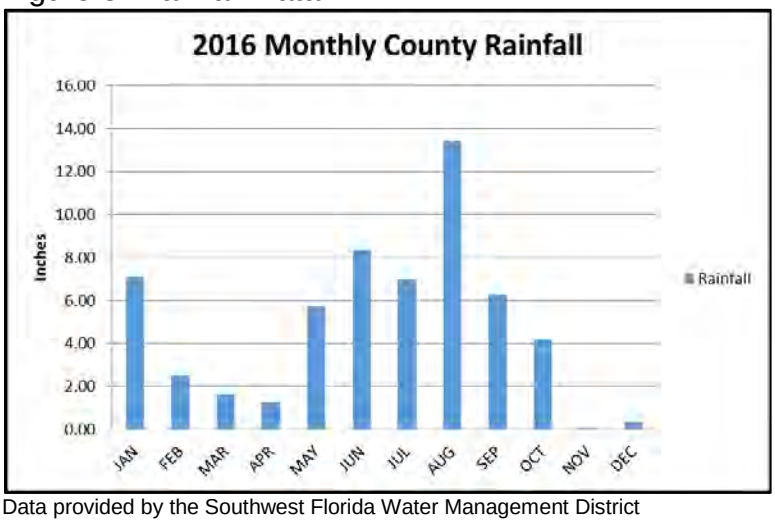
Figure 4: Caged Scallops Survival Rates



The county cage program relies on adult hatchery scallops provided by our partner organizations Mote Marine Laboratory & Sarasota Bay Watch. Scallops provided by our partners were placed at in cages three sites in county bays. The caged scallops experienced a normal growth rates June through August (See figure 3). A spike in redtide blooms during August resulted in significant mortality throughout the three cages (See figure 6). The bulk of the caged scallops did not survive through September.

D. RAINFALL

Figure 5: Rainfall Data

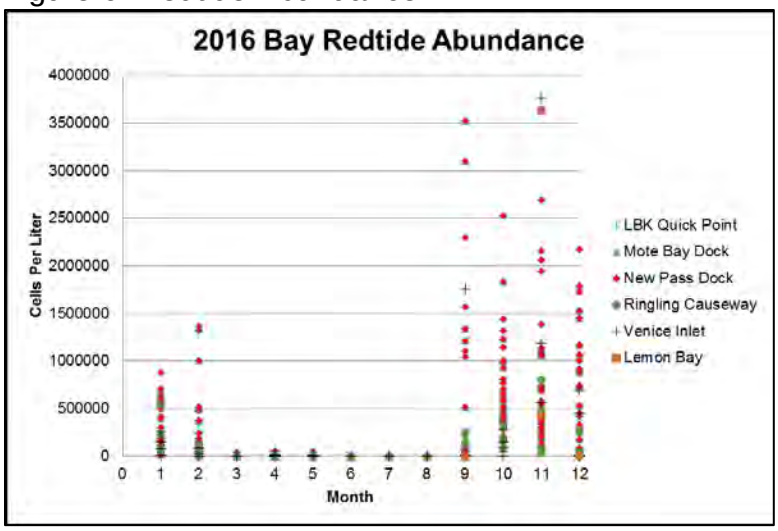


Data provided by the Southwest Florida Water Management District

The graph shows correlation between the typical peak of spat landings (see figure 2) and the decrease of rainfall leading into April (see figure 5). A similar correlation appears between the lack of adult scallops found during transect surveys and an increase in rainfall leading into a significant spike during the month of August.

E. REDTIDE

Figure 6: Redtide Abundance

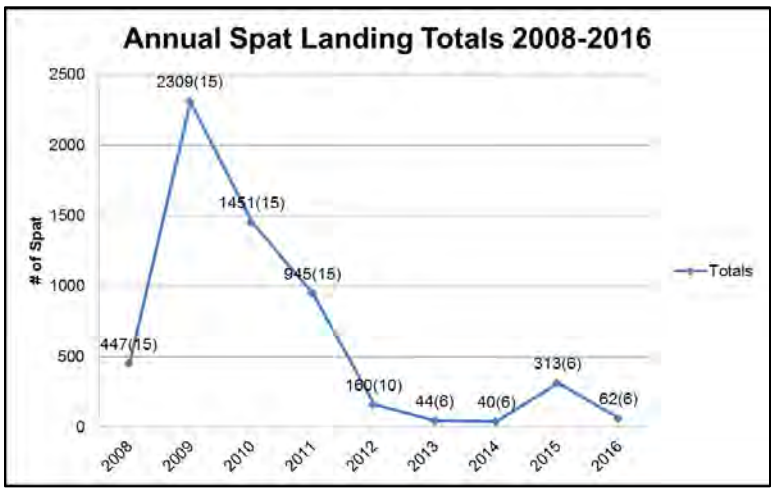


Data provided by FWRI

Redtide was present throughout most of the county's bays during nine months of the year. Red tide cell counts in excess of 1 million cells per liter are in the high range according the FWRI concentration scale. Samples showed medium to high cell counts in six of the nine months in which redtide blooms were present (See figure 6).

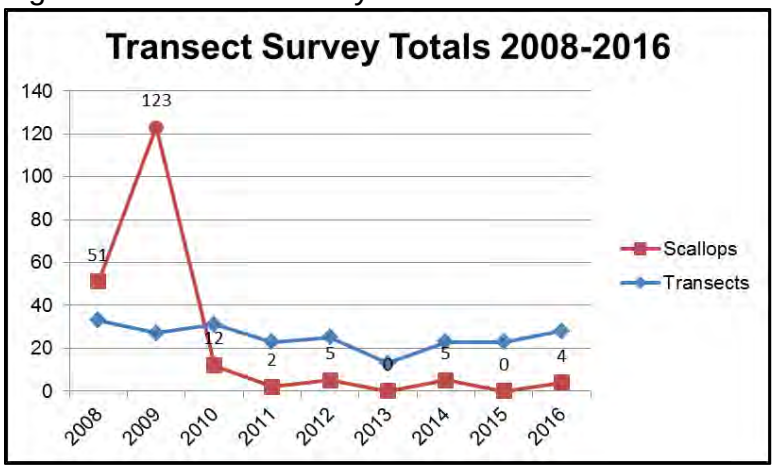
Long Term Assessment

Figure 7: Annual Scallop Spat Landings



The spat monitoring program started with (15) monitoring sites throughout the county bays. In 2012, Mote Marine Laboratory collaborated with county and the monitoring sites were reduced to (10) then further reduced to (6) in 2013. Figure 7 shows a decrease in 2016 spat landings of 19.8% from the 2015 data. However, this is roughly 30% above spat landing totals in 2013 and 2014.

Figure 8: Transect Survey Totals



After 2009, few adult scallops were found during the annual transect surveys. This trend in number of scallops found has continued from 2010 through 2016. This may indicate that a limited number of scallops remain in our natural background populations (see figure 8). Support for this conclusion is show by relatively low spat landings on our collectors during the same years (see figure 7). It is important to note that environmental factors such as visibility, number of locations surveyed and diver experience can have a significant influence the survey results.

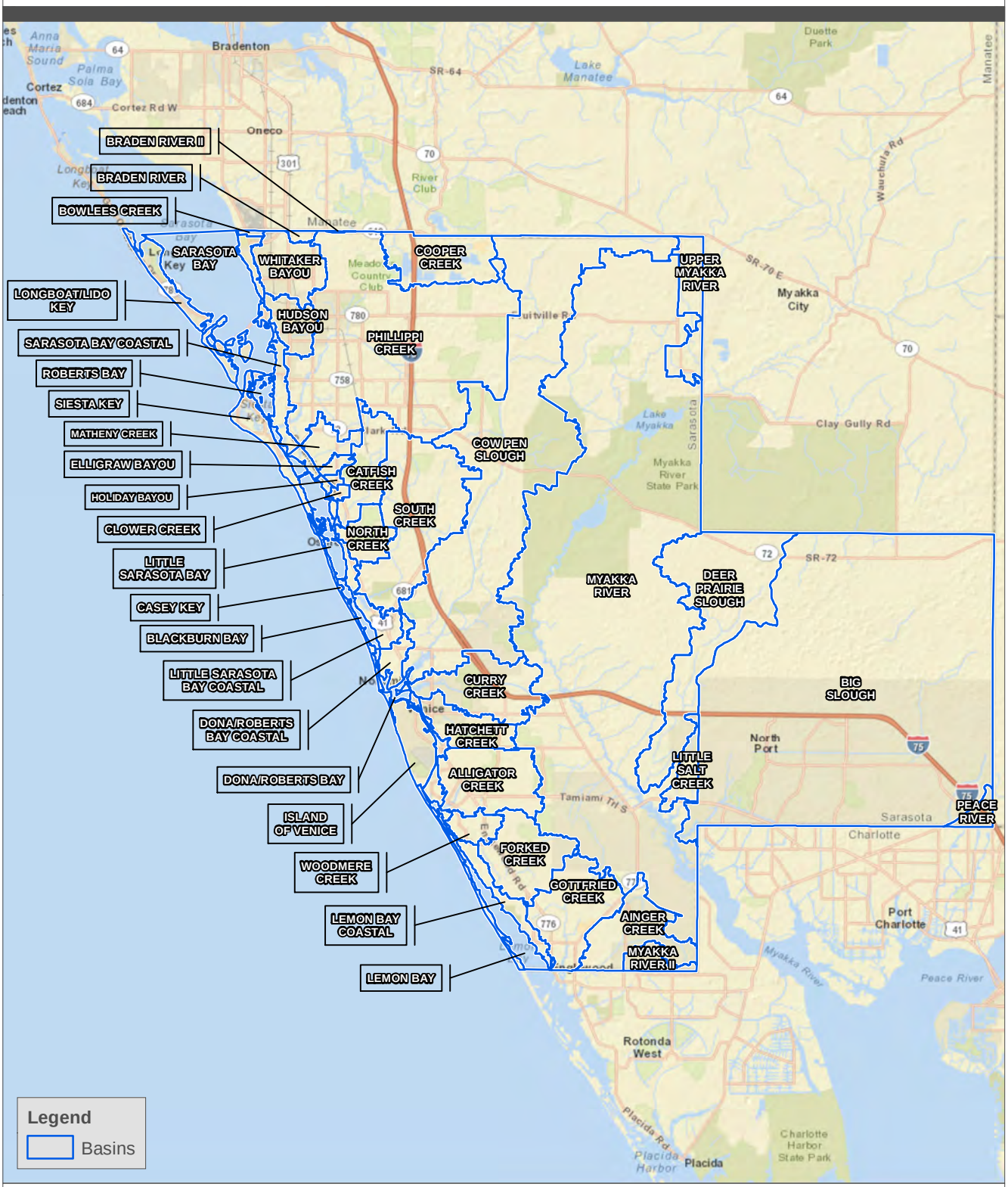
Relationship of Data to Stormwater Management Plan (SWMP)

Sarasota County continues to support watershed management projects that have a positive impact on the conditions of our bays. These structural controls remove pollutants before they reach the bay thereby protecting water quality. County bays continue to experience increasing seagrass acreage throughout our bays. Increased habitat for scallops is one part of complex environmental factors needed to support sustainable scallop populations. The county experienced concentrated rainfall events and persistent redtide blooms, each have shown to have a negative affect scallop populations. The data suggests that these factors may be the reason scallop monitoring sites throughout the county experienced 19.8% less spat landings than in 2015.

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

6. Pollutant Load Modeling

SIMPLE Pollutant Loading Model Basins



For Informational Purposes Only Q:\19006_Sarasota\050_SIMPLE_Updates\mxd\SarasotaCountySubwatersheds.mxd SNyquist 4/12/2017

Pollutant Load Modeling
Reporting and Assessment of Monitoring Results

Modeling provides reasonable estimates of the sources of pollutants to a water body. Good models are internally consistent so provide a rational means for comparisons among a variety of conditions across a landscape.

Summary of Monitoring Data from 2016 Reporting Year

The SIMPLE Model was updated and run for the years 2001, 2006, 2011 and 2016, which corresponds to the last four periods when modeling was required by the NPDES MS4 permit, a year three requirement in each five year permit term. The model produces results for several modules: baseflow, direct runoff, irrigation, point source, atmospheric and septics and the results are totaled. Modeled parameters include nutrients, BOD, solids, metals, oil and bacteria. The entire County was modeled, including 43 areas, the major areas being drainage basins, but some are waterbodies and others are small fragments of basins at the edges of the County boundaries.

Long Term Assessment

The model results are tabular and voluminous. The following is an interpretation of the model results for Nitrogen for select drainage basins.

SIMPLE Pollutant Load Model Results
Examples from Select Basins for Nitrogen

Pounds per year		Nitrogen					
Basin	**Year**	**Baseflow**	**Direct Runoff**	**Irrigation**	**Point Source**	**Septic**	**TOTAL**
Alligator Creek	2001	11,177	31,768	2,644	31	24,838	70,458
	2006	11,324	32,166	2,737	30	26,096	72,353
	2011	11,431	32,401	2,740	53	26,181	72,808
	2016	11,431	32,401	2,940	54	25,447	72,275
Catfish Creek	2001	7,207	23,820	935	121	5,513	37,595
	2006	7,260	24,058	946	130	5,452	37,845
	2011	7,265	24,145	1,002	95	4,878	37,386
	2016	7,269	24,206	984	188	4,586	37,233
Gottfried Creek	2001	6,720	24,022	726	442	2,034	33,944
	2006	6,762	24,199	737	0	2,010	33,709
	2011	6,784	24,282	770	0	2,016	33,851
	2016	6,811	24,351	821	0	2,016	33,999
Cowpen Slough	2001	49,229	227,723	13,879	330	13,906	305067
	2006	49,357	227,794	14,014	328	14,581	306,073
	2011	49,443	228,526	14,014	282	11,209	303,473
	2016	48,816	227,379	14,014	291	10,337	300,836
Hudson Bayou	2001	4,893	19,990	1,372	11,203	1,500	38,960
	2006	4,893	19,990	1,370	0	1,563	27,817
	2011	4,893	19,990	1,370	533	858	27,645
	2016	4,893	19,990	1,370	2	830	27,086
Matheny Creek	2001	3,889	13,724	777	65	4,466	22,922
	2006	3,889	13,724	777	0	4,200	22,591
	2011	3,889	13,724	777	0	2,579	20,969
	2016	3,889	13,724	777	1	2,290	20,681
Phillippi Creek	2001	69,532	197,526	24,755	14,176	90,899	396,890
	2006	71,411	200,426	24,478	18,419	86,319	401,054
	2011	71,440	200,662	25,030	6,116	42,952	346,202
	2016	71,462	200,939	25,058	3,037	40,045	340,543
South Creek	2001	13,430	59,888	2,098	261	936	76,615
	2006	13,930	61,688	2,338	230	960	79,147
	2011	14,060	62,143	2,388	280	862	79,735
	2016	14,219	62,697	2,450	187	674	80,229

The bottom right corner of each basin group in the table is either green for reduced load or red for increased Total load. The contributing factors in the other columns are also color-coded, which illustrates which source is causing the total result. Generally speaking this table suggests improvements in wastewater treatment and septic system removal are offset by increases from stormwater loading probably from land development.

Relationship of Data to Stormwater Management Plan (SWMP)

SIMPLE is a spatial model which means that it can be used to look in detail at relatively small areas. Modeling is a strong tool for identifying portions of the watersheds that can be targeted for loading reductions or corrective actions with additional pollutant reduction measures.

The pending contract for upgrades to the Sarasota Water Atlas will include design and implementation of a Pollutant Load Modeling pages. This will provide transparency to the persons who are interested in having easy access to the model results.

The Sarasota Water Atlas also has Projects Catalog Pages that can be found at http://www.sarasota.wateratlas.usf.edu/projects-catalog/. New information is being added to these pages regularly. This project information is similar, and sometimes identical, to the load reductions found in the pollutant loading model.

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

7. Rainfall

Rainfall Monitoring
Reporting and Assessment of Monitoring Results

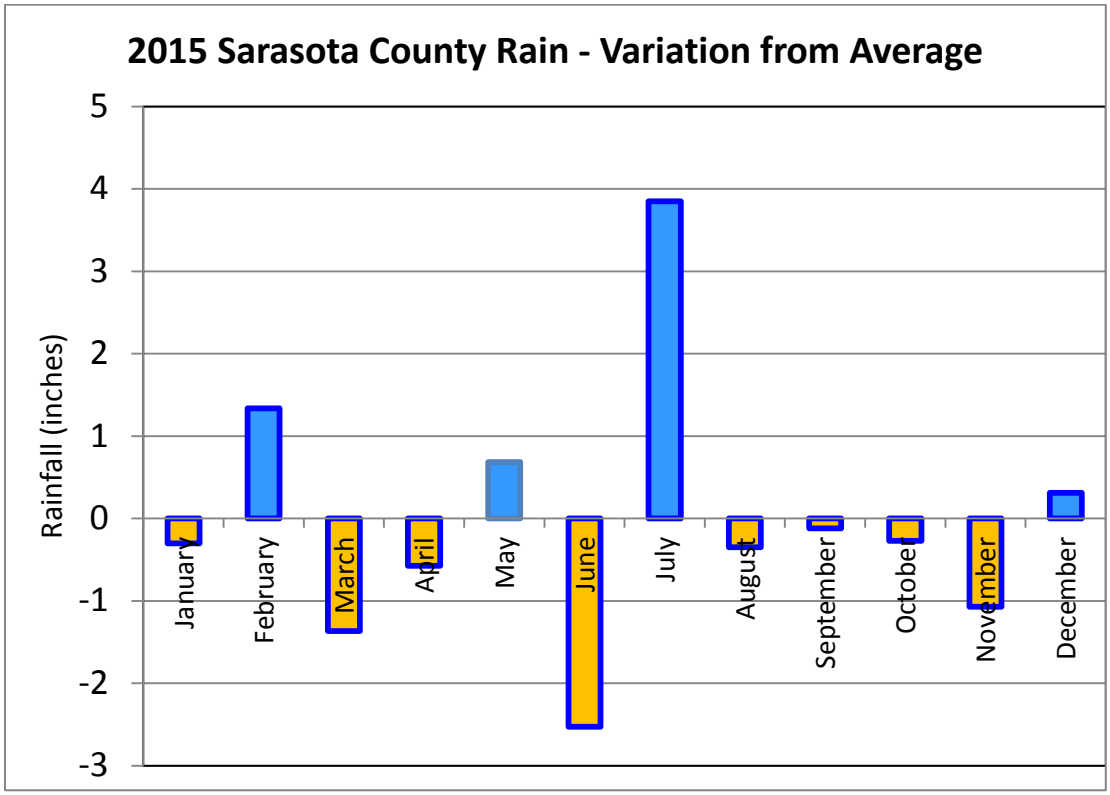
Rain is the driving force for stormwater pollution and plays an important role in other pollutant discharges such as septic systems and wastewater management. The amount and location of rain is not able to be managed but needs to be monitored and correlated to monitoring results.

Summary of Monitoring Data from 2016 Reporting Year

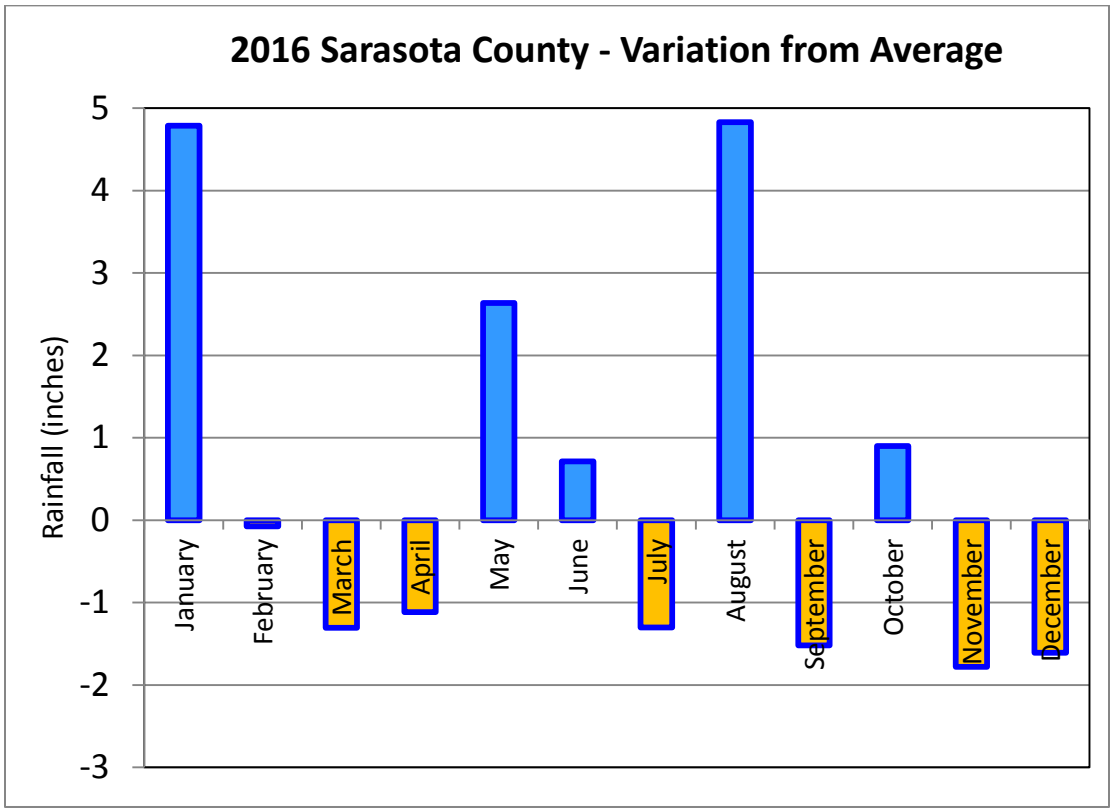
Three main sources of rainfall data are available. The SW Florida Water Management District has rain gauge data and radar-based rainfall. Sarasota County has the Automated Rainfall Monitoring System (ARMS) system. Radar data is available on the Water Atlas at http://www.sarasota.wateratlas.usf.edu/rainfall/. ARMS data is available at http://www.sarasota.wateratlas.usf.edu/datamapper/ and is also available with the data download function. District rain gauge data is available at http://www.swfwmd.state.fl.us/data/hydrologic/rainfall_data_summaries/

Long Term Assessment

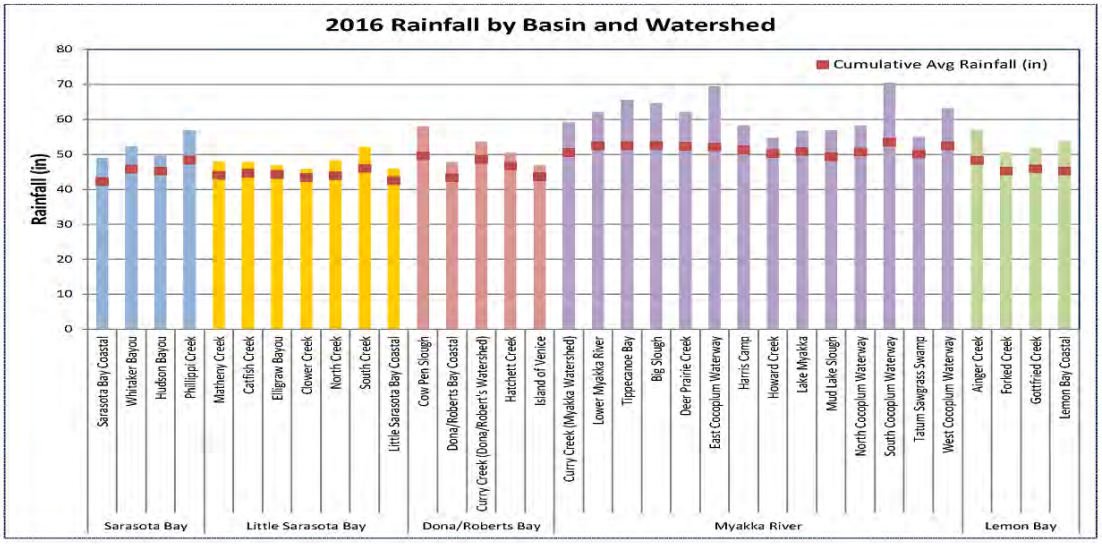
SWFWMD Rain Gauge Data: Average rainfall in Sarasota County is 52 inches per year. 2015 had above average rain (2.3 inches) but the latter part of the year was a dry spell and that may be pertinent to understanding conditions in 2016.



2016 also had above average rain (5.2 inches) primarily because of three heavy months. Six months were dry.



Radar Based Rain: More rain fell in the Myakka watershed than in the coastal watersheds and that relates directly to stormwater runoff and loading.



ARMS Rain: Tendency for more rain in the east and south. Rain is highly variable from month to month and from place to place.

Sarasota County Automated Rainfall Monitoring System 2016

Basin	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Whitaker Bayou	4.3	0.8	1.3	0.5	3.2	3.8	5.8	14.2	4.5	2.6	0.05	0.67	41.8
Hudson Bayou	5.6	2.0	2.0	0.5	4.5	10.2	4.3	11.8	4.4	2.5	0.03	0.29	48.1
Phillippi Creek	5.7	1.7	2.1	0.6	5.3	7.7	7.0	13.6	6.8	3.2	0.03	0.42	54.2
Matheny Creek	6.5	1.8	3.3	0.5	6.0	4.8	3.4	12.5	4.6	3.8	0.05	0.38	47.5
Holiday Bayou	6.8	2.1	2.5	0.9	2.7	1.9	2.7	13.5	4.0	3.4	0.03	0.34	41.1
Elligraw Bayou	5.9	2.0	2.7	0.7	6.9	4.9	2.7	13.7	4.4	3.2	0.06	0.40	47.5
Catfish Creek	5.5	1.6	2.0	1.4	6.2	5.0	3.2	13.5	2.9	1.9	0.03	0.33	43.4
North Creek	6.7	2.1	1.8	1.7	5.2	5.4	3.7	10.9	2.2	5.3	0.04	0.44	45.4
South Creek	6.0	2.3	1.1	2.3	5.3	5.4	4.0	12.7	2.9	2.6	0.03	0.48	45.1
Cowpen Slough	6.9	2.4	1.6	0.8	6.6	7.3	7.2	13.6	7.3	2.3	0.08	0.50	56.5
Hatchett Creek	7.9	2.7	2.5	1.2	5.2	4.8	2.1	11.3	3.0	2.8	0.00	0.14	43.6
Curry Creek	7.8	2.6	2.5	0.9	6.8	7.2	7.0	11.9	6.0	4.0	0.07	0.17	56.9
Alligator Creek	8.1	3.0	2.4	0.8	6.5	6.1	6.9	7.8	5.0	4.0	0.11	0.14	50.7
Woodmere Creek	8.3	3.1	2.4	1.2	4.8	4.4	7.9	8.8	4.5	3.1	0.13	0.09	48.7
Forked Creek	6.7	2.8	2.9	1.1	3.6	4.6	6.3	9.9	1.5	5.0	0.15	0.04	44.4
Gottfried Creek	8.6	3.4	2.1	0.8	2.9	6.6	5.8	11.3	4.2	3.9	0.16	0.12	50.0
Myakka River	6.6	1.7	1.3	0.6	7.7	8.3	6.7	11.4	5.0	4.1	0.08	0.64	54.2
Deer Prairie Creek	8.2	2.2	1.7	1.2	5.8	8.9	5.6	11.7	5.6	4.6	0.04	0.16	55.7
Little Salt Creek	7.4	3.6	2.2	1.9	5.1	11.7	7.5	10.7	5.8	4.4	0.11	0.05	61.3
Big Slough	6.6	3.2	1.8	1.4	3.8	8.1	5.1	12.1	6.2	3.1	0.13	0.11	51.6
Average	6.8	2.4	2.1	1.0	5.2	6.3	5.2	11.8	4.6	3.5	0.07	0.29	49.4
10% above average	7.5	2.6	2.3	1.1	5.7	7.0	5.8	13.0	5.0	3.8	0.08	0.32	54.3
10% below average	6.1	2.1	1.9	0.9	4.7	5.7	4.7	10.7	4.1	3.1	0.06	0.27	44.5

Relationship of Data to Stormwater Management Plan (SWMP)

Monthly rain data relates well to monthly monitoring of water quality. Area-specific rain data provides a relationship between creeks, basins, bays and projects. Rain is the dominant factor in stormwater pollution so having temporal and spatial rain data is valuable to identifying and managing pollution sources and crafting remedies.

Sarasota County NPDES MS4 2016 Annual Report

8. TMDL Status Report

TMDL Status Report
Sarasota County NPDES MS4 Annual Report for 2016 (Year Three)

- Currently there are 151 WBIDs in Sarasota County
    - Sixteen have TMDLs (1 from FDEP and the rest from EPA)
    - Thirty three are impaired
    - Impairment parameters include bacteria, nutrients, dissolved oxygen and copper

- TMDL priorities for this permit term are Alligator Creek (WBID 2030) for nitrogen and Phillippi Creek (WBID 1937) for bacteria

- In 2010, a TMDL for fecal coliform bacteria in Gottfried Creek (WBID 2049) allocated a 74% fecal coliform load reduction to nonpoint sources. In 2016 the FDEP concurred with the final report of Sarasota County's proactive Walk the WBID Exercise. Data from 2016 is elevated at one of two stations and a follow up investigation will be conducted at Station GOT-2 as per the Proactive Prevention Actions in the report.

Gottfried Creek Monitoring Station GOT-2 located at Park Forest Boulevard												
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Fecal Coliform	220	770	140	130	310	360	240	290	20	380	650	1,160
Enterococci	710	1,400	530	290	310	360	6,200	1,900	580	670	14,000	1,800
Gottfried Creek Monitoring Station GOT-3 located at Tangerine Woods Boulevard												
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Fecal Coliform	160	430	10	190	30	80	260	1,300	640	290	20	100
Escherichia coli	336	420	10	121	41	85	201	158	75	379	10	10

- In 2010, the EPA produced a TMDL for Phillippi Creek (WBID 1937) that allocated a 98% reduction of fecal coliform bacteria.

  Sarasota County conducted a Walk the Watershed (WTW) event in the Phillippi Creek watershed from August July to March 2017 in an effort to identify sources of bacterial pollution in the creek. The event had several purposes: 1) receive input from local agencies and residents about potential sources for bacterial pollution; 2) conduct field surveys and sampling events based on that input to isolate potential sources; and 3) provide education and outreach to eliminate sources.

  Field investigations were conducted from August 2016 to March 2017 with staff from the City of Sarasota Utilities and Sarasota County Stormwater participating. Nine bacterial hotspots were investigated, with field staff documenting field conditions upstream and conducting additional water quality sampling. Initial results have did

not find clear indications of sources of bacterial pollution. The WTW activity has narrowed down the list of potential sources of pollution and provided a clearer picture of where the areas of education and outreach should focus.

- In 2006, an EPA TMDL for Alligator Creek (WBID 2030) allocated a 28.2% reduction in nitrogen. In the TMDL, the existing load was 5,370 kg/year and the target load was 3,857 kg/year. The difference between existing and target is 1,512 kg or 3,336 pounds.

  In 2016, Sarasota County operated the Briarwood Stormwater Treatment Facility to reduce the amount of nitrogen and other pollutants reaching Alligator Creek. Over the course of the year a reduction of about 1,960 pounds of nitrogen loading was measured, which is over 50% of the TMDL goal. Additional improvements to the operation of the BSTF are expected to improve load reductions in the future.

  In addition, the Venice Gardens community is very active in improving lake water quality by planting shorelines with aquatic plants and deploying floating wetland islands. In cooperation with the community, Sarasota County planted four demonstration shorelines along these highly eutrophic lakes and co-hosted a well-attended and well-publicized open house. Planting is an effort to shift from a plankton-dominated lake to a macrophyte-dominated lake that will export fewer nutrients downstream.

- The Tampa Bay Estuary Program (TBEP) worked with partners to form a Nitrogen Management Consortium and Reasonable Assurance Plan to restore seagrass and water quality in Tampa Bay. In 2010, the FDEP allocated a Water Quality Based Effluent Limit to Sarasota County for 8.2 tons of nitrogen. Sarasota County provides pollutant removal information for Cooper Creek to the TBEP as needed.

- Sarasota County continues to make significant inroads towards reduction of water pollution.
    - The Phillippi Creek Septic System Replacement Program continues to convert residents from old septic systems to centralized and modern wastewater treatment facilities with effluent reuse capabilities. The program cost is roughly $100,000,000.
    - The $13M Dona Bay Project in the Cowpen Slough watershed was completed in early 2017 and is filling with water. Pollutant removal to the Dona and Roberts Bays area is expected to improve water quality, seagrass, and oysters as well as beach water quality.
    - The expansion of the Celery Fields Regional Stormwater Facility was completed in 2013. A monitoring study showed overall 50% removal efficiency for TP, 53% for TN and 82% for solids and it applies to a large 3,600 acre contributing area.
    - Creative outreach is spreading the message about reducing fertilizer usage and cleaning up after the dogs.


pick it up!
THERE IS NO
POOP FAIRY


PROTECT OUR
WATERS
RAYS
Spread FUN,
not fertilizer
June 1 - Sept. 30

Sarasota County NPDES MS4 2016 Annual Report
Monitoring Data Summary

9. Sarasota County Monitoring Plan

Monitoring Plan for the Sarasota County National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit

February 15, 2013

Submitting a monitoring plan to Florida Department of Environmental Protection (FDEP) is required by the National Pollutant Discharge Elimination System (NDPES) Municipal Separate Storm Sewer System (MS4) permit and State rules. The objective of the permit is to reduce pollutant discharges from urban stormwater to the waters of the State to the maximum extent practicable by implementing a Stormwater Management Program (SWMP). The overall purpose of monitoring is to determine the effectiveness of the SWMP. More specific monitoring goals may include prioritizing areas for additional controls, identifying pollutant sources, characterizing water quality trends, modeling pollutant loads, or assessing impaired water bodies. This monitoring plan is to fulfill Part V.B., Monitoring and Reporting Requirements and Monitoring Data Collection of permit FLS000004 for Sarasota County, the City of Sarasota, the City of Venice, the Town of Longboat Key and the Florida Department of Transportation (FDOT), but not including the City of North Port.

Background

Sarasota County encompasses parts of two watersheds: the Myakka River and the Southern Coastal Basin. Within the watersheds are 26 sub-basins named after small creeks. Other water bodies include a series of coastal bays, numerous wetlands, a handful of natural lakes, thousands of ponds, and an extensive network of canals and ditches.

Several agencies are actively involved in watershed management in the area, including three National Estuary Programs (NEPs), the South West Florida Water Management District (SWFWMD), the Environmental Protection Agency (EPA), the FDEP, the County, four Municipalities, and FDOT. Previous studies have highlighted the need to protect receiving waters from nutrients, sedimentation, toxins, and bacteria. Unnatural volumes and timing of stormwater are often cited as a problem. Implementation of the SWMP has been successful since 1995. Many projects have been implemented to reduce pollution from stormwater, sanitary sewers, erosion, and septic systems.

Joint Monitoring Plan

<u>Ambient Water Quality of Bays</u>

Healthy estuaries are among the foremost economic values to our community. Excessive stormwater pollution of the bays can have negative impacts on fish and wildlife, businesses, and the health of our citizens. Monitoring bays provides an integrated assessment of the cumulative impacts of stormwater.

Monthly water samples will be analyzed for specific conductance, salinity, temperature, pH, dissolved oxygen, DO saturation, light attenuation, secchi depth, total nitrate + nitrite, total kjeldahl nitrogen, ammonia nitrogen, orthophosphate, total phosphorus, turbidity, color, 5-day biochemical oxygen demand, and corrected chlorophyll A.

Sampling locations (See Appendix A) will be distributed among all bays, including Sarasota Bay, Roberts Bay North (Sarasota), Little Sarasota Bay, Dryman Bay, Blackburn Bay, Lyons Bay, Dona Bay, Roberts Bay South (Venice), the Intracoastal Waterway (Venice) and Lemon Bay.

Ambient Water Quality of Watersheds

Monitoring water quality in the watersheds is a direct assessment of management success. This program is valuable in measuring compliance with surface water quality standards, identification of impaired waters, and numeric nutrient criteria.

Monthly water samples will be taken from creeks and rivers throughout Sarasota County (See Appendix B). Special attention will be paid to those water bodies designated as not meeting regulatory criteria.

Samples will be analyzed for specific conductance, salinity, temperature, pH, dissolved oxygen, DO saturation, secchi depth, total nitrate + nitrite, total ammonia, total kjeldahl nitrogen, total orthophosphorus, total phosphorus, 5-day biochemical oxygen demand, total suspended solids, turbidity, color and corrected chlorophyll-A (as appropriate).

Biological Monitoring

Oyster Monitoring: Oysters are naturally abundant in coastal creeks and appropriate timing of freshwater is essential to their survival. As a keystone organism, oysters provide habitat by building reefs, improve water quality by filter feeding, stabilize shorelines, and are a delicious food. Oysters will be monitored twice per year in select creeks as a direct indicator of successful watershed management.

Seagrass Monitoring: Seagrass is rebounding to historic levels in the bays of Southwest Florida because of successful wastewater and stormwater management. Seagrass meadows are critical habitat for the fishing economy and have inherent ecological value. Seagrass is the response variable used in the development of Numeric Nutrient Criteria. In cooperation with the SWFWMD, the FWC, and the NEPs, the health of seagrass will be monitored during summer and winter seasons to determine status and trends and also to enhance the accuracy of the SWFWMD aerial surveys.

Scallop Monitoring: Bay scallops are sensitive indicators of excessive freshwater inflows to bays. In cooperation with the Florida Fish and Wildlife Conservation Commission (FWC) and others, scallop monitoring may include larval surveys, adult surveys or survival rates of sentinels.

Pollutant Load Modeling

Modeling of pollutant loading identifies priority areas for pollution reduction and also estimates trends in loading of nutrients and other pollutants. The Spatially Integrated Model for Pollutant Loading Estimates (SIMPLE-Monthly) was developed in cooperation with the SWFWMD and was used for the development of loading targets for Numeric Nutrient Criteria and County watershed plans. The model will be used to comply with the Annual Pollutant Loading and Event Mean Concentration requirement of the NPDES MS4 permit.

Rainfall

Rainfall data will be used to explain the ambient monitoring results, the pollutant loading, and the effectiveness of the SWMP. Rainfall is the principal driving force in understanding stormwater and stormwater pollution. Data sources may include the National Weather Service, the Southwest Florida Water Management District, or the County's Automated Rainfall Monitoring System (ARMS) that also has stage and flow data for selected stations.

Evaluation of the Effectiveness of SWMP

The monitoring program is intended to assess the SWMP, to identify problem areas, to evaluate progress, and to assess pollutant loading. Ambient monitoring in bays is an effective method to evaluate progress and identify problem areas on a broad scale. Declining trends or noncompliance with bay standards would indicate a renewed focus is needed in those bays and associated watersheds. Creek and river ambient monitoring provides a similar but more basin-specific focus. GIS-based pollutant load modeling identifies where on the landscape the pollutants are originating. Based on previous studies, it is expected that the volume of runoff is more influential than the concentration of the runoff. This comprehensive monitoring approach is expected to prioritize activities in the SWMP and also to identify where water quality improvement projects should be sited.

Quality Assurance

All monitoring shall be conducted in accordance with Chapter 62-160, Florida Administrative Code and all National Environmental Laboratory Accreditation Conference (NELAC) standards. Participation in the Southwest Florida Regional Ambient Monitoring Program ("RAMP") will continue. RAMP fosters scrutiny of data outliers and improvement of sampling and analysis techniques to maintain a central tendency among results from various sampling agencies.

Data Analysis and Reporting

Basic analysis of the data will be submitted in the annual reports to the FDEP and will include narrative, tabular, graphical depictions and trend analysis, as appropriate. Monitoring data and reports shall be regularly posted on the Sarasota Water Atlas website at www.sarasota.wateratlas.org. Metadata will be provided on request. Ambient water quality data will be posted to the STORET database.

SUPPLEMENT 2

Year 3 Pollutant Load Estimates
(Permit Section V.A.2)

- **FDOT District One: Sarasota County Pollutant Load Estimates Report**

FDOT District One: Pollutant Load Estimates and Event Mean Concentrations Report

Sarasota County NPDES Phase I MS4 Permit
Permit Number FLS000004-004

December 2016

Prepared for:

Florida Department of Transportation, District One
PO Box 1249
801 N. Broadway Ave.
Bartow, FL 33831

ENGINEERING
ENVIRONMENTAL
ECOLOGICAL

November 30, 2016

Steven Kelly
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Bartow, FL 33831

Subject: Pollutant Load Estimates and Event Mean Concentrations for the Sarasota County NPDES Phase I MS4 Permit
Permit Numbers FLS000004-004
E Sciences Project No.: 1-1999-009

Dear Mr. Kelly:

Attached is the Department's Pollutant Load Estimates and Event Mean Concentrations report for the Sarasota County NPDES Phase I Municipal Separate Storm Sewer System (MS4) Permit, FLS000004-0004. This effort is a required task for the Year 3 annual report.

We appreciate the opportunity to provide these services to you under this contract. If you need additional information, please do not hesitate to call us.

Sincerely,
E SCIENCES, INCORPORATED

Teayann Duclos
Project Scientist

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Project Manager

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Methods

Section A - Methods

A.1 – Introduction

As required for the Term 4, Year 3 annual report for the Sarasota County (FLS000004-0004) NPDES Phase I Municipal Separate Storm Sewer System (MS4) Permit, the Florida Department of Transportation (FDOT) District One has developed the annual pollutant load estimates and event mean concentrations (EMCs) for each major outfall within the Department's MS4 boundary in Sarasota County. The following six steps were undertaken to complete this task.

1. Verification of the major outfall inventory in Sarasota County
2. Delineation of major outfall drainage basins (as needed)
3. Review of soil and land use classification for each major outfall drainage basin
4. Development of pollutant load model
5. Identification and calculation of pollutant load reductions
6. Generation of combined pollutant load estimates for the FDOT major outfalls

A.2 – Verification of Major Outfall Inventory

The major outfall inventory for Sarasota County was verified by comparing historic outfall information with recent inspection documentation. Only outfalls meeting the definition of a major outfall were included in the assessment. The Sarasota County Phase I MS4 permit defines a major outfall as a municipal separate storm sewer outfall that:

- Discharges from a single pipe with an inside diameter of 36 inches or more, or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or
- A municipal separate storm sewer that receives stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more, or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more).

A.3 – Delineation of Major Outfall Drainage Basins

Drainage basin delineations for each of these major outfalls were obtained from the Outfall Drainage Characterization for the Phase I MS4 Permits Report, dated January 2012, prepared by AMEC. The delineations were estimated using a combination of FDOT plan sets, previous delineations, digital elevation models, aerials, and field reconnaissance for a few systems. Those areas contributing to FDOT outfalls from outside the FDOT right-of-way were estimated using digital elevation models. A combined drainage basin delineation for each major outfall was created using the FDOT and non-FDOT contributing areas for each major outfall. Shapefiles were generated for the major outfall drainage basin delineations.

A.4 – Soil and Land Use Classification

Soil and land use classifications were identified for the major outfall drainage basins. The 2015 soils data and shapefile for Sarasota County was obtained from the National Resource Conservation Service (NRCS). NRCS hydrologic soil group assignments provided in the soil coverage and generic land use categories were used to determine runoff coefficients.

The 2011 land use coverage was acquired from the Southwest Florida Water Management District (SWFMWD). This file describes specific land use criteria that are defined by the Florida Land Use and Cover Classification System (FLUCCS). These FLUCCS codes are utilized to identify generic land use categories that were employed in the selection of runoff coefficient and EMC values used in the pollutant load model. The 2007 report to FDEP entitled *Evaluation of Current Stormwater Design Criteria within the State of Florida*, by Dr. Harvey Harper and Mr. David Baker, was referenced to obtain the runoff coefficient and EMC values utilized for this loading analysis.

A.5 – Pollutant Load Model

The annual pollutant load model incorporated the following data to calculate gross pollutant loads flowing to the major outfalls:

- Major outfall basin boundaries
- NRCS soil data
- FLUCCS codes
- Runoff coefficients derived from land use types and soil classification
- EMCs derived from land use types
- 30-year average annual rainfall

The annual pollutant load model calculates the total volume of runoff from individual polygons within each basin area based on composite land use and soil hydrologic group code. The volume from each polygon is then multiplied by the EMC for the land use designation (Equation 1). Allocation of the appropriate EMC for each polygon is completed by referencing designated EMC values for each land use code. Runoff volume is calculated by multiplying the 30-year mean annual rainfall by the total area and runoff coefficient for each polygon (Equation 2). The runoff coefficient is determined by the combination of land use code and NRCS hydrologic soil group for each polygon.

Equation 1 $$PL = 2.2046 \times 10^{-3} \times EMC \times RO$$

Where:
PL = Pollutant Load (lbs/yr)
EMC = Event Mean Concentration (mg/L)
RO = Runoff Volume (m^3/yr)

Equation 2 $RO = 102.79 \times R_m \times A \times C_{RO}$

Where:
RO = Runoff Volume (m^3/yr)
R_m = 30 year Mean Annual Rainfall (in/yr)
A = Area (ac)
C_{RO} = Runoff Coefficient (unitless)

Total annual pollutant load values were then broken into a wet season (June to September) and a dry season (October to May). The wet season in Sarasota County accounts for roughly 60 percent of the total annual rainfall and the dry season accounts for 40 percent based on average monthly rainfall data from the National Oceanic & Atmospheric Administration (NOAA) and published in NOAA's 1981-2010 U.S. Climate Normals: Monthly Precipitation, Snowfall, and Snow Depth.

A.6 – Identification and Calculation of Pollutant Load Reductions

Pollutant load reductions were identified that included street sweeping, education credits, and stormwater structural best management practices. Street sweeping contracts were reviewed for appropriate pollutant load reductions within the major outfall drainage basins. These reductions were estimated by employing Method 3 as presented in Appendix B of the FDOT's 2012 Statewide Stormwater Management Plan. An education credit of 1 percent was included as a pollutant load reduction based on FDOT employee training in illicit discharge detection and elimination, spill response, good housekeeping, and erosion and sediment control. The FDOT inventory and plans were reviewed to include other structural best management practices such as grassed swales and stormwater treatment facilities. Generic pollutant removal efficiencies for these treatment facilities were obtained from Dr. Harper's 2007 report to FDEP as well as other sources listed in Section C of this report. Using this information, pollutant load reductions were calculated for each major outfall. These reductions were then subtracted from the gross estimated load to the outfall in order to generate a net estimated total load to the outfall.

A.7 - Combined Pollutant Load Estimates

The sum of the estimated loads from major outfalls within the County to a receiving waterbody was calculated once estimates were generated for each major outfall. These estimates will be used as a baseline for comparison in subsequent Year 3 annual reports.

Section B

Major Outfall Inventory

FDOT DISTRICT ONE: MAJOR OUTFALL INVENTORY IN SARASOTA COUNTY						
Figure ID	**Outfall ID**	**County**	**Receiving Water Body**	**State Road**	**Latitude**	**Longitude**
1	OF17050-3511-01	SARASOTA	Wetlands to Godfrey Creek	SR 776	26.9638	-82.3529
2	OF17050-3511-04	SARASOTA	Canal to Forked Creek	SR 776	26.9893	-82.3673
3	OF17050-3511-05	SARASOTA	Forked Creek	SR 776	27.0014	-82.3771
4	OF17050-3505-06	SARASOTA	Alligator Creek	SR 776	27.0485	-82.4061
5	OF17010-3528-01	SARASOTA	Alligator Creek	SR 45	27.0577	-82.4127
6	OF17010-3528-02	SARASOTA	Alligator Creek	SR 45	27.0574	-82.4134
7	OF17010-3533-01	SARASOTA	Intracoastal Waterway	SR 45	27.0783	-82.4300
8	OF17010-3533-02	SARASOTA	Intracoastal Waterway	SR 45	27.0785	-82.4305
9	Sarasota3	SARASOTA	Canal	SR 45A	27.0899	-82.4317
10	Sarasota2	SARASOTA	Hatchett Creek	SR 45A	27.1009	-82.4337
11	Sarasota4	SARASOTA	Sarasota Bay	SR 45	27.1029	-82.4440
12	OF-SC-24-01734	SARASOTA	Blackburn Bay	SR 45	27.1545	-82.4691
13	OF17020-3572-02	SARASOTA	Phillippi Bayou	SR 45	27.2727	-82.5304
14	OF17070-3525-02	SARASOTA	Canal to Little Sarasota Bay	SR 72	27.2686	-82.5143
15	OF17070-3525-05	SARASOTA	Lake Clark	SR 72	27.2708	-82.4947
16	Sarasota1	SARASOTA	County Drainage System	SR 758	27.2990	-82.4557
17	Sarasota5	SARASOTA	Sarasota Bay	SR 789	27.3171	-82.5792
18	OF-SA-02-01826	SARASOTA	Hudson Bayou	SR 45	27.3284	-82.5357
19	OF-SA-23-01104	SARASOTA	Sarasota Bay	SR 45	27.3345	-82.5459
20	OF-SA-23-01092	SARASOTA	Sarasota Bay	SR 45	27.3350	-82.5470
21	OF17040-3508-01	SARASOTA	Canal	SR 780	27.3435	-82.5256
22	OF17040-3516-04	SARASOTA	Philippi Creek Trib.	SR 780	27.3373	-82.4849
23	OF17040-3518-01	SARASOTA	Wetland to Philippi Creek Trib.	SR 780	27.3385	-82.4797
24	OF17040-3518-02	SARASOTA	Canal	SR 780	27.3382	-82.4635

Section C

Sources and Coefficients Used for Pollutant Load Estimates

Sources and Coefficients Used for Pollutant Load Estimate Calculations

Sarasota County				
Runoff Coefficients (C) - Meteorological Zone 4				
Land Use Category	Soil Type			
	A	B	C	D
Residential, low density	0.079	0.144	0.210	0.262
Residential, medium density	0.231	0.273	0.324	0.362
Residential, high density	0.436	0.467	0.503	0.529
Highway	0.627	0.642	0.659	0.672
Undeveloped/Natural Areas	0.011	0.050	0.105	0.149
Commercial and services	0.628	0.642	0.658	0.671
Water	1.000	1.000	1.000	1.000

EMC Runoff Concentrations (mg/L)						
Land Use Category	**Total N**	**Total P**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
Agriculture, pasture	3.47	0.616	5.1	94.3	0.013	0.021
Commercial, high intensity	2.4	0.345	11.3	69.7	0.015	0.16
Commercial, low intensity	1.18	0.179	7.7	57.5	0.018	0.094
Highway	1.64	0.22	5.2	37.3	0.32	0.126
Industrial, light	1.2	0.26	7.6	60	0.003	0.057
Residential, low density	1.61	0.191	4.7	23	0.008	0.031
Residential, medium density	2.07	0.327	7.9	37.5	0.016	0.062
Residential, high density	2.32	0.52	11.3	77.8	0.009	0.086
Undeveloped/Natural Areas	1.15	0.055	1.4	8.4	0	0
Water	0	0	0	0	0	0

Removal Efficiencies for Common Stormwater Treatment Facilities						
	Total N	**Total P**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
Wet Detention Ponds	20%	60%	50%	85%	60%	85%
Dry Detention Ponds	59%	66%	60%	73%	54%	58%
Dry Retention Ponds	60%	60%	60%	60%	60%	60%
Grass Swales	50%	50%	40%	70%	35%	70%

Treatment Train Reduction Formula
BMP TT Eff = $Eff_1+((1-Eff_1)*Eff_2)$

All C and EMC values obtained from FDEP "Evaluation of Current Stormwater Design Criteria within the State of Florida, Final Report"- Harvey Harper, Ph.D., P.E., June 2007

Dissolved Conversion factor obtained from "Environmental Protection Agency: The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion, EPA 823-B-96-007, June 1996"

Wet Detention and Grass Swales removal efficiencies for TN and TP obtained from FDEP "Evaluation of Current Stormwater Design Criteria within the State of Florida, Final Report" - Harvey Harper, Ph.D., P.E., June 2007

Wet Detention treatment Based on 7-day detention times

Other Wet Detention removal efficiencies obtained from UCF "Effectiveness of detention/retention Basins for Removal of Heavy Metals in Highway Runoff" Harper, Yousef and Wanielista; 1985

Dry Detention removal efficiencies obtained from "Performance of Dry Detention and Underdrain Treatment Systems" presented by Harvey Harper at the Florida Stormwater Association 2016 Winter Conference in Orlando, Florida.

Other removal efficiencies for Grass Swales and Dry Retention Ponds were assumed to be equal to that of the efficiencies documented in "Pollutant Removal Efficiencies for Typical Stormwater Management Systems in Florida" -Harvey Harper, Ph.D., P.E., June 1999

Section D

Pollutant Load Estimate Calculation Worksheets

Outfall: OF17050-3511-01
Receiving Body of Water: Wetlands to Godfrey Creek
County: SARASOTA
State Road: SR 776

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
163	A/D	0.63	COMMERCIAL, HIGH INTENSITY	12.60	1.81	59.34	365.99	0.0788	0.8402
134	A/D	7.33	HIGHWAY	99.51	13.35	315.51	2,263.20	1.9416	7.6451
90	A/D	0.21	RESIDENTIAL, HIGH DENSITY	3.00	0.67	14.64	100.77	0.0117	0.1114
103	A/D	0.08	RESIDENTIAL, LOW DENSITY	0.28	0.03	0.83	4.04	0.0014	0.0054
105	A/D	0.97	RESIDENTIAL, MEDIUM DENSITY	7.62	1.20	29.10	138.12	0.0589	0.2284
27	A/D	4.83	UNDEVELOPED/NATURAL AREAS	70.68	3.38	86.04	516.25	0.0000	0.0000
49	A/D	0.95	UNDEVELOPED/NATURAL AREAS	1.12	0.05	1.36	8.17	0.0000	0.0000
7	A/D	0.46	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**194.8**	**20.5**	**506.8**	**3,396.5**	**2.1**	**8.8**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.9	0.205	5.1	34.0	0.0209	0.0883
Streetsweeping Removal (lb/yr)	3.2	2.0	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	37.9	11.0	250.9	2,858.2	1.2	7.4

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	194.8	20.5	506.8	3,396.5	2.1	8.8
BMP Pollutant Load Reduction	43.1	13.2	255.9	2,892.2	1.3	7.5
Estimated Pollutant Load to Water Body	**151.8**	**7.3**	**250.9**	**504.4**	**0.8**	**1.3**

Outfall: OF17050-3511-04
Receiving Body of Water: Canal to Forked Creek
County: SARASOTA
State Road: SR 776

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
48	C/D	0.05	AGRICULTURE, PASTURE	0.28	0.05	0.41	7.50	0.0010	0.0017
148	A/D	3.58	HIGHWAY	48.56	6.51	153.96	1,104.38	0.9475	3.7306
146	C/D	3.09	HIGHWAY	42.95	5.76	136.20	976.96	0.8381	3.3002
98	A/D	0.00	RESIDENTIAL, HIGH DENSITY	0.00	0.00	0.00	0.00	0.0000	0.0000
65	C/D	0.03	RESIDENTIAL, HIGH DENSITY	0.45	0.10	2.17	14.94	0.0017	0.0165
52	A/D	0.43	RESIDENTIAL, LOW DENSITY	1.52	0.18	4.44	21.72	0.0076	0.0293
58	C/D	0.29	RESIDENTIAL, LOW DENSITY	1.39	0.16	4.06	19.85	0.0069	0.0268
60	C/D	0.00	RESIDENTIAL, MEDIUM DENSITY	0.00	0.00	0.01	0.06	0.0000	0.0001
92	A/D	0.94	UNDEVELOPED/NATURAL AREAS	1.10	0.05	1.33	8.00	0.0000	0.0000
120	C/D	2.69	UNDEVELOPED/NATURAL AREAS	39.35	1.88	47.91	287.45	0.0000	0.0000
132	C/D	0.61	UNDEVELOPED/NATURAL AREAS	1.14	0.05	1.39	8.34	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**136.7**	**14.8**	**351.9**	**2,449.2**	**1.8**	**7.1**

Outfall: OF17050-3511-04
Receiving Body of Water: Canal to Forked Creek
County: SARASOTA
State Road: SR 776

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	1.4	0.148	3.5	24.5	0.0180	0.0711
Streetsweeping Removal (lb/yr)	5.3	3.4	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	26.0	6.7	174.2	2,061.0	1.1	6.0

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	136.7	14.8	351.9	2,449.2	1.8	7.1
BMP Pollutant Load Reduction	32.7	10.3	177.7	2,085.5	1.1	6.0
Estimated Pollutant Load to Water Body	**104.0**	**4.5**	**174.2**	**363.7**	**0.7**	**1.1**

Outfall: OF17050-3511-05
Receiving Body of Water: Forked Creek
County: SARASOTA
State Road: SR 776

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
158	A/D	0.23	COMMERCIAL, HIGH INTENSITY	4.47	0.64	21.05	129.83	0.0279	0.2980
157	C/D	0.14	COMMERCIAL, HIGH INTENSITY	2.87	0.41	13.50	83.27	0.0179	0.1912
4	A/D	3.87	HIGHWAY	52.49	7.04	166.44	1,193.90	1.0243	4.0330
113	C/D	1.34	HIGHWAY	18.61	2.50	59.02	423.34	0.3632	1.4300
165	A/D	0.03	RESIDENTIAL, HIGH DENSITY	0.43	0.10	2.12	14.57	0.0017	0.0161
86	C/D	0.05	RESIDENTIAL, HIGH DENSITY	0.81	0.18	3.94	27.12	0.0031	0.0300
45	C/D	0.01	RESIDENTIAL, LOW DENSITY	0.07	0.01	0.21	1.03	0.0004	0.0014
15	A/D	0.21	RESIDENTIAL, MEDIUM DENSITY	1.63	0.26	6.23	29.59	0.0126	0.0489
143	C/D	0.27	RESIDENTIAL, MEDIUM DENSITY	2.46	0.39	9.39	44.57	0.0190	0.0737
22	A/D	0.53	UNDEVELOPED/NATURAL AREAS	7.71	0.37	9.38	56.30	0.0000	0.0000
83	A/D	1.16	UNDEVELOPED/NATURAL AREAS	1.35	0.06	1.65	9.89	0.0000	0.0000
140	C/D	0.03	UNDEVELOPED/NATURAL AREAS	0.05	0.00	0.06	0.36	0.0000	0.0000
26	A/D	0.98	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**93.0**	**12.0**	**293.0**	**2,013.8**	**1.5**	**6.1**

Outfall: OF17050-3511-05
Receiving Body of Water: Forked Creek
County: SARASOTA
State Road: SR 776

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	0.9	0.120	2.9	20.1	0.0147	0.0612
Streetsweeping Removal (lb/yr)	4.2	2.7	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	17.6	5.5	145.0	1,694.6	0.9	5.2

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	93.0	12.0	293.0	2,013.8	1.5	6.1
BMP Pollutant Load Reduction	22.7	8.3	148.0	1,714.7	0.9	5.2
Estimated Pollutant Load to Water Body	**70.3**	**3.7**	**145.0**	**299.0**	**0.6**	**0.9**

Outfall: OF17050-3505-06
Receiving Body of Water: Alligator Creek
County: SARASOTA
State Road: SR 776

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
69	A/D	0.73	COMMERCIAL, HIGH INTENSITY	14.44	2.08	67.97	419.25	0.0902	0.9624
75	A/D	0.16	COMMERCIAL, LOW INTENSITY	1.17	0.18	7.61	56.84	0.0178	0.0929
6	A/D	6.91	HIGHWAY	93.73	12.57	297.20	2,131.87	1.8289	7.2015
95	A/D	0.24	RESIDENTIAL, HIGH DENSITY	3.37	0.76	16.43	113.10	0.0131	0.1250
31	A/D	0.19	RESIDENTIAL, MEDIUM DENSITY	1.48	0.23	5.64	26.76	0.0114	0.0442
9	A/D	1.14	UNDEVELOPED/NATURAL AREAS	16.70	0.80	20.33	121.98	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**130.9**	**16.6**	**415.2**	**2,869.8**	**2.0**	**8.4**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.3	0.166	4.2	28.7	0.0196	0.0843
Streetsweeping Removal (lb/yr)	3.9	2.5	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	25.1	8.4	205.5	2,414.9	1.2	7.1

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	130.9	16.6	415.2	2,869.8	2.0	8.4
BMP Pollutant Load Reduction	30.4	11.0	209.7	2,443.6	1.2	7.2
Estimated Pollutant Load to Water Body	**100.5**	**5.6**	**205.5**	**426.2**	**0.8**	**1.3**

Outfall: OF17010-3528-01
Receiving Body of Water: Alligator Creek
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
14	A/D	1.53	COMMERCIAL, HIGH INTENSITY	30.39	4.37	143.07	882.46	0.1899	2.0257
3	C/D	0.43	COMMERCIAL, HIGH INTENSITY	8.64	1.24	40.66	250.83	0.0540	0.5758
152	A/D	13.58	HIGHWAY	184.32	24.73	584.44	4,192.20	3.5965	14.1613
122	C/D	0.59	HIGHWAY	8.16	1.09	25.86	185.51	0.1591	0.6267
24	-	0.01	HIGHWAY	0.15	0.02	0.49	3.50	0.0030	0.0118
131	A/D	0.00	RESIDENTIAL, MEDIUM DENSITY	0.00	0.00	0.01	0.05	0.0000	0.0001
56	A/D	1.24	UNDEVELOPED/NATURAL AREAS	18.17	0.87	22.12	132.71	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**249.8**	**32.3**	**816.6**	**5,647.3**	**4.0**	**17.4**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	2.5	0.3	8.2	56.5	0.0400	0.1740
Streetsweeping Removal (lb/yr)	7.6	4.9	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	47.9	16.3	404.2	4,752.2	2.4	14.6

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	249.8	32.3	816.6	5,647.3	4.0	17.4
BMP Pollutant Load Reduction	58.0	21.5	412.4	4,808.6	2.4	14.8
Estimated Pollutant Load to Water Body	**191.8**	**10.9**	**404.2**	**838.6**	**1.6**	**2.6**

Outfall: OF17010-3528-02
Receiving Body of Water: Alligator Creek
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
2	A/D	3.13	COMMERCIAL, HIGH INTENSITY	62.25	8.95	293.09	1,807.85	0.3891	4.1500
28	C/D	0.05	COMMERCIAL, HIGH INTENSITY	0.92	0.13	4.31	26.61	0.0057	0.0611
79	A/D	15.44	HIGHWAY	209.52	28.11	664.34	4,765.35	4.0882	16.0974
129	C/D	0.56	HIGHWAY	7.81	1.05	24.75	177.52	0.1523	0.5997
124	A/D	0.61	RESIDENTIAL, MEDIUM DENSITY	4.76	0.75	18.17	86.24	0.0368	0.1426
73	A/D	1.22	UNDEVELOPED/NATURAL AREAS	17.79	0.85	21.66	129.94	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**303.04**	**39.84**	**1,026.32**	**6,993.50**	**4.7**	**21.1**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	3.0	0.398	10.3	69.9	0.0467	0.2105
Streetsweeping Removal (lb/yr)	10.4	6.6	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	57.9	19.7	508.0	5,885.0	2.8	17.7

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	303.0	39.8	1,026.3	6,993.5	4.7	21.1
BMP Pollutant Load Reduction	71.3	26.7	518.3	5,955.0	2.8	17.9
Estimated Pollutant Load to Water Body	**231.7**	**13.1**	**508.0**	**1,038.5**	**1.9**	**3.1**

Outfall: OF17010-3533-01
Receiving Body of Water: Intracoastal Waterway
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
149	A/D	2.01	COMMERCIAL, HIGH INTENSITY	39.93	5.74	188.02	1,159.74	0.2496	2.6622
168	C/D	0.49	COMMERCIAL, HIGH INTENSITY	10.02	1.44	47.18	291.03	0.0626	0.6681
121	A/D	0.24	COMMERCIAL, LOW INTENSITY	1.75	0.27	11.44	85.46	0.0268	0.1397
101	A/D	15.67	HIGHWAY	212.60	28.52	674.09	4,835.33	4.1483	16.3338
29	B	0.11	HIGHWAY	1.48	0.20	4.70	33.71	0.0289	0.1139
43	C/D	1.11	HIGHWAY	15.42	2.07	48.89	350.72	0.3009	1.1847
17	-	0.07	HIGHWAY	1.54	0.21	4.89	35.07	0.0301	0.1185
153	A/D	0.19	RESIDENTIAL, HIGH DENSITY	2.73	0.61	13.28	91.45	0.0106	0.1011
130	B	0.00	RESIDENTIAL, HIGH DENSITY	0.01	0.00	0.07	0.50	0.0001	0.0006
97	-	0.16	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**285.5**	**39.1**	**992.6**	**6,883.0**	**4.9**	**21.3**

Outfall: OF17010-3533-01
Receiving Body of Water: Intracoastal Waterway
County: SARASOTA
State Road: SR 45

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	2.9	0.391	9.9	68.8	0.0486	0.2132
Streetsweeping Removal (lb/yr)	7.5	4.8	0.0	0.0	0.0	0.0
Dry Ret. Pond Removal Efficiency (%)	60%	60%	60%	60%	60%	60%
Dry Ret. Pond Total Removal (lb/yr)	165.1	20.3	589.6	4,088.5	2.9	12.7

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	285.5	39.1	992.6	6,883.0	4.8578	21.3225
BMP Pollutant Load Reduction	175.5	25.5	599.5	4,157.3	2.9341	12.8788
Estimated Pollutant Load to Water Body	**110.0**	**13.5**	**393.1**	**2,725.7**	**1.9**	**8.4**

Outfall: OF17010-3533-02
Receiving Body of Water: Intracoastal Waterway
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
93	A	9.89	COMMERCIAL, HIGH INTENSITY	189.74	27.28	893.37	5,510.43	1.1859	12.6495
63	A/D	2.67	COMMERCIAL, HIGH INTENSITY	53.06	7.63	249.84	1,541.03	0.3316	3.5375
51	B	0.33	COMMERCIAL, HIGH INTENSITY	6.41	0.92	30.20	186.27	0.0401	0.4276
18	C/D	0.31	COMMERCIAL, HIGH INTENSITY	6.21	0.89	29.24	180.35	0.0388	0.4140
46	A	0.03	COMMERCIAL, LOW INTENSITY	0.18	0.03	1.19	8.85	0.0028	0.0145
162	A	0.60	HIGHWAY	7.83	1.05	24.83	178.14	0.1528	0.6017
37	B	0.33	HIGHWAY	4.36	0.58	13.82	99.11	0.0850	0.3348
70	A	0.11	RESIDENTIAL, HIGH DENSITY	1.46	0.33	7.10	48.86	0.0057	0.0540
0	A/D	1.85	RESIDENTIAL, HIGH DENSITY	26.43	5.92	128.74	886.37	0.1025	0.9798
125	C/D	0.12	RESIDENTIAL, HIGH DENSITY	1.78	0.40	8.65	59.56	0.0069	0.0658
139	A	0.78	RESIDENTIAL, LOW DENSITY	1.26	0.15	3.67	17.94	0.0062	0.0242
10	A/D	1.12	RESIDENTIAL, LOW DENSITY	3.94	0.47	11.51	56.31	0.0196	0.0759
44	-	0.27	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**302.7**	**45.6**	**1,402.1**	**8,773.2**	**2.0**	**19.2**

Outfall: OF17010-3533-02
Receiving Body of Water: Intracoastal Waterway
County: SARASOTA
State Road: SR 45

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	3.0	0.5	14.0	87.7	0.0198	0.1918
Streetsweeping Removal (lb/yr)	4.6	2.9	0.0	0.0	0.0	0.0
Dry Ret. Pond Removal Efficiency (%)	60%	60%	60%	60%	60%	60%
Dry Ret. Pond Total Removal (lb/yr)	177.0	25.4	832.9	5,211.3	1.2	11.4

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	302.7	45.6	1,402.1	8,773.2	2.0	19.2
BMP Pollutant Load Reduction	184.6	28.7	846.9	5,299.0	1.2	11.6
Estimated Pollutant Load to Water Body	**118.0**	**16.9**	**555.2**	**3,474.2**	**0.8**	**7.6**

Outfall: Sarasota3
Receiving Body of Water: Canal
County: SARASOTA
State Road: SR 45A

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
141	A/D	0.04	COMMERCIAL, HIGH INTENSITY	0.72	0.10	3.37	20.80	0.0045	0.0477
114	C/D	0.12	COMMERCIAL, HIGH INTENSITY	2.44	0.35	11.47	70.74	0.0152	0.1624
71	A/D	5.23	HIGHWAY	71.03	9.53	225.21	1,615.43	1.3859	5.4569
61	B/D	0.03	HIGHWAY	0.36	0.05	1.13	8.08	0.0069	0.0273
100	C/D	2.12	HIGHWAY	29.41	3.95	93.26	668.95	0.5739	2.2597
85	A/D	0.07	INDUSTRIAL, LIGHT	0.68	0.15	4.30	33.92	0.0017	0.0322
13	C/D	0.02	INDUSTRIAL, LIGHT	0.23	0.05	1.44	11.38	0.0006	0.0108
Raw Pollutant Load Total (lb/yr) =				**104.9**	**14.2**	**340.2**	**2,429.3**	**2.0**	**8.0**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.0	0.142	3.4	24.3	0.0199	0.0800
Streetsweeping Removal (lb/yr)	2.4	1.6	0.0	0.0	0.0	0.0
Grass Swale Removal Efficiency (%)	50%	50%	40%	70%	35%	70%
Grass Swale Total Removal (lb/yr)	50.7	6.2	134.7	1,683.5	0.7	5.5

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	104.9	14.2	340.2	2,429.3	2.0	8.0
BMP Pollutant Load Reduction	54.2	7.9	138.1	1,707.8	0.7	5.6
Estimated Pollutant Load to Water Body	**50.7**	**6.2**	**202.1**	**721.5**	**1.3**	**2.4**

Outfall: Sarasota2
Receiving Body of Water: Hatchett Creek
County: SARASOTA
State Road: SR 45A

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
8	A/D	1.69	COMMERCIAL, HIGH INTENSITY	33.61	4.83	158.22	975.95	0.2100	2.2403
169	C/D	0.31	COMMERCIAL, HIGH INTENSITY	6.38	0.92	30.02	185.19	0.0399	0.4251
35	C/D	0.02	COMMERCIAL, LOW INTENSITY	0.18	0.03	1.17	8.73	0.0027	0.0143
34	A/D	4.01	HIGHWAY	54.45	7.30	172.66	1,238.49	1.0625	4.1836
115	C/D	1.43	HIGHWAY	19.94	2.68	63.24	453.61	0.3892	1.5323
81	C/D	0.15	UNDEVELOPED/NATURAL AREAS	0.28	0.01	0.34	2.01	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**114.8**	**15.8**	**425.6**	**2,864.0**	**1.7**	**8.4**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.1	0.158	4.3	28.6	0.0170	0.0840
Streetsweeping Removal (lb/yr)	2.5	1.6	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	114.8	15.8	425.6	2,864.0	1.7	8.4
BMP Pollutant Load Reduction	3.7	1.8	4.3	28.6	0.0	0.1
Estimated Pollutant Load to Water Body	**111.2**	**14.0**	**421.4**	**2,835.3**	**1.7**	**8.3**

Outfall: Sarasota4
Receiving Body of Water: Sarasota Bay
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
161	A/D	4.40	COMMERCIAL, HIGH INTENSITY	87.32	12.55	411.13	2,535.90	0.5457	5.8213
Raw Pollutant Load Total (lb/yr) =				**87.3**	**12.6**	**411.1**	**2,535.9**	**0.5**	**5.8**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.9	0.126	4.1	25.4	0.0055	0.0582
Streetsweeping Removal (lb/yr)	2.0	1.3	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	87.3	12.6	411.1	2,535.9	0.5	5.8
BMP Pollutant Load Reduction	2.9	1.4	4.1	25.4	0.0	0.1
Estimated Pollutant Load to Water Body	**84.4**	**11.1**	**407.0**	**2,510.5**	**0.5**	**5.8**

Outfall: OF-SC-24-01734
Receiving Body of Water: Blackburn Bay
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
99	A/D	0.73	COMMERCIAL, HIGH INTENSITY	14.40	2.07	67.81	418.28	0.0900	0.9602
111	A/D	16.36	HIGHWAY	221.98	29.78	703.84	5,048.71	4.3313	17.0546
19	C/D	1.40	HIGHWAY	19.44	2.61	61.65	442.25	0.3794	1.4939
112	A/D	0.01	UNDEVELOPED/NATURAL AREAS	0.02	0.00	0.02	0.11	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**255.8**	**34.5**	**833.3**	**5,909.4**	**4.8**	**19.5**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	2.6	0.345	8.3	59.1	0.0480	0.1951
Streetsweeping Removal (lb/yr)	2.7	1.7	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	255.8	34.5	833.3	5,909.4	4.8	19.5
BMP Pollutant Load Reduction	5.3	2.1	8.3	59.1	0.0	0.2
Estimated Pollutant Load to Water Body	**250.6**	**32.4**	**825.0**	**5,850.3**	**4.8**	**19.3**

Outfall: OF17020-3572-02
Receiving Body of Water: Phillippi Bayou
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
116	A	0.97	COMMERCIAL, HIGH INTENSITY	18.64	2.68	87.77	541.36	0.1165	1.2427
154	A/D	0.06	COMMERCIAL, HIGH INTENSITY	1.24	0.18	5.84	36.00	0.0077	0.0826
156	A	0.09	COMMERCIAL, LOW INTENSITY	0.57	0.09	3.72	27.76	0.0087	0.0454
74	A	12.37	HIGHWAY	161.93	21.72	513.44	3,682.92	3.1596	12.4410
119	A/D	0.40	HIGHWAY	5.49	0.74	17.42	124.96	0.1072	0.4221
53	A	0.06	RESIDENTIAL, HIGH DENSITY	0.82	0.18	3.98	27.43	0.0032	0.0303
88	A/D	0.10	RESIDENTIAL, LOW DENSITY	0.36	0.04	1.05	5.13	0.0018	0.0069
127	A	0.06	UNDEVELOPED/NATURAL AREAS	0.01	0.00	0.01	0.08	0.0000	0.0000
142	A	0.00	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**189.1**	**25.6**	**633.2**	**4,445.6**	**3.4**	**14.3**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.9	0.3	6.3	44.5	0.0340	0.1427
Streetsweeping Removal (lb/yr)	8.6	5.5	0.0	0.0	0.0	0.0
Dry Det. Pond Removal Efficiency (%)	59%	66%	60%	73%	54%	58%
Dry Det. Pond Total Removal (lb/yr)	105.4	13.1	376.1	3,212.9	1.8	8.2

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	189.1	25.6	633.2	4,445.6	3.4	14.3
BMP Pollutant Load Reduction	115.8	18.9	382.5	3,257.3	1.9	8.3
Estimated Pollutant Load to Water Body	**73.2**	**6.8**	**250.8**	**1,188.3**	**1.6**	**5.9**

Outfall: OF17070-3525-02
Receiving Body of Water: Canal to Little Sarasota Bay
County: SARASOTA
State Road: SR 72

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
145	A/D	0.40	COMMERCIAL, HIGH INTENSITY	8.02	1.15	37.74	232.79	0.0501	0.5344
87	C/D	0.81	COMMERCIAL, HIGH INTENSITY	16.50	2.37	77.67	479.09	0.1031	1.0998
55	A/D	5.94	HIGHWAY	80.61	10.81	255.60	1,833.40	1.5729	6.1933
42	C/D	5.41	HIGHWAY	75.19	10.09	238.41	1,710.11	1.4671	5.7768
5	-	2.13	HIGHWAY	29.92	4.01	94.87	680.53	0.5838	2.2989
164	A/D	0.15	RESIDENTIAL, HIGH DENSITY	2.14	0.48	10.42	71.73	0.0083	0.0793
117	C/D	0.13	RESIDENTIAL, HIGH DENSITY	1.96	0.44	9.52	65.57	0.0076	0.0725
77	-	0.07	RESIDENTIAL, HIGH DENSITY	1.12	0.25	5.47	37.66	0.0044	0.0416
12	A/D	1.00	RESIDENTIAL, MEDIUM DENSITY	7.84	1.24	29.91	142.00	0.0606	0.2348
50	C/D	0.75	RESIDENTIAL, MEDIUM DENSITY	6.80	1.07	25.95	123.20	0.0526	0.2037
78	-	0.06	RESIDENTIAL, MEDIUM DENSITY	0.56	0.09	2.15	10.22	0.0044	0.0169
33	A/D	1.40	UNDEVELOPED/NATURAL AREAS	20.53	0.98	24.99	149.95	0.0000	0.0000
76	A/D	0.60	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**251.2**	**33.0**	**812.7**	**5,536.2**	**3.9**	**16.6**

Outfall: OF17070-3525-02
Receiving Body of Water: Canal to Little Sarasota Bay
County: SARASOTA
State Road: SR 72

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	2.5	0.330	8.1	55.4	0.0391	0.1655
Streetsweeping Removal (lb/yr)	4.1	2.6	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	48.9	18.0	402.3	4,658.8	2.3	13.9

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	251.2	33.0	812.7	5,536.2	3.9	16.6
BMP Pollutant Load Reduction	55.5	21.0	410.4	4,714.1	2.4	14.1
Estimated Pollutant Load to Water Body	**195.6**	**12.0**	**402.3**	**822.1**	**1.6**	**2.5**

Outfall: OF17070-3525-05
Receiving Body of Water: Lake Clark
County: SARASOTA
State Road: SR 72

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
84	A/D	0.76	COMMERCIAL, HIGH INTENSITY	15.00	2.16	70.64	435.72	0.0938	1.0002
20	C/D	0.34	COMMERCIAL, HIGH INTENSITY	6.94	1.00	32.68	201.58	0.0434	0.4627
172	A/D	5.21	HIGHWAY	70.75	9.49	224.33	1,609.17	1.3805	5.4358
133	B/D	0.89	HIGHWAY	12.18	1.63	38.62	277.01	0.2377	0.9358
96	C/D	3.34	HIGHWAY	46.43	6.23	147.22	1,056.04	0.9060	3.5673
30	A/D	0.15	RESIDENTIAL, MEDIUM DENSITY	1.17	0.18	4.46	21.19	0.0090	0.0350
107	B/D	0.17	RESIDENTIAL, MEDIUM DENSITY	1.42	0.22	5.41	25.68	0.0110	0.0425
147	-	0.09	RESIDENTIAL, MEDIUM DENSITY	2.47	0.39	9.43	44.78	0.0191	0.0740
41	A/D	0.02	UNDEVELOPED/NATURAL AREAS	0.02	0.00	0.02	0.13	0.0000	0.0000
144	C/D	0.08	UNDEVELOPED/NATURAL AREAS	0.16	0.01	0.19	1.14	0.0000	0.0000
126	A/D	2.15	WATER	0.00	0.00	0.00	0.00	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**156.5**	**21.3**	**533.0**	**3,672.4**	**2.7**	**11.6**

Outfall: OF17070-3525-05
Receiving Body of Water: Lake Clark
County: SARASOTA
State Road: SR 72

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	1.6	0.213	5.3	36.7	0.0270	0.1155
Streetsweeping Removal (lb/yr)	4.2	2.7	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	30.2	11.0	263.8	3,090.4	1.6	9.7

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	156.5	21.3	533.0	3,672.4	2.7	11.6
BMP Pollutant Load Reduction	35.9	14.0	269.2	3,127.1	1.6	9.8
Estimated Pollutant Load to Water Body	**120.6**	**7.4**	**263.8**	**545.4**	**1.1**	**1.7**

Outfall: Sarasota1
Receiving Body of Water: County Drainage System
County: SARASOTA
State Road: SR 758

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
11	A/D	1.10	COMMERCIAL, HIGH INTENSITY	21.75	3.13	102.42	631.72	0.1360	1.4502
118	B/D	0.69	COMMERCIAL, HIGH INTENSITY	13.85	1.99	65.20	402.19	0.0866	0.9232
123	C/D	0.10	COMMERCIAL, HIGH INTENSITY	2.13	0.31	10.02	61.80	0.0133	0.1419
1	B/D	0.07	COMMERCIAL, LOW INTENSITY	0.50	0.08	3.27	24.42	0.0076	0.0399
25	A/D	7.83	HIGHWAY	106.30	14.26	337.06	2,417.73	2.0742	8.1671
138	B/D	2.79	HIGHWAY	38.32	5.14	121.49	871.46	0.7476	2.9438
108	C/D	0.96	HIGHWAY	13.33	1.79	42.28	303.28	0.2602	1.0245
170	A/D	0.82	RESIDENTIAL, MEDIUM DENSITY	6.45	1.02	24.63	116.94	0.0499	0.1933
128	B/D	0.22	RESIDENTIAL, MEDIUM DENSITY	1.84	0.29	7.01	33.28	0.0142	0.0550
137	A/D	0.19	UNDEVELOPED/NATURAL AREAS	0.23	0.01	0.28	1.67	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**204.7**	**28.0**	**713.7**	**4,864.5**	**3.4**	**14.9**

Outfall: Sarasota1
Receiving Body of Water: County Drainage System
County: SARASOTA
State Road: SR 758

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	2.0	0.280	7.1	48.6	0.0339	0.1494
Streetsweeping Removal (lb/yr)	8.9	5.7	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	204.7	28.0	713.7	4,864.5	3.4	14.9
BMP Pollutant Load Reduction	10.9	5.9	7.1	48.6	0.0	0.1
Estimated Pollutant Load to Water Body	**193.8**	**22.1**	**706.5**	**4,815.8**	**3.4**	**14.8**

Outfall: Sarasota5
Receiving Body of Water: Sarasota Bay
County: SARASOTA
State Road: SR 789

Water Quality Summary									
GIS ID	**Soil Hydrologic Group**	**Basin Area (acres)**	**Land Use Description**	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
66	A	0.18	COMMERCIAL, HIGH INTENSITY	3.39	0.49	15.96	98.42	0.0212	0.2259
38	A	2.36	HIGHWAY	30.87	4.14	97.89	702.15	0.6024	2.3719
Raw Pollutant Load Total (lb/yr) =				**34.3**	**4.6**	**113.8**	**800.6**	**0.6**	**2.6**

Water Quality Treatment Summary						
Best Management Practice	**TN**	**TP**	**BOD_5**	**TSS**	**Total Cu**	**Total Zn**
1 % Education Credit Removal (lb/yr)	0.3	0.046	1.1	8.0	0.0062	0.0260
Streetsweeping Removal (lb/yr)	1.2	0.8	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	**TN (lb/yr)**	**TP (lb/yr)**	**BOD_5 (lb/yr)**	**TSS (lb/yr)**	**Total Cu (lb/yr)**	**Total Zn (lb/yr)**
Raw Pollutant Load	34.3	4.6	113.8	800.6	0.6	2.6
BMP Pollutant Load Reduction	1.6	0.8	1.1	8.0	0.0	0.0
Estimated Pollutant Load to Water Body	**32.7**	**3.8**	**112.7**	**792.6**	**0.6**	**2.6**

Outfall: OF-SA-02-01826
Receiving Body of Water: Hudson Bayou
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
80	A/D	0.14	COMMERCIAL, HIGH INTENSITY	2.75	0.40	12.95	79.88	0.0172	0.1834
82	A	0.54	HIGHWAY	7.03	0.94	22.28	159.84	0.1371	0.5399
47	A/D	2.94	HIGHWAY	39.91	5.35	126.53	907.60	0.7786	3.0659
167	A/D	0.00	RESIDENTIAL, HIGH DENSITY	0.03	0.01	0.15	1.02	0.0001	0.0011
21	A/D	0.02	RESIDENTIAL, MEDIUM DENSITY	0.14	0.02	0.54	2.58	0.0011	0.0043
136	A/D	0.00	UNDEVELOPED/NATURAL AREAS	0.00	0.00	0.00	0.02	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**49.9**	**6.7**	**162.5**	**1,151.0**	**0.9**	**3.8**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.5	0.067	1.6	11.5	0.0093	0.0379
Streetsweeping Removal (lb/yr)	2.6	1.7	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	49.9	6.7	162.5	1,151.0	0.9	3.8
BMP Pollutant Load Reduction	3.1	1.8	1.6	11.5	0.0	0.0
Estimated Pollutant Load to Water Body	**46.7**	**5.0**	**160.8**	**1,139.4**	**0.9**	**3.8**

Outfall: OF-SA-23-01104
Receiving Body of Water: Sarasota Bay
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
171	A	0.57	HIGHWAY	7.43	1.00	23.55	168.90	0.1449	0.5705
160	A	0.02	RESIDENTIAL, LOW DENSITY	0.03	0.00	0.09	0.42	0.0001	0.0006
Raw Pollutant Load Total (lb/yr) =				**7.5**	**1.0**	**23.6**	**169.3**	**0.1**	**0.6**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.1	0.010	0.2	1.7	0.0015	0.0057
Streetsweeping Removal (lb/yr)	0.5	0.3	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	7.5	1.0	23.6	169.3	0.1	0.6
BMP Pollutant Load Reduction	0.6	0.3	0.2	1.7	0.0	0.0
Estimated Pollutant Load to Water Body	**6.9**	**0.7**	**23.4**	**167.6**	**0.1**	**0.6**

Outfall: OF-SA-23-01092
Receiving Body of Water: Sarasota Bay
County: SARASOTA
State Road: SR 45

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
68	A/D	0.16	COMMERCIAL, HIGH INTENSITY	3.18	0.46	14.99	92.45	0.0199	0.2122
39	A	1.15	HIGHWAY	15.08	2.02	47.80	342.87	0.2941	1.1582
109	A/D	0.34	HIGHWAY	4.55	0.61	14.44	103.56	0.0888	0.3498
102	A/D	0.05	RESIDENTIAL, HIGH DENSITY	0.65	0.14	3.15	21.67	0.0025	0.0240
36	A	0.01	RESIDENTIAL, LOW DENSITY	0.02	0.00	0.04	0.22	0.0001	0.0003
Raw Pollutant Load Total (lb/yr) =				**23.5**	**3.2**	**80.4**	**560.8**	**0.4**	**1.7**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.2	0.032	0.8	5.6	0.0041	0.0174
Streetsweeping Removal (lb/yr)	1.3	0.8	0.0	0.0	0.0	0.0
No Treatment Practice Identified (%)	0%	0%	0%	0%	0%	0%
No Treatment Total Removal (lb/yr)	0.0	0.0	0.0	0.0	0.0	0.0

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	23.5	3.2	80.4	560.8	0.4	1.7
BMP Pollutant Load Reduction	1.5	0.9	0.8	5.6	0.0	0.0
Estimated Pollutant Load to Water Body	**22.0**	**2.4**	**79.6**	**555.2**	**0.4**	**1.7**

Outfall: OF17040-3508-01
Receiving Body of Water: Canal
County: SARASOTA
State Road: SR 780

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
32	A/D	0.36	COMMERCIAL, HIGH INTENSITY	7.06	1.02	33.26	205.14	0.0441	0.4709
54	A/D	2.95	HIGHWAY	39.99	5.36	126.79	909.45	0.7802	3.0721
16	A/D	0.69	RESIDENTIAL, MEDIUM DENSITY	5.42	0.86	20.68	98.14	0.0419	0.1623
Raw Pollutant Load Total (lb/yr) =				**52.5**	**7.2**	**180.7**	**1,212.7**	**0.9**	**3.7**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.5	0.072	1.8	12.1	0.0087	0.0371
Streetsweeping Removal (lb/yr)	1.0	0.6	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	10.2	3.9	89.5	1,020.5	0.5	3.1

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	52.5	7.2	180.7	1,212.7	0.9	3.7
BMP Pollutant Load Reduction	11.7	4.6	91.3	1,032.6	0.5	3.2
Estimated Pollutant Load to Water Body	**40.8**	**2.6**	**89.5**	**180.1**	**0.3**	**0.6**

Outfall: OF17040-3516-04
Receiving Body of Water: Philippi Creek Trib.
County: SARASOTA
State Road: SR 780

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
106	A/D	0.06	COMMERCIAL, HIGH INTENSITY	1.23	0.18	5.79	35.71	0.0077	0.0820
64	A/D	4.92	HIGHWAY	66.77	8.96	211.71	1,518.58	1.3028	5.1298
104	A/D	0.09	INDUSTRIAL, LIGHT	0.94	0.20	5.95	46.95	0.0023	0.0446
57	A/D	0.39	RESIDENTIAL, MEDIUM DENSITY	3.04	0.48	11.62	55.16	0.0235	0.0912
40	A/D	0.05	UNDEVELOPED/NATURAL AREAS	0.05	0.00	0.07	0.39	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**72.0**	**9.8**	**235.1**	**1,656.8**	**1.3**	**5.3**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.7	0.098	2.4	16.6	0.0134	0.0535
Streetsweeping Removal (lb/yr)	2.7	1.7	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	13.7	4.8	116.4	1,394.2	0.8	4.5

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	72.0	9.8	235.1	1,656.8	1.3	5.3
BMP Pollutant Load Reduction	17.2	6.6	118.7	1,410.8	0.8	4.6
Estimated Pollutant Load to Water Body	**54.9**	**3.2**	**116.4**	**246.0**	**0.5**	**0.8**

Outfall: OF17040-3518-01
Receiving Body of Water: Wetland to Philippi Creek Trib.
County: SARASOTA
State Road: SR 780

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
62	A/D	0.01	COMMERCIAL, HIGH INTENSITY	0.20	0.03	0.95	5.85	0.0013	0.0134
155	B/D	0.07	COMMERCIAL, HIGH INTENSITY	1.39	0.20	6.55	40.39	0.0087	0.0927
135	A/D	1.24	HIGHWAY	16.88	2.26	53.52	383.93	0.3294	1.2969
151	B/D	4.30	HIGHWAY	58.92	7.90	186.83	1,340.13	1.1497	4.5270
23	A/D	0.15	RESIDENTIAL, HIGH DENSITY	2.18	0.49	10.62	73.10	0.0085	0.0808
67	B/D	0.00	RESIDENTIAL, HIGH DENSITY	0.06	0.01	0.31	2.15	0.0002	0.0024
72	A/D	0.33	RESIDENTIAL, MEDIUM DENSITY	2.59	0.41	9.89	46.97	0.0200	0.0777
159	B/D	0.08	RESIDENTIAL, MEDIUM DENSITY	0.65	0.10	2.47	11.72	0.0050	0.0194
59	A/D	0.42	UNDEVELOPED/NATURAL AREAS	6.19	0.30	7.53	45.19	0.0000	0.0000
Raw Pollutant Load Total (lb/yr) =				**89.1**	**11.7**	**278.7**	**1,949.4**	**1.5**	**6.1**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	0.9	0.117	2.8	19.5	0.0152	0.0611
Streetsweeping Removal (lb/yr)	3.3	2.1	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	17.0	5.7	137.9	1,640.5	0.9	5.1

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	89.1	11.7	278.7	1,949.4	1.5	6.1
BMP Pollutant Load Reduction	21.2	7.9	140.7	1,659.9	0.9	5.2
Estimated Pollutant Load to Water Body	**67.9**	**3.8**	**137.9**	**289.5**	**0.6**	**0.9**

Outfall: OF17040-3518-02
Receiving Body of Water: Canal
County: SARASOTA
State Road: SR 780

Water Quality Summary									
GIS ID	Soil Hydrologic Group	Basin Area (acres)	Land Use Description	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
166	A/D	1.09	COMMERCIAL, HIGH INTENSITY	21.59	3.10	101.66	627.07	0.1350	1.4395
91	A/D	7.19	HIGHWAY	97.53	13.08	309.23	2,218.11	1.9029	7.4928
150	B/D	1.53	HIGHWAY	21.03	2.82	66.69	478.39	0.4104	1.6160
89	A/D	0.01	INDUSTRIAL, LIGHT	0.05	0.01	0.33	2.63	0.0001	0.0025
110	A/D	0.03	RESIDENTIAL, MEDIUM DENSITY	0.26	0.04	1.00	4.75	0.0020	0.0078
94	B/D	0.04	RESIDENTIAL, MEDIUM DENSITY	0.36	0.06	1.37	6.52	0.0028	0.0108
Raw Pollutant Load Total (lb/yr) =				**140.8**	**19.1**	**480.3**	**3,337.5**	**2.5**	**10.6**

Water Quality Treatment Summary						
Best Management Practice	TN	TP	BOD_5	TSS	Total Cu	Total Zn
1 % Education Credit Removal (lb/yr)	1.4	0.191	4.8	33.4	0.0245	0.1057
Streetsweeping Removal (lb/yr)	5.1	3.3	0.0	0.0	0.0	0.0
Wet Pond Removal Efficiency (%)	20%	60%	50%	85%	60%	85%
Wet Pond Total Removal (lb/yr)	26.9	9.4	237.7	2,808.5	1.5	8.9

Pollutant Load Summary						
Totals	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
Raw Pollutant Load	140.8	19.1	480.3	3,337.5	2.5	10.6
BMP Pollutant Load Reduction	33.4	12.9	242.5	2,841.9	1.5	9.0
Estimated Pollutant Load to Water Body	**107.4**	**6.3**	**237.7**	**495.6**	**1.0**	**1.6**

Section E

Major Outfall Drainage Maps

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17050-3511-01

FIGURE 1

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17050-3511-04

FIGURE 2

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17050-3511-05

FIGURE 3

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17050-3505-06

FIGURE 4

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17010-3528-01

FIGURE 5

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17010-3528-02

FIGURE 6

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17010-3533-01

FIGURE 7

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17010-3533-02

FIGURE 8

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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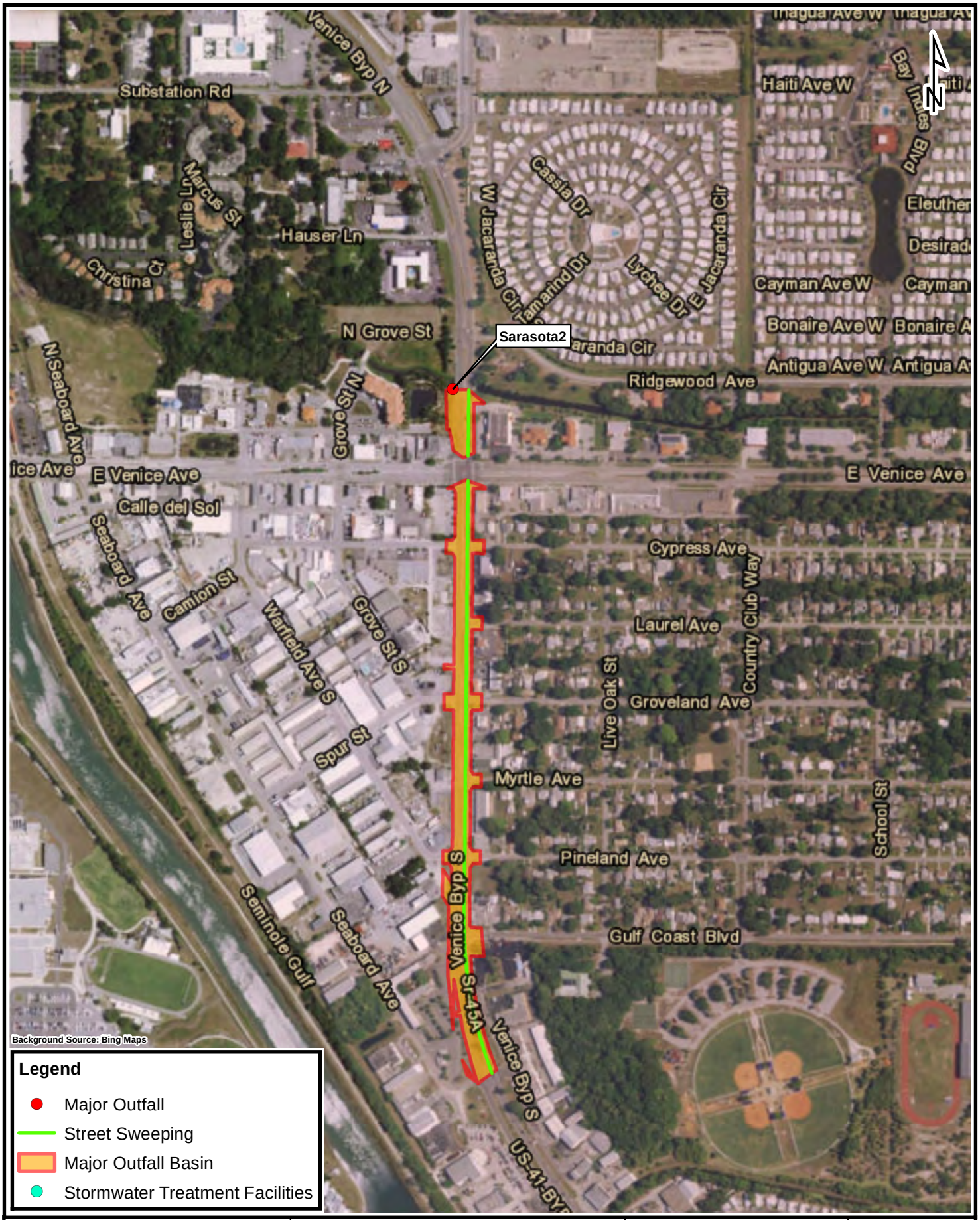
FDOT			**Sarasota County Major Outfalls**	Major Outfall ID: Sarasota3	FIGURE 9
DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009		SCALE: 1 " = 600 '	DATE: 11/21/2016



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FDOT

Sarasota County Major Outfalls

Major Outfall ID: Sarasota2

FIGURE 10

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: Sarasota4

FIGURE 11

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF-SC-24-01734

FIGURE 12

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

G:\Projects\1-1999-009\GIS\Sarasota Outfalls 2.mxd

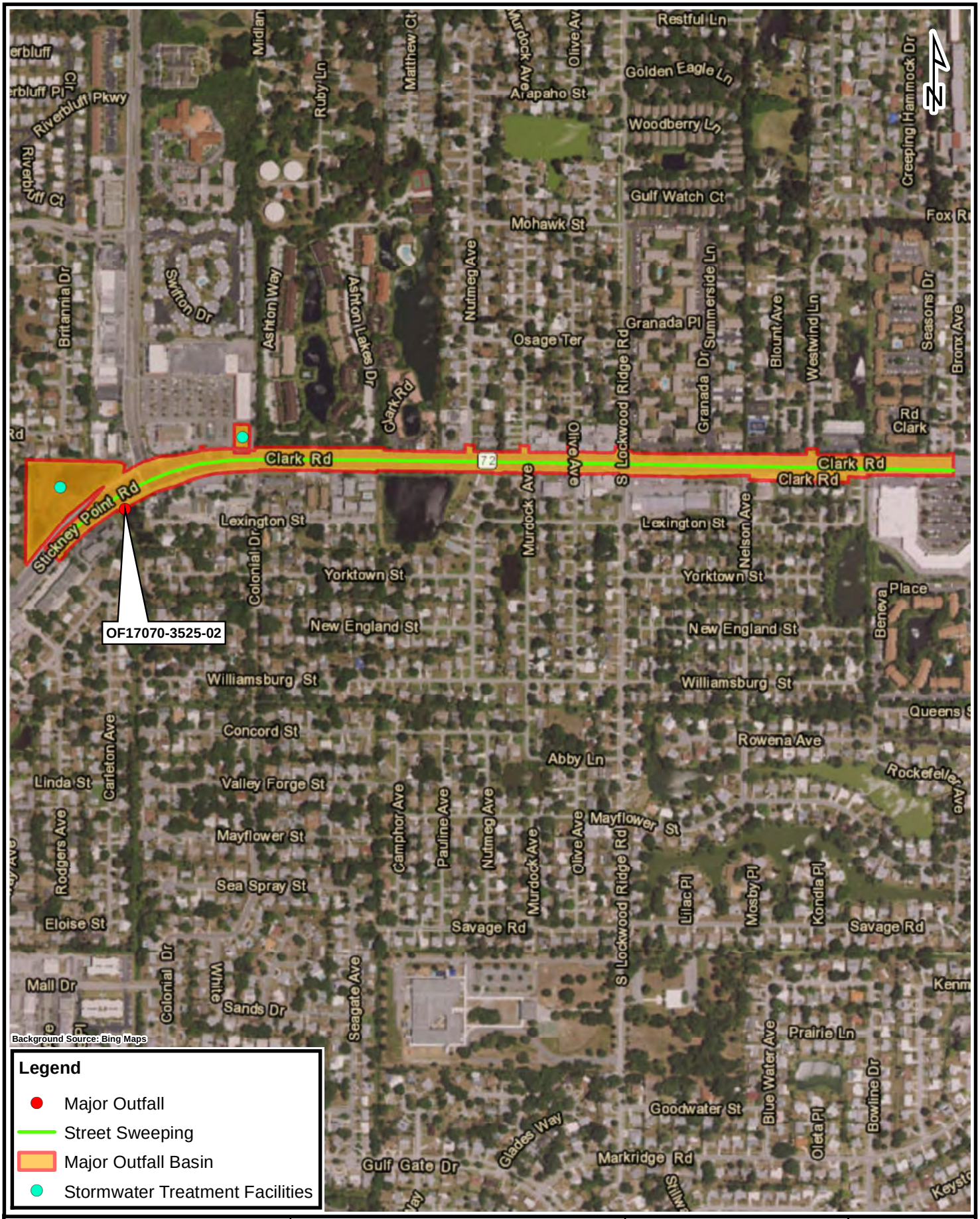
FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17020-3572-02

FIGURE 13

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016



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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17070-3525-02

FIGURE 14

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 700 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17070-3525-05

FIGURE 15

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/15/2016

FDOT			**Sarasota County Major Outfalls**	Major Outfall ID: Sarasota1	FIGURE 16
DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009		SCALE: 1 " = 800 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: Sarasota5

FIGURE 17

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

FDOT		**Sarasota County Major Outfalls**	Major Outfall ID: OF-SA-02-01826		FIGURE 18
DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016	

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF-SA-23-01104

FIGURE 19

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF-SA-23-01092

FIGURE 20

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 500 '	DATE: 11/21/2016

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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17040-3508-01

FIGURE 21

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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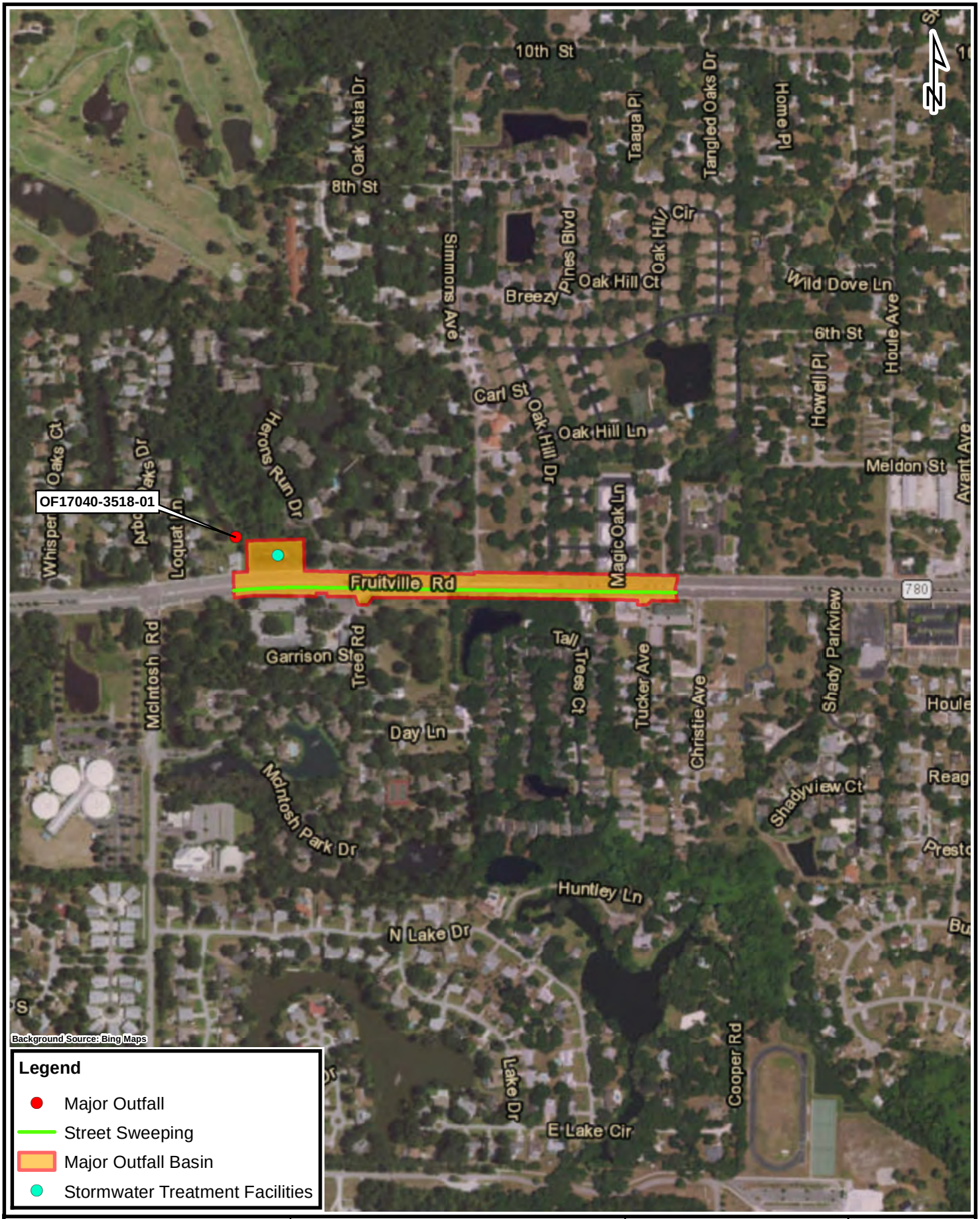
FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17040-3516-04

FIGURE 22

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/15/2016



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FDOT

Sarasota County Major Outfalls

Major Outfall ID: OF17040-3518-01

FIGURE 23

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009	SCALE: 1 " = 600 '	DATE: 11/21/2016

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FDOT

DRAWN BY: LG	CHECKED BY: E L	PROJECT NUMBER: 1-1999-009

Sarasota County Major Outfalls

Major Outfall ID: OF17040-3518-02

SCALE: 1 " = 600 '	DATE: 11/21/2016

FIGURE

24

Section F

Total Annual Pollutant Load Estimates

Sarasota County Total Estimated Pollutant Loading to Water Bodies									
Outfall ID	State Road	County	Receiving Waterbody	TN (lb/yr)	TP (lb/yr)	BOD_5 (lb/yr)	TSS (lb/yr)	Total Cu (lb/yr)	Total Zn (lb/yr)
OF17050-3511-01	SR 776	SARASOTA	Wetlands to Godfrey Creek	151.8	7.3	250.9	504.4	0.8	1.3
OF17050-3511-04	SR 776	SARASOTA	Canal to Forked Creek	104.0	4.5	174.2	363.7	0.7	1.1
OF17050-3511-05	SR 776	SARASOTA	Forked Creek	70.3	3.7	145.0	299.0	0.6	0.9
OF17050-3505-06	SR 776	SARASOTA	Alligator Creek	100.5	5.6	205.5	426.2	0.8	1.3
OF17010-3528-01	SR 45	SARASOTA	Alligator Creek	191.8	10.9	404.2	838.6	1.6	2.6
OF17010-3528-02	SR 45	SARASOTA	Alligator Creek	231.7	13.1	508.0	1,038.5	1.9	3.1
OF17010-3533-01	SR 45	SARASOTA	Intracoastal Waterway	110.0	13.5	393.1	2,725.7	1.9	8.4
OF17010-3533-02	SR 45	SARASOTA	Intracoastal Waterway	118.0	16.9	555.2	3,474.2	0.8	7.6
Sarasota3	SR 45A	SARASOTA	Canal	50.7	6.2	202.1	721.5	1.3	2.4
Sarasota2	SR 45A	SARASOTA	Hatchett Creek	111.2	14.0	421.4	2,835.3	1.7	8.3
Sarasota4	SR 45	SARASOTA	Sarasota Bay	84.4	11.1	407.0	2,510.5	0.5	5.8
OF-SC-24-01734	SR 45	SARASOTA	Blackburn Bay	250.6	32.4	825.0	5,850.3	4.8	19.3
OF17020-3572-02	SR 45	SARASOTA	Phillippi Bayou	73.2	6.8	250.8	1,188.3	1.6	5.9
OF17070-3525-02	SR 72	SARASOTA	Canal to Little Sarasota Bay	195.6	12.0	402.3	822.1	1.6	2.5
OF17070-3525-05	SR 72	SARASOTA	Lake Clark	120.6	7.4	263.8	545.4	1.1	1.7
Sarasota1	SR 758	SARASOTA	County Drainage System	193.8	22.1	706.5	4,815.8	3.4	14.8
Sarasota5	SR 789	SARASOTA	Sarasota Bay	32.7	3.8	112.7	792.6	0.6	2.6
OF-SA-02-01826	SR 45	SARASOTA	Hudson Bayou	46.7	5.0	160.8	1,139.4	0.9	3.8
OF-SA-23-01104	SR 45	SARASOTA	Sarasota Bay	6.9	0.7	23.4	167.6	0.1	0.6
OF-SA-23-01092	SR 45	SARASOTA	Sarasota Bay	22.0	2.4	79.6	555.2	0.4	1.7
OF17040-3508-01	SR 780	SARASOTA	Canal	40.8	2.6	89.5	180.1	0.3	0.6
OF17040-3516-04	SR 780	SARASOTA	Philippi Creek Trib.	54.9	3.2	116.4	246.0	0.5	0.8
OF17040-3518-01	SR 780	SARASOTA	Wetland to Philippi Creek Trib.	67.9	3.8	137.9	289.5	0.6	0.9
OF17040-3518-02	SR 780	SARASOTA	Canal	107.4	6.3	237.7	495.6	1.0	1.6
Totals:				**2,537.4**	**215.0**	**7,073.1**	**32,825.6**	**29.4**	**99.4**

Wet Season Total Pollutant Load (June - Sept., 60%)					
1,522.5	**129.0**	**4,243.9**	**19,695.4**	**17.6**	**59.6**

Dry Season Total Pollutant Load (Oct. - May, 40%)					
1,015.0	**86.0**	**2,829.3**	**13,130.3**	**11.7**	**39.8**

Section G

Comparison of Annual Pollutant Load Estimates

Section G – Comparison of Annual Pollutant Load Estimates

The NPDES Phase I MS4 Cycle 4 permit for Sarasota County Part V.A.1 requires permittees to provide estimates of the annual pollutant load and event mean concentration for six parameters at each major outfall or major watershed within the MS4. The permit states that a table should be included to compare the current estimated annual pollutant loadings with those from the previous two Year 3 annual pollutant loading estimates.

A comparison of the estimates of annual pollutant loads from FDOT's MS4 cannot be provided due to a conflict in pollutant load calculation methodologies and lack of historic data. The previous Year 3 annual pollutant loading estimates were developed by the lead permittee (Sarasota County) on a watershed basis for the various bays in Sarasota County. The data for the various bays analysis does not split out the individual permittee contributions. For the Cycle 4 permit, FDOT District One developed annual pollutant load estimates for each major outfall. FDOT District One believes this approach is a more accurate and appropriate method for estimating annual pollutant loads from FDOT's MS4. Further, this approach will allow FDOT to better evaluate the effectiveness of its stormwater management program in future years.

The estimated annual pollutant loads reported this year will be used as FDOT District One's baseline for future Year 3 pollutant load comparisons as well as to evaluate the effectiveness of District One's stormwater management program.

Sarasota County Comparison of Annual Pollutant Loadings

Parameter	**Cycle 4, Year 3 Estimate (lbs/yr)**	**Cycle 5, Year 3 Estimate (lbs/yr)**
Total Nitrogen	2,537.4	-
Total Phosphorus	215	-
BOD	7,073.1	-
TSS	32,825.6	-
Total Cu	29.4	-
Total Zn	99.4	-