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 (http://www.dep.state.fl.us/water/stormwater/npdes/contacts.htm). Files larger than 10MB may be placed on the FTP site at: ftp://ftp.dep.state.fl.us/pub/NPDES_Stormwater/. After uploading files, email the MS4 coordinator or NPDES Program Administrator to notify them the report is ready for downloading; or by mail to the address in the box at right.
- Refer to the Form Instructions for guidance on completing each section.
- **Please print or type information in the appropriate areas below.**

Submit the form and attachments to:
Florida Department of Environmental Protection
Mail Station 3585
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SECTION I. BACKGROUND INFORMATION			
A.	Permittee Name: City of Delray Beach		
B.	Permit Name: Palm Beach County MS4		
C.	Permit Number: FLS000018-004		
D.	Annual Report Year: ☐ Year 1 ☐ Year 2 ☒ Year 3 ☐ Year 4 ☐ Year 5 ☐ Other, specify Year:		
E.	Reporting Time Period (month/year): October 1, 2018 through September 30, 2019		
F.	Name of the Responsible Authority: Missie Barletto		
	Title: Assistant Director of Public Works		
	Mailing Address: 434 S. Swinton Avenue		
	City: Delray Beach, FL	Zip Code: 33444	County: Palm Beach
	Telephone Number: (561) 243-4104	Fax Number: (561) 243-7060	
	E-mail Address: barlettom@mydelraybeach.com		
G.	Name of the Designated Stormwater Management Program Contact (if different from Section I.F above): Cynthia Buisson		
	Title: Engineering Division Manager		
	Department: Public Work Department		
	Mailing Address: 434 S. Swinton Avenue		
	City: Delray Beach, FL	Zip Code: 33444	County: Palm Beach
	Telephone Number: (561) 243-7196	Fax Number: (561) 243-7060	
	E-mail Address: fuentesc@mydelraybeach.com		

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): (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): (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.	PART V.B. ASSESSMENT PROGRAM
A.	Provide a brief statement as to the status of water quality monitoring plan implementation. Status may include sampling frequency changes, monitoring location changes, or sampling waiver conditions. *DEP Note: If permittee participates in a collaborative monitoring plan, permittee may refer to a joint response as defined by the interlocal agreement.* Name and date of the approved plan: Current approval of the Group Monitoring Plan is September 8, 2016 (with issuance of the Cycle 4 permit). Individual Assessment Plan was approved on May 5, 2018. Status: The monitoring program is carried out jointly by the Palm Beach County (PBC) permittees. See the PBC Joint Annual Report.
B.	Provide a brief discussion of the monitoring and loading results to date which includes a summary of the water quality monitoring data and / or stormwater pollutant loading changes from the reporting year. *DEP Note: Results must be specific to the permittee's SWMP.* Refer to City's 2019 Annual Assessment Report and Lake Ida TMDL Status Report for Cycle 4, Year 3.
C.	Attach a monitoring data summary as required by the permit. An analysis of the data discussing changes in water quality and/or stormwater pollutant loading from previous reporting years. *DEP Note: Analysis must be specific to the permittee's SWMP.* Refer to City's 2019 Annual Assessment Report and Lake Ida TMDL Status Report for Cycle 4, Year 3.

SECTION IV.	FISCAL ANALYSIS
A.	Total expenditures for the NPDES stormwater management program for the current reporting year: $1,259,882
B.	Total budget for the NPDES stormwater management program for the subsequent reporting year: $4,709,138
C.	Did the current reporting year resources decrease from the previous year? Y ☒ / N ☐ If program resources decreased, provide a discussion of the impacts on the implementation of the SWMP. During fiscal year 18/19 the City focused attention on commencing with planning and design on several stormwater improvement projects identified in the Stormwater Master Plan and Seawall Vulnerability Study (including design for Marine Way, planning for Tropic Isles and Thomas Street Pump Station) while keeping the typical annual stormwater maintenance activities going. Design activities are much less costly than construction, so the budget was not entirely used.

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	Required Attachments	Permit Citation	Attachment Number/Title
☒	☐	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.	Part III.A	
☐	☒	An explanation of why the minimum inspection frequency in Table II.A.1.a. was not met, if applicable.	Part II.A.1	
☐	☒	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 III.A.4	
☒	☐	A monitoring data summary as directed in Section III.C above and in accordance with Rule 62-624.600(2)(c), F.A.C.	Part V.B.3	Refer to Joint Report and Assessment Report
☐	☒	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.	Part III.A.1	
☐	☒	YEAR 2: A summary review of codes and regulations to reduce the stormwater impact from development.	Part III.A.2	
☒	☐	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.	Part V.A	Refer to Joint Report and Assessment Report
☒	☐	YEAR 3: Summary of TMDL Monitoring Results (if applicable).	Part VIII.B.2	Lake Ida TMDL Monitoring Report
☐	☒	YEAR 3: Bacteria Pollution Control Plan (if applicable).	Part VIII.B.3	
☐	☒	YEAR 4: A follow-up report on plan implementation of changes to codes and regulations to reduce the stormwater impact from development.	Part III.A.2	
☐	☒	YEAR 4: A report on any amendments to the applicable legal authority (if applicable).	Part III.A.7.a	
☐	☒	YEAR 4: Permit re-application information in accordance with Rule 62-624.420(2), F.A.C. • The monitoring plan (with revisions, if applicable). • 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 Part V.A.3	
☐	☒	YEAR 4: TMDL Supplemental SWMP (if applicable).	Part VIII.B.3	

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): Missie Barletto

Title: Assistant Director of Public Works

Signature: Missie Barletto Date: 4/30/2020

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**				

Report the current known inventory.

Report the number of inspection and maintenance activities conducted for each applicable 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.

Note: Delete structures that are not in your MS4's inventory. 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.

Type of Structure	Number of Structures	Number of Inspections	Percent Inspected	Number of Maintenance Activities	Percent Maintained			
Dry retention systems	22	52	100	264	100	Maintenance Report	Stormwater Maintenance & Administration	
Underdrain filter systems (lf)	1480	1391	94	2	10	Maintenance Report	Stormwater Maintenance & Administration	
Exfiltration trench / French drains (lf)	1475	1401	95	4	14	Maintenance Report	Stormwater Maintenance & Administration	
Grass treatment swales (miles)	27.9	52	52	26	100	Maintenance Report	Stormwater Maintenance & Administration	
Dry detention systems	22	52	100	264	100	Maintenance Report	Stormwater Maintenance & Administration	
Wet detention systems	2	38	100	38	100	Maintenance Report	Stormwater Maintenance & Administration	
Detention with filtration systems	22	52	100	264	100	Maintenance Report	Stormwater Maintenance & Administration	
Alum Injection systems								
Pollution control boxes								
pump stations	7	168	100	123	100	City Works	Utilities Maintenance	
Major outfalls	23	23	100	3	100	Maintenance	Stormwater	

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Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**	**Number of Activities Performed**					**Documentation / Record**	**Entity Performing the Activity**	**Comments**
							Report	Maintenance & Administration	
	Weirs or other control structures	11	22	100	3	27	Maintenance Report	Stormwater Maintenance & Administration	
	pipes / culverts (miles)	2	1	50	.28	.28	Maintenance Report	Stormwater Maintenance & Administration	
	Canals	3	12	100	18	100	Maintenance Report	Stormwater Maintenance & Administration	
	Inlets / catch basins / grates	1258	1258	199	405	32	Maintenance Report	Stormwater Maintenance & Administration	Vac-con problems – New Vac-con ordered
	Ditches / conveyance swales (miles)	28	28	100	28	100	Maintenance Report	Stormwater Maintenance & Administration	
	If the minimum inspection frequencies set forth in Table II.A.1.a. 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.	N/A							All Met

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Part III.A.1 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Enforcing the FAC statutes for stormwater retention requirements for all new development in the MS4 including single family residential.				
	Limitations:				
	SWMP revisions implemented to address limitations: Included in the Comprehensive Plan, stormwater runoff from new construction will cause no impacts to adjacent properties.				
Part III.A.2	**Areas of New Development and Significant Redevelopment**				
	Report the number of significant development projects, including new and redevelopment, reviewed and approved by the permittee for post-development stormwater considerations.				
	Number of significant development projects reviewed	**36**	TAC Report	Engineering	
	Number of significant development projects approved	**31**	TAC Report	Engineering	
	Provide in the Year 2 Annual Report the summary report of the review activity. Provide in the Year 4 Annual Report the follow-up report on plan implementation.				
	Year 2 ONLY: Attach the summary report of the review activity	☐			
	Year 4 ONLY: Attach the follow-up report on plan implementation	☐			
Part III.A.2 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: The City review process allows for significant review during the site plan approval and design process to enhance stormwater quality improvements for redevelopment within the City. Inspections are performed during the project construction to ensure that BMP's are adhered to.				
	Limitations: Aging infrastructure in areas of development.				
	SWMP revisions implemented to address limitations: Studying flood prone areas to address issues.				
Part III.A.3	**Roadways**				
	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. *Note: If the permittee does not contract activities, delete CONTRACTOR activities.*				
	PERMITTEE Litter Control: Frequency of litter collection	Daily	GIS SWA	Parks and Recreation	
	PERMITTEE Litter Control: Estimated amount of area maintained (lf)	**200**	GIS SWA	Parks and Recreation	
	PERMITTEE Litter Control: Estimated amount of litter collected (cy)	**4000**	GIS SWA	Parks and Recreation	
	CONTRACTOR Litter Control: Frequency of litter collection	0			
	CONTRACTOR Litter Control: Estimated amount of area maintained (lf)	0			
	CONTRACTOR Litter Control: Estimated amount of litter collected (cy)	0			
	OPTIONAL: 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. If you do not participate in an Adopt-A-Road program, report "0".				
	Trash Pick-up Events: Total miles cleaned	6	D. Beardsley	Special Events Coordinator	
	Trash Pick-up Events: Estimated amount of litter collected (lbs)	410	D. Beardsley	Special Events	

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Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**	**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
				Coordinator	
	Adopt-A-Road: Total miles cleaned	0			
	Adopt-A-Road: Estimated amount of litter collected (cy)	0			
	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 and total phosphorus loadings that were removed by the collection of sweepings. If no street sweeping program is implemented, provide the explanation of why not in column F.				
	Frequency of street sweeping	241	Maintenance Report	Stormwater Maintenance & Administration	
	Total miles swept	8710	Maintenance Report	Stormwater Maintenance & Administration	
	Estimated quantity of sweeping material collected (cy)	973	Maintenance Report	Stormwater Maintenance & Administration	
	Total phosphorous loadings removed (pounds)	805	FSA Spreadsheet	Public Works	
	Total nitrogen loadings removed (pounds)	1,256	FSA Spreadsheet	Public Works	
	Report the equipment yards and maintenances shops that support road maintenance activities, and the number of inspections conducted for each facility.				
	Name of Facility	**Number of Inspections**			
	Swinton Operations Center	12	Monthly Reports	Building Maintenance Division	

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Permit Citation/ SWMP Element	**Permit Requirement/Quantifiable SWMP Activity**	**Number of Activities Performed**	**Documentation / Record**	**Entity Performing the Activity**	**Comments**
Part III.A.3 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Proactive management and maintenance program.				
	Limitations: Coastal Florida variations.				
	SWMP revisions implemented to address limitations: Identifying and addressing flood prone areas to address issues.				
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.				
	Flood control projects completed during the reporting period	**5**	CIP Database	Engineering	
	Flood control projects completed that did not include stormwater treatment	0	CIP Database	Engineering	
	Stormwater retrofit projects planned/under construction	31	CIP Database	Engineering	
	Stormwater retrofit projects completed	7	CIP Database	Engineering	
	If there were projects that did not include stormwater treatment, provide as an attachment a list of the projects and an explanation for each of why it did not.	☐			
Part III.A.4 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Comprehensive Program				
	Limitations: Coastal Florida variations.				
	SWMP revisions implemented to address limitations: Identifying and addressing flood prone areas.				
Part III.A.5	**Municipal Waste Treatment, Storage, and Disposal Facilities Not Covered by an NPDES Stormwater Permit**				
	Report the applicable facilities and the number of the inspections conducted for each facility.				
	Name of Facility	**Number of Inspections**			
	N/A				
Part III.A.5 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: N/A				
	Limitations: N/A				
	SWMP revisions implemented to address limitations: N/A				
Part III.A.6	**Pesticides, Herbicides, and Fertilizer Application**				
	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 who have been trained through the Green Industry BMP Program and the number of contracted commercial applicators of fertilizer who are FDACS certified / licensed.				

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	PERSONNEL: FDACS public applicators of pesticides/herbicides	3	Certification	IFAS	
	CONTRACTORS: FDACS commercial applicators of pesticides/ herbicides	5	Certification	IFAS	
	PERSONNEL: Green Industry BMP Program training completed	0	Certification	FDACS	
	CONTRACTORS: FDACS certified / licensed applicators of fertilizer	Yes	Certification	FDACS	
	Provide a copy of the adopted ordinance with the Year 2 Annual Report. If this provision is not applicable because the permittee is not within the watershed of a nutrient-impaired water body, indicate that in Column F.				
	Year 2 ONLY: Attach copy of adopted Florida-friendly ordinance	☐			
	Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee's jurisdiction to encourage citizens to reduce their use of pesticides, herbicides and fertilizers including the type and number of activities conducted, the type and number of materials distributed, and the number of Web site visits (if applicable).				
	Public Education and Outreach Program	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.			
	Brochures/Flyers/Fact sheets distributed				
	Neighborhood presentations: Number conducted				
	Neighborhood presentations: Number of participants				
	Newspapers & newsletters: Number of articles/notices published				
	Newsletters: Number of newsletters distributed				
	Public displays (e.g., kiosks, storyboards, posters, etc.)				
	Radio or television Public Service Announcements (PSAs)				
	School presentations: Number conducted				
	School presentations: Number of participants				
	Seminars/Workshops: Number conducted				
	Seminars/Workshops: Number of participants				
	Special events: Number conducted				
	Special events: Number of participants				
	Number of visitors to stormwater-related pages				
Part III.A.6 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: State Certification Programs in Place				
	Limitations: No weakness identified.				
	SWMP revisions implemented to address limitations: None				
Part III.A.7.a	**Illicit Discharges and Improper Disposal — Inspections, Ordinances, and Enforcement Measures**				
	Report amendments in Year 4.				
	Year 4 ONLY: Attach a report on amendments to applicable legal authority	☐			

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Part III.A.7.c	**Illicit Discharges and Improper Disposal — Investigation of Suspected Illicit Discharges and/or Improper Disposal**				
	Report on the proactive inspection program, including the number of inspections conducted by the permittee, the number of illicit activities found, and the number and type of enforcement actions taken.				
	Proactive inspections for suspected illicit discharges	200	S:/Monitoring Report	IPP Program	
	Illicit discharges found during a proactive inspection	2	S:/Monitoring Report	IPP Program	Letter Sent
	NOV/WL/citation/fines issued for illicit discharges found during proactive inspection	0			
	Report on the reactive investigation program as it relates to responding to reports of suspected illicit discharges, including the number of reports received, the number of investigations conducted, the number of illicit activities found, and the number and type of enforcement actions taken.				
	Reports of suspected illicit discharges received	2	Report	IPP Program	Notified DOH & DEP
	Reactive investigations of reports of suspected illicit discharges etc.	2			
	Illicit discharges etc. found during reactive investigation	2			
	NOV/WL/citation/fines issued for illicit discharges etc. found during reactive investigation	0			
	Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training) within the reporting year.				
	Personnel trained	2	Sign-In Sheet	PBC Steering Committee	March 19, 2019
	Contractors trained	0			None Used
Part III.A.7.d	**Illicit Discharges and Improper Disposal — Spill Prevention and Response**				
	Report on the spill prevention and response activities, including the number of spills addressed.				
	Hazardous and non-hazardous material spills responded to	2	Email	Maintenance IPP	
	Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training) within the reporting year.				
	Personnel trained	0			One certified staff's due for renewal and others have retired.
	Contractors trained	0			None Used
Part III.A.7.e	**Illicit Discharges and Improper Disposal — Public Reporting**				
	Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee's jurisdiction to encourage the public reporting of suspected illicit discharges and improper disposal of materials, including the type and number of activities conducted, the type and number of materials distributed, and the number of Web site visits (if applicable).				
	Public Education and Outreach Program	The public outreach and education plan is carried out as a joint effort by			

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		the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.			
	Brochures/Flyers/Fact sheets distributed				
	Neighborhood presentations: Number conducted				
	Neighborhood presentations: Number of participants				
	Newspapers & newsletters: Number of articles/notices published				
	Newsletters: Number of newsletters distributed				
	Public displays (e.g., kiosks, storyboards, posters, etc.)				
	Radio or television Public Service Announcements (PSAs)				
	School presentations: Number conducted				
	School presentations: Number of participants				
	Seminars/Workshops: Number conducted				
	Seminars/Workshops: Number of participants				
	Special events: Number conducted				
	Special events: Number of participants				
	Number of visitors to stormwater-related pages				
Part III.A.7.f	**Illicit Discharges and Improper Disposal — Oils, Toxics, and Household Hazardous Waste Control**				
	Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee's jurisdiction to encourage the proper use and disposal of oils, toxics, and household hazardous waste, including the type and number of activities conducted, the type and number of materials distributed, the amount of waste collected / recycled / properly disposed, and the number of Web site visits (if applicable).				
	Public Education and Outreach Program	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.			
	Brochures/Flyers/Fact sheets distributed				
	Neighborhood presentations: Number conducted				
	Neighborhood presentations: Number of participants				
	Newspapers & newsletters: Number of articles/notices published				
	Newsletters: Number of newsletters distributed				
	Public displays (e.g., kiosks, storyboards, posters, etc.)				
	Radio or television Public Service Announcements (PSAs)				
	School presentations: Number conducted				
	School presentations: Number of participants				
	Seminars/Workshops: Number conducted				
	Seminars/Workshops: Number of participants				
	Special events: Number conducted				
	Special events: Number of participants				
	Storm sewer inlets newly marked/replaced				

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	Number of visitors to stormwater-related pages				
Part III.A.7.g	**Illicit Discharges and Improper Disposal — Limitation of Sanitary Sewer Seepage**				
	Report on the type and number of activities undertaken to reduce or eliminate SSOs and inflow/ infiltration, the number of SSOs or inflow / infiltration incidents found and the number resolved, and the name of the owner of the sanitary sewer system within the permittee's jurisdiction. Report only the SSOs and inflow / infiltration incidents into the MS4.				
	Owner of the sanitary sewer system	City of Delray Beach			
	Activity to reduce/eliminate SSOs and I&I: (description)	**Cleaning by Vac-Con Truck & Pipe Lining Program**	Monthly Report	Public Works	Monthly Main cleaning by Vac-Con truck
	SSO incidents discovered	11	Sewer Report Folder	IPP Program	Report to DEP, DOH, State Warning Report
	SSO incidents resolved	11	Sewer Report Folder	IPP Program	Report to DEP, DOH, State Warning Report
	Inflow / infiltration incidents discovered	0	N/A	N/A	N/A
	Inflow / infiltration incidents resolved	0	N/A	N/A	N/A
Part III.A.7 Summary	For activities required by Part III.A.7: Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Comprehensive proactive program with dedicated staff.				
	Limitations: No weakness identified.				
	SWMP Revisions implemented to address limitations: None				
Part III.A.8.a	**Industrial and High-Risk Runoff — Identification of Priorities and Procedures for Inspections**				
	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. Report on the high-risk facilities inspection program, including the number of inspections conducted and the number and type of enforcement actions taken.				

Type of Facility	**Number of Facilities**	**Number of Inspections**	**Enforcement Actions**			
Operating municipal landfills	0					
Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities	1	1	0	IPP Program	Utilities	SWA
EPCRA Title III, Section 313 facilities (TRI)	0	0	0			

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	Facilities determined as high risk by the permittee	5	5	No	IPP Program Inspection and Sampled every year	Utilities	DEP Permitted Facilities
Part III.A.8.b	**Industrial and High-Risk Runoff — Monitoring for High Risk Industries**						
	Report the number of high risk facilities sampled.						
	High risk facilities sampled		3		IPP Program	Utilities	Other 2 high risk facilities are zero discharge and not sampled
Part III.A.8 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.						
	Strengths: Comprehensive proactive program with dedicated staff.						
	Limitations: No weakness identified.						
	SWMP Revisions implemented to address limitations: None						
Part III.A.9.a	**Construction Site Runoff — Site Planning and Non-Structural and Structural Best Management Practices**						
	Report the number of permittee and private pre-construction site plans reviewed for stormwater, erosion, and sedimentation controls, and the number approved.						
	PERMITTEE SITES: Construction site plans reviewed		10		Monthly Report	Public Works/ Engineering Dept.	
	PERMITTEE SITES: Construction site plans approved		5		Monthly Report	Public Works/ Engineering Dept.	
	PRIVATE SITES: Construction site plans reviewed		146		Monthly Report	Bldg. Department	
	PRIVATE SITES: Construction site plans approved		128		Monthly Report	Bldg. Department	
	Report the number of development permit applicants notified of the ERP and CGP, and the number of applicants who confirmed ERP and CGP coverage.						
	Notified of ERP stormwater permit requirements		138		TAC Reviews	Bldg. Dept./ Engineering	
	Confirmed ERP coverage		138		TAC Reviews	Bldg. Dept./ Engineering	
	Notified of CGP stormwater permit requirements		138		NOI – CGP	Bldg. Dept	
	Confirmed CGP coverage		138		NOI – CGP	Bldg. Dept	
Part III.A.9.b	**Construction Site Runoff — Inspection and Enforcement**						
	Report on the inspection program for privately-operated and permittee-operated 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						

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**
	enforcement actions / referrals taken.				
	PERMITTEE SITES: Active construction sites	10	Monthly Report	Public Works/ Engineering Dept.	
	PERMITTEE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	543	Daily Reports	Public Works/ Engineering Dept.	
	PERMITTEE SITES: Percentage of active construction sites inspected	100	Monthly Report	Public Works/ Engineering Dept.	
	PRIVATE SITES: Active construction sites	128	Monthly Report	Public Works/ Engineering Dept.	
	PRIVATE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	4580	Monthly Report	Public Works/ Engineering Dept.	
	PRIVATE SITES: Percentage of active construction sites inspected	100	Monthly Report	Public Works/ Engineering Dept.	
	Enforcement Action	0	Monthly Report	Public Works/ Engineering Dept.	
Part III.A.9.c	**Construction Site Runoff — Site Operator Training**				
	Report the type of training activities, the number of inspectors, site plan reviewers and site operators trained (both in-house and outside training).				
		DEP Certification	**Annual Training**		
	Permittee construction site inspectors	2	2	Certification	PBC Steering Committee	Sediment & Erosion Control (Refresher Training)
	Permittee construction site plan reviewers		2	Sign-In Sheet	PBC Steering Committee	
	Permittee construction site operators		0			Contracted
Part III.A.9 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Comprehensive proactive program with dedicated review and inspection staff.				
	Limitations: No weakness identified				
	SWMP revisions implemented to address limitations: None				

SECTION VIII. 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.**
	N/A	
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)**
	N/A	

SECTION IX. TMDL Status Report

A. YEAR 1 Provide a table summarizing the status of the TMDL process. Include a list of prioritized TMDLs and their monitoring and implementation schedule; and include the Identification number of the outfall prioritized for TMDL monitoring.

WBID Number	Segment/ Waterbody/ Basin	Pollutant of Concern	TMDL DEP / EPA	Percent Reduction (WLA)	Priority Rank	Priority Outfall	Monitoring Summary / BPCP Due Date	Supplemental SWMP Due Date
WBIC 3262A	Lake Ida	TN, TP	☐ / ☒	20% TN 45% TP	1	None	Attached	(*Year 4 AR; N/A if BPCP*)
			☐ / ☐					
			☐ / ☐					

B. YEAR 3 and annually thereafter, provide a summary of the estimated load reductions that have occurred for the pollutant(s) of concern being discharged from the MS4 to the TMDL water body during the reporting period and cumulatively since the date the Supplemental SWMP was implemented.

Year 3: Submit a Monitoring data summary or BPCP (if applicable).

Year 4: Submit a Supplemental SWMP (if applicable).

WBID Number	Pollutant of Concern	Monitoring Summary / BPCP Submitted	Supplemental SWMP Submitted	Projected load reductions OR Actual load reductions to date
WBIC 3262A	TN, TP	(*Year 3 AR*) Attached	(*Year 4 AR; N/A if BPCP*)	6% Based on Public Education Programs

C. Provide a brief statement as to the status of TMDL implementation according to Part VIII.B of the permit (e.g. status of monitoring to validate WLA):

Monitoring completed and Summary Report is attached.

MS4
LAKE IDA TMDL STATUS REPORT
CYCLE 4, YEAR 3

February 2020

Introduction

The Palm Beach County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. FLS000018-004 requires that the cities of Boynton Beach and Delray Beach submitted a Targeted Water Quality Monitoring Plan for the Lake Ida with Water Boundary Identification (WBID) # 3262A. The Cities received approval for their proposed monitoring plan from the Florida Department of Environmental Protection (Department or FDEP) on January 19, 2018. The MS4 "Annual Report Form" (in Section IX – C) requires the permittees to report on the status of Total Maximum Daily Loads (TMDL) implementation according to Part VIII.B of the permit (e.g. status of monitoring to validate Waste Load Allocation - WLA). This report intends to comply with the permit requirement by presenting the analysis of the data collected over a two-year period.

Total Maximum Daily Load (TMDL) Program

A small portion of the cities discharge to Lake Ida. Lake Ida is a water body with an established United States Environmental Protection Agency (EPA) nutrient TMDL. A portion of WBID 362A receives stormwater discharges from four (4) MS4 systems and other urban development within unincorporated Palm Beach County (Table 1). The four (4) MS4s discharging into Lake Ida directly are: the City of Boynton Beach, the City of Delray Beach, Palm Beach County and Florida Department of Transportation (FDOT).

Table 1: Water Boundary Identification - WBID 3262A[1]

WBID	Segment Name	Basin	Constituent	TMDL	Percent Reduction	Date	MS4's	Agency
3262A	Lake Ida	Lake Worth Lagoon	Nutrients	TN=0.857 mg/l TP=0.062 mg/l	20 45	11/9/12	Boynton Beach, Delray, FDOT, PBC	EPA

Boynton Beach and Delray Beach have prioritized EPA's Lake Eden/Ida (Lake Ida) nutrient TMDL for more detailed assessment of the lakes' pollutant loading, identification of pollutant sources and possible restoration opportunities within the contributing watershed. Both permittees, as well as Palm Beach County and Florida Department of Transportation, actively participated in the Watershed Management Plan for the Boynton Inlet Contributing Area sponsored by the National Oceanic and Atmospheric Administration (NOAA)[2]. As part of this plan, the Lake Ida contributing area, sub-watershed "I", was selected for a more detailed assessment (Figure 1). Sub-watershed "I" encompasses approximately 18.1 square miles (or 11,580 acres including the Lake Ida 147 acres). Of these four (4) MS4's, the contributing areas from the Cities of Boynton Beach and Delray Beach make up only 10.1% of the total contributing sub-watershed "I" discharging into

the Lake (Table 2). The vast majority of stormwater runoff received by this lake (up to 89.9%) comes from non-point sources of private residential developments, golf courses, and agricultural land permitted by South Florida Water Management District (SFWMD) and conveyed by the Lake Worth Drainage District's (LWDDs) drainage network.

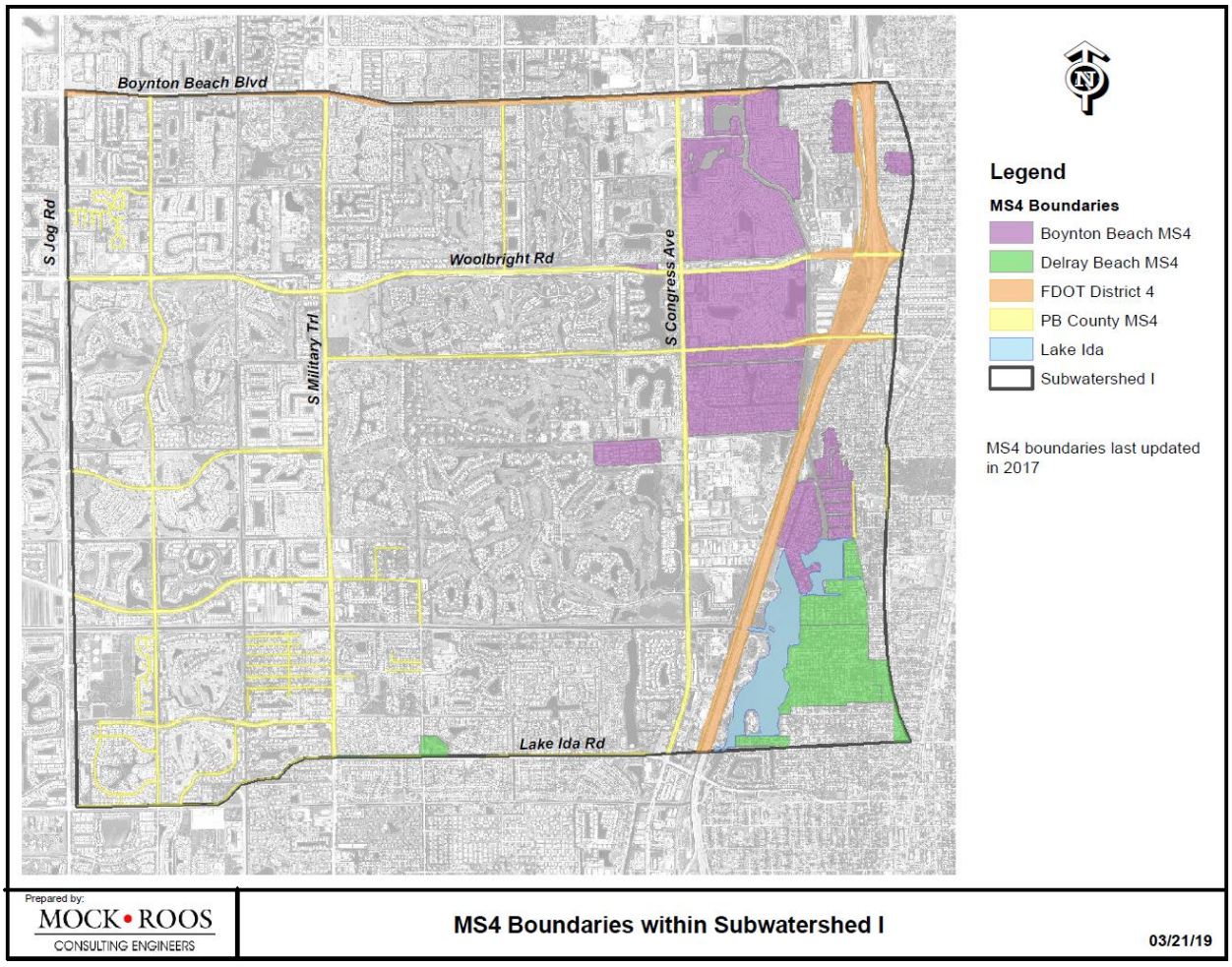


Figure 1: MS4 Areas within Sub-watershed 'I'[2]
NOAA. Boynton Inlet Contributing Area Watershed Management Plan. [2]

Many of the elements of NOAA's study and report addressed the MS4 permit requirements for Lake Ida's TMDL compliance, including: estimating current annual pollutant loading, identifying major sources of pollutants of concern, water quality monitoring, field assessments, stakeholder meetings and potential restoration opportunities. The Watershed Management Plan was completed in June 2018[2].

Both Boynton Beach and Delray Beach contribute small amounts of Nitrogen and Phosphorus loading into Lake Ida, approximately 6% of the entire sub-watershed "I" loadings. (Refer to Table 2). Most of Boynton Beach's outfalls to Lake Ida are smaller than 18-inch in diameter and serve a

one block residential area. Delray Beach has two 36-inch outfall pipes, each serving about six blocks of residential area. Consequently, it was not reasonable, cost effective, nor beneficial to conduct storm event monitoring for these MS4s. Therefore, a watershed management plan with a target water quality-monitoring plan was more appropriate for Lake Ida.

Table 2: Total Nitrogen (TN) and Total Phosphorus (TP) Loads within Sub-watershed 'I' [2]

MS4 Area Within Sub-watershed I	*TN Load (lb/yr)*	*TP Load (lb/yr)*	*Area (Acres)*
Boynton Beach MS4	3,396	225	910
Delray Beach MS4	648	93	254
FDOT District IV	2,799	340	319
Palm Beach County	3,487	392	389
ALL MS4	**10,330**	**1,050**	
Private Development	49.756	4,129	9,543
ALL Sub-watershed 'I'	60,086	5,179	11,562*
ALL MS4 (as % of Sub-watershed "I")	**17.2%**	**20.3%**	
ALL MS4 TMDL Target Reduction	**2,066**	**473**	
Private Development Reduction TMDL Target Load	**9,951**	**1,858**	
Total Target Reduction Load	**12,017**	**2,331**	

**Lake Ida = 147 acres*
NOAA. Boynton Inlet Contributing Area Watershed Management Plan. [2]

Boynton Beach and Delray Beach's Nitrogen and Phosphorus loading into Lake Ida could be considered minimal when compared to the private development areas that are contributing and suggests that:

1. If both Boynton Beach and Delray Beach MS4 areas, met their targeted nutrient reduction goals, Lake IDA waterbody would still be impaired.
2. If both Boynton Beach and Delray Beach MS4 area, reduced their nutrient loading to zero, the water body would still be impaired.
3. A cooperative initative by Florida Department of Environmental Protection (FDEP), SFWMD, FDOT, County, local drainage districts and municipal governments is needed to reduce nutrient loadings from the private developments.

The Cities of Boynton Beach and Delray Beach implemented a two (2) year target water quality-monitoring plan with the objective of establishing ambient water quality conditions in Lake Ida as stipulated in the joint Water Quality Monitoring Plan for Lake Ida, approved by FDEP on January 19, 2018.

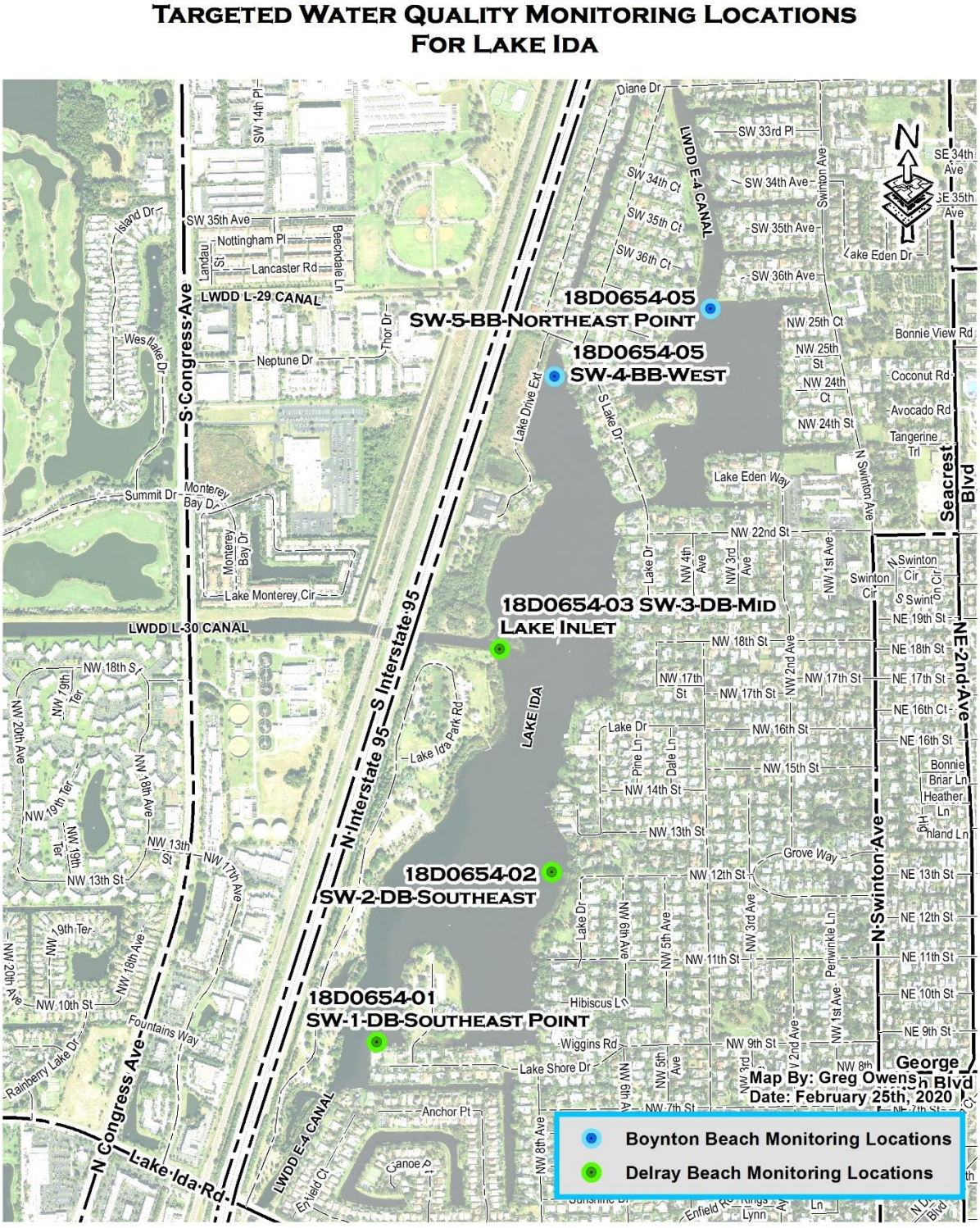


Figure 2: Monitoring Locations

The **Monitoring Plan** included the monitoring locations, methods of monitoring at each location, monitoring frequency, and a narrative detailing the monitoring plan's ability to evaluate changes in stormwater pollutant loadings and water body's health over time.

- The five (5) Monitoring Locations are depicted on Figure 2. (two (2) in Boynton Beach and three (3) in Delray Beach).
- Method of Monitoring was **Grab Samples.**
- Monitoring Frequency was **Quarterly** collected during the years of 2018 and 2019.
- Monitoring Parameters included total phosphorous **(TP),** total nitrogen **(TN), Chlorophyll A** and physical parameters such as **temperature, pH, conductivity** and **dissolved oxygen** (DO).

Sampling Analysis: The Cities of Boynton Beach and Delray Beach contracted the 2018 and 2019 sample collection and lab analysis with Florida Spectrum - Environmental Services. Detailed analysis results and graphs are included in Appendixes A and B.

The average observed values in Lake Ida for the years from 2001 to 2008 are 1.167 mg/L for TN and 0.096 mg/L for TP (Refer to tables 5.9 and 5.10 in page 39 of EPA TMDL report[1]).

Chlorophyll-a target of 20 ug/l was used to derive the in-lake target concentrations for TN and TP and required reduction percentages. This is described in page 46 of the EPA TMDL report[1].

A review of the analysis from the two-year's data collected at the five (5) monitoring locations shows that the water body is not meeting the EPA TMDL in lake target concentrations for TN and TP. Chlorophyll-a water quality criteria is being met. (refer to Table 3)

Table 3: Analysis of Total Nitrogen (TN) and Total Phosphorus (TP) Loads within Lake Ida

ANALYSIS RESULTS	**TMDL[1] Target**	**TMDL[1] 2001-2008**	**Cities Monitoring 2018-2019**
Chlorophyll-a (ug/L)	20	N/A	8.165
Total Nitrogen (mg/L)	0.857	1.167	0.925
Total Phosphorus (mg/L)	0.062	0.096	0.101

1. The observed average TN during the Cities 2018-19 monitoring of **0.925** mg/L, shows a reduction compared to historical TN concentration of 1.167 mg/L. [1]

2. The observed average TP during the Cities 2018-19 monitoring of **0.101** mg/L, shows an increase compared to historical TP concentration of 0.096 mg/L. [1]

3. Site SW3-DB Mid Lake Inlet (refer to Figure 2), located at the east end of the LWDD L-30 Canal emerges as a hot spot for Phosphorous with a Mean TP value of 0.123 mg/L for the eight (8) 2018-19 quarterly measurements (refer to Figure 5 in Appendix B). This canal conveys the

majority of the stormwater runoff discharging into the Lake Ida from non-point sources of private residential developments, golf courses, and agricultural land permitted by SFWMD and conveyed by the LWDD drainage network.

4. If the two-year 2018-19 monitoring quarterly phosphorous data collected at SW3-DB Mid Lake Inlet is removed from this analysis, then the Mean TP value for the remaining four (4) stations reduces by 6.3% from 0.101 to **0.095** mg/L. This new value represents a reduction compared to the average observed TP concentrations of 0.096 mg/L in Lake Ida during the years from 2001 to 2008[1].

Future Efforts

The Cities are reviewing possible load reduction strategies as provided in NOAA's Boynton Inlet Contributing Area Watershed Management Plan[2] to meet the TMDL reduction targets for TN (20%) and TP (45%) for both the City of Boynton Beach and City of Delray Beach MS4. Per NOAA's[2] 2018 report, reduction of fertilizer usage is the most efficient and cost effective best management strategy. As such, Boynton Beach and Delray Beach amended in 2019 its Land Development Regulations to include a Florida Friendly landscaping principles. The adoption of the Florida Friendly Fertilizer Ordinance and public education activities will be part of the supplemental stormwater management strategies to be provided in the Year 4 Annual Report.

FDEP Assessment group is in the process of re-evaluating the nutrient TMDL for Lake Ida. The projected schedule for a draft report and adoption is in 2021. At this time, the impact on the exiting EPA Lake Ida TMDL is unknown.

Since the MS4s contributions to nutrients in Lake Ida is relatively small in comparison to the loading from the private sector, any effective nutrient restoration program to achieve the required nutrient reduction goals for Lake Ida will entail a comprehensive coordinated program. That program will involve all stakeholders including FDEP, SFWMD, LWDD, MS4s (Boynton Beach, Delray Beach, Palm Beach County and Florida Department of Transportation), and private developments. The mechanism for conducting such a program is a Basin Management Action Plan (BMAP) initiated and coordinated by the Florida Department of Environmental Protection assessment group.

References:

1. US EPA Region 4, Final Total Maximum Daily Load (TMDL) for Nutrients in Lake Ida (WBID 3262A). November 2012. http://www.pbco-npdes.org/pdf/tmdlReports/3262a_TMDL.pdf

2. Horsley Witten Group, Inc, Boynton Inlet Contributing Area Watershed Management Plan. June, 2018. Prepared for National Oceanic and Atmospheric Administration.

APENDIX A

Table 4: Summary of all locations – This table represent the mean of all five locations.

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	11.000	27.900	11.080	1.860	6.940	4.200	1.800	0.540	8.165
Total Nitrogen (mg/L)	0.857 mg/l	0.891	0.845	0.733	1.003	0.751	1.312	1.088	0.776	0.925
Phosphorus, Total (mg/L)	0.062 mg/l	0.080	0.106	0.129	0.060	0.081	0.105	0.126	0.119	0.101
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		503.200	433.400	537.000	407.600	456.800	496.000	521.600	401.600	469.650
Dissolved Oxygen (mg/L)		6.840	4.748	7.158	7.482	5.904	5.974	5.710	5.606	6.178
Dissolved Oxygen (% Saturation)		83.820	62.620	96.600	82.040	71.160	80.820	76.892	67.850	77.725
pH (pH Units)		7.780	7.554	7.846	7.442	7.324	7.790	7.890	7.634	7.658
Temperature (°C)		25.840	27.860	31.920	19.660	25.280	32.060	30.200	22.440	26.908

* Annual in-lake TMDL target concentrations

The following five tables depict the measured data provided by Florida Spectrum - Environmental Services for each of the five-monitoring locations.

Table 5: Delray Beach - SW-1-DB-Southern Point

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	7.100	41.800	4.000	0.000	12.500	0.000	1.000	0.000	8.300
Total Nitrogen (mg/L)	0.857 mg/l	0.841	0.949	0.641	0.962	0.798	1.400	1.390	0.891	0.984
Phosphorus, Total (mg/L)	0.062 mg/l	0.078	0.121	0.110	0.047	0.075	0.082	0.119	0.118	0.094
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		495.000	436.000	793.000	407.000	479.000	479.000	510.000	404.000	500.375
Dissolved Oxygen (mg/L)		6.730	4.660	7.460	7.500	5.570	6.220	5.150	5.340	6.079
Dissolved Oxygen (% Saturation)		83.400	59.000	101.000	87.500	67.200	84.000	71.320	64.630	77.256
pH (pH Units)		7.710	7.610	7.680	7.140	7.200	7.560	8.070	7.670	7.580
Temperature (°C)		26.500	28.100	32.500	19.700	25.200	31.900	30.400	22.900	27.150

* Annual in-lake TMDL target concentrations

Note: Chlorophyll-a (ug/L) values of Zero (0) correspond to lab reporting ND

CITY OF DELRAY BEACH

MS4 STORMWATER MANAGEMENT PROGRAM (SWMP) ASSESSMENT PROGRAM

ANNUAL RESULTS REPORT

CYCLE 4, YEAR 3

March 2020

Contents

1. City of Delray Beach MS4 Assessment Report

1.1 Introduction

The Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit is part of a federal program designed to reduce stormwater pollutant discharges to receiving waters of the United States. In 1987, the United States Environmental Protection Agency (EPA) was required under Section 402 (p) of the Clean Water Act to develop the NPDES. In 1997, EPA issued the first 5-year permit (No. FLS000018) to Palm Beach County's permittees, The City of Delray Beach (City) is one of the joint permittees of this permit under an Inter-local Agreements with Northern Palm Beach County Improvement District. In 2001, the Florida Department of Environmental Protection (FDEP) received delegation from EPA for the MS4 Programs. In November 2002, FDEP issued the Cycle 2 MS4 Permit. The Cycle 3 permit was issued on March 2, 2011 and the Cycle 4 Permit was issued on September 8, 2016. This report is to document the assessment results under the permit requirements Part V-A. and B.

1.2 Goals

The City's goal is to reduce the nutrient loadings to receiving water bodies to the maximum extent possible. This report discusses the water quality monitoring program and ambient water quality trends that the City's MS4 discharges, so that the overall effectiveness of City's Stormwater Management Program (SWMP) can be assessed. Current data available, trends observed and conclusions that can be drawn from this data are summarized in this report.

2. Florida Department of Environmental Protection's Impaired Waters

2.1 Water Quality Monitoring

FDEP conducts a statewide water quality-monitoring program with the purpose of assessing Florida's rivers, lakes, springs and estuaries to determine whether they meet publicly adopted water quality standards. The data used for this monitoring program includes both theirs and others. For analysis purposes, the state has been divided into five distinct hydrologic "Basin Groups". Each basin group's water quality data is assessed every five years, The City of Delray Beach is in Basin Group No. 3. Basin No. 3's last assessment was concluded in 2016.

The goal of FDEP's water quality assessment is to update their comprehensive water quality listing system, within each Basin Group. Each Basing group is further divided into Water Body Identification Numbers (WBIDs) or assessment areas.

By reviewing the water quality data for a Water Body Identification (WBID) as compared to water quality standards found in the Chapters 62-302, 62-303, 62- 303.720, and 62-303.390 of the Florida Administrative Code (F.A.C), impaired WBIDs are added to or removed from lists. Five typical outcomes can result from the cycle review.

- A WBID stays in its *current status* listed or unlisted,
- A WBID can be added to or delisted from the *Comprehensive Study List*,
- A WBID can be added to or delisted from *Impaired Waters*,
    - A WBID can be delisted if a previously identified impairment cannot be verified or a Total Maximum Daily Load (TMDL) has been adopted.
- A TMDL development: adoption represents the maximum amount of pollutant loading that can be discharged to a water body and have its designated uses still be met.
- BMAP Development: Once a TMDL is develop, watershed stakeholders and FDEP staff develop a Basin Management Action Plan (BMAP) that specifies the activities, schedule, and funding sources that will be undertaken to restore the water body.

2.2 Lake Worth Lagoon Cycle 3 Verified List of Impairments

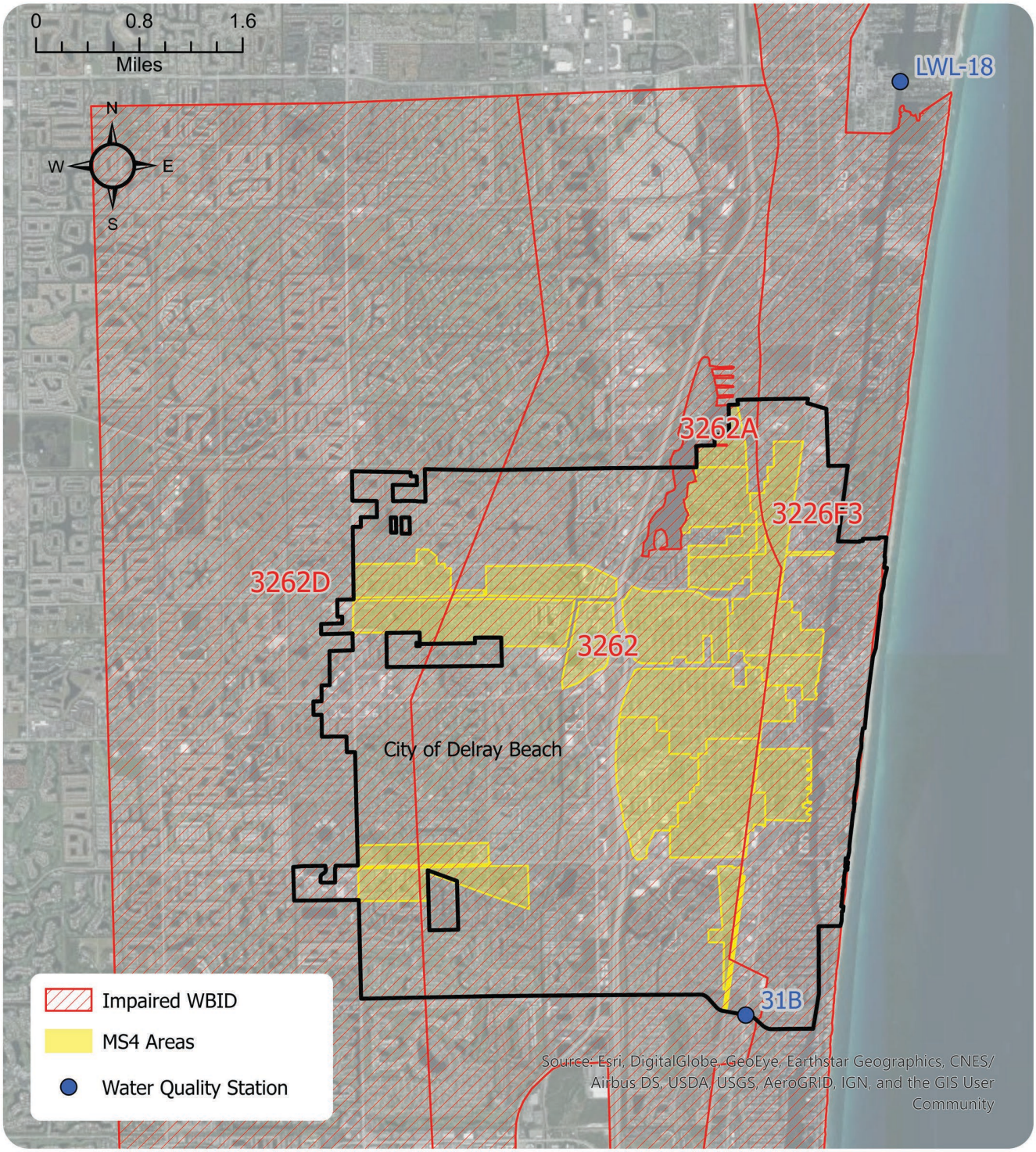
Currently the City has no WBIDs on the study list. There are four (4) WBIDs on the impaired waters list below and in Figure 1.

Table 1: Listing of Impaired Waters Within City's MS4

WBID	Planning Unit	Water Segment	Parameter Impaired
3262	C15	E-4 Canal	Nutrients (Chlorophyll-a)
3262A	C15	Lake Ida	Nutrients (Chlorophyll-a and Total Phosphorus)
3262D	C15	E-3 Canal	Nutrients (Chlorophyll-a)
3226F3	Intracoastal	ICWWS	Copper

All marina estuaries along the Palm Beach County coastline are listed as impaired for copper; however, there are no identified copper impairments for any of the inflows from the freshwater tributaries. The copper impairments do not appear to be related to stormwater runoff. One possible source of copper may be related to the marina boating actives in the water body.

Figure 1: WBID MS4 Area Water Quality Stations



2.3 Total Maximum Daily Loads Program

A small area within the City of Delray Beach discharges to Lake Ida WBID 3262A. Refer to the MS4 Lake Ida TMDL status report included with the City of Delray Beach's Cycle 4, Year 3 Annual Report.

3. Water Quality Monitoring Program

3.1 Description

The Palm Beach County NPDES MS4 water quality program includes the following components:

- ambient water quality sampling
- water quality data analyses
- trend analyses
- annual pollutant loading estimations in Year 3
- program modifications as needed

The Palm Beach County wide monitoring program includes 44 ambient water quality-monitoring sites, which were selected after coordination among the South Florida Water Management District (SFWMD), Palm Beach County Environmental Resource Management (ERM), the Loxahatchee River District (LRD), Broward County (BC), West Palm Beach (CWPB), and the Palm Beach County permittees (the group).

The monitoring sites are sampled and initially analyzed in-situ, by staff, using a multi-parameter water quality-analysis instrument. Water samples are collected, preserved and stored in accordance with Standard Operating Procedures. Final analysis of samples is conducted in laboratory settings under the direction of the entities mentioned above.

3.2 Monitoring Sites

City of Delray Beach reviewed the available water quality data from the group's water quality monitoring program sites. Figure 1 includes the two (2) selected sites (31B and LWL-18) for the City assessment program.

3.3 Water Quality Monitoring Results

The City does not have its own monitoring program and relies on the groups monitoring program for data sampling and analysis. The historical data on the selected two sites are provided to the City via the group's website and can be found in the Group's Cycle 4, Year 3 Joint Report (www.pbco-npdes.org/annualreporting).

3.4 Trend Analysis

Figures 2 through 7 Appendix A provide trend lines for the period of record for Total Nitrogen (TN), Total Phosphorus (TP), and Chlorophyll-a. A trend line provides a graphic indication if the TN, TP, and Chlorophyll-a are increasing (upward), decreasing (downward), or at a steady-state (near flat). A general summary of the trend and exceedances can be seen in Table 2 below.

TABLE 2: Summary of Trends

Watershed	Period of Record	Station	Total Nitrogen	Total Phosphorus	Chlorophyll-a
C15	2000-2019	31B	Significant Decreasing	Significant Decreasing	Increasing
ICWWS	2000-2019	LWL-18	Significant Decreasing	Decreasing	Increasing

Review of the trend graphs for the two water quality monitoring stations (C51 Basin and ICWW-S) show a decreasing trend for the primary nutrients (Total Nitrogen and Total Phosphorus). Chlorophyll-a, a surrogate for nutrients enrichments, has an increasing trend for both sites. City MS4 discharges to these two watersheds represents 7% of the contributing area. Both these watershed receive discharges from other MS4 permittees (25 %) and the private entities (68 %). Monitoring should continue to be evaluated for any changes.

4. Pollutant Loading Estimates

4.1 Description

As part of the requirements in the joint permit, the average annual pollutant loading, and event mean concentration (EMC) estimates are to be provided for six water quality parameters. The six parameters identified by the FDEP are five-day biochemical oxygen demand (BOD_5), total copper (Cu), total nitrogen (as N) (TN), total phosphorus (TP), total suspended solids (TSS), and total zinc (Zn), all in the units of (mg/L). Water Quality models provide a tool to compare the effects of pollutant loadings and varying contributing area conditions over a time interval. The permit allows the average annual pollutant loading estimates can be based on major outfalls or watersheds. Since the pollutant loading estimates for permit Cycles 1 through 3 were provided on a watershed basis, it was agreed with the FDEP that the Cycle 4 loading estimates would continue to be provided on a watershed basis.

During Year 2 of this permit cycle, the City of Delray Beach reviewed and provided updated information to the Palm Beach County MS4 permittee group for the MS4 contributing areas to each receiving water,

City limits delineation, land uses, and surface water quality Best Management Practices (BMPs).

A pollution-loading model was completed in October 2019 as a joint activity by the Palm Beach County MS4 Group "the Group". Previous cycles pollutant-loading models were completed with Watershed Management Model (WMM) developed by CDM Smith to estimate pollutant loading. WMM is a public domain model used by the Florida Department of Environmental protection (FDEP). It provides high level planning simulations of pollutant loadings on both a seasonal and annual time step. It was decided by the Group to change to a Spatially Integrated Model for Pollutant Loading Estimates (SIMPLE) model for Cycle 4 of the permit. One of the major benefits of SIMPLE is it uses a GIS platform for the input of data and output of the estimated loadings. This allows for better spatial comparison of the input parameters. SIMPLE uses the same basic method of estimating pollutant loading as WMM. SIMPLE also incorporates work done by Environmental Research and Design, Inc. (ERD) and Jones, Edmunds, and Associates Inc. in development of the GIS functionality.

Estimates of average annual pollutant loading for each watershed are based on land use, EMCs, rainfall, soil type, base flow, septic system impact and best management practices (BMPs). To maintain consistency in the comparison of Cycles 3 and 4 pollutant loadings, data from Cycle 3 was migrated from WMM to the SIMPLE model and consistent event mean concentrations and rainfall averages were used for both. Results of the SIMPLE model are contained in the Cycle 4 Year 3 Joint Report- "Summary of Average Annual Pollutant Loading Model Activities".

4.2 Delray Beach Cycle 3 and Cycle 4 Loadings

The City of Delray Beach MS4 discharges into two watersheds, the C15 and the Intracoastal Waterway South (ICWWS). The Cycle 3 and Cycle 4 pollutant loadings estimates for all six water quality parameters in the Delray Beach are shown in Table 3. Also included are loading reductions for the group's county-wide public education programs and the City's Street sweeping program. All six water quality parameters show a significant decrease in pollutant load reduction from Cycle 3 to Cycle 4.

TABLE 3: Delray Beach Pollutant Loadings (lbs/year)

Parameter	BOD_5	TSS	TP	CU	ZN	TN
C15 Cycle 3 Loads	140,855	765,668	6,095	372	1,675	42,479
ICWWS Cycle 3 Loads	11,004	67,037	472	28	131	3,129
Total Cycle 3 Loading	**151,859**	**832,705**	**6,567**	**400**	**1,806**	**45,608**
C15 Cycle 4 Loads	120,652	585,783	5,362	312	1,346	36,699
ICWWS Cycle 4 Loads	10,212	59,571	444	26	121	3,020
Total Cycle 4 Loads	**130,864**	**645,354**	**5,806**	**338**	**1,467**	**39,719**
Other Reductions:						
Public Education (6%)	7,852	38,721	348	20	88	2,383
Street Sweeping*			852			602
Total Adjusted Cycle 4 Loads	**123,012**	**606,633**	**4,606**	**318**	**1,379**	**36,734**
Percent Reduction	**19%**	**27%**	**30%**	**20%**	**24%**	**20%**

*Reported Cycle 4 YR 2 Reductions

5. Conclusions

Water quality monitoring results are encouraging as nutrient trends for TN and TP are generally downward. Pollutant loading reductions are occurring for all six water quality parameters. In 2019, the City amended its Land Development Regulations to include Florida Friendly landscaping principles. The City will continue to monitor and evaluate if additional SWMP are needed in future Assessment Reports. No additional SWMP Programs are proposed at this time.

APPENDIX A

Nutrient Water Quality Trend Graphics

Figure 2: 31B C15 TP

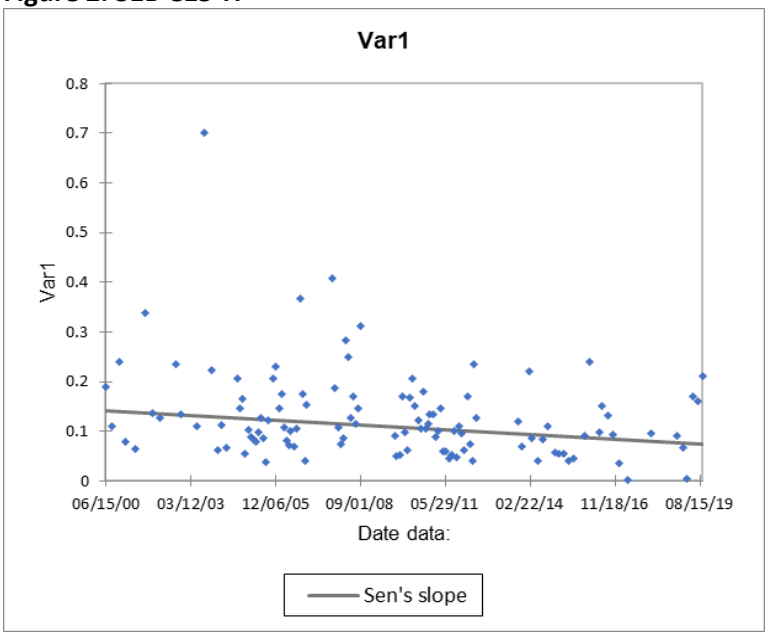


Figure 3: 31b C15 TN

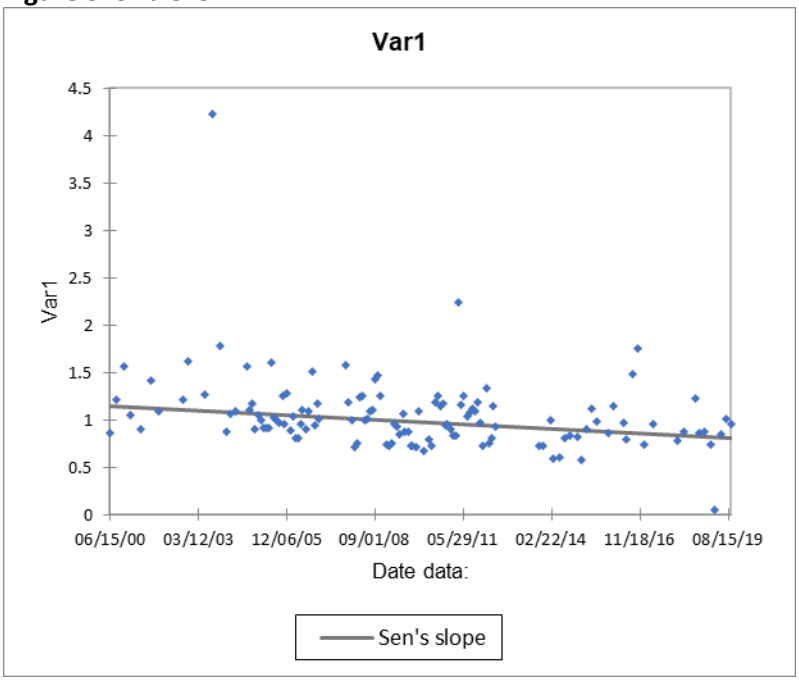


Figure 4: 31B Chlorophyll-a

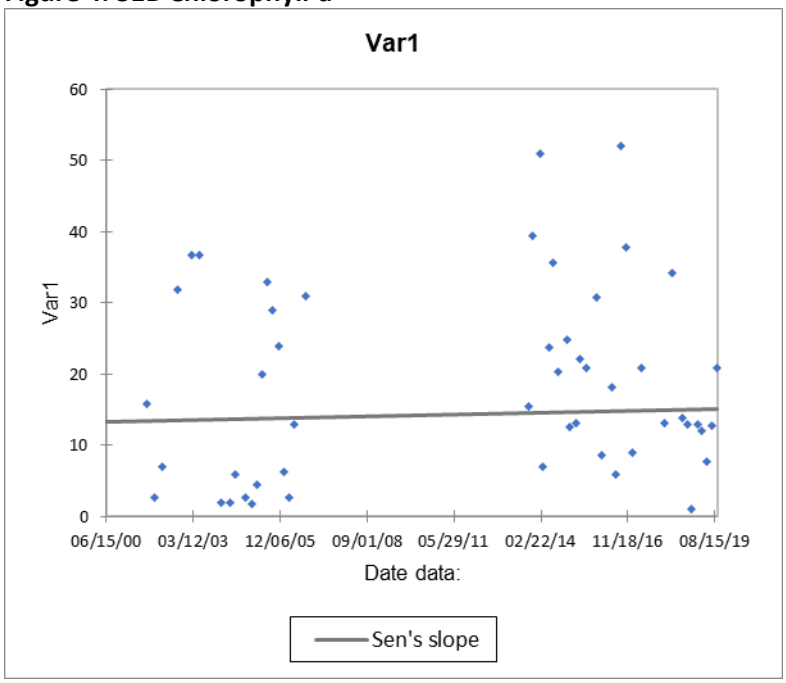


Figure 5: LWL-18 ICWWS TP

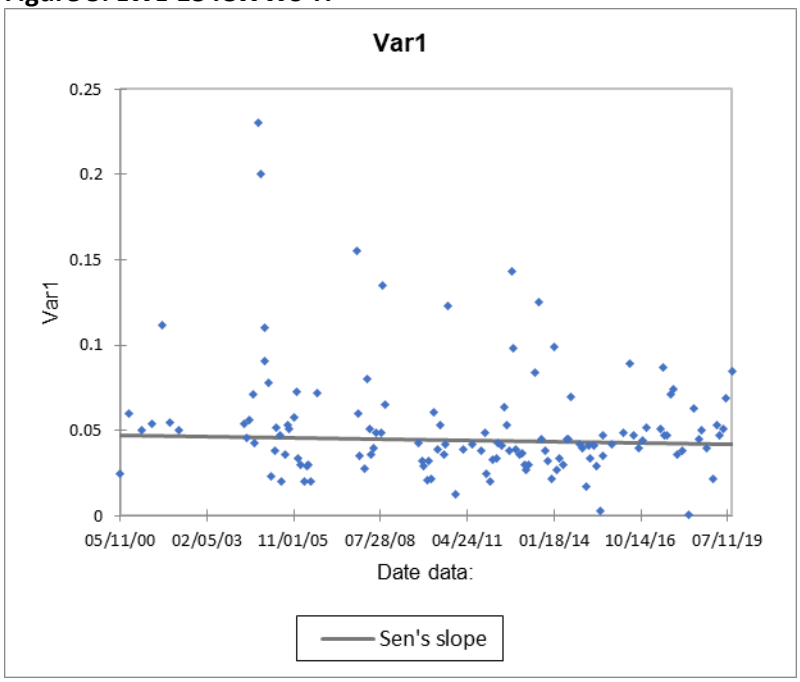


Figure 6: LWL-18 ICWWS TN

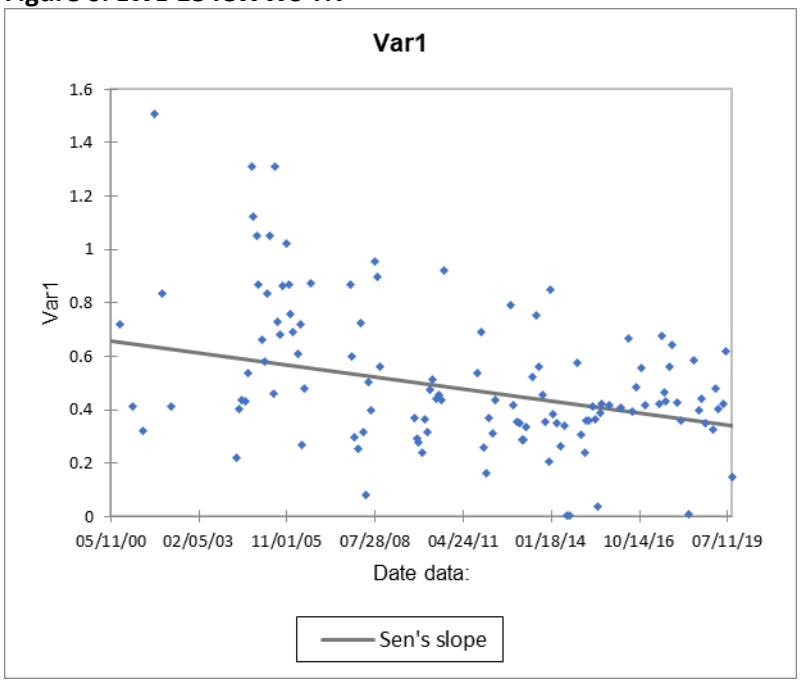


Figure 7: LWL-18 ICWWS Chlorophyll-a

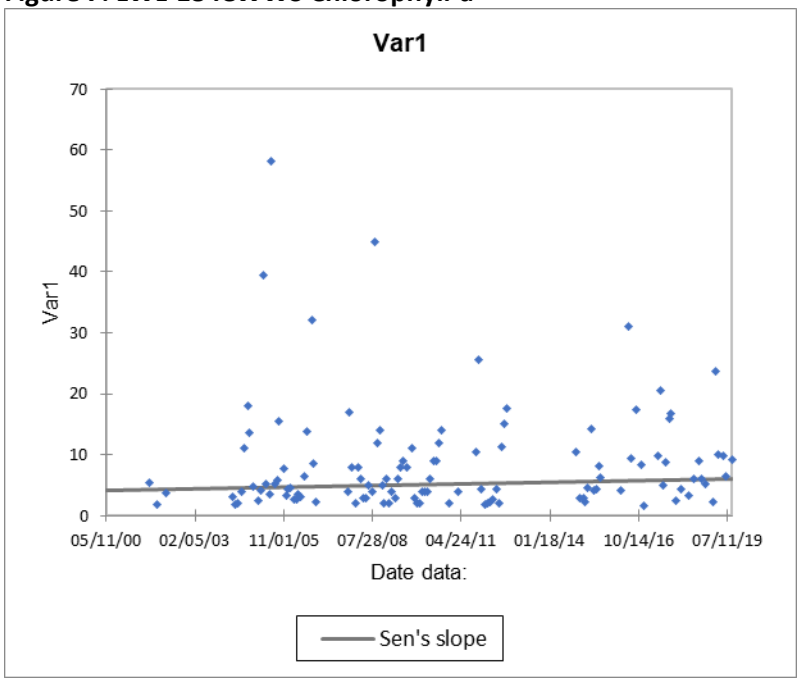


Table 6: Delray Beach - SW-2-DB- South-East Point

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	8.400	45.800	24.400	0.000	1.300	4.000	0.000	0.000	10.488
Total Nitrogen (mg/L)	0.857 mg/l	1.170	1.050	0.880	1.060	0.738	1.150	1.040	0.734	0.978
Phosphorus, Total (mg/L)	0.062 mg/l	0.088	0.124	0.120	0.062	0.084	0.060	0.134	0.114	0.098
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		503.000	438.000	438.000	407.000	455.000	478.000	511.000	401.000	453.875
Dissolved Oxygen (mg/L)		6.980	5.270	7.320	7.400	6.210	6.270	5.230	5.250	6.241
Dissolved Oxygen (% Saturation)		85.200	70.500	99.000	80.200	75.200	84.100	72.320	63.540	78.758
pH (pH Units)		7.700	7.600	7.900	7.360	7.260	8.010	8.210	7.720	7.720
Temperature (°C)		25.600	28.100	31.100	19.800	25.200	32.200	30.300	22.400	26.838

* Annual in-lake TMDL target concentrations

Note: Chlorophyll-a (ug/L) values of Zero (0) correspond to lab reporting ND

Table 7: Delray Beach - SW-3-DB- Mid Lake Inlet

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	12.900	4.800	13.300	0.000	2.700	0.000	0.000	2.700	4.550
Total Nitrogen (mg/L)	0.857 mg/l	0.476	0.980	0.613	1.160	0.759	1.140	1.050	0.734	0.864
Phosphorus, Total (mg/L)	0.062 mg/l	0.088	0.080	0.155	0.071	0.102	0.221	0.150	0.118	0.123
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		483.000	426.000	478.000	403.000	440.000	514.000	550.000	385.000	459.875
Dissolved Oxygen (mg/L)		6.890	4.150	6.920	7.600	6.140	4.130	6.060	5.540	5.929
Dissolved Oxygen (% Saturation)		84.400	54.700	93.000	80.800	73.700	54.000	83.170	67.050	73.853
pH (pH Units)		7.690	7.480	7.850	7.530	7.330	7.600	7.680	7.600	7.595
Temperature (°C)		25.800	27.200	32.100	19.100	25.600	31.900	29.800	22.800	26.788

* Annual in-lake TMDL target concentrations

Note: Chlorophyll-a (ug/L) values of Zero (0) correspond to lab reporting ND

Table 8: Boynton Beach - SW-4-BB- West Point

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	15.500	28.000	13.700	9.300	8.900	3.600	4.700	0.000	10.463
Total Nitrogen (mg/L)	0.857 mg/l	1.020	0.324	0.781	0.875	0.734	1.390	0.961	0.823	0.864
Phosphorus, Total (mg/L)	0.062 mg/l	0.081	0.108	0.133	0.069	0.054	0.098	0.117	0.118	0.097
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		508.000	434.000	489.000	411.000	451.000	508.000	520.000	388.000	463.625
Dissolved Oxygen (mg/L)		7.040	4.650	7.110	7.340	5.140	6.240	5.940	5.600	6.133
Dissolved Oxygen (% Saturation)		85.800	62.100	96.000	79.700	62.300	85.000	72.460	67.780	76.393
pH (pH Units)		7.900	7.520	7.880	7.580	7.370	7.810	7.800	7.610	7.684
Temperature (°C)		25.500	28.000	32.100	19.900	25.100	32.300	30.300	22.200	26.925

* Annual in-lake TMDL target concentrations

Note: Chlorophyll-a (ug/L) values of Zero (0) correspond to lab reporting ND

Table 9: Boynton Beach - SW-5-BB-North-East Point

Parameter	Target*	4/18/18	6/12/18	9/13/18	12/12/18	3/18/19	6/26/19	9/11/19	12/26/19	Mean
Wet Chemistry										
Chlorophyll-a (ug/L)	< 20 ug/l	11.100	19.100	0.000	0.000	9.300	13.400	3.300	0.000	7.025
Total Nitrogen (mg/L)	0.857 mg/l	0.946	0.922	0.749	0.959	0.728	1.480	1.000	0.697	0.935
Phosphorus, Total (mg/L)	0.062 mg/l	0.066	0.099	0.125	0.050	0.088	0.063	0.110	0.125	0.091
Field Parameter (s)										
Specific Conductance (uS/cm @ 25°C)		527.000	433.000	487.000	410.000	459.000	501.000	517.000	430.000	470.500
Dissolved Oxygen (mg/L)		6.560	5.010	6.980	7.570	6.460	7.010	6.170	6.300	6.508
Dissolved Oxygen (% Saturation)		80.300	66.800	94.000	82.000	77.400	97.000	85.190	76.250	82.368
pH (pH Units)		7.900	7.560	7.920	7.600	7.460	7.970	7.690	7.570	7.709
Temperature (°C)		25.800	27.900	31.800	19.800	25.300	32.000	30.200	21.900	26.838

* Annual in-lake TMDL target concentrations

Note: Chlorophyll-a (ug/L) values of Zero (0) correspond to lab reporting ND

APENDIX B

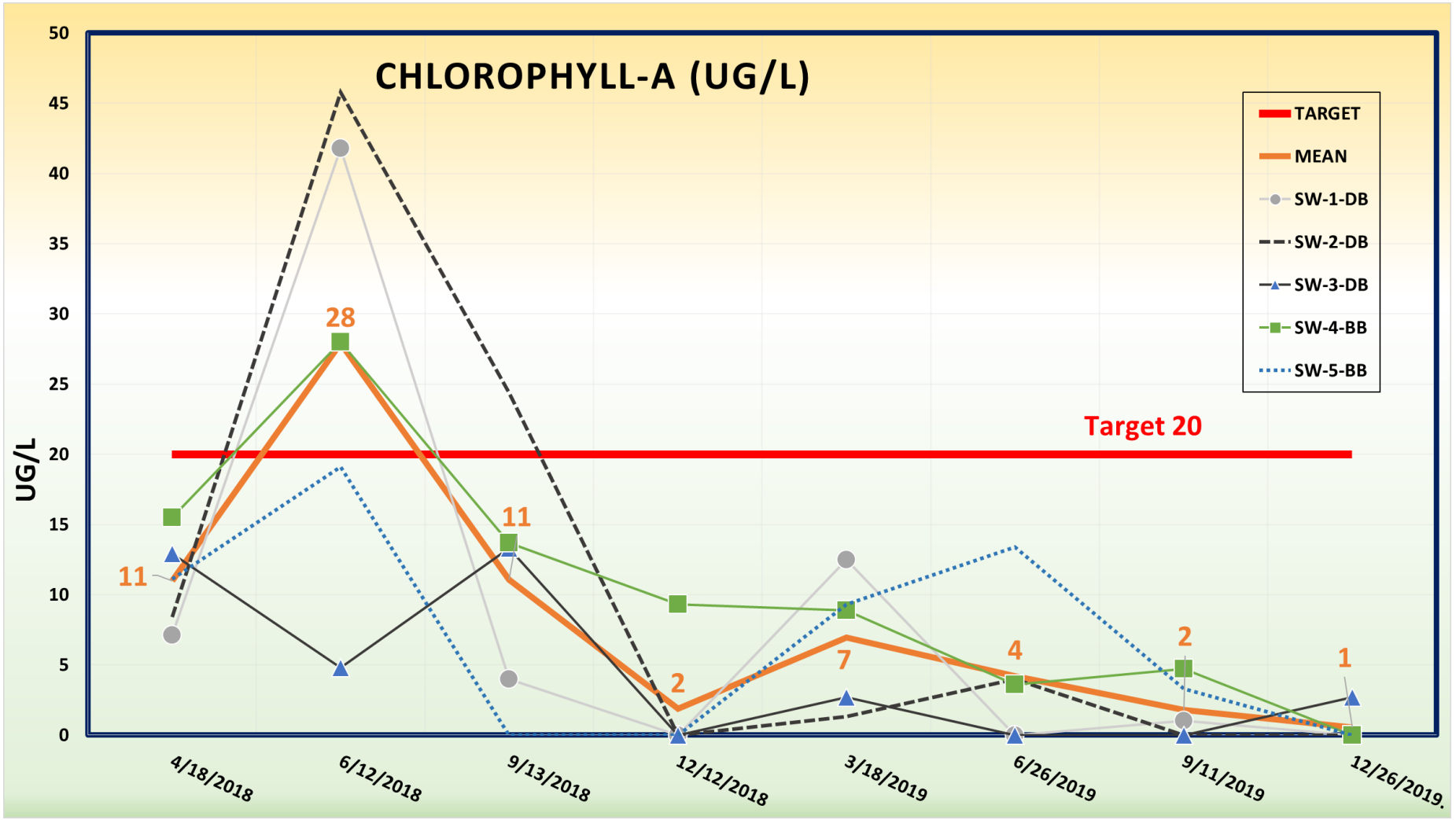


Figure 3: Chlorophyll-a

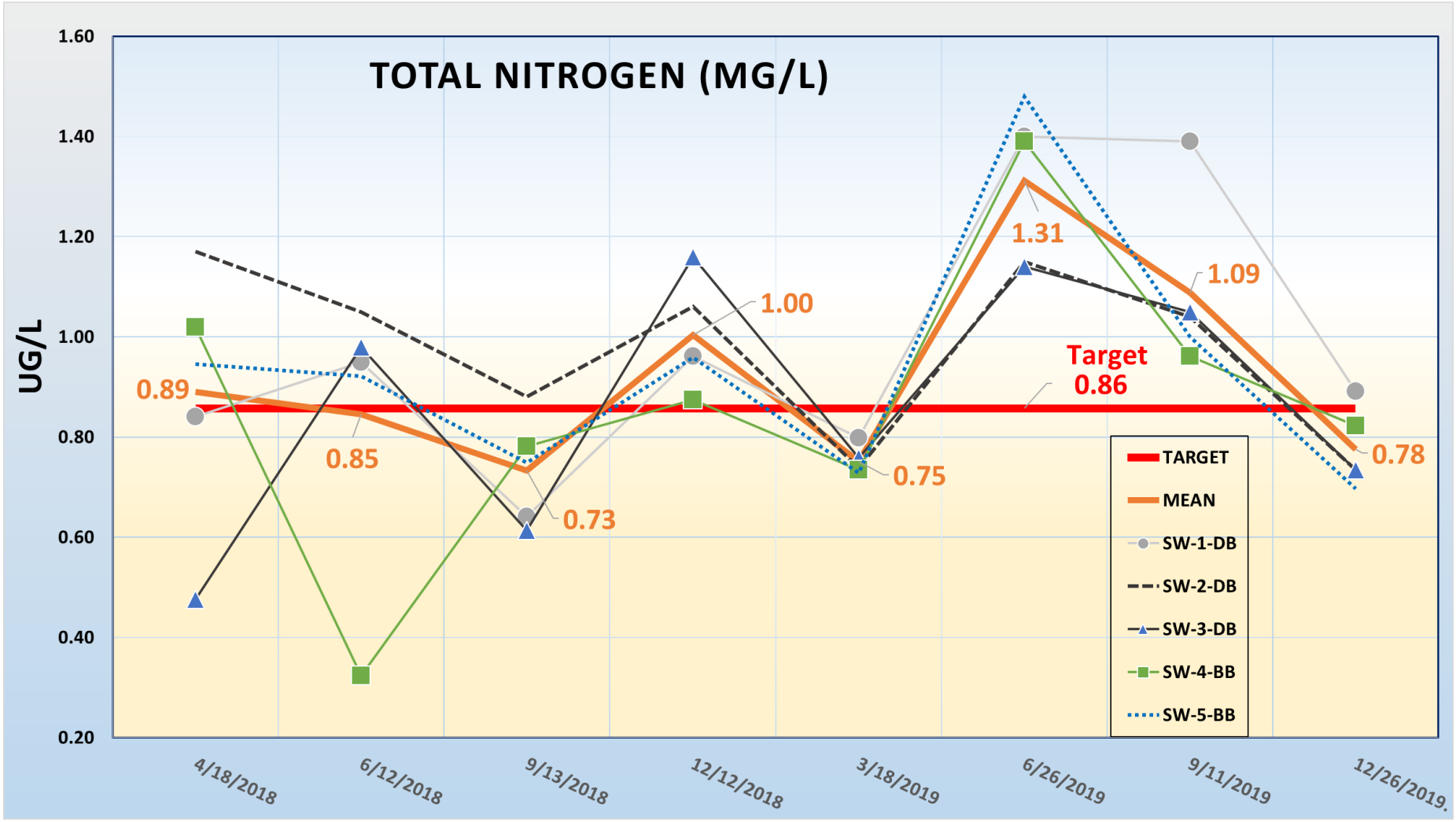


Figure 4: Nitrogen

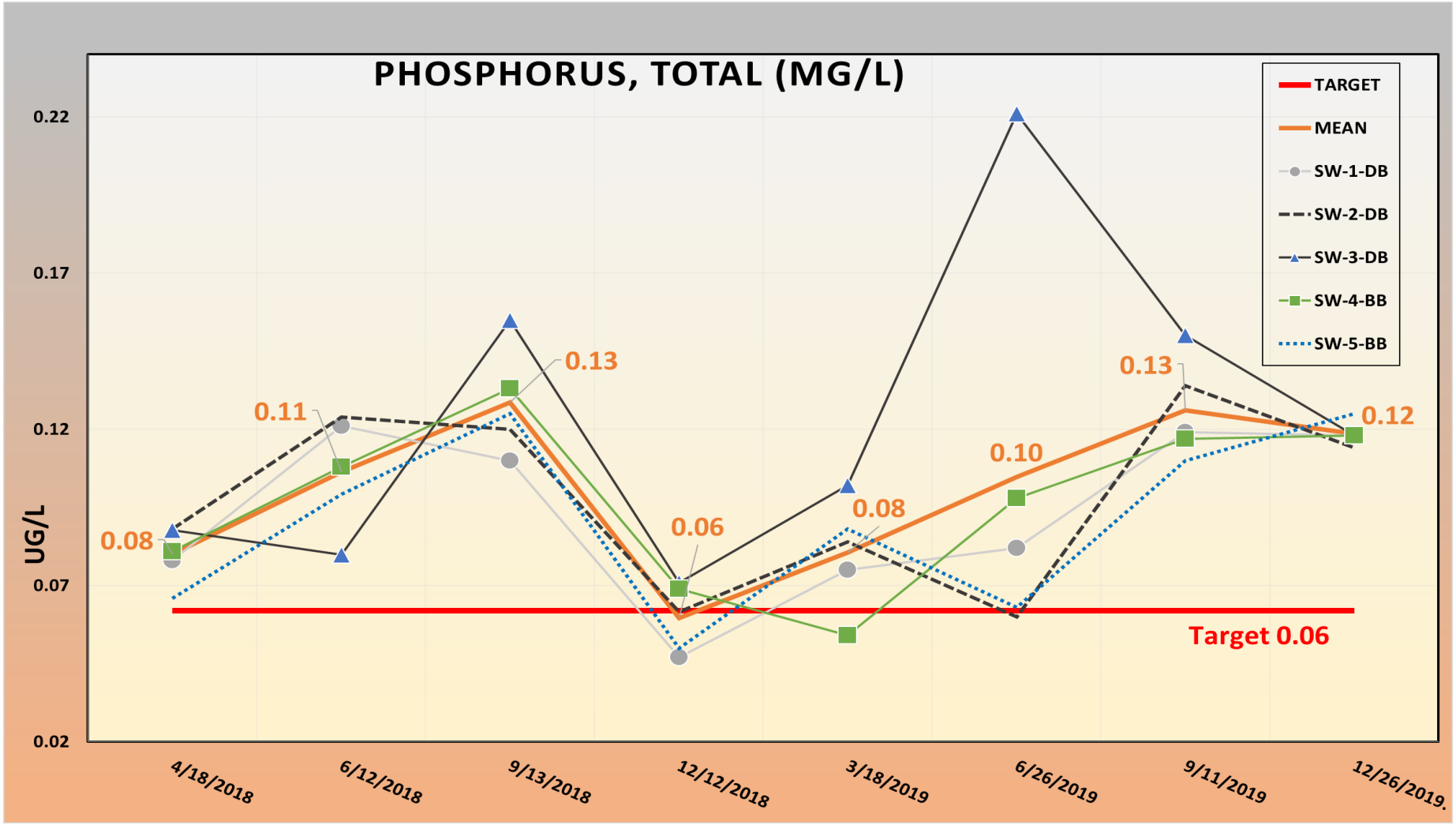


Figure 5: Phosphorous