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 Boynton 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): 10 / 2018 through 9 / 2019		
F.	Name of the Responsible Authority: Joseph Paterniti, PE		
	Title: Utility Director		
	Mailing Address: 124 East Woolbright Road		
	City: Boynton Beach	Zip Code: 33435	County: Palm Beach
	Telephone Number: 561-742-6423	Fax Number:	
	E-mail Address: paternitiJ@bbfl.us		
G.	Name of the Designated Stormwater Management Program Contact (if different from Section I.F above): Angela A. Prymas, PE		
	Title: Senior Engineer		
	Department: Utilities		
	Mailing Address: 124 East Woolbright Road		
	City: Boynton Beach	Zip Code: 33435	County: Palm Beach
	Telephone Number: 561-742-6421	Fax Number:	
	E-mail Address: Prymasa@bbfl.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.	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 submitted in September 2017 and approved on May 5, 2018.* Status: *The monitoring program is carried out jointly by the PBC permittees. See the PBC Joint Annual Report. The information relevant to the permittee's outfalls is addressed within the Annual Assessment Report documents.*
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: $1,065,597 Operations Expenses and $2,702,847 for Capital Improvements Projects (Dimick & Potter Stormwater Improvements, Seacrest Neighborhood Improvement Projects, Various Stormwater systems R&R)
B.	Total budget for the NPDES stormwater management program for the subsequent reporting year: $1,422,852 Operations Expenses and $2,650,000 for Capital Improvements Projects (Dimick & Potter, Seacrest and various Stormwater Improvements projects)
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. N/A

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	SWMP Assessment Report
☐	☒	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): Joseph Paterniti, PE

Title: Utility Director

Signature:  Date: 2 / 13 / 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	7	84	100%	294	100%	NPDES Activities October 1, 2018 – September 30 2019 Master Pond Drainage Form	Utilities Operations Stormwater and Engineering Divisions	Inspection/maintenance: water levels, littoral shelf, side slope erosion, plant vegetation, mowing, pruning, irrigation and fertilization.
	Exfiltration trench / French drains (lf)	3,500	400	12%	400	15%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Routine visually inspections and maintenance pre and post-storm events. 500-ft installation of new exfiltration system.
	Grass treatment swales (miles)	30	28.3	94%	1.6	2%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Estimated up top 28 miles visually inspected and 1.6 miles of swale restoration and re-sodding.
	Dry detention systems	9	108	100%	108	100%	NPDES Activities October 1, 2018 – September 30 2019 Master Pond Drainage Form	Utilities Operations Division Stormwater	Inspection/maintenance: water levels, littoral shelf, side slope erosion, plant vegetation, mowing, pruning, irrigation and fertilization.
	Wet detention systems	10	120	100%	120	100%	NPDES Activities October 1, 2018 – September 30 2019 Master Pond Drainage Form	Utilities Operations Division Stormwater	Inspection/maintenance: water levels, littoral shelf, side slope erosion, plant vegetation, mowing, pruning, irrigation and fertilization.
	Pollution control boxes	39	556	100%	556	100%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections & maintenance of pollution control boxes discharging to water bodies

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
									and baffles at other structures
	pump stations	3	36	100%	36	100%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Monthly Inspections and maintenance of three pump stations
	Major outfalls	11	132	100%	132	100%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance
	Weirs or other control structures	12	144	100%	144	100%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance
	pipes / culverts (miles)	22 (est.)	3.0	14%	2.8	13%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance 14% inspected for the year over 100% for 10 years.
	Canals (miles)	5.6	5.2	93%	5.2	93%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance of four canals
	Inlets / catch basins / grates	550 (est.)	200	36%	200	60%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	36% for the year over 100% for 5 years.
	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.	☐							All met.

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 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: *The Stormwater Division routinely inspect, repair, maintains its drainage system, and proactively conducts inspections before and after major storms. The City is constantly expanding the stormwater services by implementing drainage improvements projects and providing assistance with pumps and vactor truck to areas with drainage deficiencies.*				
	Limitations: *Limited stormwater staff to inspect annually the entire stormwater system.*				
	SWMP revisions implemented to address limitations: *None*				
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	6	Plan Review Procedures	Engineering, Planning & Zoning	Staff reviews
	Number of significant development projects approved	6	Plan Review Procedures	Engineering, Development, Planning & Zoning	City Commission Approvals
	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	☐			N/A
	Year 4 ONLY: Attach the follow-up report on plan implementation	☐			N/A
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 BMPs are adhered to.*				
	Limitations: *None Identified*				
	SWMP revisions implemented to address limitations: *None*				
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	0	N/A	N/A	Work performed by outside contractors
	PERMITTEE Litter Control: Estimated amount of area maintained (lf)	0	N/A	N/A	Work performed by outside contractors
	PERMITTEE Litter Control: Estimated amount of litter collected (cy)	0	N/A	N/A	Work performed by outside contractors
	CONTRACTOR Litter Control: Frequency of litter collection	Monthly	Maintenance schedule	Boynton Beach City Contractors	Outside contractor
	CONTRACTOR Litter Control: Estimated amount of area maintained (lf)	22 miles or 116,000 lf Approx.	Maintenance schedule	Boynton Beach City Contractors	Outside contractor

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**
	CONTRACTOR Litter Control: Estimated amount of litter collected (cy)	1,050 CY	Maintenance schedule	Boynton Beach City Contractors	Estimated by contractor
	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	N/A	N/A	N/A	N/A
	Trash Pick-up Events: Estimated amount of litter collected (cy)	N/A	N/A	N/A	N/A
	Adopt-A-Road: Total miles cleaned	N/A	N/A	N/A	N/A
	Adopt-A-Road: Estimated amount of litter collected (cy)	N/A	N/A	N/A	N/A
	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	Weekly			
	Total miles swept	2,140	NPDES Street Sweeping Record	Streets Public Works Department	Maintenance Records
	Estimated quantity of sweeping material collected (cy / tons)	41 cy	NPDES Street Sweeping Record	Streets Public Works Department	Maintenance Records
	Total phosphorous loadings removed (pounds)	34	Quantifying Nutrient Loads	Utilities Department	Established based on FSA spreadsheet
	Total nitrogen loadings removed (pounds)	53	Quantifying Nutrient Loads	Utilities Department	Established based on FSA spreadsheet
	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**			
	Fleet Maintenance, Public Works Complex	1	Municipal Maintenance Yard Inspection Record	Utilities Environmental Inspector	Annual Inspection
	East Water Treatment Plant	1	High Risk Facility Inspection Checklist	Utilities Environmental Inspector	Annual Inspection - One for each treatment plan
	West Water Treatment Plant	1	High Risk Facility Inspection Checklist	Utilities Environmental Inspector	Annual Inspection - One for each treatment 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.3 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: *Street sweeping and litter collection are effective and measurable activities within the program.*				
	Limitations: *Limited staff and equipment to sweep more areas. The City has multiple trash receptacles along roads, parks and beach. Public Works and Parks Departments continuously remove trash to avoid overflow and reduce pollution.*				
	SWMP revisions implemented to address limitations: *The City is considering bidding street sweeping services.*				
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	1	Utilities CIP	Utilities Department	Oak/New Palm Way
	Flood control projects completed that did <u>not</u> include stormwater treatment	0	N/A	N/A	N/A
	Stormwater retrofit projects planned/under construction	2	Utilities CIP	Utilities Department	Lakeside Gardens Central Seacrest II
	Stormwater retrofit projects completed	1	Utilities CIP	Utilities Department	Oak/New Palm Way
	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.	☐	N/A	N/A	N/A
Part III.A.4 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: *The implementation of Flood Control projects mitigate and reduce damage to roads, property and safety concerns. It also provides water quality to stormwater runoff before entering receiving water bodies.*				
	Limitations: *There are some areas in the City that have standing water in the roadways after heavy rain events, however, standing water dissipates within 2 – 48 hours depending on the rainfall amounts. The MS-4 is designed this way.*				
	SWMP revisions implemented to address limitations: *None*				

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.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**			
	Public Works Complex	1	Municipal Maintenance Yard Inspection Record	Utilities Environmental Inspector	Annual Inspection
Part III.A.5 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: *Dedicated Environmental Inspector to monitor illicit discharges, improper disposal and high risk facilities.*				
	Limitations: *None identified*				
	SWMP revisions implemented to address limitations: *None.*				
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.				
	PERSONNEL: FDACS public applicators of pesticides/herbicides	2	FDACS Certification	City Staff	Copies of certificates on file
	CONTRACTORS: FDACS commercial applicators of pesticides/ herbicides	4	FDACS Certification	Contractors	Copies of certificates on file
	PERSONNEL: Green Industry BMP Program training completed	1	BMP Program Certification	City Staff	Copies of certificates on file
	CONTRACTORS: FDACS certified / licensed applicators of fertilizer	3	FDACS Certification	Contractors	Copies of certificates on file
	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	☐ Refer to attached draft ordinance presented on January 25, 2019 to the department for comments.			
	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).				

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**
	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	3	• Water Quality Report • Flood Hazard Information insert in three languages (English, Spanish and Creole) • CRS Repetitive Loss letters	Utilities Department	43,000 reports and inserts mailed. Over 5,000 copies hand delivered and distributed at projects outreach meetings and workshops. Over 2,500 placed in City's facilities
	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: *The City has an outreach program that included activities related to the Community Rating System (CRS), Local Mitigation Strategy (LMS), TMDLs and cooperative work with the local drainage district, the County and SFWMD.*				
	Limitations: *None 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	☐			

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.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	NPDES Activities Oct 2018 – Sep 2019	Utilities Operations Division	Concurrent with inlet, catch basins and grates inspections
		203	Industrial Commercial Inspections	Utilities Environmental Inspector	Routine nonresidential establishments surveys
	Illicit discharges found during a proactive inspection	0	N/A	N/A	N/A
	NOV/WL/citation/fines issued for illicit discharges found during proactive inspection	0	N/A	N/A	N/A
	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	4	Industrial/Commercial User Inspections	Utilities Environmental Inspector	Paint residues in storm drains, resin odor due to pipe lining, sediment discharging from FDOT outfall.
	Reactive investigations of reports of suspected illicit discharges etc.	4	Industrial/Commercial User Inspections	Utilities Environmental Inspector	Illicit dumping was suspected
	Illicit discharges etc. found during reactive investigation	1	Industrial/Commercial User Inspections	Utilities Environmental Inspector	FDOT outfall – directional boring drilling mud
	NOV/WL/citation/fines issued for illicit discharges etc. found during reactive investigation	0	Utilities Department Customer Assistance Form	Utilities Environmental Inspector	Advised adjacent business owners and residents of findings and followed-up
	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	59	Attendance List	April 17 and 18, 2019 Illicit Discharge detection and elimination EXCAL Videos presented at the Utilities safety meeting.	City Staff
	Contractors trained	0	N/A	N/A	No Contractors trained
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	9	Boynton Beach Fire Rescue Incident Type	Fire Rescue	Firefighter response

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**
	responded to		Report		
	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	59 City Staff 125 Firefighters	Attendance List	April 17 and 18, 2019 Illicit Discharge EXCAL Videos presented at the Utilities safety meeting. Fire Department HazMat Training	City Staff & Firefighters
	Contractors trained	0	N/A	N/A	No Contractors trained
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 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	3	Water Quality Report, Flood Hazard Information insert in three languages (English, Spanish and Creole), CRS Repetitive Loss letters	Utilities Department	43,000 reports and inserts mailed. Over 5,000 copies hand delivered and distributed at projects outreach meetings and workshops. Over 2,500 placed in City's facilities
	Neighborhood presentations: Number conducted	1	Sign-in sheets	Utilities Department	Meeting conducted for Flood Mitigation Plan Update.
	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				

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**
	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	2	Water Quality Report and Flood Hazard Information insert in three languages (English, Spanish and Creole)	Utilities Department	43,000 reports and inserts mailed. Over 5,000 copies hand delivered and distributed at projects outreach meetings and workshops. Over 2,500 placed in City's facilities
	Neighborhood presentations: Number conducted	1	Flood Hazard Information insert Sign-in sheets	Utilities Department	Meeting conducted for Flood Mitigation Plan Update.
	Neighborhood presentations: Number of participants				
	Newspapers & newsletters: Number of articles/notices published				
	Newsletters: Number of newsletters distributed				
	Public displays (e.g., kiosks, storyboards, posters)				
	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				
	Number of visitors to stormwater-related pages				
Part III.A.7.g	**Illicit Discharges and Improper Disposal — Limitation of Sanitary Sewer Seepage**				

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**
	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 Boynton Beach Utilities Department			
	Activity to reduce/eliminate SSOs and I&I: (description)	1	Capital Improvement Projects	Utilities	12,528 LF of wastewater line cured in Place Liner
	Activity to reduce/eliminate SSOs and I&I: (description)	0	N/A	N/A	No generators or dry pumps purchased or installed during this period
	SSO incidents discovered	1	Wastewater Spillage Report-Palm Beach Co. Health Department	Operations Division	Staff response
	SSO incidents resolved	1	Wastewater Spillage Report-Palm Beach Co. Health Department	Operations Division	Staff response and repair
	Inflow / infiltration incidents discovered	60	Weekly wastewater activities report	Operations Division	Staff response
	Inflow / infiltration incidents resolved	60	Weekly wastewater activities report	Operations Division	Staff response and repair
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: *Staff ability to operate and maintain the sanitary sewer system and respond to emergencies.*				
	Limitations: *None 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**	N/A	N/A			

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
	Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities	2	2	0	High Risk Inspection Checklist	Utilities Environmental Inspector	**Bethesda Memorial Hospital** (biohazard incinerator) and **Safety Kleen** (storage and transportation) High Risk Facilities and also HWTSDR
	EPCRA Title III, Section 313 facilities (TRI)	0	0	N/A			
	Facilities determined as high risk by the permittee	5	5	0	High Risk Inspection Checklist	Utilities Environmental Inspector	Palmdale Oil Co., Waste Management, Worldwide Super-abrasives and the City's East and West Water Treatment Plants.
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	2 by City 6 self-monitoring		**Self-Monitor:** Bethesda: twice per year and Waste Management: four times per/year **Utilities:** sample both of them once a year		Self-monitoring: Private Lab contracted by the Permittee	South Central Regional Wastewater Treatment Plant request a yearly sampling. A Private Lab is contracted to conduct sampling and testing. Utilities Environmental Inspector attends the sampling.
Part III.A.8 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.						
	Strengths: *Dedicated Environmental Inspector to monitor Illicit Discharges, Improper Disposal and High Risk Facilities.*						
	Limitations: *None Reported*						
	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	2		Plan review procedures		Building Division, Public Works and Utilities Dept.	Town Square Phase II and III Public Private Partnership
	PERMITTEE SITES: Construction site plans approved	2		Plan review procedures		Building Division, Public Works and Utilities Dept.	Site plan review process

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**
	PRIVATE SITES: Construction site plans reviewed	4	Plan review procedures	Building Division, Public Works and Utilities Dept.	Ocean Breeze, Harbor Cay, Country Trail, McDonalds Restaurant
	PRIVATE SITES: Construction site plans approved	4	Plan review procedures	Building Division, Public Works and Utilities Dept.	Site plan review process
	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	2	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	Town Square Phase II and III
	Confirmed ERP coverage	2	Plan review procedures – NOI requirements	Building Division, Public Works & Utilities Dept.	Staff reviews
	Notified of CGP stormwater permit requirements	0	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	Staff reviews
	Confirmed CGP coverage	5	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	The Club, Monarca, Cortina-P-III, Police Dept., Town Square I
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 enforcement actions / referrals taken.				
	PERMITTEE SITES: Active construction sites	4	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Town Square Phase I, Police Headquarters, Central Seacrest II and Oak/New Palm Way
	PERMITTEE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	310	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Staff Inspections
	PERMITTEE SITES: Percentage of active construction sites inspected	100%	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Staff Inspections
	PRIVATE SITES: Active construction sites	9	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Staff Inspections
	PRIVATE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	52	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Staff Inspections
	PRIVATE SITES: Percentage of active construction sites inspected	100%	Construction site inspection checklist and inspector's field notes	Building Division, Public Works and Utilities Dept.	Staff Inspections

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**
	Enforcement Action	None	N/A	N/A	N/A
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	10	10	Attendance list	Videos - below / City Staff
	Permittee construction site plan reviewers		7	Attendance list	Videos - below / City Staff
	Permittee construction site operators		49	Attendance list	April 17 and 18, 2019 Construction Site Erosion and Sediment Control EXCAL Videos presented at the Utilities safety meeting. / City Staff
Part III.A.9 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: *Providing up to date training for City staff.*				
	Limitations: *None reported*				
	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	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	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
3262A	Lake Ida	Nutrients TN=0.857 mg/l TP=0.062 mg/l	☐ / ☒	TN=20% TP=45%	1	N/A	(*Year 3 AR*)	(*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
3262A	Nutrients TN=0.857 mg/l TP=0.062 mg/l	(*Year 3 AR*)	(*Year 4 AR; N/A if BPCP*)	6% based on public education, fertilizer ordinance and site specific.

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): *Refer to City's 2019 Lake Ida TMDL Status Report for Cycle 4, Year 3.*

MS4
STORMWATER MANAGEMENT PLAN (SWMP)
ASSESSMENT PROGRAM
ANNUAL RESULTS REPORT
CYCLE 4, YEAR 3

March 2020

Contents

1. City of Boynton Beach MS4 Assessment Program

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 Boynton Beach (City) is one of the joint permittee 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 reasonably 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 Boynton Beach is in Basin Group No. 3. Basin No. 3's last assessment was concluded in 2016[1].

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 is one (1) WBID on the impaired waters list. The listed WBID, 3226-F2, Lake Worth Lagoon - South Section, was listed as impaired for copper and is shown in Table 1.

TABLE 1: Listing of Impaired Waters within City's Ms4 from 2016 Cycle 3

Cycle	Group	Group Name	Planning Unit	County	WBID	Water Segment Name	Parameters Assessed using Impaired Waters Rule (IWR)	Concentration of Criterion or Threshold not meet	Priority for TMDL Development	Projected year for TMDL	Comments
1	3	Lake Worth Lagoon - Palm Beach Coast	Intracoastal Waterway	Palm Beach	3226 F2	Lake Worth Lagoon (South Segment)	Copper	> 3.7 mg/L	Medium	2010	PP = 1/6 Insufficient data; VP = 9/48 Impaired. VP data have been updated using IWR Run 20.0.

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 fresh water 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.

2.3 Total Maximum Daily Loads Program

A small area within the City of Boynton Beach discharges to Lake Ida WBID 3262A[3]. Refer to the MS4 Lake Ida TMDL status report included with the City of Boynton Beach's 2019 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 40 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), and the Palm Beach County permittees[2] (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 Boynton Beach reviewed the available water quality data from the group's water quality monitoring program sites. Figure 1 includes the two (2) selected sites (28 and LWL-18) for the City assessment program. Table 2 provides information for these sites.

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 Tables 3 and 4.

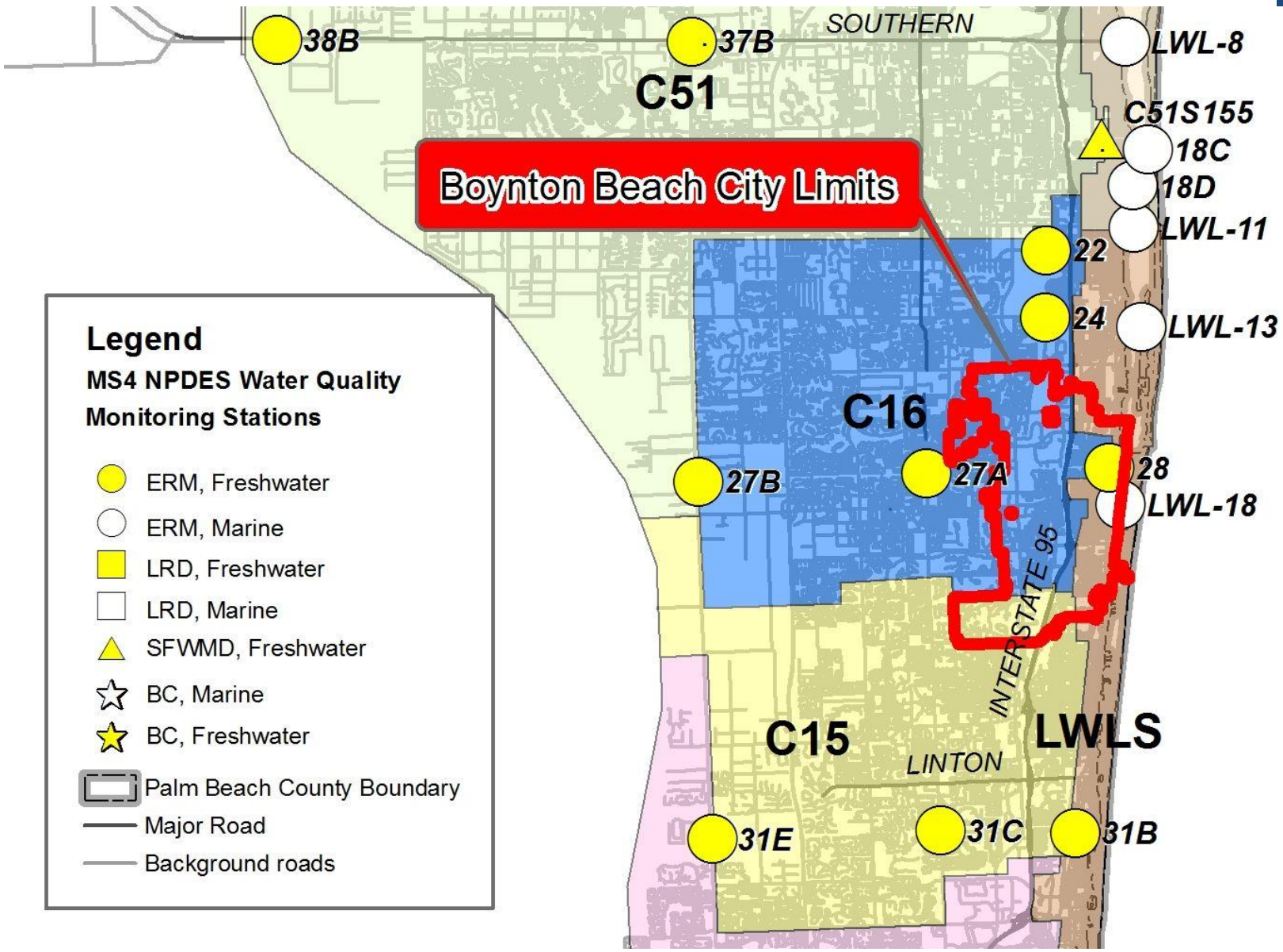

Figure 1 - Boynton Beach Ambient Water Quality Monitoring Stations

TABLE 2: Boynton Beach Ambient Water Quality Monitoring Stations

Monitoring Station Number	Location Description	Latitude/ Longitude	Receiving Water Body	Verified Impaired?	Adopted TMDL?
C16S41	SFWMD – ERM (28) Freshwater station located at the SFWMD S41 tidal structure in the C-16 Boynton Canal	Lat: 26.539019086 Long: 80.057490042	C-16 Canal		No
LWL18	ERM Marine station located at Ocean Ave Causeway in Boynton Beach, by the bridge	Lat: 26.527097520 Long: 80.053682790	Lake Worth Lagoon (South Segment)	Copper	No

TABLE 3: Monitoring Data Summary C-16 Watershed Period of Record[2]

		Period of Record 01/28/99 – 09/12/19					
SITE 28 (Samples 128)		**Count**	**Geometric Mean**	**Median**	**Max**	**Min**	**Standard Deviation**
Alkalinity	mg/L	90	147	147	210	119	15
Arsenic	mg/L	43	0.0023	0.0025	0.0071	0.0003	0.0014
Cadmium	mg/L	60	0.0006	0.0003	0.0050	0.0002	0.0020
Chlorophyll-a (corrected)	ug/L	49	8.4	9.5	50.0	1.1	10.6
Copper	mg/L	60	0.0033	0.0032	0.0200	0.0007	0.0038
Dissolved Oxygen	% Saturation	21	68.4	86.0	147.0	12.1	34.9
Fecal Coliform	cfu/100mL	28	104	92	2600	10	663
Lead	mg/L	60	0.0024	0.0025	0.0261	0.0003	0.0034
Nitrogen, Ammonia	mg/L	130	0.026	0.033	2.760	0.001	0.242
Nitrogen, nitrate + nitrite	mg/L	132	0.037	0.047	13.000	0.001	1.131
Nitrogen, Total	mg/L	131	1.04	1.00	13.71	0.11	1.22
Nitrogen, Total Kjeldahl	mg/L	135	0.91	0.89	5.81	0.08	0.50
pH	None	134	7.7	7.8	8.6	6.2	0.4
Phosphorus, orthophosphate	mg/L	134	0.021	0.031	0.250	0.001	0.051
Phosphorus, Total	mg/L	123	0.076	0.068	0.877	0.020	0.095
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	137	452	475	946	5	126
Temperature	deg C	137	25.2	25.9	56.8	13.1	4.9
Total Hardness	mg/L	67	177	178	308	120	28
Total Suspended Solids	mg/L	131	3.1	3.0	24.9	1.0	3.3
Turbidity	NTU	137	2.4	2.5	13.0	0.1	2.1
Zinc	mg/L	60	0.0062	0.0054	0.1180	0.0024	0.0146
Site 28 is a continuation of Site C16S41 when SFWMD discontinued sampling after September 2014							

TABLE 4: Monitoring Data Summary LWL-18 Watershed[2]

LWL-18 (Samples 131)		Period of Record 05/11/00 – 08/27/19					
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	7	0.0033	0.0025	0.0087	0.0023	0.0024
Cadmium	mg/L	15	0.0020	0.0008	0.0050	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	117	8.4	5.2	58.1	1.6	8.8
Copper	mg/L	37	0.0053	0.0033	0.0500	0.0017	0.0080
Dissolved Oxygen	mg/L	19	93.0	89.0	131.9	62.4	17.7
Fecal Coliform	cfu/100mL	8	40	17	180	4	59
Lead	mg/L	14	0.0056	0.0025	0.0250	0.0008	0.0070
Nitrogen, Ammonia	mg/L	137	0.035	0.022	0.410	0.003	0.046
Nitrogen, nitrate + nitrite	mg/L	129	0.034	0.019	0.210	-0.005	0.042
Nitrogen, Total	mg/L	120	0.51	0.43	1.51	0.00	0.27
Nitrogen, Total Kjeldahl	mg/L	106	0.86	0.44	39.00	0.07	3.75
pH	None	144	7.9	7.9	9.1	6.5	0.3
Phosphorus, orthophosphate	mg/L	135	0.023	0.015	0.160	0.001	0.025
Phosphorus, Total	mg/L	129	0.052	0.044	0.230	0.001	0.034
Salinity	ppth	101	28.4997	30.3000	36.7000	9.3700	6.2290
Specific Conductivity	umho/cm	145	43256	45691	64472	3790	9816
Temperature	deg C	144	26.6	27.0	33.6	16.3	4.1
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	113	10.7	8.0	56.0	1.0	8.6
Turbidity	NTU	134	4.1	3.9	17.0	0.7	2.2
Zinc	mg/L	14	0.0204	0.0100	0.1160	0.0019	0.0297

TABLE 5: South Florida Region Water Quality Criteria[2]

Applicable Class III - Freshwater Canal Water Quality Criteria C-16 (28)		
PARAMETER	UNITS	CRITERIA
Chlorophyll-a (corrected)	ug/L	≤ 20 AGM
Nitrogen, Total	mg/L	Narrative
Phosphorus, Total	mg/L	Narrative
Applicable Class III – Marine Water Quality Criteria Lake Worth Lagoon South (LWL-18)		
PARAMETER	UNITS	CRITERIA
Chlorophyll-a (corrected)	ug/L	≤ 5.7 AGM
Nitrogen, Total	mg/L	≤ 0.59 AGM
Phosphorus, Total	mg/L	≤ 0.05 AGM

Notes:
AGM - Annual Geometric Mean

- Parameters are monitored typically monthly for marine environments and bi-monthly for freshwater.
- Parameters of primary interest to FDEP and the City are Total Phosphorus (TP) and Total Nitrogen (TN).
- Chlorophyll-a can be an indicator of nutrient enrichment.

Table 5 provides a summary of the limits.

3.4 Trend Analysis

Figures 3 through 8 located in Appendix A provide trend lines (in red) for the period of record for Total Nitrogen (TN), Total Phosphorus (TP), and Chlorophyll-a. A trend line provides a graphic indication if the TP, TN, and Chlorophyll-a are increasing (upward), decreasing (downward), or at a steady-state (near flat). The appropriate water quality standards are depicted on the trend graphs (Figures 6, 7, and 8) for the Lake Worth Lagoon – South (LWL-18) to allow for a comparison of both trend and relationship to the standard. A general summary of the trend and exceedances can be seen in Table 6 below.

TABLE 6: Summary of Trends

Monitoring Station	AGM Phosphorus		AGM Nitrogen		AGM Chlorophyll-A	
	Trend	Number of Exceedances	Trend	Number of Exceedances	Trend	Number of Exceedances
28 *(SFWMD-ERM)*	Decreasing	N/A	Decreasing	N/A	Increasing	Zero
LWL—18 (ERM)	Decreasing	Two*	Decreasing	Zero*	Increasing	Four*

*Exceedances in the last 10 years reported (2009 to 2019)

Review of the trend graphs indicates the following:

- **Total Phosphorus** trends indicate a general improvement (trending lower) in values within the watersheds. Station 28 has no numeric standard. The general form of the data indicates that for station LWL-18 the levels are steadily decreasing with variability restrained between 0.024 mg/L to 0.083. Within the last ten years of record, this station have had a violation based on the states criteria (two exceedances within any 3-years period). LWL-18 exceedance was in the period of 2016- 2017. The following year, 2018 wend down to the lowest 0.024 mg/L.

- **Total Nitrogen** trend graphs indicate the TN concentrations are below water quality criteria limits (trending downward) in the watersheds throughout. Station LWL-18 has had no exceedances in the past ten years. Station 28 has no numeric standards.

- **Chlorophyll-a** trend graphs indicate that the LWL-18 and Station 28 data levels are increasing (trending upward). Station 28 is well below the required criteria limit of 20 AGM. Station LWL-18 had four exceedances during the last 10-year period, with violation of the state standard in 2016 and 2017. It is recommended that this station should continue to be monitored.

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 do 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 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 Boynton 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 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 similar to 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[4].

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 the City of Boynton Beach MS4, four watersheds were identified as contributing to water bodies (refer to Figure 2):

- Lake Worth Lagoon (LWL)
- C-15
- C-16
- Intracoastal Waterway South (ICWWS).

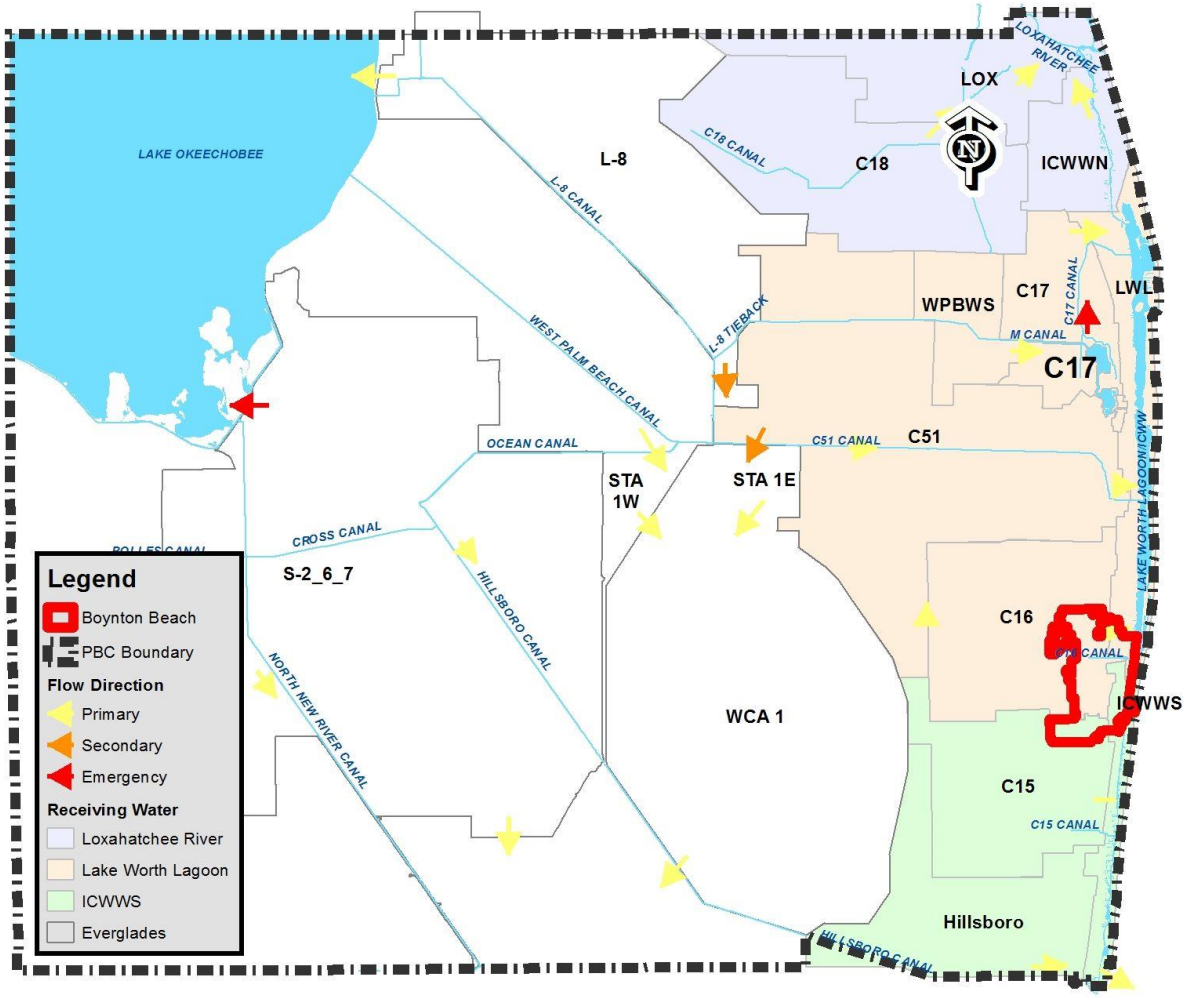

Figure 2 – Palm Beach County NPDES Watershed Flow[4] – City of Boynton Beach Boundary

4.2 Boynton Beach Cycle 3, Y-3 (2013) and Cycle 4, Y-3 (2018) reporting period

The Cycle 4 – Year 3 'Summary of Average Annual Pollutant Loading Model Activities' report (2019) prepared by Mock-Roos[4] for the co-permittees includes an analysis of all six water quality paramenters.

Pollutant loadings estimates for all six water quality parameters in the Boynton Beach MS4 indicate a reduction between 2013 and 2018. The City participates in the group's public education program, which allows for a 6% reduction in pollutant loadings[5] and is summarized in Table 7 below.

TABLE 7: Pollutant Loadings (lbs/year) – City of Boynton Beach[4]

Parameter	BOD_5	TSS	TP	CU	ZN	TN	Area (ac)	Percent of Watershed
2013 Loads to C-15	5,268	7,109	151	8	48	1,601	181.86	0.47%
2013 Loads to C-16	53,576	83,664	1,489	91	521	16,361	1,635.09	3.73%
2013 Loads to ICWWS	2,809	8,337	111	6	25	958	115.68	1.19%
2013 Loads to LW Lagoon	8,616	15,787	289	17	84	3,148	408.56	1.56%
2013 Total Loading	**70,269**	**114,897**	**2,040**	**122**	**678**	**22,068**		
2018 Loads to C-15	5,269	7,114	151	8	48	1,601	181.86	0.47%
2018 Loads to C-16	53,572	83,725	1,489	91	521	16,362	1,635.09	3.73%
2018 Loads to ICWWS	2,813	8,363	111	6	25	960	115.68	1.19%
2018 Loads to LW Lagoon	8,620	15,801	289	17	84	3,148	408.56	1.56%
2018 Total Loading	**70,274**	**115,003**	**2,040**	**122**	**678**	**22,071**		
2018 Public Education (6%)	4,216	6,900	122	7	41	1,324		
2018 Street Sweeping			183			285		
Adjusted 2018 Loads	**66,058**	**108,103**	**1,735**	**115**	**637**	**20,462**		
Percent Reduction	**6%**	**6%**	**18%**	**6%**	**6%**	**8%**		

[4] Sources: Table 14 (p. 27), Table 15 (p. 28), Table 24 (p. 37) and Table 26 (p. 39-40) of the 'Summary of Average Annual Pollutant Loading Model Activities' report (2019) prepared by Mock-Roos.

Additionally, all parameters indicate decreases for all four contiguous watersheds to Boynton Beach during the reporting period[4].

5. Conclusions

Water quality monitoring results are encouraging as nutrient trends are generally downward and in some cases below the standards. Based on these facts the City should continue to monitor the ambient water quality for changes in trends. Considering the reported trends, no significant changes in the City's SWMP are recommended. The SWMP programs have reduced TN and TP and are effective in reducing the loads. Expansion of the City's street sweeping program is recommended to assist in further reducing nutrient loads and meeting any future TMDL.

6. References

1. City of Lake Worth – MS4 SWMP Assessment Program prepared by Mock-Roos Consulting Engineers. December, 2019.
   http://www.pbco-npdes.org/reports_2019_C4Y3/arfs/Lake%20Worth,%20City%20of%20-%20Year%203,%20Cycle%204,%20Individual%20Annual%20Report.pdf

2. Municipal Separate Storm Sewer System – National Pollutant Discharge Elimination System, Draft Joint Annual Report Cycle 4 – Year 3, prepared by Mock-Roos Consulting Engineers. March 1, 2020.
   http://www.pbco-npdes.org/reports_2019_C4Y3/20200309_FINAL_NPDES%20Report.pdf

3. Boynton Inlet Contributing Area Watershed Management Plan. June 2018. Prepared by Horsley Witten Group, Inc, for National Oceanic and Atmospheric Administration.
   http://www.pbco-npdes.org/pdf/BoyntonInletContibutingAreaWatershedManagementPlan.pdf

4. Summary of Average annual Pollutant Loading Model Activities. Cycle 4 – Year 3, prepared by Mock-Roos Consulting Engineers. 2019.
   http://www.pbco-npdes.org/reports_2019_C4Y3/Cycle%204%20-%20Pollutant%20Loading%20Estimates%20Report.pdf

5. Florida Department of Environmental Protection, Statewide Best Management Practice Efficiencies for Nonpoint Source Management of Surface Waters, Draft July 2018.
   https://floridadep.gov/sites/default/files/BMP%20Efficiencies%20July%202018.pdf

Appendix A

Water Quality Data and Trends-Figures 3 through 8

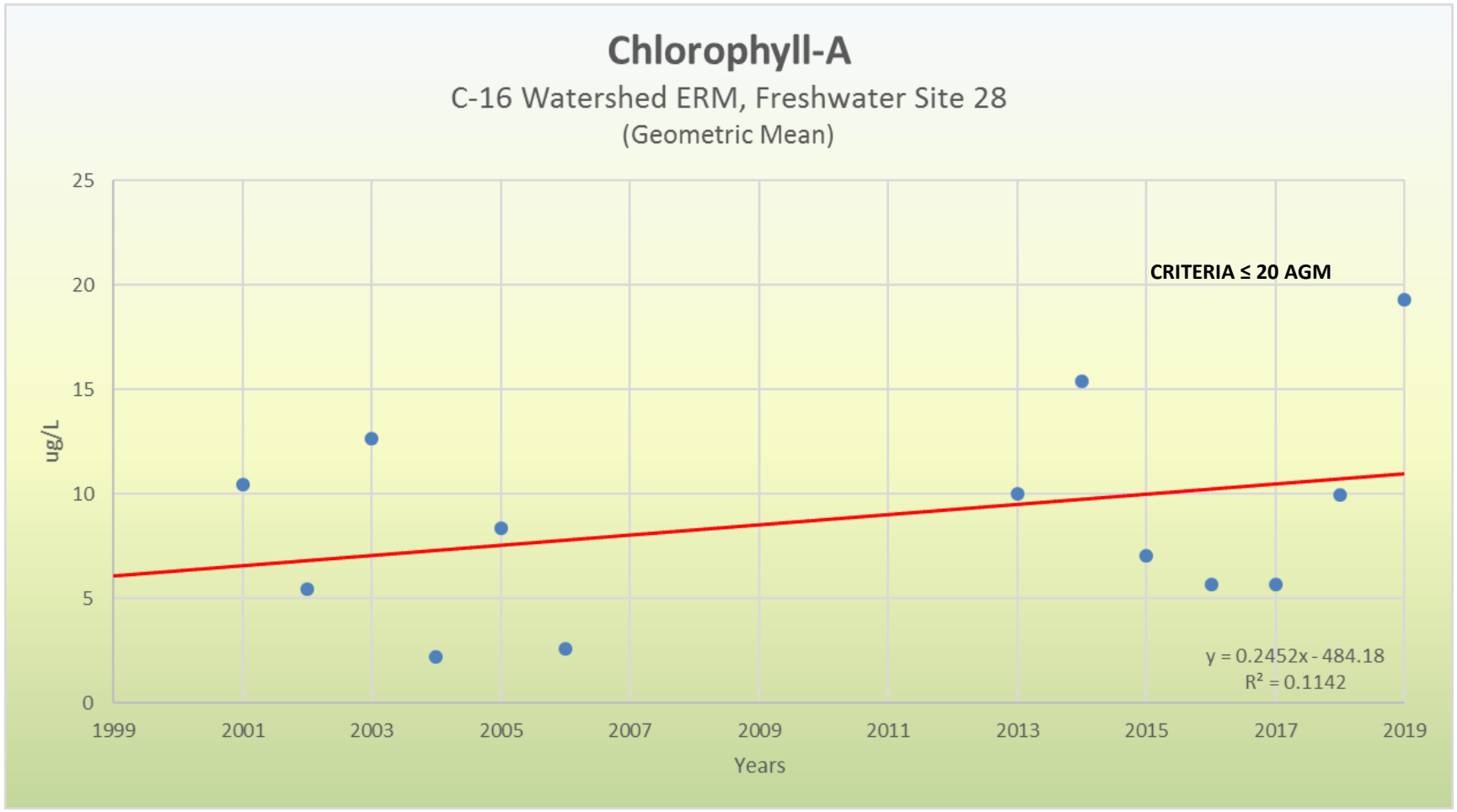

Figure 3 – C-16 Clorophyll-A

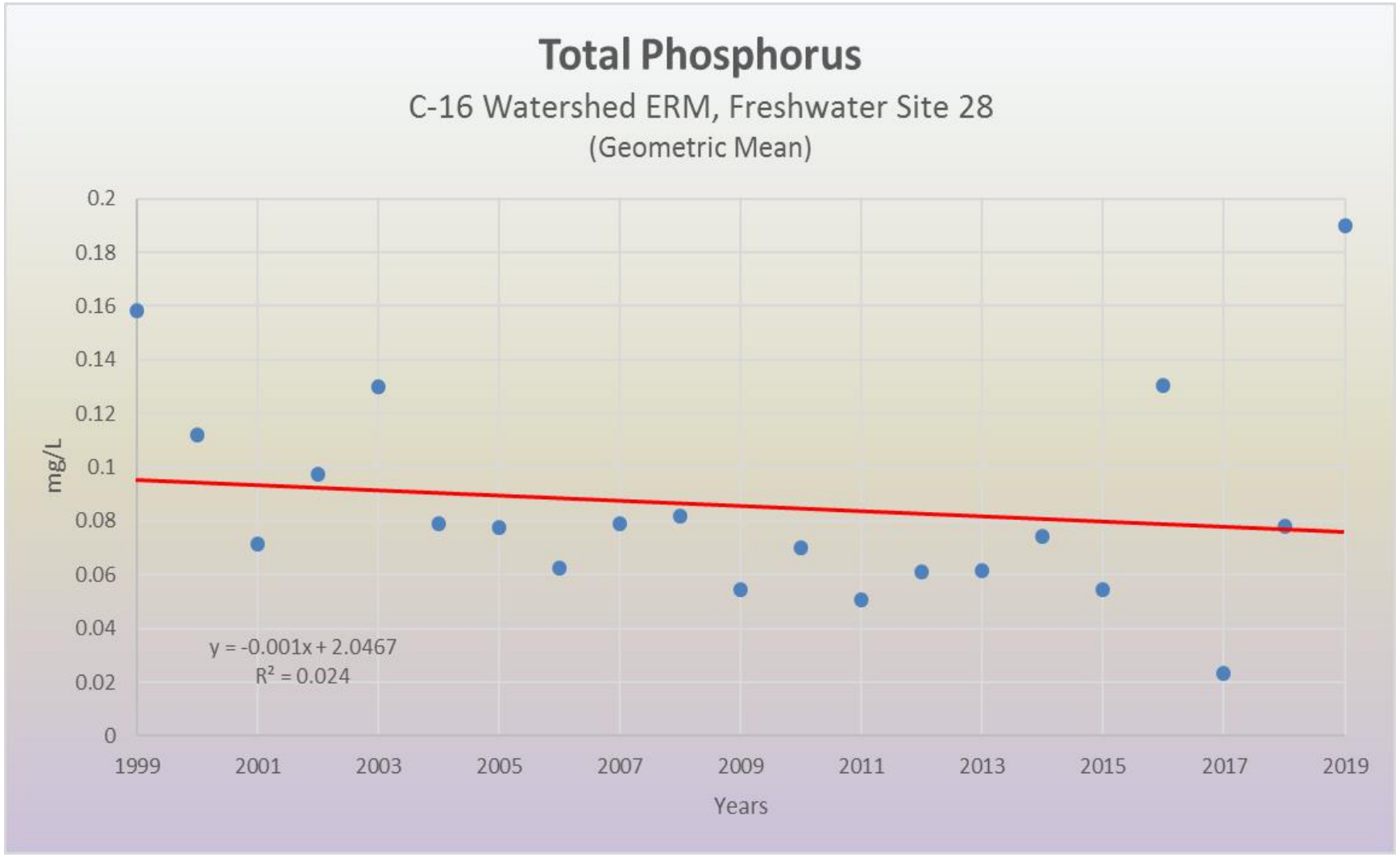

Figure 4 – C-16 Phosphorus

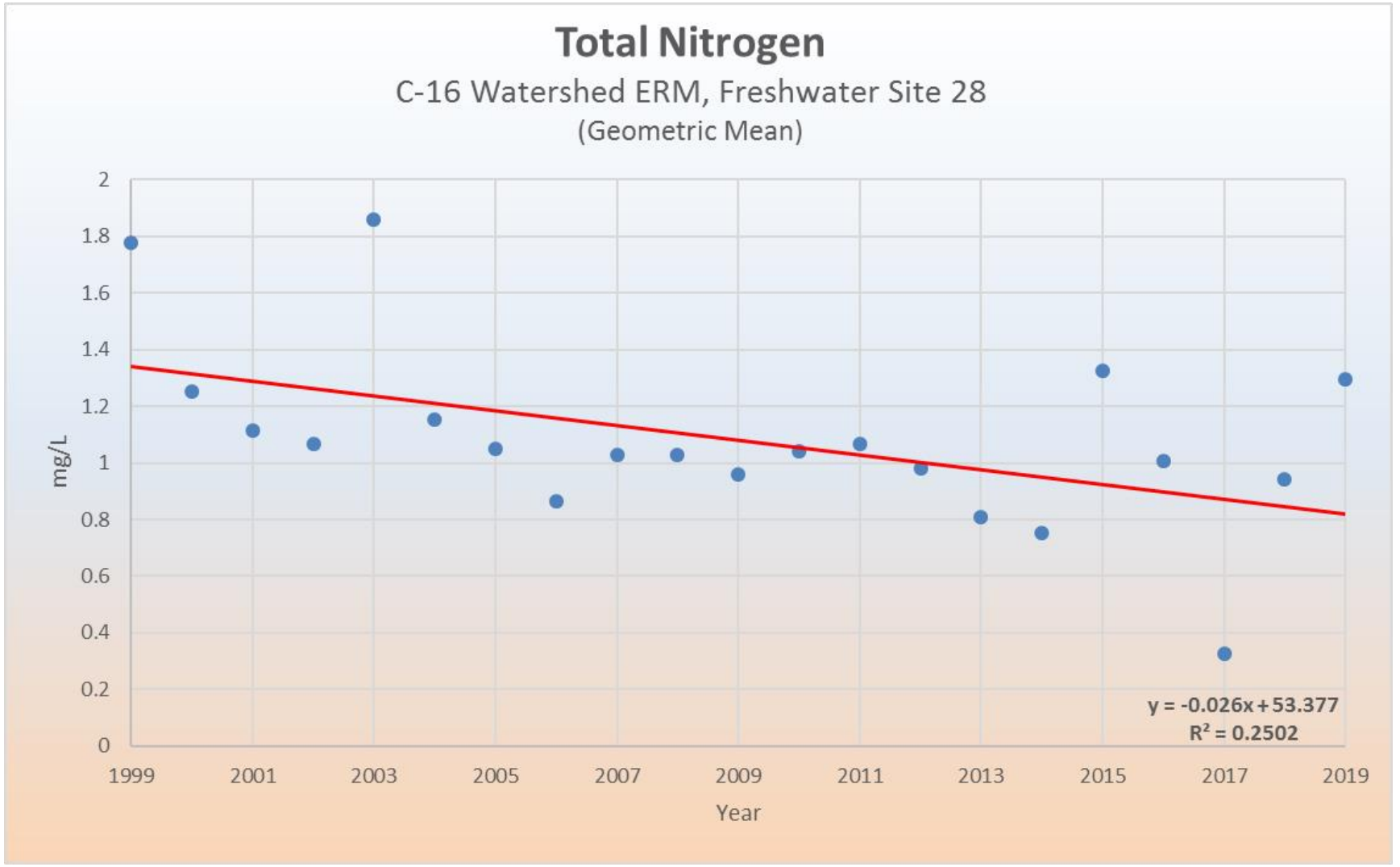

Figure 5 – C-16 Nitrogen

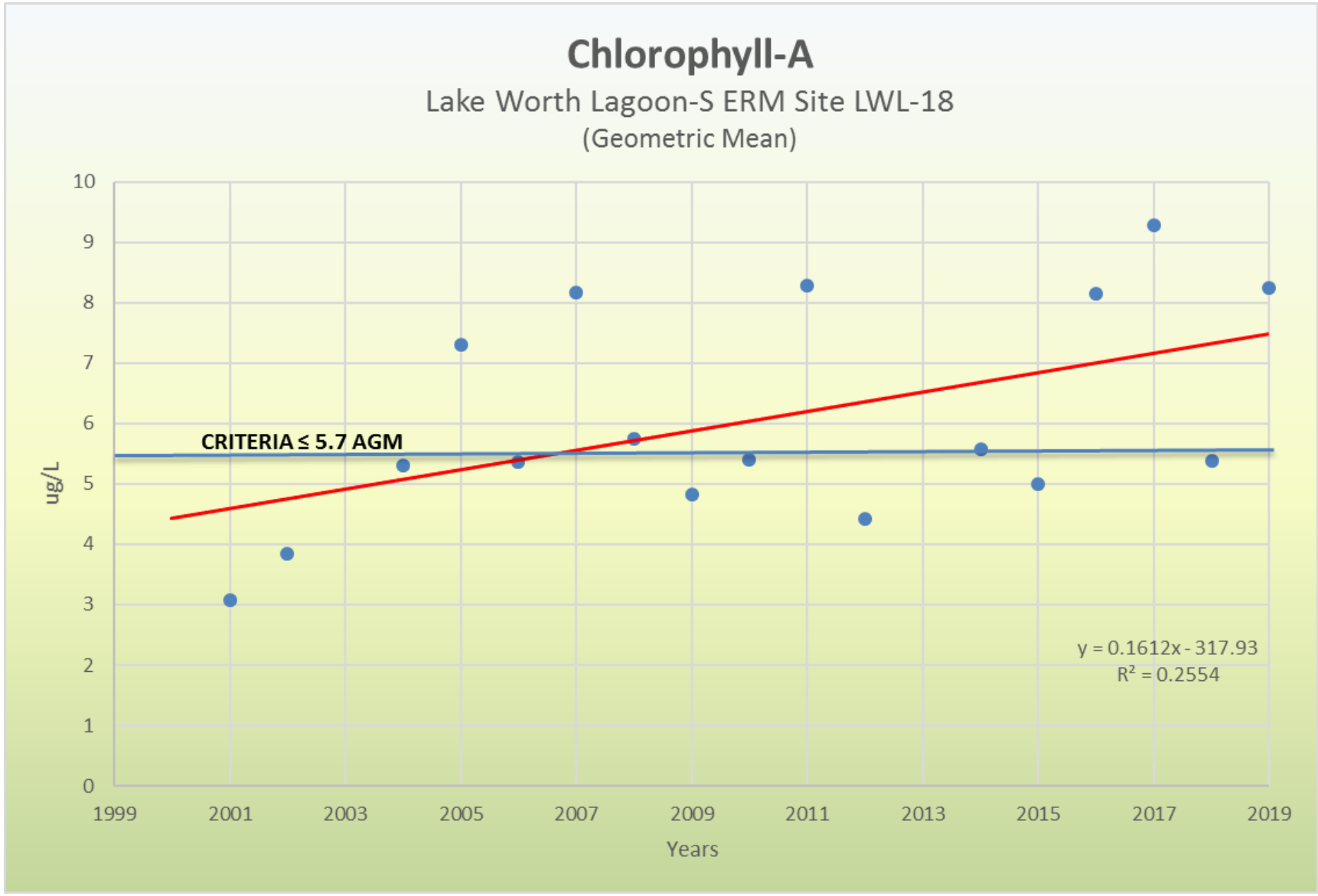

Figure 6 – Lake Worth Lagoon-S Chlorophyll-A

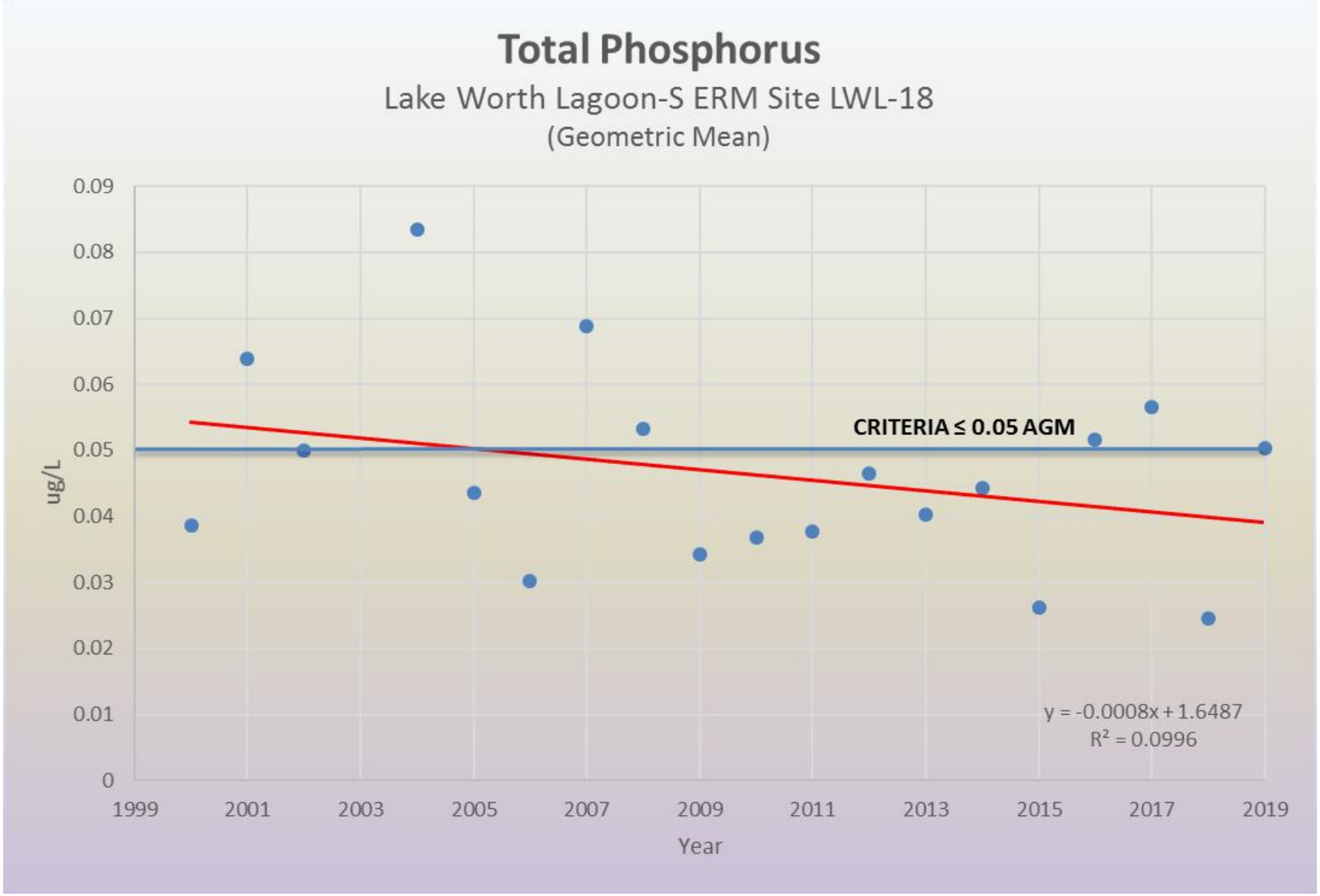

Figure 7 – Lake Worth Lagoon-S Phosphorus

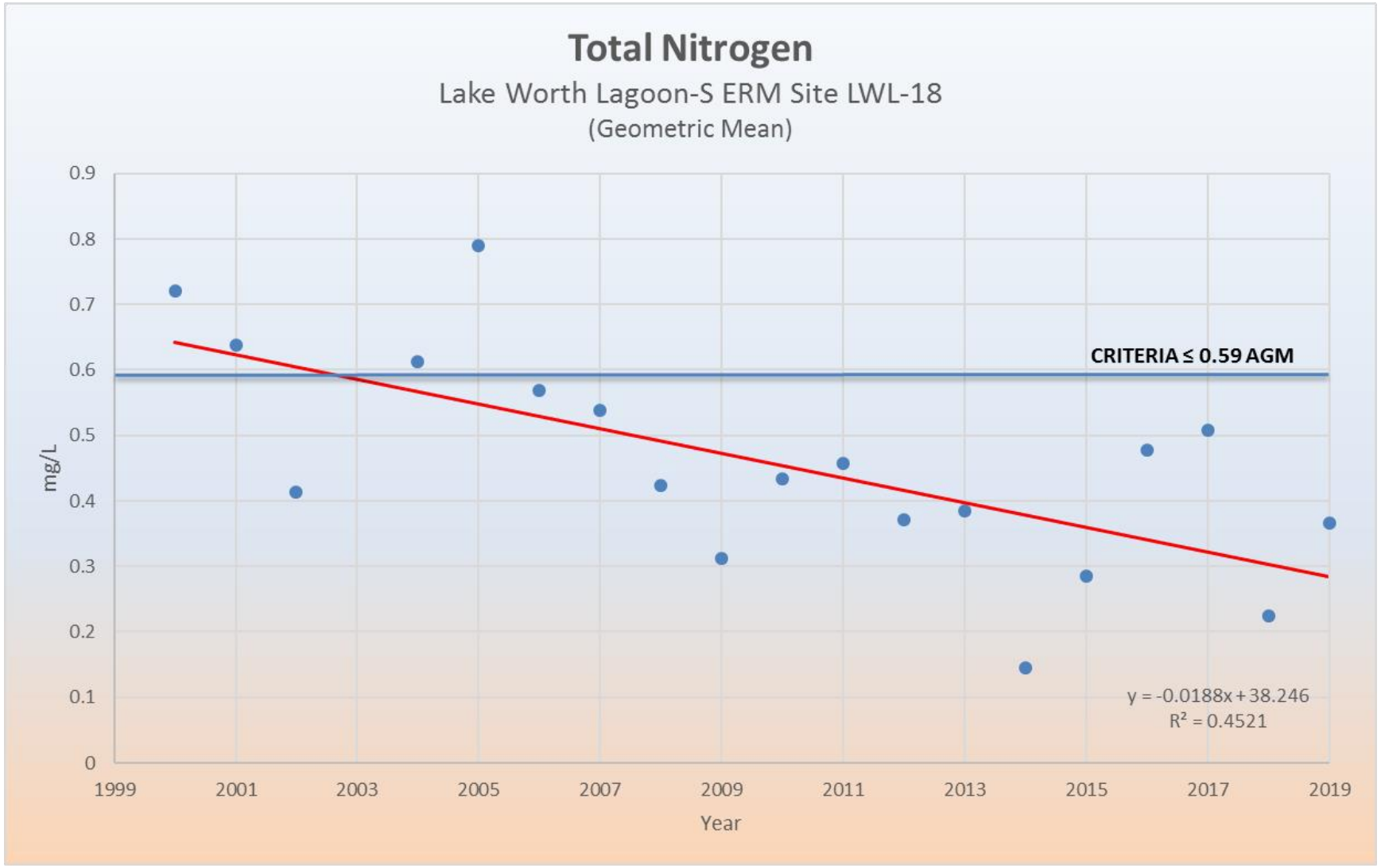

Figure 8 – Lake Worth Lagoon-S Nitrogen

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.

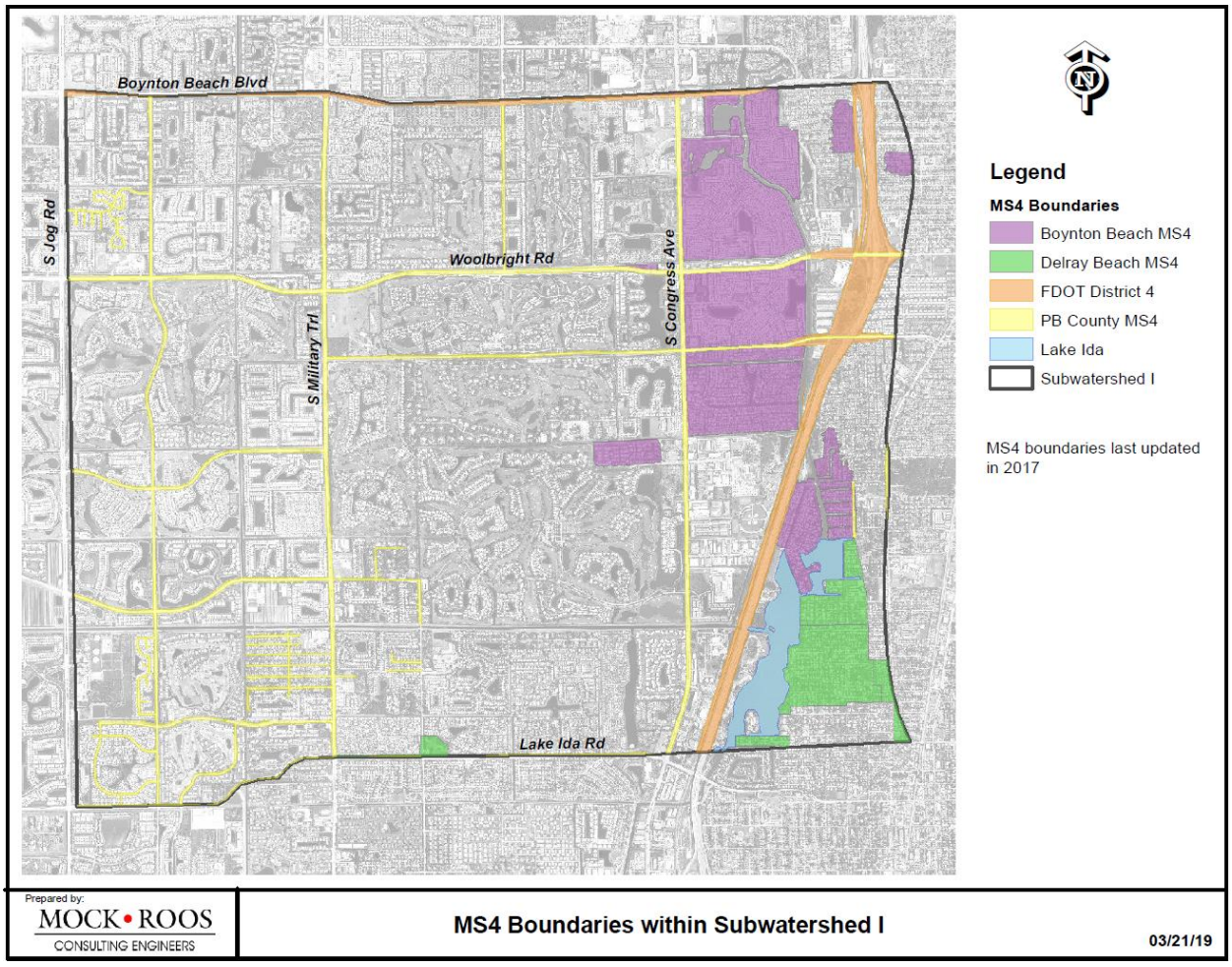

Figure 1: MS4 Areas within Sub-watershed 'I'[2]
NOAA. Boynton Inlet Contributing Area Watershed Management Plan. [2]

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.

TARGETED WATER QUALITY MONITORING LOCATIONS FOR LAKE IDA

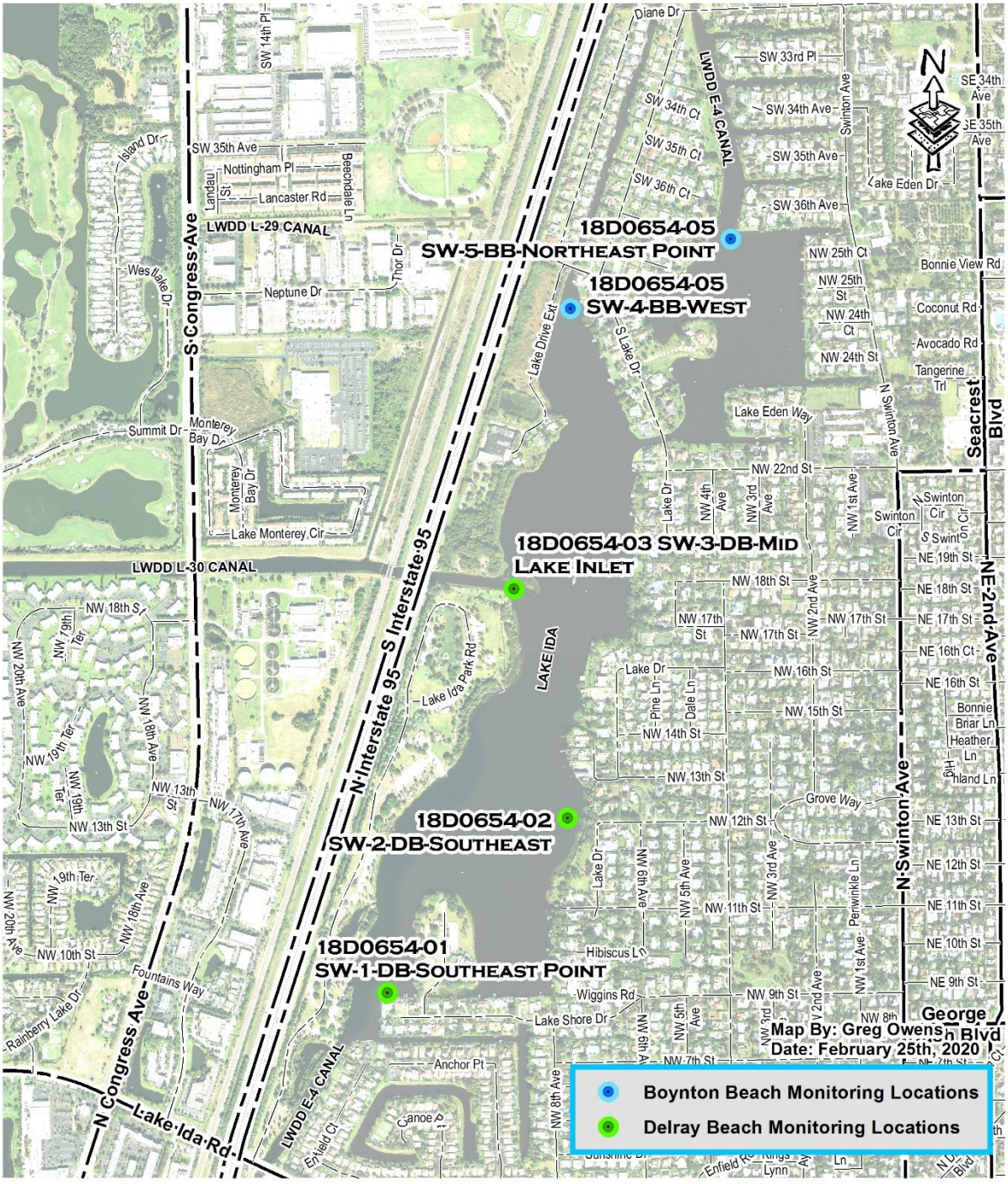

Figure 2: Monitoring Locations

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

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

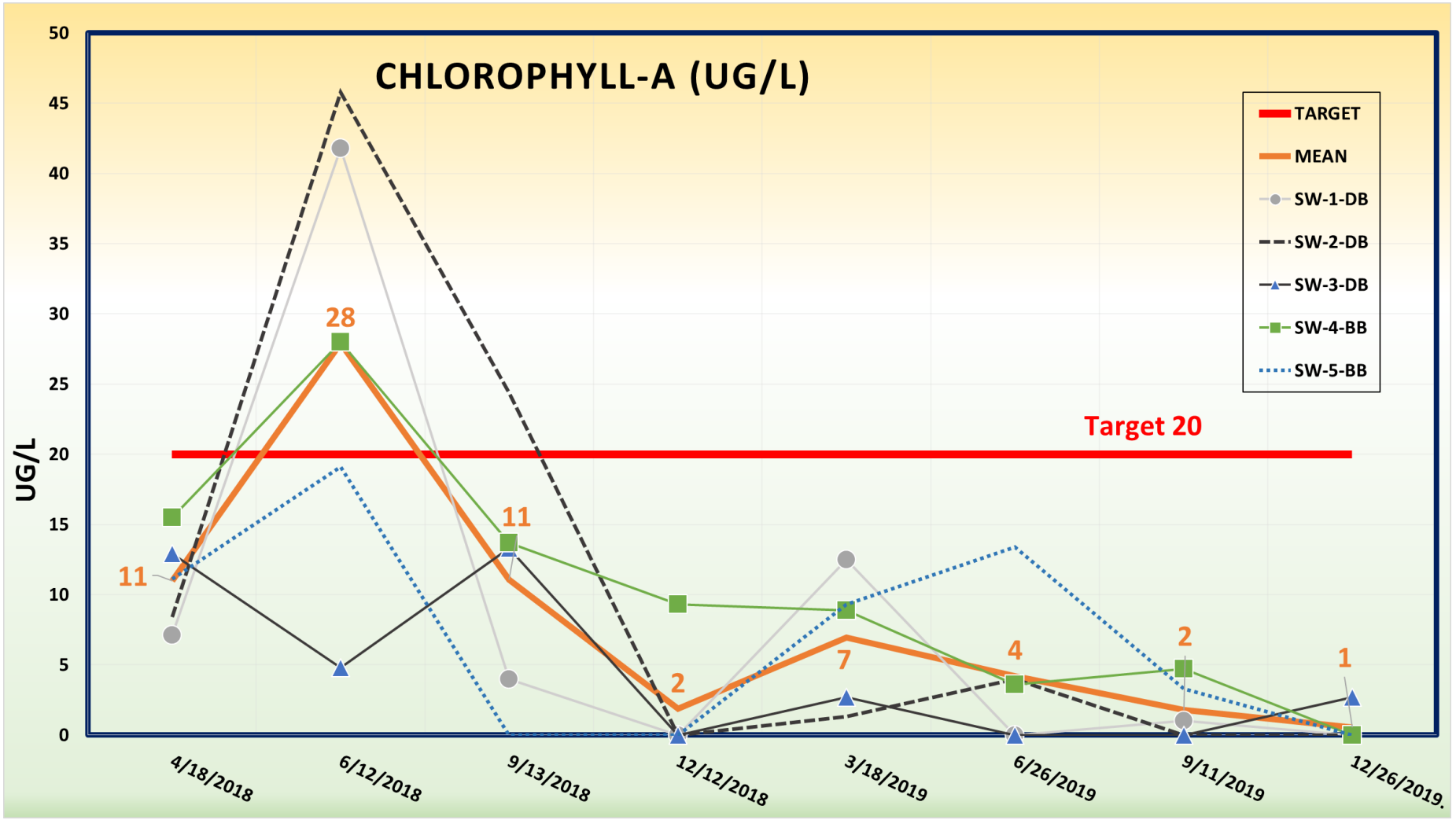

Figure 3: Chlorophyll-a

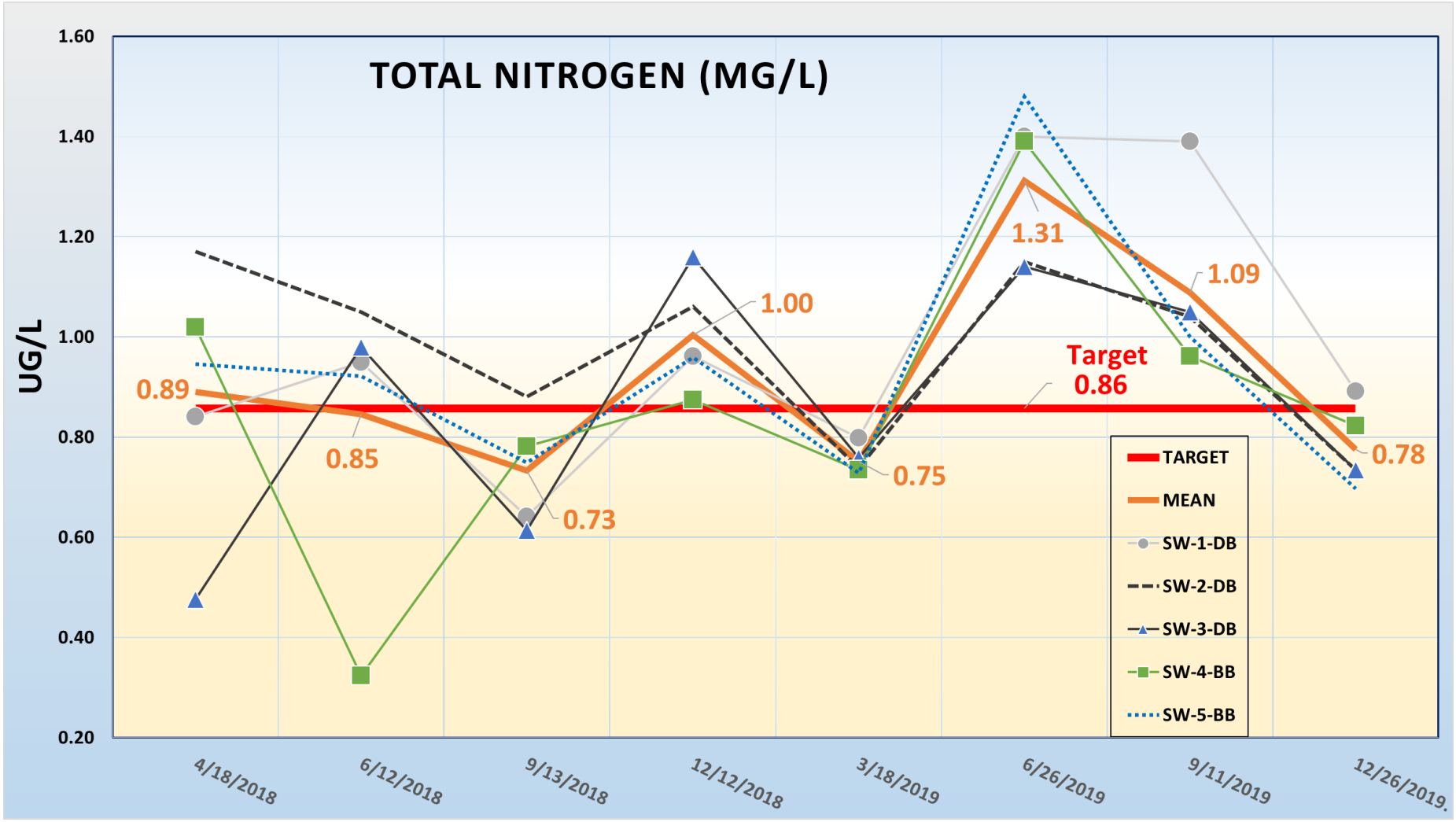

Figure 4: Nitrogen

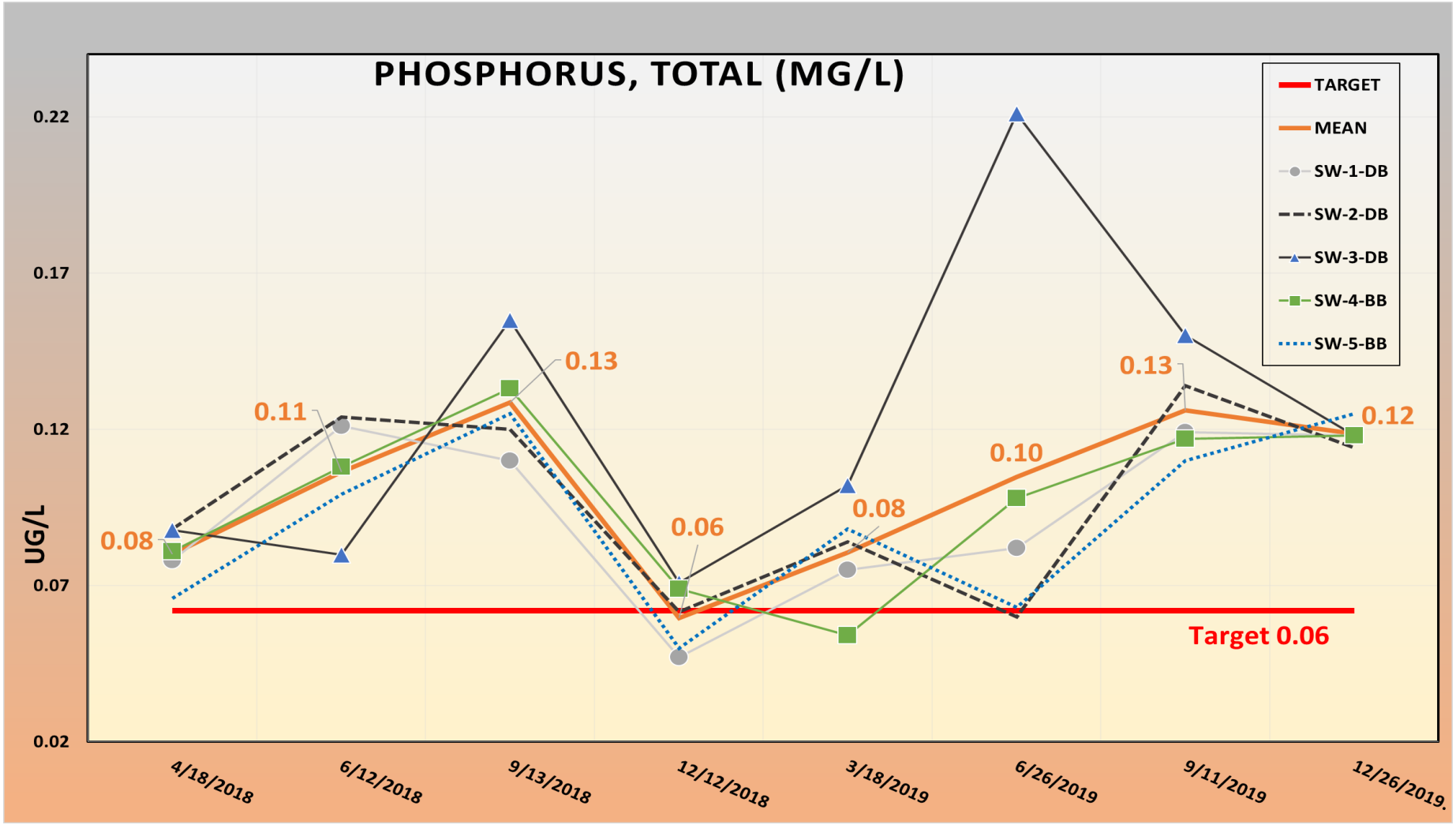

Figure 5: Phosphorous