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 / 2019 through 9 / 2020		
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): 2 (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: $1,196,784 Operations Expenses and $2,224,874 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: $1,497,311 Operations Expenses and $1,600,000 for Capital Improvements Projects (Dimick & Potter 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. New drainage improvements projects under design phase.

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	
☐	☒	YEAR 3: Summary of TMDL Monitoring Results (if applicable).	Part VIII.B.2	
☐	☒	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	Refer to attached 2020 LDR Review Follow-up
☐	☒	YEAR 4: A report on any amendments to the applicable legal authority (if applicable).	Part III.A.7.a	No changes
☐	☒	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	Refer to Year 4 Joint Report
☐	☒	YEAR 4: TMDL Supplemental SWMP (if applicable).	Part VIII.B.3	Refer to 2019 Lake Ida TMDL monitoring Report

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: Joseph Paterniti Date: 3 / 23 / 2021

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%	168	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)	4,500	929	21%	929	21%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Routine visually inspections and maintenance pre and post-storm events. 645-ft installation of new exfiltration system.
Grass treatment swales (miles)	30	25	83%	0.8	3%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Estimated up top 25 miles visually inspected and 0.8 miles of swale restoration and re-sodding.
Dry detention systems	9	108	100%	216	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%	240	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	238	100%	238	100 %	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections & maintenance of pollution control boxes discharging to water bodies and baffles at other structures
pump stations	3	36	100%	36	100	NPDES Activities October 1,	Utilities Operations	Monthly Inspections and

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						%	2018 – September 30 2019	Division Stormwater	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.)	1.5	7%	1.5	7%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance 7% inspected for the year over 100% for 10 years.
	Canals (miles)	5.6	5.6	100%	5.6	100 %	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	Inspections and maintenance of four canals
	Inlets / catch basins / grates	550 (est.)	334	61%	334	61%	NPDES Activities October 1, 2018 – September 30 2019	Utilities Operations Division Stormwater	61% 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.

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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: *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	☒	2020 LDR Review Follow-up	Utilities	2020 LDR Review Follow-up
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	Multiple Contractors	Multiple Contractors	Work performed by outside contractors
	PERMITTEE Litter Control: Estimated amount of area maintained (lf)	0	Multiple Contractors	Multiple Contractors	Work performed by outside contractors
	PERMITTEE Litter Control: Estimated amount of litter collected (cy)	0	Multiple Contractors	Multiple Contractors	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	Maintenance schedule	Boynton Beach City Contractors	Outside contractor

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	CONTRACTOR Litter Control: Estimated amount of litter collected (cy)	Approx. 1,000 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	0			
	Trash Pick-up Events: Estimated amount of litter collected (cy)	0			
	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	Weekly	NPDES Street Sweeping Record	Streets Public Works Department	Streets Public Works Department
	Total miles swept	700	NPDES Street Sweeping Record	Streets Public Works Department	Streets Public Works Department.
	Estimated quantity of sweeping material collected (cy / tons)	210 CY	NPDES Street Sweeping Record	Streets Public Works Department	Estimated quantity provided by Public Works
	Total phosphorous loadings removed (pounds)	160	Quantifying Nutrient Loads	Utilities Department	Established based on FSA spreadsheet
	Total nitrogen loadings removed (pounds)	294	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

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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 sweeper was not operable continuously. 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 in the process of piggybacking from a street sweeping contract and in the future 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	Central Seacrest II
	Flood control projects completed that did <u>not</u> include stormwater treatment	0	Utilities CIP	Utilities Department	All drainage projects included stormwater treatment
	Stormwater retrofit projects planned/under construction	1	Utilities CIP	Utilities Department	Lakeside Gardens
	Stormwater retrofit projects completed	1	Utilities CIP	Utilities Department	Central Seacrest II
	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.	☐	Utilities CIP	Utilities Department	All drainage projects included stormwater treatment.
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*				

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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	☐			
	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). Distribution of brochures at different public outreach activates sponsored by the City. Since Covid there are limited opportunities for public engagement. The Water Quality Report mailed yearly to every utility customer to encourage citizens to reduce their use of pesticides, herbicides and fertilizers.				

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	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.				

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	Year 4 ONLY: Attach a report on amendments to applicable legal authority	☐	Commission minutes	Development and Utility Department	No changes
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	334	NPDES Activities Oct 2018 – Sep 2019	Utilities Operations Division	Concurrent with inlet, catch basins and grates inspections
		189	Industrial Commercial Inspections	Utilities Environmental Inspector	Routine nonresidential establishments surveys
	Illicit discharges found during a proactive inspection	0	Inspection Records	Utilities Environmental Inspector	
	NOV/WL/citation/fines issued for illicit discharges found during proactive inspection	0	Inspection Records	Utilities Environmental Inspector	
	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	1	Industrial/Commercial User Inspections	Utilities Environmental Inspector	Cooking grease from Tropical Island Restaurant caused a sewer backup
	Reactive investigations of reports of suspected illicit discharges etc.	1	Industrial/Commercial User Inspections	Utilities Environmental Inspector	Found violation of the cooking grease interceptor
	Illicit discharges etc. found during reactive investigation	1	Industrial/Commercial User Inspections	Utilities Environmental Inspector	Cooking grease interceptor violation found
	NOV/WL/citation/fines issued for illicit discharges etc. found during reactive investigation	1	Utilities Department Customer Assistance Form	Utilities Environmental Inspector	Aug 31, 2020 Notice of Violation to Tropical Island Restaurant
	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.				

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	Personnel trained	11	Attendance List	Illicit Discharge detection-elimination EXCAL Videos presented Utilities Engineering meeting.	City Staff
	Contractors trained	0	Attendance List	EXCAL Videos	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 responded to	8	Boynton Beach Fire Rescue Incident Type Report	Fire Rescue	Firefighter response
	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	11 City Staff 234 Firefighters	Attendance List	Illicit Discharge EXCAL Videos presented at the Utilities Eng. meeting. Fire Department HazMat Training	City Staff & Firefighters
	Contractors trained	0	Attendance List	EXCAL Videos	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	Zoom meeting conducted for Flood Mitigation Plan Update.
	Neighborhood presentations: Number of participants				
	Newspapers & newsletters: Number of				

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	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	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				

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**
	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**				
	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	3,279 LF of wastewater gravity main Cured-in-Place Liner
	Activity to reduce/eliminate SSOs and I&I: (description)	1	Capital Improvement Project	Utilities	Lift Station #305 Pipe Manifold and Wet Well Piping Rehabilitation and 5 Manholes Sealcoating
	SSO incidents discovered	2	Wastewater Spillage Report-Palm Beach Co. Health Department	Operations Division	Staff response
	SSO incidents resolved	2	Wastewater Spillage Report-Palm Beach Co. Health Department	Operations Division	Staff response and repair
	Inflow / infiltration incidents discovered	42	Weekly wastewater activities report	Operations Division	Staff response
	Inflow / infiltration incidents resolved	42	Weekly wastewater activities report	Operations Division	Staff response and repair

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 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**	0	0	DEP Solid Waste Website	Utilities Env. Inspector	
Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities	0	0	0	EPA Website	Utilities Env. Inspector	
EPCRA Title III, Section 313 facilities (TRI)	1	1	0	EPA Website	Utilities Environmental Inspector	**Safety Kleen** (storage and transportation) High Risk Facilities and also HWTSDR
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, City's Fleet Maintenance facility and the 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.

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.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	1	Plan review procedures	Building Division, Public Works and Utilities Dept.	Quantum Eco Park
	PERMITTEE SITES: Construction site plans approved	1	Plan review procedures	Building Division, Public Works and Utilities Dept.	Quantum Eco Park
	PRIVATE SITES: Construction site plans reviewed	5	Plan review procedures	Building Division, Public Works and Utilities Dept.	Miraflor Apartments, 7-Eleven, Legacy, Wells Landing North and South
	PRIVATE SITES: Construction site plans approved	2	Plan review procedures	Building Division, Public Works and Utilities Dept.	Miraflor Apartments and 7-Eleven,
	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	1	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	Quantum Eco Park
	Confirmed ERP coverage	1	Plan review procedures – NOI requirements	Building Division, Public Works & Utilities Dept.	Quantum Eco Park
	Notified of CGP stormwater permit requirements	0	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	Staff reviews
	Confirmed CGP coverage	4	Plan review procedures – NOI requirements	Building Division, Public Works and Utilities Dept.	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 Quantum Eco Park
	PERMITTEE SITES: Pre-, During, and Post	310	Construction site inspection	Building Division,	Staff Inspections

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**
	inspections of active construction sites for E&S and waste control BMPs		checklist and inspector's field notes	Public Works and Utilities Dept.	
	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	11	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
	Enforcement Action	0	Construction site inspection checklist	Building Division, Public Works and Utilities	
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	City Staff
Permittee construction site plan reviewers		7	Attendance list	Videos	City Staff
Permittee construction site operators		0	Attendance list	Videos	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: *COVID limited staff training opportunities*
	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*)	Public education, fertilizer ordinance and site specific BMPs provide for a 20% reduction as described in the NOAA Watershed Management Plan for the Boynton Inlet. The City recommends additional quarterly sampling in the two Boynton Beach locations described in City's 2019 Lake Ida TMDL Status Report for Cycle 4, Year 3.

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.*

City of Boynton Beach, Palm Beach County Permit # FLS000018

Year 4 – Follow-up report on plan implementation of changes to codes and regulations to reduce the stormwater impact from development.

Land Development Regulations (LDR)
Code or Ordinances
Comprehensive Plan

- LDR code section (Chapter 4, Article V, Section 2.A.4.c) limiting the amount the front yard can be paved for parking to 40%.
- Resolution R19-126 adopting the 2020 Palm Beach County Local Mitigation Strategy Plan
- Resolution R20-021 adopting the 2020 Climate Action Plan
- Resolution (R20-040) adopting a Complete Streets & Mobility Policy.
- Resolution R20-091 adopting citywide tree planting goal of 3,000 tree per year to achieve 20% tree canopy coverage by 2035. (Urban Tree Canopy report dated July 24, 2020)
- Ordinance No. 17-029 Amending Charter 4, Article X Flood Prevention Requirements
- Ordinance No. 19-011 Chapter 2 Article I, Green Building Program
- Ordinance No. 19-019 Chapter 4 Article XII, Fertilizer use regulations
- Ordinance No. 19-027 Chapter 4 Article XII, Sustainable Development Standards
- Ordinance No. 20-015 Amendments to the Comprehensive Plan Utility Element associated with an update to the 10 Year Water Supply Plan

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

March 2021

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 and the City of Boynton Beach (City) is one of the joint permittees of this permit under an Inter-local Agreement 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 available data, 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 the water bodies meet publicly adopted water quality standards. The data used for this monitoring program includes both FDEP data and provided by 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, and 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 Basin 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 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 the appropriate list. 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 two (2) WBIDs on the impaired waters list. The WBID, 3226-F2, Lake Worth Lagoon - South Section was listed as impaired for copper and is shown in Table 1. WBID 3262A, Lake Ida in the C-15 subbasin, is listed for nutrients.

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 marine 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 4
- 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 group's 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.

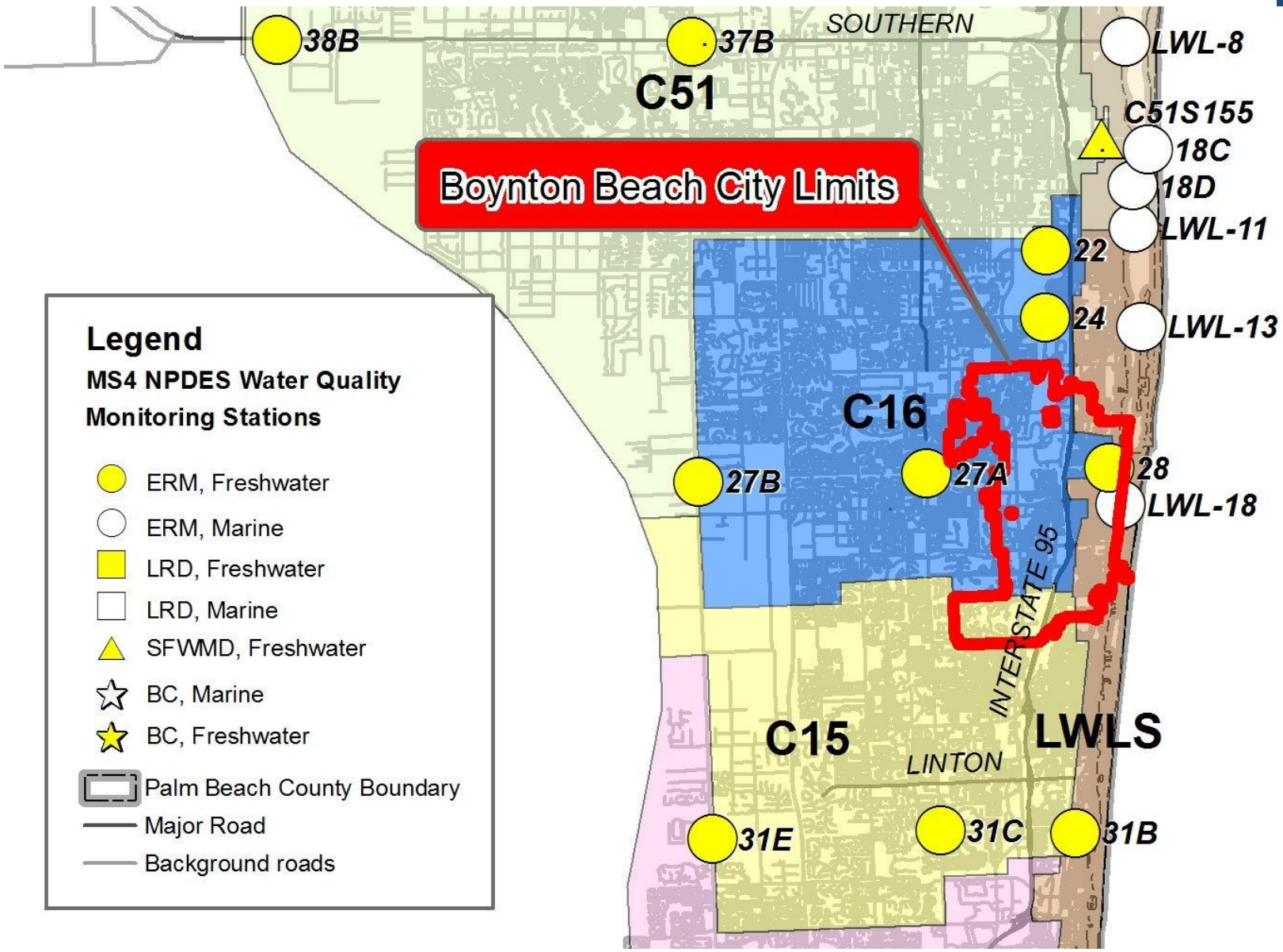

Figure 1 - Boynton Beach Ambient Water Quality Monitoring Stations

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 – 09/10/20					
SITE 28 (Samples 143)		**Count**	**Geometric Mean**	**Median**	**Max**	**Min**	**Standard Deviation**
Alkalinity	mg/L	90	147	147	210	119	15
Arsenic	mg/L	49	0.0025	0.0025	0.0071	0.0003	0.0013
Cadmium	mg/L	66	0.0005	0.0003	0.005	0.0002	0.0019
Chlorophyll-a (corrected)	ug/L	55	8.9	9.8	50.0	1.1	10.1
Copper	mg/L	66	0.0031	0.0031	0.02	0.0007	0.0037
Dissolved Oxygen	% Saturation	27	71.5	86.0	147.0	12.1	33.7
Fecal Coliform	cfu/100mL	28	104	92	2600	10	663
Lead	mg/L	66	0.0023	0.0025	0.0261	0.0003	0.0032
Nitrogen, Ammonia	mg/L	136	0.026	0.033	2.760	0.001	0.236
Nitrogen, nitrate + nitrite	mg/L	138	0.036	0.042	13.000	0.001	1.106
Nitrogen, Total	mg/L	137	0.95	0.99	13.71	0.06	1.21
Nitrogen, Total Kjeldahl	mg/L	141	0.84	0.87	5.81	0.04	0.51
pH	None	140	7.7	7.8	8.6	6.2	0.4
Phosphorus, orthophosphate	mg/L	140	0.020	0.030	0.250	0.001	0.050
Phosphorus, Total	mg/L	129	0.068	0.067	0.877	0.001	0.095
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	143	452	475	946	5	123
Temperature	deg C	143	25.2	26.0	56.8	13.1	4.8
Total Hardness	mg/L	72	177	177	308	120	27
Total Suspended Solids	mg/L	137	3.0	2.7	24.9	1.0	3.3
Turbidity	NTU	143	2.4	2.5	13.0	0.1	2.0
Zinc	mg/L	66	0.0061	0.0055	0.118	0.0024	0.014
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 155)		Period of Record 05/11/00 – 09/14/20					
		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	0.002	0.0008	0.005	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	127	8.2	5.2	58.1	1.6	8.6
Copper	mg/L	37	0.0053	0.0033	0.05	0.0017	0.008
Dissolved Oxygen	mg/L	29	88.8	89.0	131.9	0.0	23.9
Fecal Coliform	cfu/100mL	8	40	17	180	4	59
Lead	mg/L	14	0.0056	0.0025	0.025	0.0008	0.007
Nitrogen, Ammonia	mg/L	147	0.034	0.020	0.410	0.003	0.045
Nitrogen, nitrate + nitrite	mg/L	139	0.034	0.018	0.210	-0.005	0.041
Nitrogen, Total	mg/L	130	0.50	0.43	1.51	0.00	0.26
Nitrogen, Total Kjeldahl	mg/L	106	0.86	0.44	39.00	0.07	3.75
pH	None	152	7.9	7.9	9.1	6.5	0.3
Phosphorus, orthophosphate	mg/L	145	0.023	0.015	0.160	0.001	0.024
Phosphorus, Total	mg/L	139	0.052	0.044	0.230	0.001	0.033
Salinity	ppth	110	28.5161	30.3	36.7	9.37	6.1643
Specific Conductivity	umho/cm	154	43328	45753	64472	3790	9702
Temperature	deg C	153	26.7	27.0	33.6	16.3	4.0
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	123	10.5	8.0	56.0	1.0	8.4
Turbidity	NTU	144	4.0	3.6	17.0	0.7	2.2
Zinc	mg/L	14	0.0204	0.01	0.116	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 (2010 to 2020)

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 has had a violation based on the state's criteria (two exceedances within any 3-year period). LWL-18 exceedance was in the period of 2016- 2017. In the following year of 2018, TP decreased to its lowest level of 0.024 mg/L.

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

- **Chlorophyll-a** trend graphs indicate that LWL-18 and Station 28 data levels are increasing (trending upward). Station 28 is well below the required criteria limit. Station LWL-18 had four exceedances during the last 10-year period, with violations of the state standard in 2016 and 2017. During the year 2020, Chlorophyll-a decreased below the criteria limit to 5.07 ug/L. It is recommended that this station 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 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 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 body, 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 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 impacts, 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).

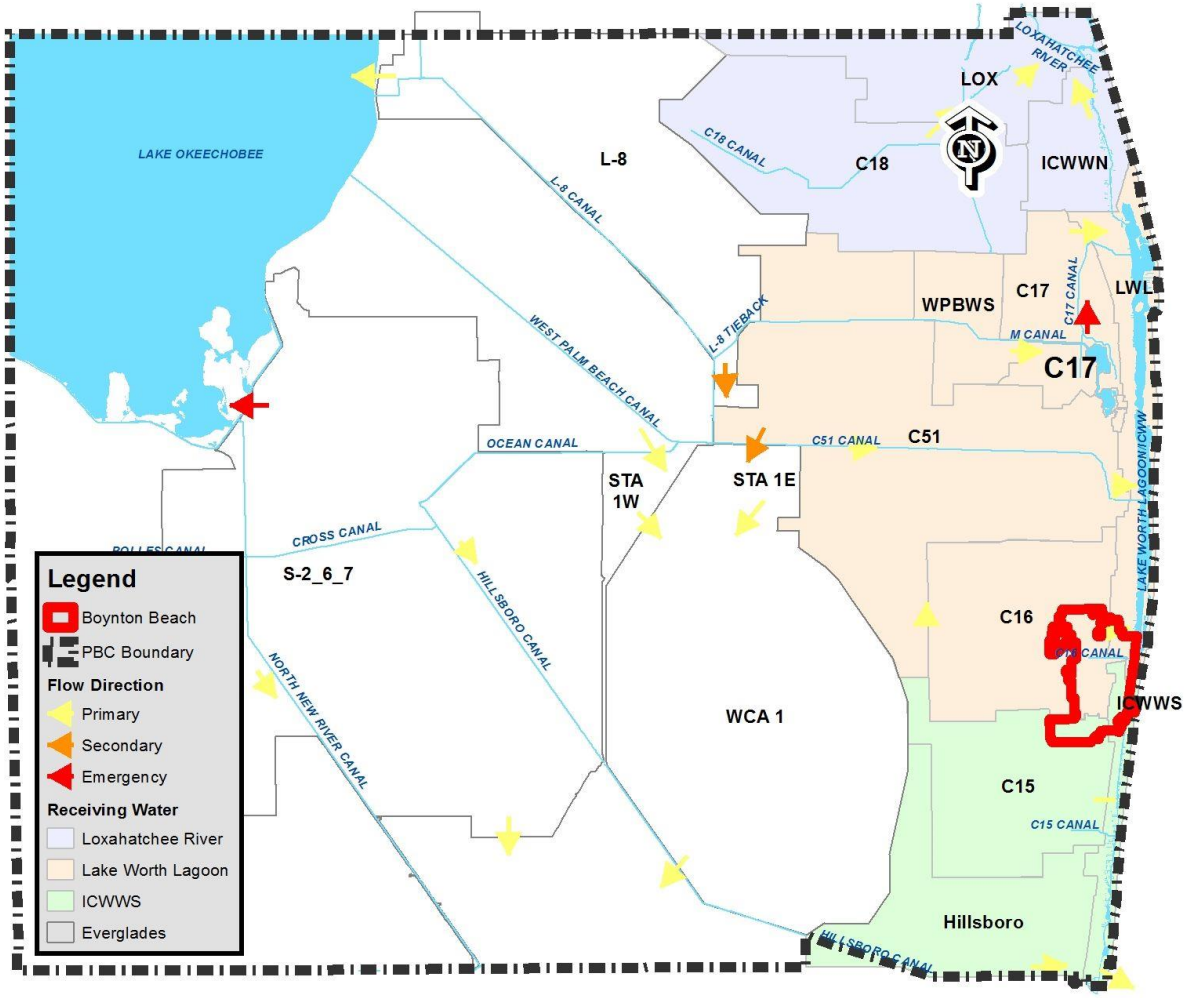

Figure 2 – Palm Beach County NPDES Watershed Flow[4] – City of Boynton Beach Boundary

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 parameters.

Pollutant loading 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**		
2019 Public Education (6%)	4,216	6,900	122	7	41	1,324		
2019 Street Sweeping			160			294		
Adjusted 2019 Loads	**66,058**	**108,103**	**1,758**	**115**	**637**	**20,453**		
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 are below the standards. Based on these facts the City recommends the continuation of monitoring 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 nutrient loading. Expansion of the City's street sweeping program is recommended to assist in further reducing nutrient loads and meeting any future TMDLs.

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 4, prepared by Mock-Roos Consulting Engineers. January 31, 2021. 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

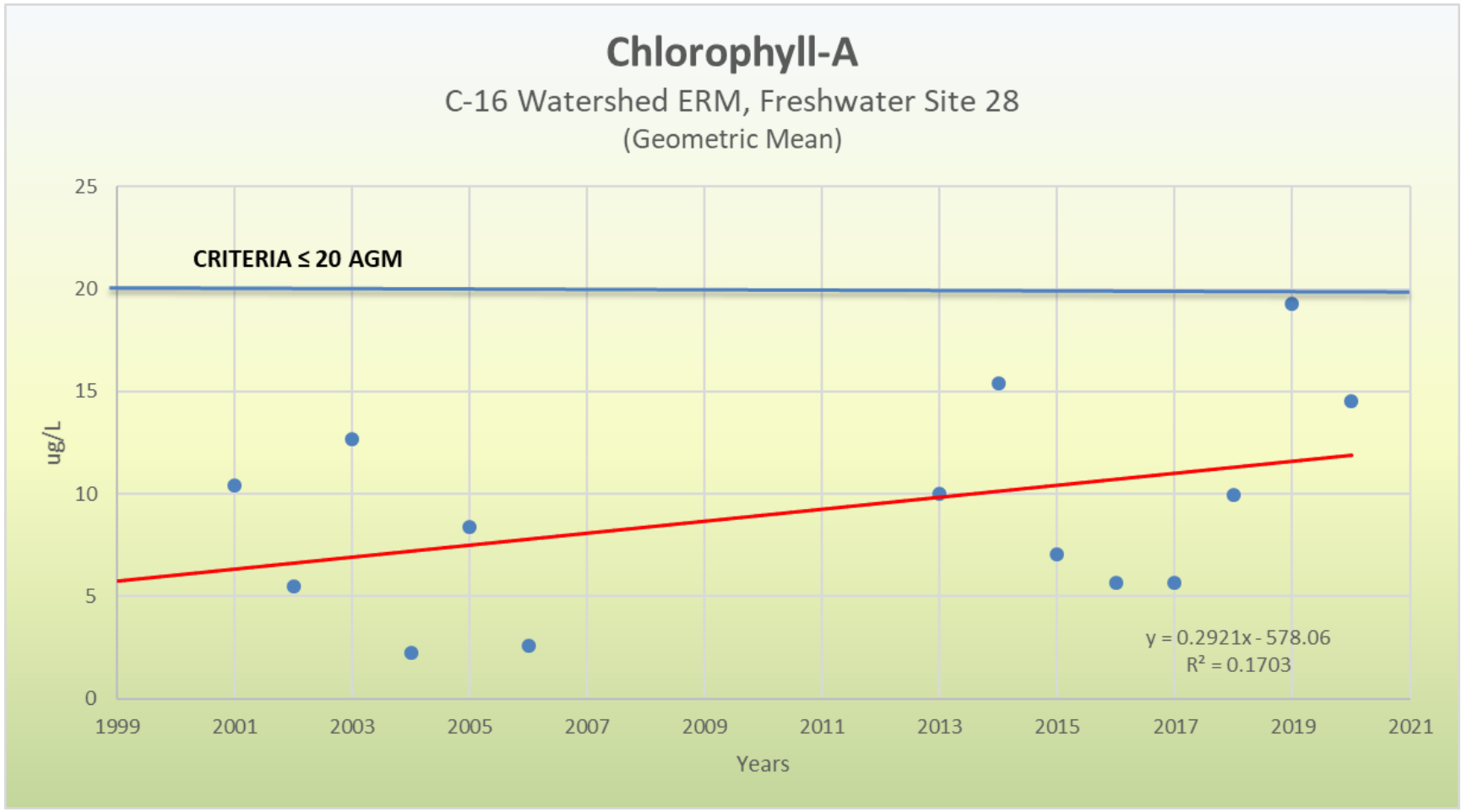

Figure 3 – C-16 Clorophyll-A

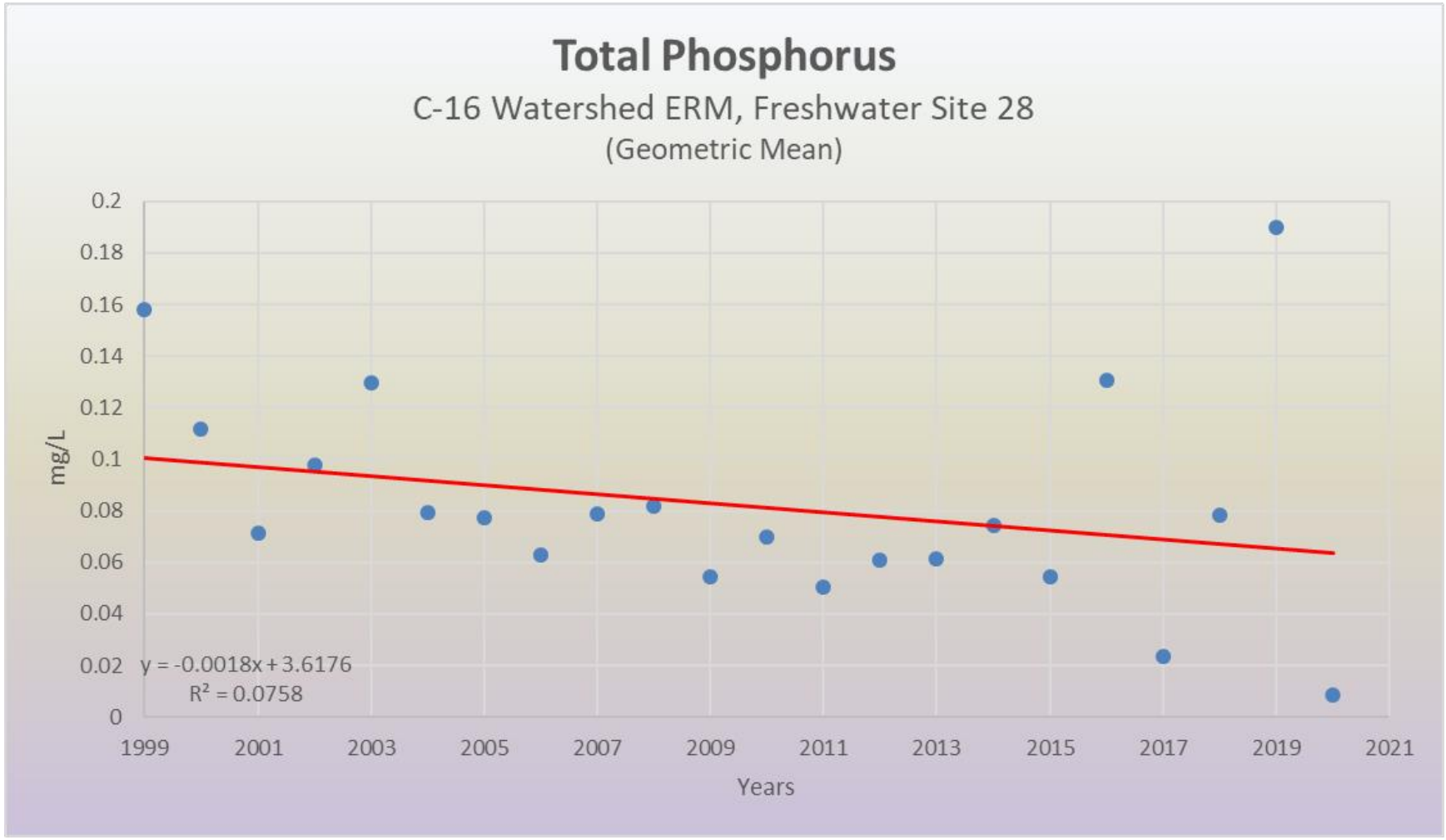

Figure 4 – C-16 Phosphorus

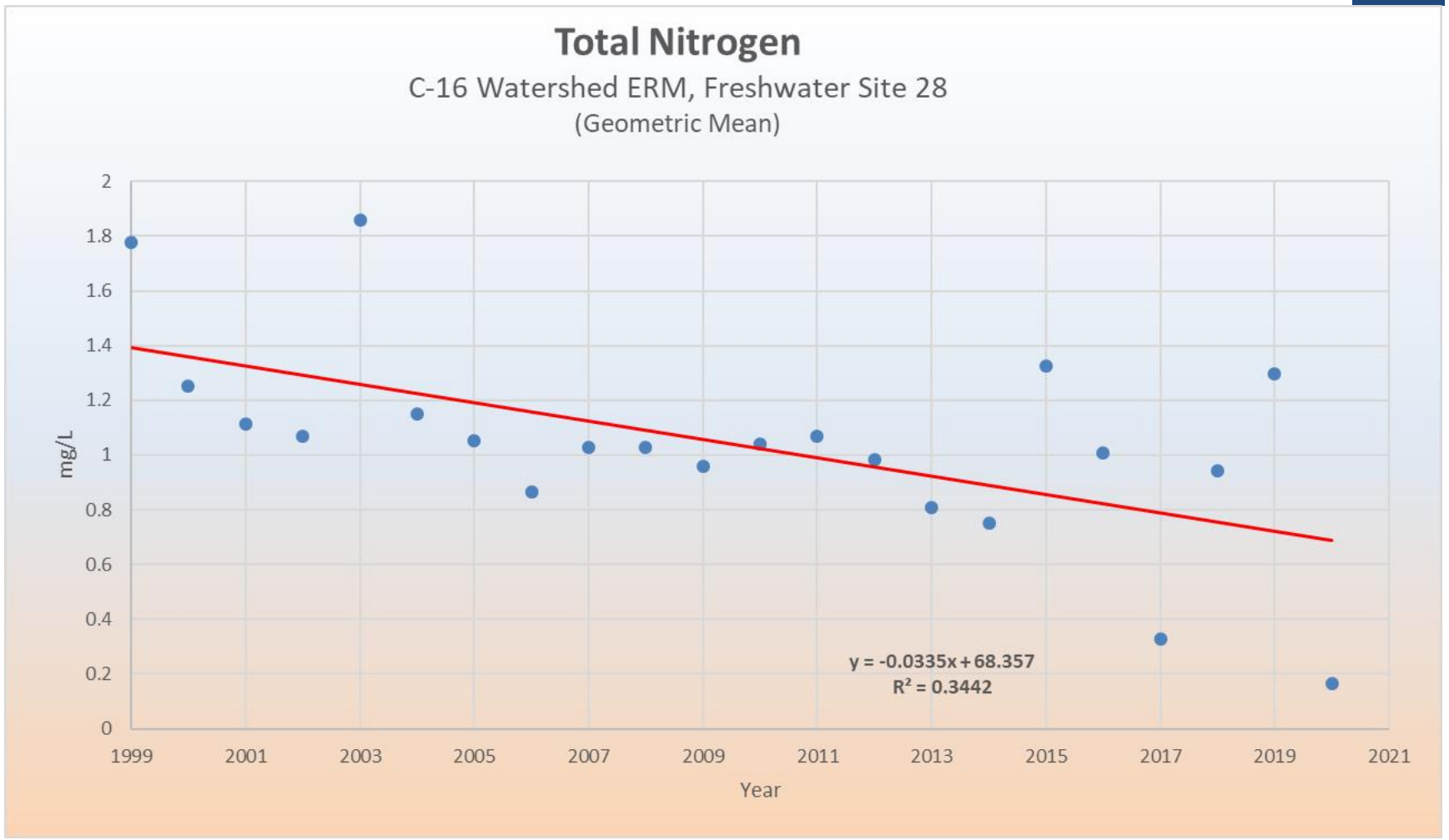

Figure 5 – C-16 Nitrogen

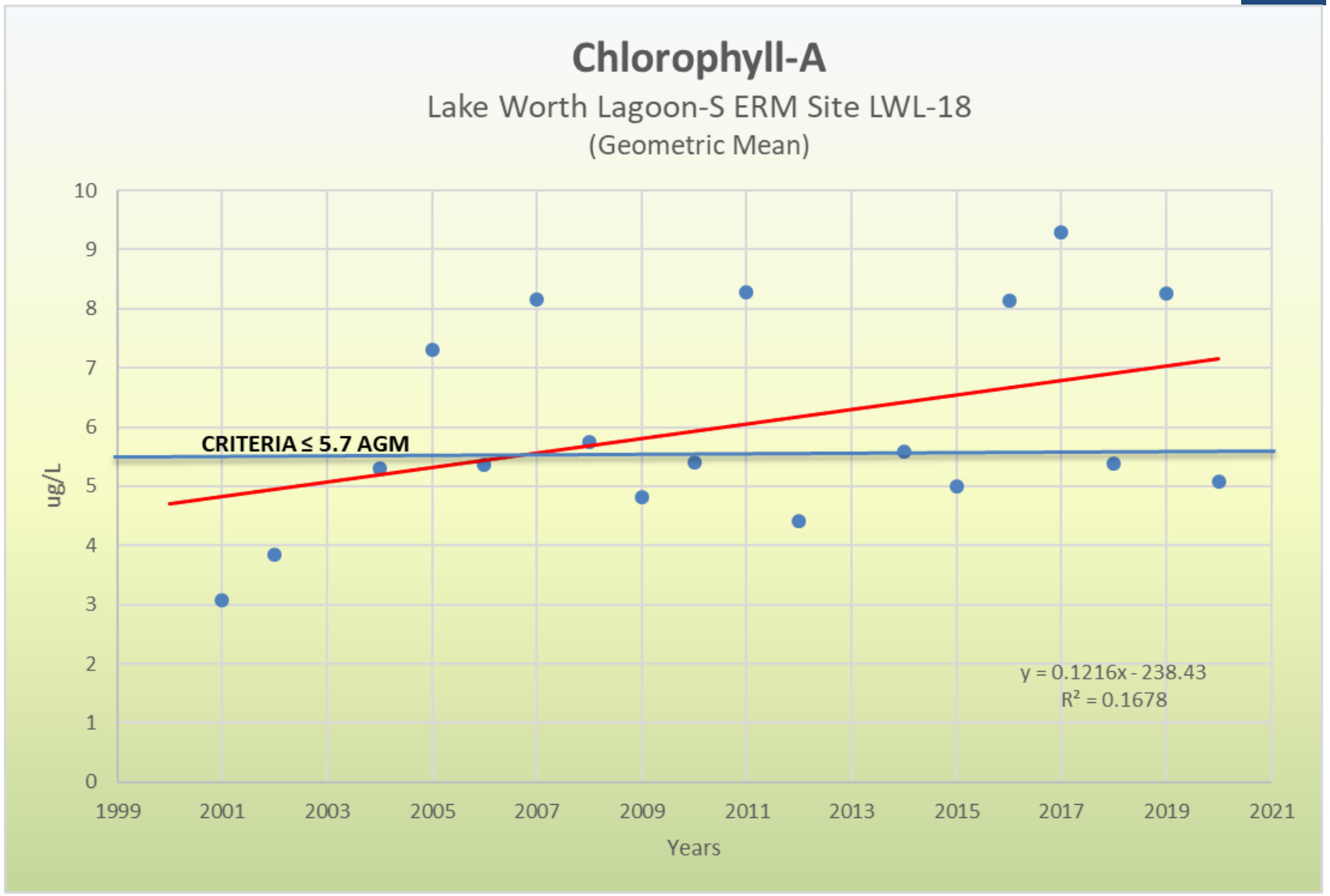

Figure 6 – Lake Worth Lagoon-S Chlorophyll-A

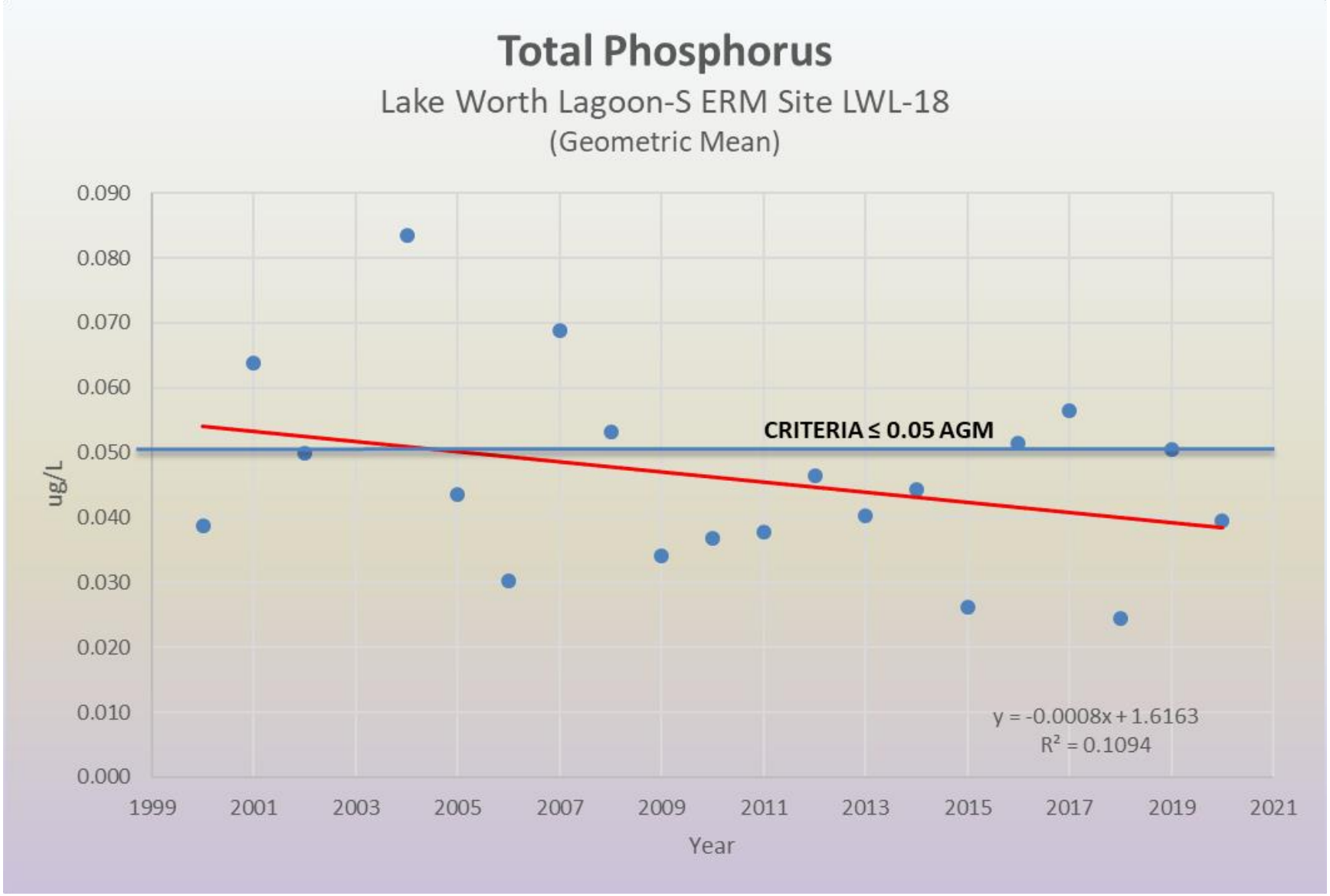

Figure 7 – Lake Worth Lagoon-S Phosphorus

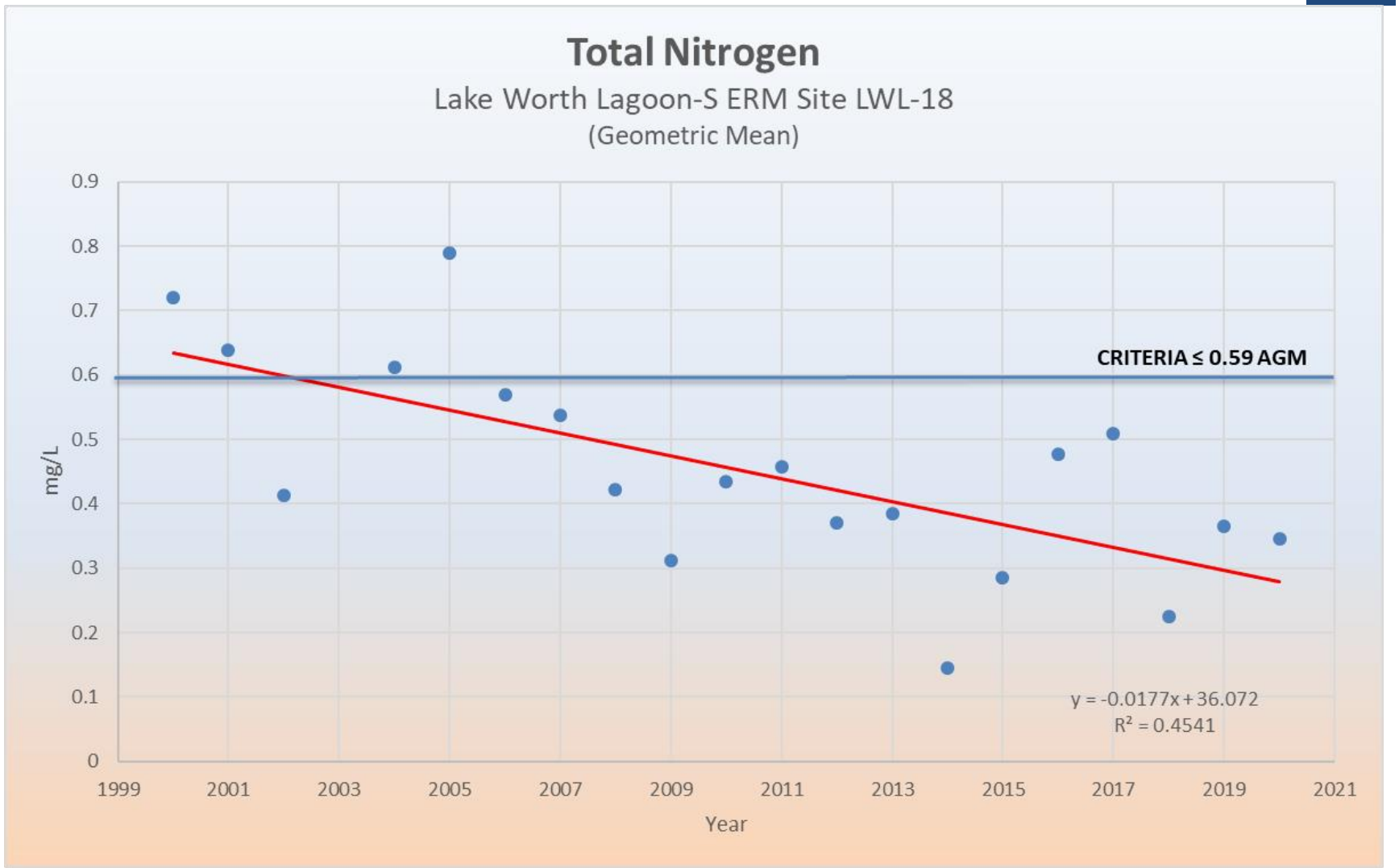

Figure 8 – Lake Worth Lagoon-S Nitrogen