BACTERIA TMDL ACTION PLAN

for

Elizabeth River Watershed and
Hoffler Creek Watershed

City of Portsmouth, VA
Permit No. VA0088668

June 20, 2018

Prepared by Arcadis

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1 INTRODUCTION

The City of Portsmouth (City) has developed this Bacteria Total Maximum Daily Load (TMDL) Action Plan (Plan) for the approved local TMDL reports for Elizabeth River and Hoffler Creek watersheds, as required by the Virginia Stormwater Management Program (VSMP) Individual Municipal Separate Storm Sewer System (MS4) Permit (Permit No. VA0088668), which was effective on July 1, 2016 and expires on June 30, 2021. This Plan was developed to comply with Part 1.D.2 of the Permit, TMDL Action Plans other than the Chesapeake Bay TMDL, and is required to be submitted to the Virginia Department of Environmental Quality (DEQ) no later than 24 months after the effective date of the Permit (by July 1, 2018). The DEQ TMDL Action Planning for Local TMDLs Guidance Memo (DEQ Guidance Memo)[1] was used to prepare this Plan, which is the first permit term of Bacteria TMDL Action Plan to be developed by the City to document the planned reductions of the pollutant(s) of concern (POC) in order to address the waste load allocations (WLA) identified by the permit.

The City is located within the James River Basin in coastal Virginia. The City is bordered on the west by the City of Suffolk, on the south, east, and west by the City of Chesapeake, on the north by the James River and on the east by the City of Norfolk. The Elizabeth River watershed is in central and eastern Portsmouth. The Hoffler Creek watershed is in the northwestern portion of the City, as shown in Figure 1.

Figure 1. City of Portsmouth, Hoffler Creek and Elizabeth River Locations

[1] Virginia DEQ Guidance Memo No. 16-2006, dated November 21, 2016

The name(s) of the Final TMDL Report(s) (DEQ Guidance Memo)

1.1 Elizabeth River Watershed

This TMDL Action Plan has been prepared to address the approved local TMDL report *Bacteria Total Maximum Daily Load (TMDL) Development for the Elizabeth River Watershed (dated April 2010 and approved by the SWCB on September 30, 2010).* A portion of the Elizabeth River watershed falls within the City of Portsmouth, and therefore the city is subject to the previously mentioned bacteria TMDL for the Elizabeth River.

1.2 Hoffler Creek Watershed

This TMDL Action Plan has been prepared to address the approved local TMDL report *Bacteria Total Maximum Daily Load (TMDL) Development for the Hoffler Creek Watershed (dated September 2011 and approved by the SWCB on June 29, 2012).* The northwest corner of the City of Portsmouth falls under the Hoffler Creek watershed and therefore the City is subject to the previously mentioned bacteria TMDL for Hoffler Creek.

This Plan is organized as follows to address specific MS4 Permit requirements:

- Section 2: Pollutant(s) Causing Impairment(s)
    - Elizabeth River Watershed
    - Hoffler Creek Watershed
- Section 3: Waste Load Allocations assigned to MS4
    - Elizabeth River Watershed
    - Hoffler Creek Watershed
- Section 4: Significant Sources of POC(s) (Permit Section I.D.2.b(3))
    - Elizabeth River Watershed
    - Hoffler Creek Watershed
- Section 5: Existing or New Best Management Practices (Permit Section I.D.2.b(2))
- Section 6: Legal Authority for TMDL Implementation (Permit Section I.D.2.b(1))
- Section 7: Enhancements to Public Education, Outreach and Employee Training Programs (Permit Section I.D.2.b(3))
- Section 8: Milestone Implementation Schedule
- Section 9: Methods to Assess TMDL Action Plan (Permit Section I.D.2.b(5))
    - Elizabeth River Watershed
    - Hoffler Creek Watershed
- Section 10: Measurable Goals and Metrics to Track Compliance (Permit Section I.D.2.b(5))
- Section 11: Public Comment Process (Permit Section I.D.2.b(6))
- Section 12: Conclusions
- Section 13: Limitations

2 POLLUTANT(S) CAUSING IMPAIRMENT(S)

The pollutant(s) causing the impairment(s) (DEQ Guidance Memo)

Enterococcus bacteria is the pollutant of concern for the Elizabeth River and Hoffler Creek watersheds. Both are listed on Impaired Waters – 303(d) List for Recreation, due to exceedances of the criteria for enterococcus bacteria for primary contact: Elizabeth River (2008) and Hoffler Creek (2010).

2.1 Impairments in the Elizabeth River Watershed

The Elizabeth River watershed has nine impaired segments covered in four TMDLs. The City of Portsmouth covers 17,544 acres in the Elizabeth River watershed and is broken down into the following segments:

- TMDL 1 (Upper Mainstem, Lower Southern branch, Lower Eastern Branch, Indian River, and Broad Creek),
- TMDL 2 (Western Branch), and
- TMDL 4 (Paradise Creek).

Figure 2 shows the boundaries of the watershed. The segments are listed as impaired according to the VA DEQ criteria for recreational uses (VA DEQ, 2016) of waterbodies located in saltwater or in a transition zone:

> Enterococci bacteria shall not exceed a geometric mean of 35 counts per 100 ml of water for four or more samples over a calendar month nor shall more than 10% of the total samples in the assessment period exceed enterococci 104 CFU/100ml.

Analysis of physical, chemical, biological, and observational data indicate potential key sources of bacteria. Land use characterization was based on the latest available land cover data from the National Land Cover Dataset (NLCD) 2005 Dataset. The primary land uses in the watershed are 58% developed and 24% wetland.

Potential sources of bacteria include run-off from grazing livestock, industrial waste, agricultural practices, residential waste, and pet waste. The TMDL identified and characterized potential bacteria sources in the watershed to include MS4 permitted facilities, failed septic systems, sanitary sewer overflows, marinas, livestock, wildlife, and pets. Eight MS4 permits are held in the Elizabeth River Watershed TMDL: four Phase I MS4 permits (Portsmouth, Chesapeake, Norfolk, Virginia Beach) and four Phase II MS4 permits (Suffolk, Norfolk State University, Portsmouth Naval Medical Center, Scott Center Annex). An inventory of livestock, wildlife, and pets was collected from data provided by the Cities, Census of Agriculture (2007), the Virginia Department of Game and Inland Fisheries (VDGIF), the American Veterinary Medical Association (AVMA), as well as from other sources.

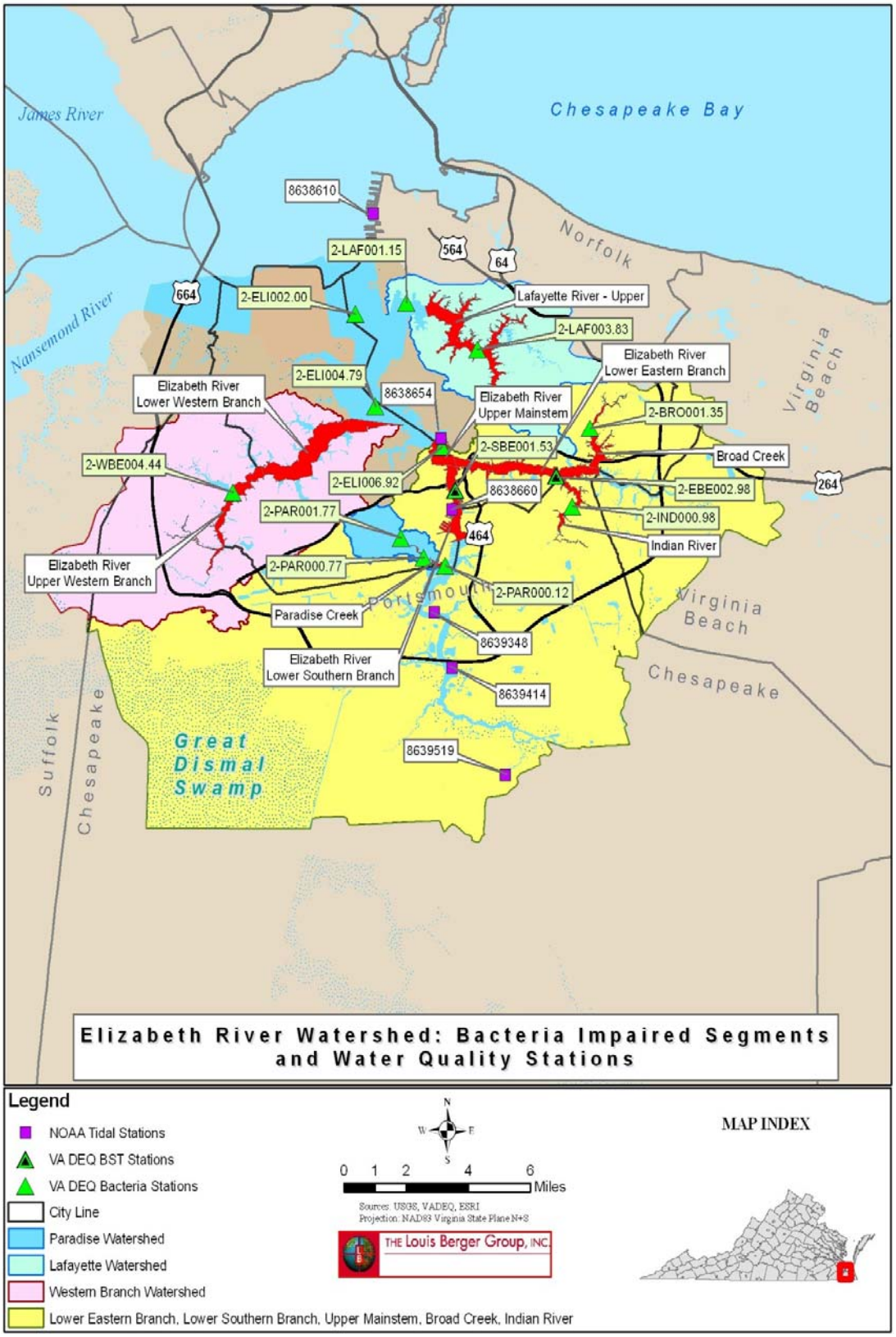


Figure 2. Elizabeth River Watershed Overview and Monitoring (by The Louis Berger Group, Inc.)

2.2 Impairments on the Hoffler Creek Watershed

The impaired segment within the Hoffler Creek watershed covers 1,781 acres with 1,122 acres within the city of Portsmouth MS4 permit, see Figure 3. The segment is listed as impaired according to the VA DEQ criteria for recreational uses (VA DEQ, 2001) of waterbodies located in saltwater or in a transition zone:

> Enterococci bacteria shall not exceed a geometric mean of 35 counts per 100 ml of water for four or more samples over a calendar month nor shall more than 10% of the total samples in the assessment period exceed enterococci 104 CFU/100ml.

Analysis of physical, chemical, biological, and observational data indicate potential key sources of bacteria. Land use characterization was based on the latest available land cover data from the National Land Cover Dataset (NLCD) 2006 Dataset. The primary land uses in the watershed are 72% developed and 12% wetland. Potential sources of bacteria include run-off from wildlife, residential waste, and pet waste. The TMDL identified and characterized potential bacteria sources in the watershed to include sanitary sewer overflows, wildlife, and pets. Three MS4 permits are held in the Hoffler Creek Watershed TMDL: one Phase I MS4 (Portsmouth) and two Phase II MS4 (Suffolk, VDOT). An inventory of livestock, wildlife, and pets was collected from data provided by the Cities, Census of Agriculture (2007), the Virginia Department of Game and Inland Fisheries (VDGIF), the American Veterinary Medical Association (AVMA), as well as from other sources.

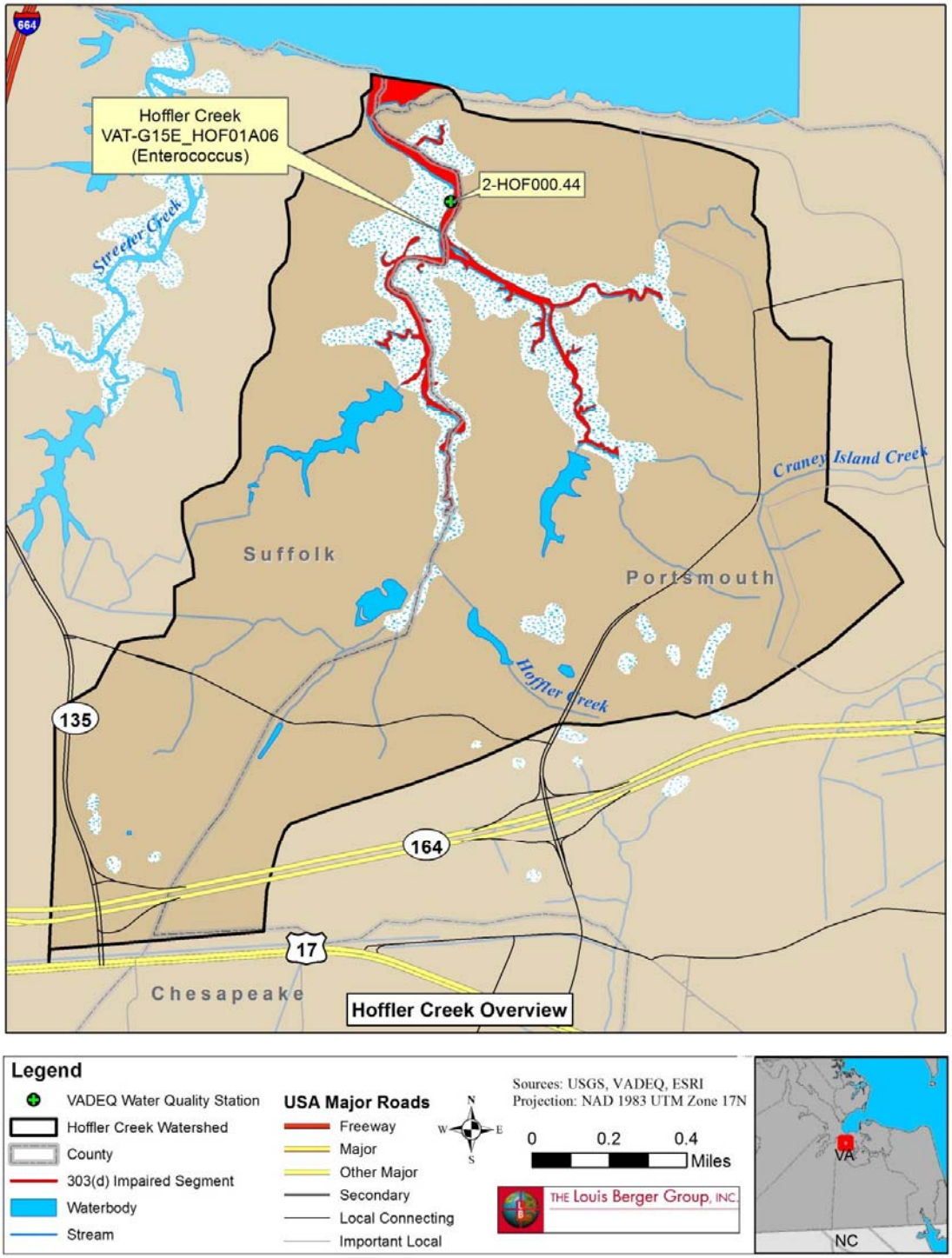


Figure 3. Hoffler Creek Watershed Overview (by The Louis Berger Group, Inc.)

3 WASTE LOAD ALLOCATIONS ASSIGNED TO MS4

The WLA(s) assigned to the MS4 as aggregate or individual WLAs (DEQ Guidance Memo)

A simple volumetric approach was used to calculate current loads, allocation, and determine reductions for each source. The load allocation was calculated using the following equation:

$$TMDL = \sum WLA + \sum LA + MOS$$

Where,

WLA = waste load allocation (point source contributions);

LA = load allocation (non-point source allocation); and

MOS = margin of safety.

3.1 WLA for the Elizabeth River Watershed

The Waste Load Allocation (WLA) for Enterococci for the City of Portsmouth Elizabeth River Watershed based on MS4 Permit #VA0088668 is shown in Table 1 below.

Table 1. Waste Load Allocation for Enterococci for the City of Portsmouth Elizabeth River Watershed

TMDL #	River Sections	MS4 Permit #	Existing Load Counts/day	Allocated Load Counts/day	Required Reduction %
1	Upper Mainstem, Lower Southern Branch, Lower Eastern Branch, Broad Creek, Indian River	VA0088668	9.28E+13	4.42E+12	95%
2	Western Branch	VA0088668	2.10E+14	9.77E+12	95%
4	Paradise Creek	VA0088668	1.01E+13	4.79E+11	95%

3.2 WLA for the Hoffler Creek Watershed

The WLA for Enterococci for the City of Portsmouth based on MS4 Permit #VA0088668 is 3.34E+11 counts/day, with a 95.6% required reduction.

4 SIGNIFICANT SOURCES OF POC

Significant sources of POC(s) from facilities of concern owned or operated by the MS4 permittee that are not covered under a separate VPDES permit. A significant source of pollutant(s) from a facility of concern means a discharge where expected pollutant loading is greater than the average allocated pollutant loading for the land use identified in the TMDL (DEQ Guidance Memo)

4.1 Significant Sources of POC in the Elizabeth River Watershed

Land use characteristics in Table 2 were collected from the sources previously listed in section 2.1

Table 2. Land Use in the Elizabeth River Drainage Area*

General Land Use Category	Specific Land Use Type	Acres	Total Acres	Percentage of Watershed (%)	Total Percent (%)
Developed	High Intensity Developed	7,700	68,887	6%	58%
	Medium Intensity Developed	13,048		11%	
	Low Intensity Developed	32,322		27%	
	Developed Open Space	15,816		13%	
Agriculture	Cultivated Crops	4,537	5,370	4%	5%
	Pasture/Hay	833		<1%	
Forest	Deciduous Forest	3,137	5,462	3%	5%
	Evergreen Forest	1,764		1%	
	Mixed Forest	560		<1%	
Wetlands	Estuarine Emergent Wetland	2,588	28,735	2%	24%
	Estuarine Forested Wetland	<1		<1%	
	Estuarine Scrub/Shrub Wetland	87		<1%	
	Palustrine Emergent Wetland	357		<1%	
	Palustrine Forested Wetland	23,589		20%	
	Palustrine Scrub/Shrub Wetland	2,113		2%	
Water	Palustrine Aquatic Bed	5	6,909	<1%	6%
	Water	6,905		6%	
Other	Barren Land	150	3,344	<1%	3%
	Grassland (not used in agriculture)	625		<1%	
	Scrub/Shrub	2,514		2%	
	Unconsolidated Shore	55		<1%	
	Total	**118,707**		**100%**	**100%**

*Data is for the entire Elizabeth River Watershed

No municipal permitted facilities discharge into the bacteria impaired watershed, therefore no waste load was allocated to permitted facilities. To account for future growth, one percent of the LA for Elizabeth River was allocated to the WLA. The bacteria load was allocated using a weighted approach. A margin of safety (MOS) which accounts for any lack of knowledge is applied to the waste load allocation. Non-point source reduction was incorporated into the load allocation. In addition to this, the total load from sanitary sewer overflows (SSOs) was included in load allocation but not the WLA for several reasons stemming from quantifying overflows. The load allocation was based on the proportion of bacteria sources, and estimated form the EPA's bacteria indicator tool.

4.2 Significant Sources of POC in the Hoffler Creek Watershed

Data in Table 3 was collected from sources on land use characteristics, mentioned previously in section 2.2.

Table 3. Land Use in the Hoffler Creek Drainage Area*

General Land Use Category	NLCD 2006 Land Use Category	Acres	Total Acres	Percentage of Watershed (%)	Total Percent (%)
Developed	Developed High Intensity	30.6	1,280.2	1.7%	71.9%
	Developed Medium Intensity	232.2		13.0%	
	Developed Low Intensity	559.9		31.5%	
	Developed Open Space	457.5		25.7%	
Agriculture**	Cultivated Crops	4.9	8.3	0.3%	0.5%
	Pasture/Hay	3.3		0.2%	
Forest	Deciduous Forest	51.6	124.4	2.9%	6.9%
	Evergreen Forest	61.4		3.4%	
	Mixed Forest	11.4		0.6%	
Wetland	Palustrine Emergent Wetland	19.2	220.1	1.1%	12.4%
	Palustrine Forested Wetland	110.5		6.2%	
	Palustrine Scrub/Shrub Wetland	9.6		0.5%	
	Estuarine Emergent Wetland	79.5		4.5%	
	Estuarine Scrub/Shrub Wetland	1.3		0.1%	
Water	Open Water	106.3	106.3	6.0%	6.0%
Other	Scrub/Shrub	32.6	42.0	1.8%	2.3%
Total		**1,781.3**		**100%**	**100%**

*Data is for the entire Hoffler Creek Watershed
**The portion of Hoffler Creek Watershed within the City of Portsmouth contains no Agricultural Lands

No municipal permitted facilities discharge into the bacteria impaired watershed, therefore no waste load was allocated to permitted facilities. To account for future growth, one percent of the LA for Hoffler Creek was allocated to the WLA. The bacteria load was allocated using a weighted approach. The allocation was based on the urban area that is covered in each TMDL watershed. The reduction of loading from non-point sources (livestock, wildlife, pets, failed septic systems) including those that are not covered under MS4 area and the non-urban area of the MS4 was incorporated into the load allocation. In addition to this, the total load from the SSOs was included in load allocation.

5 EXISTING OR NEW BEST MANAGEMENT PRACTICES

Existing or new management practices, control techniques, and system design and engineering methods, that have been or will be implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant for which the WLA was established (DEQ Guidance Memo)

The following BMPs will be implemented by the city to reduce Enterococci pollution from entering the watersheds. The BMP implementation will reflect the ratio of the watershed areas in the City with the majority being installed in the Elizabeth River watershed.

BMP 1: Site Inspections – As part of the stormwater management program, the City will continue to perform routine site inspections on projects that disturb 2,500 square feet or more of land, including demolition projects. Enforcement actions will be performed to ensure violators correct deficiencies, such as portable toilet care and placement. Site inspections will be performed once every two weeks and following any runoff-producing storm events. Following a repeat violation, inspections will be performed weekly until compliance is achieved. Inspection forms will be filled out and kept in an electronic database as well as in a paper filing system. Total number of inspections and active projects will be reported in the annual report. As a goal, the City will continue to perform the inspections and actions above routinely.

BMP 2: Education/Public Awareness – The City of Portsmouth works with Ask HR Green and HR Storm to produce publications for the City, including handouts, pledges, brochures, business education, storm drain medallions and more. To help reduce the amount of pollutants that enter area waterways, efforts are made to educate the general public and specific businesses to raise their awareness of stormwater pollution and ways to prevent it (see Section 7). The City goal will be to continue producing publications and collaborating with Ask HR Green and HR Storm.

BMP 3: Illicit Discharge Program – There are multiple pages on the City website that allow for the reporting of potential stormwater issues. City stormwater publications all contain a phone number and email address to help promote the reporting process. Directions for City employees on how to handle major and minor spill responses are on laminated cards and placed in all the City's trash, recycling, and public works vehicles. Routine field screenings will continue, and upon detection of dry weather flow, the source will be determined, and the City will attempt to resolve. Preventative measures will continue with inspections performed by the Fire Department to ensure materials are handled and stored in a safe manner. The goal of the City will be to continue preventative routine field screenings, and any Illicit Discharge Detection and Elimination (IDDE) incident to be documented, reported, and resolved.

BMP 4: Sanitary Sewer Overflows - The City requires any discharge from the sanitary sewer system to the stormwater system to be reported. Table 4 shows the number of SSOs and estimated gallons since the TMDL has been implemented.

Table 4. Sanitary Sewer Overflows

Fiscal Year	Number of Incidences	Gallons Spilled
2011	47	3,637
2012	18	622
2013	34	2,001
2014	34	1,369
2015	70	1,689
2016	32	2,539
2017	79	1,959
2018	26	945

As part of the DEQ Region-wide Consent Decree, the Department of Public Utilities is aggressively taking measures to control SSOs. The department submits all documentation and reports required by the consent order. All requirements are on schedule for completion and 99% of all recommended manhole inserts and wash out box plugs have been installed. As a goal, each incident will be reported to the VA DEQ and corrective actions will be taken by the wastewater utility through the Sanitary Sewer Overflow Reporting System (SSORS).

BMP 5: Sanitary Sewer Monitoring – The City continuously monitors flow at 3 sites and all 65 City pump stations to help identify any blockages, overflows, or overloaded areas. All flow and SSES (Sanitary Sewer Evaluation Survey) data is evaluated and each basin evaluated. The City goal will be to continue to perform field investigations on the sanitary system in order to maintain system integrity and prevent future SSOs. This monitoring will be on-going.

BMP 6: Capital Improvement Program – The City of Portsmouth Capital Improvement Program (CIP) aims to address physical conditions in the system that may contribute to an SSO or have potential adverse impacts to health and safety. This is done through CCTV inspections, responding to calls, and proactively investigating system conditions. The total miles of CCTV performed annually since 2011 are shown in Table 5 below. These focus on the backbone sewer and inspection of gravity sewers, extending from reoccurring SSO locations to the location of stoppage. Faults will be prioritized and addressed based on urgency. The City will continue to assess potential replacement areas through CCTV and create rehabilitation plans annually. For fiscal year 2019, The City plans to rehab 6,546 linear feet of pipe. The goal of the City will be to CCTV 119,000 linear feet (22.5 miles) of sanitary sewer each year as required in the MS4 permit.

Table 5. CCTV Quantities

Fiscal Year	CCTV by City (mi)	CCTV by Contractors (mi)	Total CCTV (mi)	Percent of City Sewers
2011	3.5	41.9	45.4	11.8%
2012	4.9	32.1	37.0	10.1%
2013	4.3	18.6	22.9	6.3%
2014	6.9	15.3	22.2	6.1%
2015	5.2	7.9	13.1	3.6%
2016	4.7	15.8	20.5	5.6%
2017	1.3	10.4	11.7	3.2%
2018	0.7	5.2	5.9	1.6%

BMP 7: <u>Pet Waste Stations</u> – The Hoffler Creek bacteria TMDL determined 72% of the bacteria contribution was from pet waste. The Portsmouth portion of the contribution from pets to the Elizabeth River is unknown. Beginning in 2012, 18 pet waste stations have been installed and maintained in the City of Portsmouth; 4 stations are in the Hoffler Creek watershed (Stations Hoffler 3-6) and 12 within the Elizabeth River watershed, three of which are in close proximity of the Hoffler Creek watershed (Hoffler 1-2, 7). See Figure 4 for station locations within the City. Along with maintaining existing stations, the City will continue to identify areas with high pet concentrations in need of potential stations. To encourage proper pet waste disposal, a goal of 10 new pet waste stations will be installed from these identified locations.

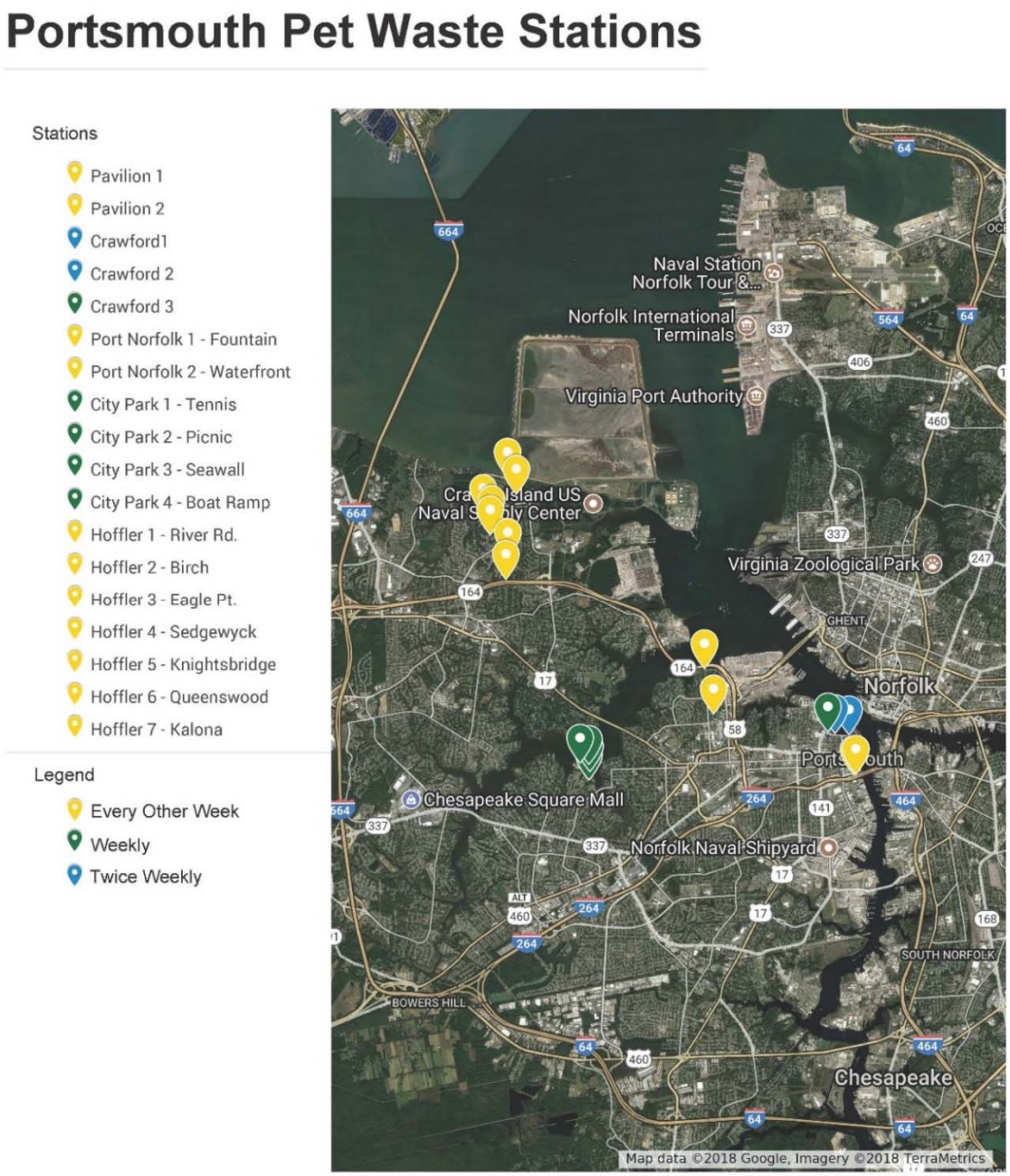


Figure 4. Pet Waste Stations

BMP 8: <u>Dog Parks</u> – The environment of dog parks encourages patrons to pick up after their pets. Currently there are no dog parks in the City of Portsmouth. Parks, Recreation, and Leisure Services are continuing to promote pocket dog parks within communities throughout the City. A dog park would encourage people to exercise their dogs in the designated area rather than walking them in neighborhoods where there is a higher chance of waste not being properly disposed of. A goal of the City will be to identify 1 potential location for a dog park of ranging from 0.5 acre to 1 acre.

BMP 9: <u>Structural BMPs</u> - The City proposes to continue to perform routine maintenance as needed on City-owned structural BMPs. City staff will continue to annually review assessments and budget for specific projects.

BMP 10: Septic System Management – Portsmouth still has 70 active septic systems citywide, 5 of which are in the Hoffler Creek watershed and the remainder in the Elizabeth River watershed. Since the implementation of the TMDL report, 7 systems have been tied to the City sewer system, 1 from the Hoffler Creek Watershed. Currently there is no system to track septic maintenance and pumping. The City goal is to work with VDH on developing and implementing a septic management plan during the permit cycle.

BMP 11: Marina Waste Collection and Enforcement – Marinas can be a significant source of human waste pollution when waste is not properly disposed of or pump stations do not work properly. The City sponsors the HRSD Boater Education and Pump Out Program, providing dedicated HRSD teams to service Portsmouth marinas. The program educates users and provides pump out services free of charge. Marinas with existing pump outs may obtain supplemental support if their system malfunctions or fails. The program currently services select marinas and boat ramps as well as service call-ins, walk-up, and residential appointments. The City's goal is to maintain this program and spread awareness and participation in the free pump out service.

6 LEGAL AUTHORITY FOR TMDL IMPLEMENTATION

> *Legal authorities such as ordinances, state, federal, and other permits, orders, specific contract language, and interjurisdictional agreements applicable to reducing the POCs identified in each respective TMDL (DEQ Guidance Memo)*

Under the City's MS4 Permit's TMDLs Action Plans other than the Chesapeake Bay TMDL (Part I, D.2), the City of Portsmouth is required to:

- Conduct a review of its currently implemented MS4 program that includes review of the City's existing legal authorities and the City's ability to ensure compliance with the Permit.

Compliance with this Plan represents adequate progress during the current MS4 Permit term towards achieving TMDL waste load allocations consistent with the assumptions and requirements of the local TMDLs. Relevant existing legal authorities include ordinances, permits, orders, contracts, inter-jurisdictional agreements and other enforceable mechanisms.

6.1 Current Program and Existing Legal Authority

The City of Portsmouth Department of Engineering and Technical Services, Stormwater Compliance is responsible for the overall implementation of the MS4 Permit and reporting requirements. The City has adopted an MS4 Program Plan that documents its capabilities for implementation of all MS4 Permit requirements, including the programmatic and legal authorities required to meet the local TMDLs requirements. The full MS4 Program Plan can be found online at https://www.portsmouthva.gov/DocumentCenter/View/3202/MS4-Program-Plan. The following components of the City's MS4 Program will be utilized to meet this Plan requirements:

- The Stormwater Management Ordinance (Chapter 31.2), Erosion and Sediment Control Ordinance (Chapter 11), Water, Sewers and Sewage Disposal Ordinance (Chapter 38), Fire Prevention Code (Chapter 13), and Garbage and Refuse Code (Chapter 16) provide the authority to control pollutant discharges to the MS4.

- The City has authority as authorized by state law and as stated in local ordinances, including options for escalating enforcement steps as appropriate in the City's exercise of its enforcement discretion as the regulator of covered third party activities. Local enforcement authority includes:
    - Stormwater Management Ordinance (Chapter 31.2): see § 31.2-21. Enforcement and § 31.2-23. Pollution of the Stormwater System.
    - Erosion and Sediment Control Ordinance (Chapter 11): see § 11-7. Violations, Penalties, Legal Remedies.
    - Water, Sewers, and Sewage Disposal Ordinance (Chapter 38): see § 38-2. Violations of Chapter.
    - Fire Prevention Code (Chapter 13): § 13-83. Enforcement and § 13-84. Violations.
    - Chesapeake Bay Preservation Act Ordinance (Chapter 9.1): § 9.1-13. Enforcement
- Contracts and interjurisdictional agreements:
    - To the extent authorized by state law, the City has authority to enter and carry out contracts and, in event of breach of any contract by a counterparty, to enforce such contracts according to the provisions.
- The City has authority to conduct inspections and monitoring related to implementing the permit requirements, including but not limited to:
    - Stormwater Management Ordinance (Chapter 31.2): § 31.2-13. Monitoring and Inspections.
    - Erosion and Sediment Control Ordinance (Chapter 11): § 11-6. Monitoring, Reports and Inspections.
    - Water, Sewers and Sewage Disposal Ordinance (Chapter 38): § 38-53. Right of entry and access to premises.
    - Fire Prevention Code (Chapter 13): § 8.1-9. Investigation.
    - City Portsmouth Code of Ordinances

6.2 New or Modified Legal Authority

No new legal authority or modifications to the existing legal authority are necessary in order to meet the local TMDL Action Plans requirements.

7 ENHANCEMENTS TO PUBLIC EDUCATION, OUTREACH, AND EMPLOYEE TRAINING PROGRAMS

Enhancements to public education, outreach, and employee training programs to also promote methods to eliminate and reduce discharges of POC(s) for which a WLA has been assigned (DEQ Guidance Memo)

The City continues to implement a public education and outreach program as part of its MS4 Program Plan. This program has many goals including making the public aware of the results of polluting the stormwater system, involving the community in improving the quality of the area waters, and educating the public on ways to decrease the amount of pollution that is entering the area's waterways. The City will continue to distribute educational material to citizens throughout the year. HR Storm, Ask HR Green, Chesapeake Club, and the City work together to distribute various materials from pet waste information to yard care to violation letters. Included with all education materials is a number to call if citizens have any questions about the stormwater management program. The City participates in many regional and

national events, such as cleaning up the bay, public parks, and land to increase public participation and awareness.

There are two pages on the City's website allowing for reporting of potential stormwater issues, including illicit discharges. The City Manager's webpage and the Public Works page each contain drop-downs that allow for ease of use of the web reporting method. All city stormwater publications contain a phone number and/or an email address to promote the reporting process. Any report will be promptly addressed, and necessary actions taken to resolve the illicit discharge reported.

The City will also continue to participate in the Storm Drain Medallion Program. Storm inlets are identified with a medallion marked "No Dumping. Drains to Waterway" to help remind citizens about pollution and the importance of preventing pollution from entering the waterways.

The City sponsors the HRSD Boater Education and Pump Out program, providing free service and education. The program operates year round, with a crew dedicates to visiting Portsmouth marinas at least one day each weekend. With each visit the crew provides pump out services as well as a face-to-face instructional session. The program will also attend water themed events and festivals in Portsmouth to promote the program and City sponsorship.

The City's stormwater website (https://www.portsmouthva.gov/397/Stormwater-Management) contains easy access to city stormwater information, pollution prevention, the MS4 permit, and illicit discharge information and reporting. The website will be updated continually as the program develops.

The City will continue to provide SWM training and SWPPP training for employees. The City of Portsmouth staff is involved with the DEQ training program to ensure that individuals are properly trained to implement the VSMP and continues to train other local staff for the VSMP.

8 MILESTONE IMPLEMENTATION SCHEDULE

A schedule of interim milestones and implementation of the items in 5, 6, and 7 (DEQ Guidance Memo)

As permitted in the MS4 General Permit and referred to in the DEQ's Draft Local TMDL Action Plan Guidance Document, the City is proposing to implement this Action Plan in multiple stages over multiple permit cycles using an adaptive iterative approach. This approach will allow the City to gather the necessary data and information to determine the most effective strategy for minimizing the POC loads and targeting the implementation to meet the TMDL WLA for bacteria. The schedule below is proposed for implementation of the BMPs for the current permit cycle ending on June 30, 2021.

BMP/Milestone	Schedule
Submission of Local TMDL Action Plan to DEQ	July 1, 2018
BMP 1: Site Inspections	Biweekly
BMP 2: Education/Public Awareness	Quarterly
BMP 3: Illicit Discharge Program	On-Going
BMP 4: Sanitary Sewer Overflows	As-Needed
BMP 5: Sanitary Sewer Monitoring	On-Going
BMP 6: Capital Improvement Program	On-Going

BMP 7: Pet Waste Stations	Annually
BMP 8: Dog Park	June 30, 2021
BMP 9: Structural BMPs	On-Going
BMP 10: Septic System Management	On-Going
BMP 11: Marina Waste Collection and Enforcement	On-Going

9 METHODS TO ASSESS TMDL ACTION PLAN

Methods to access TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs (DEQ Guidance Memo)

The City of Portsmouth will continue the water quality monitoring city wide and in Elizabeth River and Hoffler Creek as part of the MS4 permit requirements.

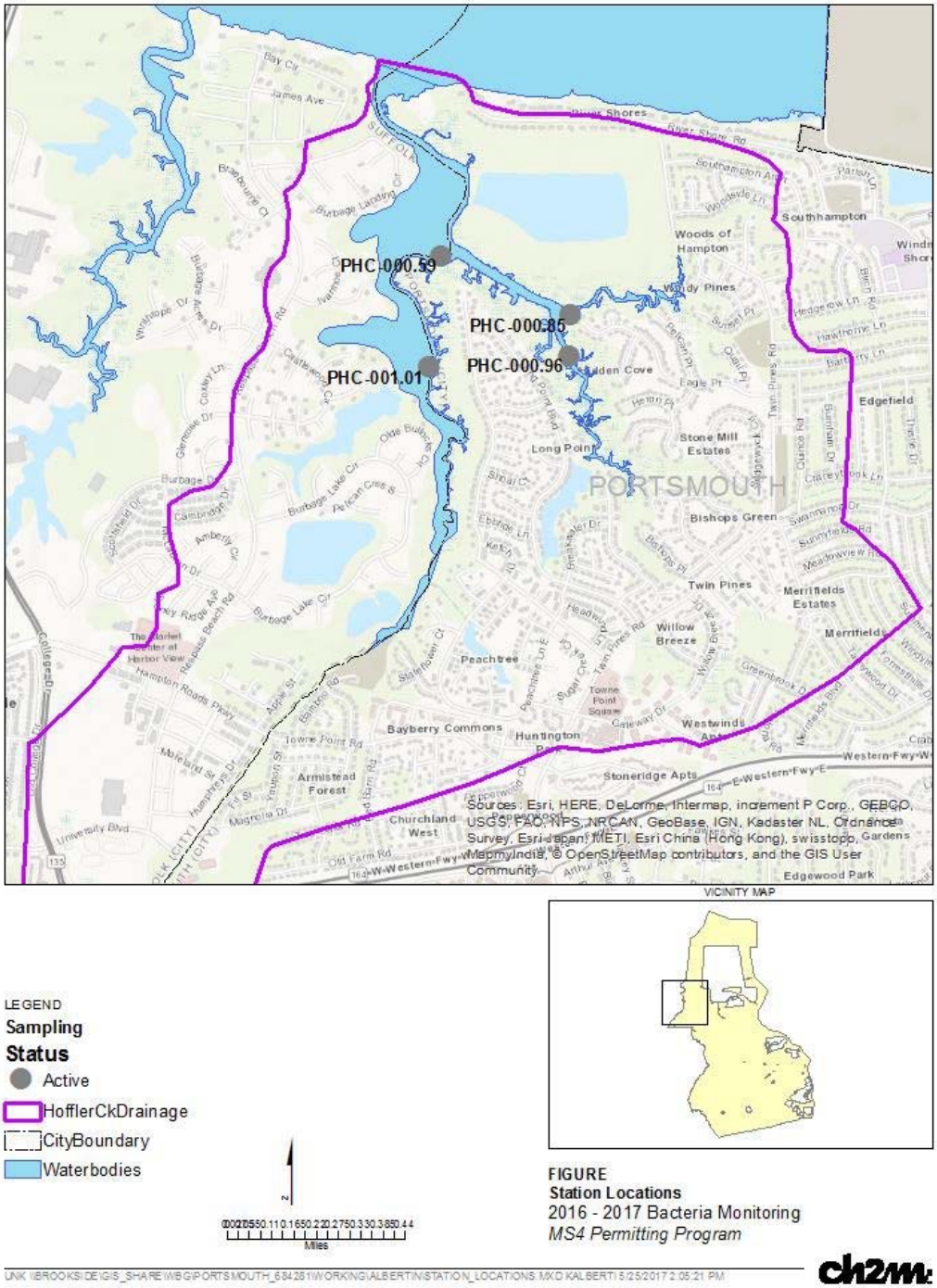
The City will provide all documentation of the Water Quality (WQ) Monitoring Program and analysis of the data to determine if any adjustments are necessary to the Action Plan with regards to the BMPs/management strategies for controlling POC loads. At the end of each MS4 permit reporting period, the City will also prepare an annual WQ monitoring report to be included with the City's MS4 Annual Report.

9.1 Elizabeth River Watershed Monitoring

There are 8 monitoring stations within the Portsmouth portion of the Elizabeth River watershed. Three located within the Upper Mainstem, three within Paradise Creek, one within Lower Southern Branch, and one within Western Branch. The locations of these can be seen in Figure 2: Elizabeth River Watershed Overview and Monitoring (by The Louis Berger Group, Inc.), found in Section 2.1.

9.2 Hoffler Creek Watershed Monitoring

Monitoring at four locations within Hoffler Creek will continue to be performed on a monthly basis to meet MS4 permit requirements. The City's monthly bacteria monitoring is used to assess the overall health and evaluate long-term trends in Hoffler Creek. These monitoring locations, shown in Figure 5, are sampled during ebb tide. Until July 2014, the samples were analyzed for *E. coli* and *Enterococcus* bacteria. Since that time, the samples are analyzed for fecal coliform and *Enterococcus* bacteria.



VICINITY MAP

LEGEND

Sampling Status

- Active
- HofflerCkDrainage
- CityBoundary
- Waterbodies

0 0.025 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45
Miles

FIGURE
Station Locations
2016 - 2017 Bacteria Monitoring
MS4 Permitting Program

UNK \\BROOKSIDE\GIS_SHARE\WBG\PORTSMOUTH_684281\WORKING\ALBERTI\STATION_LOCATIONS.MXD KALBERTI 5/25/2017 2:05:21 PM

ch2m

Figure 5. Water Quality Monitoring Stations for Hoffler Creek (by CH2M)

10 MEASURABLE GOALS AND METRICS TO TRACK COMPLIANCE

> *Measurable goals and the metrics that the permittee and DEQ will use to track those goals (and the milestones required by the permit). Evaluation metrics other than monitoring may be used to determine compliance with the TMDL(s) (DEQ Guidance Memo)*

The City intends to demonstrate its progress on implementation of this Action Plan by tracking, monitoring, and reporting on BMP/milestone activity progress in its MS4 Program Annual Report that is submitted to DEQ on October 1st of each permit year. In the Annual Report, the City will provide updates on the status of each of the BMP/milestone activities listed under Section 5 of this Action Plan to include compliance with the proposed schedule, found in Section 8. In accordance with the adaptive approach adopted by the City, referenced in this Action Plan, the City may modify/replace BMPs, as necessary, to achieve the most effective plan for reducing the discharge of bacteria from the City's MS4 and meeting the assigned TMDL WLA.

11 PUBLIC COMMENTS PROCESS

A draft version of this plan was published for a public comment period of approximately four weeks and no comments were received.

12 CONCLUSIONS

The City developed this Bacteria TMDL Action Plan as required in the City's MS4 Permit, referenced in Section 1 of this Plan, and in accordance with the DEQ TMDL Action Plan Guidance Document dated November 21, 2016.

13 LIMITATIONS

This document was prepared solely for and by the City of Portsmouth in accordance with professional standards at the time the services were performed, and in accordance with the contract between the City of Portsmouth and Arcadis. This document is governed by the specific scope of work authorized by the City; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by the City and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.