Chesapeake Bay TMDL

Action Plan

Prepared for the City of Suffolk, Virginia

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This document identifies strategies that the City of Suffolk plans to use to reduce nutrient and sediment contributions to the Chesapeake Bay.

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Executive Summary

Below is the most current accounting of the City of Suffolk's progress towards the Chesapeake Bay Total Maximum Daily Load (TMDL) reduction requirements. A more detailed breakdown of the calculations and reduction methods used is detailed within this report. The numbered sections in this Action Plan correspond with the numbered sections in Part VI of the Department of Environmental Quality (DEQ) Chesapeake Bay TMDL Special Condition Guidance document (May 18, 2015), items 1 through 10, issued by the Virginia Department of Environmental Quality (DEQ) and relied upon by the City of Suffolk in developing this plan.

As shown in Table 1, this Action Plan concludes that the first-phase pollutant reduction requirements have been exceeded by the projects identified in this plan. The City is required to complete the second-phase Action Plan prior to the end the current Phase II MS4 Permit term in 2018. In the second-phase Action Plan, the City will incorporate the 2010 U.S. Census Urbanized Area into the MS4 service area, which will increase the required pollutant reductions. The current Guidance Document requires that the City achieve a 40 percent reduction in the expanded MS4 service area by the end of the next permit cycle, which is equivalent to the 5 percent first-phase progress and second-phase 35 percent progress. Concurrently, DEQ will produce the statewide Phase III Watershed Improvement Plan (WIP) and the Chesapeake Bay Model will be updated, with both efforts anticipated in 2017. The second-phase Action Plan requirements may be modified as a result of these activities. The City will continue to implement projects and programs for compliance and this plan will be updated accordingly.

	Required Removal to meet first 5% reduction requirement (lbs/yr)	Reductions to be in place before July 1, 2018 (lbs/yr)	Balance (lbs/yr)
Nitrogen	86.50	11151.97	11065.47
Phosphorus	14.41	3215.24	3200.83
Total Suspended Solids	7460.05	1182698.58	1175238.53

Table 1 – Progress towards 1st 5% reduction

Background

In the Phase I and Phase II Chesapeake Bay TMDL Bay Watershed Implementation Plan ("WIP") for the Chesapeake Bay Total Maximum Daily Load ("TMDL"), the State of Virginia committed to a phased approach to reducing nutrients and suspended solids discharging from Municipal Separate Storm Sewer Systems ("MS4s"). The Special Condition for the Chesapeake Bay TMDL ("Special Condition") in the General VPDES permit for Discharges of Stormwater from Small MS4s (VAR04), EFFECTIVE July 1, 2013, requires MS4 operators to develop a Chesapeake Bay TMDL Action Plan ("Action Plan") and submit it to the Virginia Department of Environmental Quality ("Department").

This Action Plan will provide a review of the current MS4 program, demonstrating the City of Suffolk's efforts to comply with the Special Condition for the Chesapeake Bay TMDL and will include the means and methods used to meet 5.0% of the Level 2 scoping run reduction for existing development by the end of the first permit cycle. Level 2 implementation will equate to an average reduction of 9.0% of nitrogen loads, 16% of phosphorus loads, and 20% of sediment loads from impervious regulated acres and 6.0% of nitrogen loads, 7.25% of phosphorus loads, and 8.75% sediment loads from pervious regulated acres beyond 2009 progress loads and beyond urban nutrient management reductions for pervious regulated acreage.

The City of Suffolk is located in the heart of the Hampton Roads region of Southeastern Virginia. The City is bounded by the cities of Portsmouth and Chesapeake to the east and by the counties of Isle of Wight and Southampton to the west, the James River to the north and the State of North Carolina to the south. Suffolk, the largest city in Virginia, is comprised of 429 square miles of land with a diverse landscape that includes a mix of rural, suburban, and urban areas. The City's population according to the 2010 census was 84,000 residents. Tidal and non-tidal wetlands cover approximately 94,000 acres of area within the city including the Great Dismal Swamp National Wildlife Refuge.

Within Suffolk's Borders are found agricultural as well as urbanized areas rich in open water and wetland areas. Approximately 70% of the City is considered agricultural. The City is divided into three major watersheds; James River Watershed which encompasses approximately 38.3% of the total drainage area of the City, Chowan River Watershed encompassing approximately 31.1% of the City's drainage area, and finally the Dismal Swamp Watershed comprised of approximately 30.6%. The James River Watershed makes up most of northern and downtown Suffolk. It contains the northwestern and central portions of Suffolk and extends to Isle of Wight County. The primary outfalls for this watershed are Chuckatuck Creek, and the Nansemond River. Although a large portion of its land mass is zoned for agricultural use, it currently contains the most densely populated regions of the City and ultimately outfalls to the Chesapeake Bay. The City's Chesapeake Bay Preservation Area encompasses approximately 149 square miles with approximately 14 square miles of that area identified as urban and currently regulated under the City's MS4 Stormwater Permit.

Over 50% of the Chesapeake Bay watershed in the City of Suffolk ultimately outfalls into one of several drinking water reservoirs located in the City. These reservoirs are managed and sampled regularly by drinking water staff for the Cities of Portsmouth, Norfolk, and Suffolk. Additionally, they do not experience regular significant releases as they are being managed for drinking water purposes. They are best described as terminal reservoirs that do not contribute significantly to the water quality of the Nansemond or James rivers and the Chesapeake Bay. Currently no water quality credits are generated by these facilities, the City of Suffolk awaits state guidance on methods for quantifying the real water quality improvements provided by these reservoirs. The City of Suffolk conducts monthly water monitoring of the Nansemond River and its tributaries to assess actual water quality and to identify areas of concern for future improvements and efforts. The City is committed to cooperating with DEQ to ensure data quality, and to share monitoring information that could prove valuable in the refinement of water quality models and in determining more appropriate load allocations based on actual conditions.

Action Plan Elements

1. Existing Program and authority

The City of Suffolk's local stormwater program is implemented and enforced through various sections of the City Code and the City's Unified Development Ordinance. Implementation of the program is also addressed in the City's Public Facilities Manual and is further described in the City's Comprehensive Plan. The City holds a VPDES MS4 permit for stormwater discharge and provides annual reports to the state's Department of Environmental Quality as required by the permit. An outline of the development and structure of the City's stormwater program is included as Attachment A of this action plan.

2. New or Modified Legal Authority

A review of the existing legal authorities was performed and found to be consistent with the legal authorities needed to comply with the Special Condition.

3. Means and Methods to address discharges from new sources

As per Chapter 35 of the City Code, all discharges from new sources (both new development and development on prior developed lands) are required to comply with The Virginia Stormwater Management Program Regulations for the implementation of post-development stormwater management facilities.

Sec. 35-22. - Stormwater management technical criteria.

(a)

To protect the quality of state water from the potential harm of unmanaged stormwater runoff resulting from land-disturbing activities, any activity subject to this chapter shall be designed to the technical criteria set forth in Part II B sections 9VAC25-870-62 - 92 of the regulations, except as set forth in section 9VAC25-870-48 (Grandfathering) of the regulations, or its successor provisions, as the same may be amended and renumbered from time to time. The details of which are outlined in the regulations as well as chapter 5 of the PFM.

(b)

Any land-disturbing activity which meets the requirements set forth in 9VAC25-870-48 shall design to technical criteria set forth in Part II C, section 9VAC25-870-93 - 99, or its successor provisions, as the same may be amended and renumbered from time to time, the details of which are outlined in the regulations as well as chapter 5 of the PFM.

4. Estimated existing source load

The City maintains a GIS based TMDL landcover dataset captured from 2009 and 2013 imagery, collected at a one meter resolution. The TMDL landcover layer consists of the following landcover classifications: urban impervious, urban pervious, crop, forest, open water, construction, nurseries, pasture and wetlands. The urban impervious classification in the TMDL landcover layer consists of all impervious areas included in our planimetric data: Buildings, driveways, sidewalks, roads, recreation areas (basketball courts, tennis courts and swimming pool pads), Airport aprons, runways and taxiways,

structures including concrete pads, signs, generators and tanks, parking lots, private alleys, private roads, and rail road beds.

This dataset was then analyzed to estimate pervious and imperious acreage within the City's municipal separate storm sewer system regulated area. The urban impervious data was considered as the only impervious areas; the urban pervious, construction, pasture, nurseries and forest areas less than 900 m^2 make up the pervious areas. Forest areas greater than 900 m^2, wetlands, crop and open water were eliminated as recommended in the action plan guidance. The municipal separate storm sewer system regulated area was determined by delineated drainage areas to operator owned outfalls as well as any City or School owned property regardless of drainage outfall.

The City's permit requires a reduction of 5.0% of the POCs for sources that existed as of June 30, 2009 within the City's urbanized area. The permit requires these reductions be met by June 30, 2018. The City of Suffolk's urbanized area expanded as a result of the 2010 US Census but this increase is not included in this initial 5% reduction requirement. Required reductions for the expanded urbanized area have been calculated and planning has begun to meet the 40% reductions for this area as well as the remaining 35% of the 2000 census urbanized area which must be met by the end of the second permit cycle.

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/acre)	Estimated Total POC Load Based on 2009 Progress Run	total (lbs/yr)
Regulated Urban Impervious	Nitrogen	959.75	9.39	9012.05	25828.04
Regulated Urban Pervious		2405.72	6.99	16815.98	
Regulated Urban Impervious	Phosphorus	959.75	1.76	1689.16	2892.02
Regulated Urban Pervious		2405.72	0.5	1202.86	
Regulated Urban Impervious	Total Suspended Solids	959.75	676.94	649693.17	892863.34
Regulated Urban Pervious		2405.72	101.08	243170.18	

Table 2 – estimated existing source loads

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 EOS Loading Rate (lbs/acre)	Estimated Total POC Load Based on 2009 Progress Run	total 1st permit 5% (lbs/yr)
Regulated Urban Impervious	Nitrogen	959.75	0.04	38.39	86.50
Regulated Urban Pervious		2405.72	0.02	48.11	
Regulated Urban Impervious	Phosphorus	959.75	0.01	9.60	14.41
Regulated Urban Pervious		2405.72	0.002	4.81	
Regulated Urban Impervious	Total Suspended Solids	959.75	6.67	6401.53	7460.05
Regulated Urban Pervious		2405.72	0.44	1058.52	

Table 3 – Total 5% POC reduction required during permit cycle 1

5. Means and methods to achieve required reductions

The City of Suffolk has an existing comprehensive water quality improvement program. The means and methods implemented to date include watershed retrofit projects, land use change projects, oversized BMPs, utility upgrades, and street sweeping program credits.

Permit Cycle 1 Balance Sheet						
	Type	Nitrogen removed	Phosphorus removed	TSS removed	Estimated Costs	Method of Calc used
2000 Census Area 5% Required Reductions (lbs)		**86.5**	**14.41**	**7460.05**		
Reductions in place	land use changes [3]	328.49	37.84	5077.55	$ 71,022.76	Action Plan guidance
	Oversized BMPs [1]	35.28	8.79	5170.16	$ -	Action Plan guidance
	*shoreline management [2]	25.71	1.57	361162.48	$ -	Expert Panel report
	septic conversions [1,2,3]	3445.2	-	-	$ 14,693,544.00	DEQ approved method
	Street Sweeping [1,2]	7334.5	3165.8	807833.88	$ 488,026.51	Action Plan guidance
Totals		11169.18	3214.00	1179244.07	$ 15,252,593.27	
Credits remaining after first 5% is accounted for		11082.68	3199.59	1171784.02		
note: for practices in unregulated area, baseline was accounted for in the calculations.						1 - 2000 census area 2 - 2010 census area 3 - unregulated area
* shoreline management includes only TSS for protocol 1						

Table 4 – current reduction totals

Table 4 provides a summary of the types of practices and reductions for this permit cycle. While several of the practices included are located outside of the 2000 census area, these practices are recognized as providing a benefit to the overall water quality of the Chesapeake Bay and may be included towards meeting pollutant reduction once the original base line reduction is accounted for. At this time the 5% POC reduction requirement for this permit cycle has been met. Additional reduction credits past this threshold may be applied to future reduction requirements for the second and third cycle of the TMDL Action plan. The actual reduction for planned practices may vary. If a determination is made that any project included in this plan is no longer feasible, The City of Suffolk reserves the right to remove the project from its water quality improvement plan. Other avenues will be pursued to generate the reductions required for the Bay TMDL.

Attachment B of this document includes a detailed summary of City of Suffolk's water quality improvement program projects.

6. Means and methods to offset increased loads from the new sources initiating construction between July 1, 2009 and June 30, 2014

The City of Suffolk utilized an average land cover condition of 16% impervious cover for the design of post-development stormwater management facilities until it adopted the new standard of 0.41 lbs TP/acre/year on June 30, 2014. Any projects initiating construction between July 1, 2009 and June 30, 2014, that disturbed one acre or greater, did not exceed an average land cover condition of 16% impervious cover in their design and therefore did not generate an increased load, so offsets will not be required.

7. Means and methods to offset increased loads from grandfathered projects that begin construction after July 1, 2014

The City of Suffolk utilized an average land cover condition of 16% impervious cover for the design of post-development stormwater management facilities until it adopted the new standard of 0.41 lbs TP/acre/year on June 30, 2014. Any grandfathered projects initiating construction after July 1, 2014 that disturb one acre or greater, will not exceed an average land cover condition of 16% impervious cover based on design requirements at the time of approval, therefore increased loads were not generated and an offset will not be required.

8. A list of future projects and associated acreage that qualify as grandfathered

The City of Suffolk utilized an average land cover condition of 16% impervious cover for the design of post-development stormwater management facilities until it adopted the new standard of 0.41 lbs TP/acre/year on June 30, 2014. Any grandfathered projects initiating construction after July 1, 2014 will not exceed an average land cover condition of 16% impervious cover based on design requirements at the time of approval and therefore will not generate an increased load and an offset will not be required. It is not anticipated that tracking of these projects will be needed.

9. An estimate of the expected cost to implement the necessary reductions

Please reference table 4 of this action plan document for available cost data.

10. Results of public comment period

Suffolk has received public comment on the City's Bay TMDL action plan. The Action plan was advertised on the City of Suffolk Webpage from June 30, 2015 to July 30, 2015. The city also publicized the plan via web announcements and distribution through email and public press release. The summary of the process and the comments received are included in this document as Attachment C.

Attachment A:

Description of Current Program and Existing Legal Authority

Chesapeake Bay Preservation Act Program – Adopted 1989

As mandated by the Commonwealth of Virginia, the City of Suffolk adopted a Chesapeake Bay Preservation Area Program in 1989. Because the city's waterways and water bodies play such an integral part in the city's character, an effort to be preemptive and to ensure protection of water quality lead to the adoption of a program that went beyond the requirements of the state mandate. The program included certain lakes and water bodies as protection areas that were not required by the act. The program also extended the boundaries of the protection area to include all resource protection areas as well as resource management areas. In 1999, the Chesapeake Bay Program regulations were adopted as part of the Unified Development Ordinance Section 31-415 as described below.

City Code Chapter 34 - Environment Article II – Erosion and Sediment Control – Adopted June 5, 1996

As mandated by the State of Virginia, the City of Suffolk adopted an Erosion and Sediment Control Ordinance to provide for, both during and following construction, the effective control of erosion and sedimentation by the enforcement of the minimum standards promulgated by the Division of Soil and Water Conservation of the state Department of Conservation and Recreation, and known as the state erosion and sediment control regulations. The adoption of the Ordinance also allowed the program to be administered by the City of Suffolk. The City's program has been found in compliance during reviews conducted by the State.

Unified Development Ordinance – Adopted September 7, 1999

The Unified Development Ordinance (UDO) addresses the land development regulations of the city including those regulations enacted pursuant to the zoning and subdivision authority of the city. The Ordinance is intended to enable the City to respond uniformly and consistently to development proposals and to promote the health, safety and general welfare of the residents throughout the entire City, while providing uniformity, certainty and predictability for persons subject to the Ordinance. Applicable sections of the UDO pertaining to stormwater regulations are as follows:

Section 31-415 Chesapeake Preservation Overlay District

The purpose of this Section is to implement the requirements of Section 62.1-44.15:67 et seq. of the Code of Virginia (The Chesapeake Bay Preservation Act) The intent of the Overlay District is to provide special regulatory protection for the land and water resources located within the designated Chesapeake Bay Preservation Area in the City of Suffolk. Land use development standards are established in this section for the purpose of implementing the goals, objectives criteria and standards set forth in the City of Suffolk Chesapeake Bay Preservation Program.

The requirements of this Section supplement the City's land development codes, including existing zoning and subdivision Ordinances and regulations. It imposes specific regulations for development and other land use within the City of Suffolk Chesapeake Bay Preservation Area. This Ordinance from which this Section derives is enacted under the authority of Section 62.1-44.15:67 et seq. (The Chesapeake Bay Preservation Act) and Section 15.2-2283 of the Code of Virginia. The Chesapeake Bay Preservation Area Overlay District applies to all lands identified as CBPAs as specified on the Official Preservation Area District Maps and includes all RPA's and RMA's. The section also includes performance criteria related

to on-site treatment systems not requiring a Virginia Pollutant Discharge Elimination System (VPDES) permit which includes pump out requirements every five years.

Section 31-611 Stormwater Runoff

This Section is adopted for the purpose of ensuring that new subdivisions, site plans and other developments have provided capacity in their stormwater facilities to accommodate the design storm and provides standards for the adequacy of public facilities relating to stormwater management. The section ensures that stormwater management systems have sufficient pollutant removal capacities and provides that uniform criteria consistent with regional approaches to stormwater management, as set forth in The Virginia Stormwater Management Handbook, prepared by the Virginia Department of Environmental Quality; the City of Suffolk Public Facilities Manual and Chapter 35 of the City Code of Suffolk are implemented. The section also provides criteria consistent with approaches utilized throughout the Hampton Roads region in order to ensure predictability and fairness in the application of stormwater management standards. These approaches emphasize the preservation of existing vegetation as an alternative to structural approaches to stormwater management in order to promote efficiency, reduce development costs, and to enhance water quality. The section also encourages stormwater management practices which take into consideration local conditions such as high water tables and unsuitable soils, which limit the effectiveness of infiltration devices and require the more extensive uses of vegetative preservation and vegetative management. The section further requires insurances that best management practices ("BMPs") are suitable for the development site, and that adequate measures are incorporated for the long-term maintenance of BMPs or vegetative practices; implementing the mandatory provisions of VC § 15.2-2241.3.

This section also includes the City's Stormwater Pro-Rata Policy which provides that a developer or sub-divider of land shall share the cost of providing reasonable and necessary drainage facilities, located outside the property limits of the land owned or controlled by the developer or sub-divider but necessitated or required, at least in part, by the construction or improvement of the subdivision or development. All residential development and redevelopment projects classified as a major subdivision and all commercial development and redevelopment projects are required to provide payment of the pro rata share assessment prior to subdivision, site plan, plat recordation or development plan approval.

Section 31-615 Water Quality Stream Buffers

This Section establishes buffers from the edge of streams in order to minimize erosion and sedimentation, loss of habitat, loss of vegetation and tree cover, and the resulting raising of water temperatures and other adverse impacts on water quality produced by development activities.

City Code Chapter 90 Article 7 – Stormwater Utility - Adopted November, 2005

The stormwater management utility is established to provide for the general welfare, health, and safety of the city and its residents pursuant to the statutory authority granted by the Commonwealth of Virginia.

The utility shall deposit in a separate ledger account all revenues collected pursuant to this chapter. The funds deposited shall be used exclusively to provide services and facilities related to the stormwater management program. The deposited revenues shall be used for the following:

- Acquisition of real or personal property, and interest therein necessary to construct, operate and maintain stormwater control facilities;
- The cost of administration of such programs, to include the establishment of reasonable operating and capital reserves to meet unanticipated or emergency requirements of the utility;
- Engineering and design, debt retirement, construction costs for new facilities and enlargement or improvement of existing facilities;
- Facility maintenance;
- Monitoring of quantity and quality of stormwater and associated devices; and
- Pollution control and abatement, consistent with city, state, and federal regulations for water pollution control and abatement.

Chapter 35 City Code– Stormwater Management - Adopted 2007

This chapter shall be known as the Stormwater Management Ordinance of the City of Suffolk. The purpose of this chapter is to promote and protect the general health, safety and welfare of the citizens of the City of Suffolk and to protect property, state waters, stream channels, and other natural resources from the potential harm of unmanaged stormwater, and to establish procedures whereby stormwater requirements related to water quality and quantity shall be administered and enforced.

The ordinance from which this chapter derives is adopted pursuant to Title 62.1, Chapter 3.1, Article 2.3 (Code of Virginia, § 62.1-44.15:27 et seq.), or its successor provisions, as the same may be amended and renumbered from time to time.

Additionally, amendments to the Federal Water Pollution Control Act, commonly known as the Clean Water Act, in 1987 required the Environmental Protection Agency to establish National Pollutant Discharge Elimination System (NPDES) permit regulations and the Virginia Department of Environmental Quality to establish the Virginia Pollutant Discharge Elimination System (VPDES) permit regulations for municipal separate storm sewer systems. These regulations require the city to adopt an ordinance to prohibit illicit discharges into the storm sewer system. It is also the purpose of this chapter to meet the requirements of prohibiting illicit discharges.

This chapter seeks to meet these purposes through the following objectives:

- Establish minimum design criteria for the protection of properties and aquatic resources downstream from land development and land conversion activities from damages due to increases in volume, velocity, frequency, duration, and peak flow of stormwater runoff;
- Establish minimum design criteria for measures to minimize nonpoint source pollution from stormwater runoff which would otherwise degrade water quality;
- Establish provisions for the long-term responsibility for and maintenance of stormwater management control devices and other techniques specified to manage the quality and quantity of runoff;

- Establish certain administrative procedures for the submission, review, approval, and disapproval of stormwater plans and the inspections of the approved projects; and
- Establish controls to reduce pollutants to the storm sewer system from illicit discharges to the maximum extent practicable, as required by the city's small municipal separate storm sewer system VPDES discharge permit

Public Facilities Manual – Implemented 2007

This manual was developed to provide both public and private users with requirements and criteria for construction, traffic engineering, stormwater management, water quality and erosion and sediment control. Also serves as a reference to other policies, procedures and guidelines related to development in the City of Suffolk

2026 Comprehensive Plan

The Focused Growth Framework continues the key environmental protection and land preservation policies of the 2018 Comprehensive Plan. The plan allows for managed growth in two areas – the northern and central Suburban/Urban Growth Areas, limits development in environmentally sensitive areas around the regional reservoir system, and reserves more than 70% of the City for agricultural production. This plan continues to reinforce Suffolk's contribution to the health of the Chesapeake Bay. It also recognizes Suffolk's critical role as the host of most of South Hampton Road's water supply. As Suffolk continues to grow and prosper it is critical that the City provide clear and concise policies to ensure the health of our natural systems. Without appropriate controls and focus, development could overwhelm the natural environment.

City of Suffolk MS-4 Permit and Annual Report – Current permit issued 2013

Discharges from Municipal Separate Storm Sewer Systems (MS4s) are regulated under the Virginia Stormwater Management Act and the Clean Water Act. MS4 regulations were developed and implemented in two phases. The second phase of MS4 regulations, which became effective March 23, 2003, require that operators of small MS4s in "urbanized areas" (as defined by the U.S. Census Bureau's latest decennial census) obtain permit coverage for stormwater discharges. Small MS4s include storm sewer systems operated by cities, counties, towns, federal facilities such as military bases, Department of Defense facilities and parkways, and state facilities such as VDOT, community colleges and public universities. The City of Suffolk and City of Suffolk schools is considered a small MS4 operator, permitted under the Virginia Stormwater Management Program MS4 General Permit; permit# VAR040029.

Small MS4 programs must be designed and implemented to control the discharge of pollutants from their storm sewer system to the maximum extent practicable in a manner that protects the water quality in nearby surface waters and wetlands.

•The VSMP MS4 General Permit requires that small MS4s develop, implement and enforce a program that includes the following "six minimum control measures":

•Public education and outreach on stormwater impacts.

•Public involvement and participation.

•Illicit discharge detection and elimination.

•Construction site stormwater runoff control.

•Post-construction stormwater management in new development and redevelopment.

•Pollution prevention/good housekeeping for municipal operations.

Each of these minimum control measures has multiple requirements that the City of Suffolk must accomplish as part of its stormwater management program. To meet these requirements, the City has developed a stormwater program plan with proposed best management practices to help reduce the negative effects of stormwater runoff. The best management practices to be implemented by the City to meet the requirements of the MS4 General Permit are described in the City's stormwater program plan and annual report. The City's current regulated MS4 area encompasses approximately 13.748 square miles in the urbanized area of northern and downtown Suffolk.

The Department of Public Works, Engineering, Stormwater Division is responsible for the administration of the City of Suffolk's Stormwater Management program. Public Works, Engineering maintains the City's VSMP MS4 General Permit, ensuring compliance with State and Federal stormwater regulations. The City's General Permit and annual report are in compliance with the VSMP regulations found in 9VAC25-890-40.

Attachment B:

Summary of The City of Suffolk's Water Quality Improvement Program

Overview

The purpose of the Water Quality Improvement Program is to meet the TMDL waste load allocations (WLAs) in the most fiscally responsible way, while promoting projects that effect real improvements to the water quality within the City of Suffolk.

Current Projects

The following projects have either been completed, are currently being implemented, or are approved for future implementation.

Lonestar Lakes Landuse Conversion

A 13 acre tract of land owned by the City of Suffolk was planted in fall of 2014 with long leaf pine seedlings. This project was made possible by a grant from The Virginia Department of Forestry. Another 16 acre tract was planted in the spring of 2015 with oak and persimmon trees. Prior to the projects, both sites were agricultural fields. Both sites are undeveloped, greater than 900 square meters, and were planted with approximately 440 seedlings per acre. This land use change satisfies the minimum requirements for re-classification as forested land as set forth in the Chesapeake Bay TMDL Special Condition Guidance. As a result of changing the land-use from crop to forest, it is estimated that 317.84 lbs. of nitrogen, 36.83 lbs. of phosphorus, and 4964.8 lbs. of TSS will be removed per year.

Chesapeake Bay TMDL Credits

Lonestar Lakes Land Use Conversion

Baseline calculations

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 Edge Of Stream Loading Rate (lbs/acre)(5%)	*20 (100%	Total Required Baseline Reduction
Regulated Urban Impervious	Nitrogen	0.00	0.04	0.8	0
Regulated Urban Pervious		29.00	0.02	0.4	11.6
Regulated Urban Impervious	Phosphorus	0.00	0.01	0.2	0
Regulated Urban Pervious		29.00	0.002	0.04	1.16
Regulated Urban Impervious	Total Suspended Solids	0.00	6.67	133.4	0
Regulated Urban Pervious		29.00	0.44	8.8	255.2

James River Pervious to Forest	Edge of Stream Reductions (lbs/ac/year)	Lonestar Lakes 29 acres	Total Baseline Required Reduction	Bay Credit Available (lbs)
Nitrogen	11.36	329.44	11.6	317.84
Phosphorus	1.31	37.99	1.16	36.83
Total Suspended Solids	180	5220	255.2	4964.8

Table B.1 – Lonestar Lakes Tree Planting Project Calculations

Portsmouth Blvd Tree Planting

Approximately 1000 long leaf pine seedlings were planted across 2.3 acres in the fall of 2014, 12 Saplings were planted along the road in the spring of 2015. Planting occurred within City owned right of way or property. Prior to the project, the site was considered managed turf and mowed by contract as part of our roadway maintenance program. This site is undeveloped, greater than 900 square meters, and has been planted with approximately 440 seedlings per acre. This land use change satisfies the minimum requirements for re-classification as forested land as set forth in the Chesapeake Bay TMDL Special Condition Guidance. As a result of changing the land-use from managed turf to forest, it is estimated that the project will remove 11.57 lbs. of nitrogen, 1.1 lbs. of phosphorus, and 133 lbs. of TSS per year. Air quality was also improved from reduced fossil fuel consumption as a result of reduced maintenance.

Chesapeake Bay TMDL Credits

Portsmouth Blvd Land Use Conversion

Baseline calculations

Subsource	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	2009 Edge Of Stream Loading Rate (lbs/acre)(5%)	*20 (100%	Total Required Baseline Reduction
Regulated Urban Impervious	Nitrogen	0.00	0.04	0.8	0
Regulated Urban Pervious		2.30	0.02	0.4	0.92
Regulated Urban Impervious	Phosphorus	0.00	0.01	0.2	0
Regulated Urban Pervious		2.30	0.002	0.04	0.092
Regulated Urban Impervious	Total Suspended Solids	0.00	6.67	133.4	0
Regulated Urban Pervious		2.30	0.44	8.8	20.24

James River Pervious to Forest	Edge of Stream Reductions (lbs/ac/year)	Portsmouth Blvd (2.3 acres)	Total Baseline Required Reduction	Bay Credit Available (lbs)
Nitrogen	5.03	11.569	0.92	10.649
Phosphorus	0.48	1.104	0.092	1.012
Total Suspended Solids	57.82	132.986	20.24	112.746

Table B.2 – Portsmouth Blvd Tree Planting Project Calculations

Development overages

Oversized BMPs are sometimes installed to accommodate future development, be aesthetically pleasing, or are conservatively designed larger. The Chesapeake Bay TMDL Special Condition Guidance states that "Permittees may use that capacity to meet required reductions." The City of Suffolk has compiled a list of applicable BMPs within the 2000 Urbanized Area and calculated these reductions. Further overages will be included in the second phase TMDL action plan to account for oversized facilities in the 2010 Census Urbanized area since 2009.

To determine the reduction credits available from oversized BMPs that were built as a condition of development; a thorough review of available construction plans was performed. From this review a table was compiled that lists on a site by site basis; the site area, the impervious area, the required phosphorus removal, the actual phosphorus removal, the required BMP efficiency, and the actual BMP efficiency. Any sites that fell within the 2000 census area were then scrutinized further; any sites missing information, not containing any overage, or not included in the City's BMP inspection program were excluded. The remaining sites are shown in Table B.4 below.

To generate the available Phosphorus removal credits, the difference between the actual removal and required removal was calculated. The Nitrogen and Total Suspended Solids were calculated using the difference between the actual efficiency of the BMP and the required efficiency. A load was generated using Table 4 and the post-development phosphorous load; then the efficiency difference was applied to generate the removal credit.

TN = ((Total post-development phosphorous load * 5.2 lbs TN/lb TP))*(TN established efficiency * proportion of removal available for credit)

TSS = ((Total post-development phosphorous load * 420.9 lbs TSS/lb TP))*(TSS established efficiency * proportion of removal available for credit)

Table B.4 demonstrates how the TMDL Action Plan Guidance was used to calculate the removal amounts for Nitrogen, Phosphorus, and TSS.

JR-217-DB-0003 was constructed to handle water quantity only, the water quality requirements were met as part of a regional stormwater master plan. This is why the required efficiency is -16%.

2000 Urbanized Area Oversized BMPs																				
BMP identifier	Drainage Area (ac)	impervious in DA	Site Area (ac)	Impervious Area (ac)	Post Development TP Load	Post Development TN Load	Post Development TSS Load	BMP type	Required Removal TP (lbs)	Actual Removal TP (lbs)	Required Efficiency TP (%)	Actual Efficiency TP (%)	Efficiency TN (%)	Efficiency TSS (%)	Proportion Available for Credit	Date Approved	Date Released	Nitrogen Removal	Phosporus Removal	TSS Removal
JR-196-MB-0001	0.375	0.35	0.54	0.39	0.86	4.47	361.97	Filterra	0.62	0.65	72%	75%	40%	80%	0.05	10/28/2008	10/9/2009	0.08	0.03	13.36519
Burbage Grant			4.29	1.65	16.85	87.62	7092.17		4.01	6.02	24%	36%	45%	63%	0.33	5/28/2008	6/30/2010	13.16	2.01	1491.829
JR-196-WP-0002	2.96	0.00						19 ac. Lake assessed at 35% removal rate		4.06		35%	40%	60%						
JR-196-GW-0001	0.69	0.00						grassed swale		0.26		10%	55%	50%						
JR-196-MB-0002	0.64	0.00						Filterra		1.7		65%	40%	80%						
JR-216-DB-0001	4.044	1.111	4.044	1.111	2.828	14.71	1190.31	extended detention basin	0.955	0.99	34%	35%	24%	60%	0.04	2/3/2006	2/5/2009	0.12	0.035	25.2489
JR-217-WP-0057	1.11	0.92	1.53	0.85	1.91	9.93	803.92	retention basin III	1.24	1.31	65%	65%	30%	60%	0.05	4/7/2009	11/15/2013	0.16	0.07	25.7745
Parkside at Bennett's Creek			127.77	41.37	99.46	517.19	41862.71		42.94	49.09	43%	65%	30%	60%	0.13	8/11/2005	4/1/2013	19.44	6.15	3146.739
JR-217-WP-0073	21.23	0.00						retention basin III		16.86		65%	30%	60%						
JR-217-WP-0049	21.27	0.00						retention basin III		13.49		65%	30%	60%						
JR-217-WP-0032	23.2	0.00						retention basin III		18.74		65%	30%	60%						
JR-217-DB-0003	1.32	0.61	4.86	0.61	1.85	9.62	778.67	extended detention basin	-0.3	0.49	-16%	35%	24%	60%	1.00	11/26/2012	2/25/2013	2.31	0.49	467.199
*Phosphorus efficiencies are based on calculations from approved plans.																				
** Nitrogen and Sediment efficiencies for Burbage grant were averaged between the three different BMPs treating the site																	Total	35.28	8.79	5170.16

Table B.4 – Development Overage Calculations

Shoreline Management

As part of the Riverbluff Subdivision Construction; approximately 2190 lf of eroding shoreline was stabilized by creating a living shoreline in its place. This site was experiencing a significant amount of shoreline erosion prior to the re-grading and vegetation of the bank. Approximately 12,000 sf of new marsh fringe habitat was created as part of this project. This project meets all the basic qualifying conditions as detailed in Table 7 of the Recommendations of the Expert Panel on Shoreline Management report.

Previously existing condition

After shoreline restoration

		Shoreline Management					
Variables							
Bulk Density (lb/ ft3)		93.6					
TN Concentration (Lbs/ton)		0.57					
TP Concentration (Lbs/ton)		0.41					
Area of new Marsh Plantings (ac)		0.28	12,000 sf of new wetlands grasses planted in inter-tidal zone				
Volume of Sediment (ft3)		11388					
Length of Shoreline (ft)		2190					
Shoreline Recession Rate (ft/year)		0.4					
Bank Height (ft)		13					
			TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)		
	Protocol 1		303.79	218.51	359213.96		
	Protocol 2		23.8				
	Protocol 3			1.48	1948.52		
	Protocol 4		1.9124	0.084			
		total	25.71	1.57	361162.48		

Table B.5 –Shoreline Management Calculations

P1: Protocol 1 – Prevented Sediment*

To determine nutrient loading prevented or nutrient reduction, TN and TP concentrations from Ibison (1992) in Table 7 were used:
0.57 pounds TN/ton sediment
0.41 pounds TP/ton sediment

TN 303.79 lbs/yr = V*93.6*0.57/2000
TP 218.51 lbs/yr = V*93.6*0.41/2000
TSS 179.6 tons/yr = Sediment Removal = [533.0 tons/yr] * 0.337

*Protocol 1 is currently only allowed for the calculation of TSS, nutrient credits that were included in an earlier draft of the Shoreline Management Expert Panel Report are shown above. It is anticipated that protocol 1 will be revisited by the Expert Panel Report in early 2016 and some form of nutrient credits will be generated through prevented sediment, at which time the City plans to take additional credit for this project.

P2: Protocol 2 – Denitrification

Denitrification pollutant load reduction: 85 lb TN/acre/yr

TN = 85 lbs-TN/acre/yr * 0.28 acres = 23.8 lbs/yr

P3: Protocol 3 – Sedimentation

Sedimentation pollutant load reduction: 5.289 lb TP/acre/yr and 6,959 lbs TSS/acre/yr

TP = 5.289 lbs-TP/acre/yr * 0.28 acres = 1.48 lbs/yr

TSS = 6,959 lbs-TSS/acre/yr * 0.28 acres = 1948.52 lbs/yr

P4: Protocol 4 - Marsh Redfield Ratio (Note the TN and TP pollutant load for Protocol 4's marsh Redfield ratio is an annual credit based on field verification of survival of the initial planting and any expansion of the restored marsh area.)

Marsh Redfield Ratio pollutant load reduction: 205 lbs TN/acre and 9 lbs TP/acre

TN = 6.83 lbs-TN/acre/yr * 0.28 acres = 1.91 lbs/yr

TP = .3 lbs-TP/acre/yr * 0.28 acres = .08 lbs/yr

Street Sweeping

The Public Works Department currently maintains all "curb and gutter" streets in the City with routine scheduled sweeping by three street sweepers. All of the Downtown Business Overlay District streets and at least sixteen parking lots in this urban area are swept four days per week. This does not include a small sidewalk sweeper that is in operation on the same schedule.

Outside of the downtown area, three sweepers are operated on a seven day rotating schedule for all curb and gutter areas, with sweeps in most neighborhoods occurring approximately once per month.

Bridge decks and ramps are swept as required, several times per year, with extra sweeps when necessary. The sweepers are also used after significant roadwork, tree trimming operations, and construction activities when necessary.

The City's street sweeping efforts removed more than 5867 cubic yards of debris and sediment from the City streets in 2014. A density conversion of 865 lbs per cubic yard was taken from a conversion chart provided by a manufacturer of hook lift hoists. They indicate that all their data was gathered from the EPA and NTEA. Local street sweeping efforts are currently tracked by the number of loads generated per sweeper per month rather than by weight of material removed. The total amount of material removed during FY 14 was determined to be approximately 5 million pounds. The Mass Loading approach as detailed in Appendix V.G of the Action Plan Guidance was used to calculate the removal rate associated with our current street sweeping efforts. As a conservative estimate the baseline required reduction for every lane mile maintained by Public Works was calculated and removed from the street sweeping for FY14. The sweeping data used for these calculations was from FY 14 and the associated costs are also provided in Table B.6

Street Sweeping - Mass Loading Approach

Yards of Material	Density (lbs/CY)	Total Lbs	Dry weight/ lbs material	Dry weight	Conversion Factor	Removal Rate (lbs/yr)	
5867	865.00	5,074,955.00	0.70	3,552,468.50	0.0025	8881.17	TN
					0.0010	3552.47	TP
					0.3000	1065740.55	TSS

Baseline Calculations

Pollutants of Concern	Lane Miles	Lane Width	Area swept (ac)	2009 EOS Loading Rate (lbs/acre)(5%)	*20 = (100%)	Total Required Baseline Reduction
TN	1595	10.00	1,933.33	0.04	0.8	1,546.67
TP	1595	10.00	1,933.33	0.01	0.2	386.67
TSS	1595	10.00	1,933.33	6.67	133.4	257906.67

Totals		FY 14 cost	$ 488,026.51

Pollutants of Concern	Removal Rate (lbs/yr)	Baseline Required Reduction	Bay Credit Available	Cost per pound
TN	8881.17	1,546.67	7,334.50	$ 66.54
TP	3552.47	386.67	3,165.80	$ 154.16
TSS	1065740.55	257,906.67	807,833.88	$ 0.60

Table B.6 – Street Sweeping Calculations for FY 14

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U.S.A. LTD.

CUBIC YARDAGE CALCULATION SHEET

Length of Body/Container	Height of Sides					
	3'	4'	5'	6'	7'	8'
10'	8.89	11.85	14.81	17.78	20.74	23.70
12'	10.67	14.22	17.78	21.33	24.89	28.44
14'	12.44	16.59	20.74	24.89	29.04	33.19
16'	14.22	18.96	23.70	28.44	33.19	37.93
18'	16.00	21.33	26.67	32.00	37.33	42.67
20'	17.78	23.70	29.63	35.56	41.48	47.41
22'	19.56	26.07	32.59	39.11	45.63	52.15
24'	21.33	28.44	35.56	42.67	49.78	56.89

- *Assumes all dimensions to be inside dimensions.*
- *Assumes body/container is 8' wide (inside dimensions).*
- *These are only rough estimates. Consult your container manufacturer for more precise information.*

Material Weight – Pounds per Cubic Yard			
Asphalt	2,700 lb.	Iron (wrought)	13,100 lb.
Brush/Branches (loose)	250 lb.	Leaves (loose, dry)	150 lb.
Brush/Branches (chipped – 3" screen)	600 lb.	Leaves (vacuumed, dry)	400 lb.
Concrete (gravel or stone mix)	4,050 lb.	Leaves (wet or compacted)	550 lb.
Concrete (average wet mix)	3,730 lb.	Limestone (solid)	4,480 lb.
Clay (dry)	2,300 lb.	Limestone (crushed)	2,565 lb.
Clay (wet)	2,970 lb.	Paper (solid - average)	1,565 lb.
Crushed Stone	2,700 lb.	Plywood Sheets	800 lb.
Earth (loose)	2,050 lb.	Roofing Debris	450 lb. to 750 lb.
Earth (packed)	2,565 lb.	Sand (dry)	2,750 lb.
Earth (shaken)	2,350 lb.	Sand (wet)	3,300 lb.
Earth (moist)	2,700 lb.	Snow (packed)	1,350 lb.
Earth (wet)	3,375 lb.	Steel (cast)	13,250 lb.
Garbage (dry)	400 lb. to 800 lb.	Steel (rolled)	13,365 lb.
Garbage (wet)	1,240 lb.	Stone (crushed - average)	2,700 lb.
Grass Clippings (loose, green)	350 lb.	Street Sweeping Debris	865 lb.
Grass Clippings (compacted, green)	650 lb.	Tires (shredded)	950 lb.
Gravel (dry)	2,565 lb.	Tires (whole – auto & pickup)	220 lb.
Gravel (wet)	3,375 lb.	Tires (whole – truck)	480 lb.
Iron (cast)	12,150 lb.	Water (fresh)	1,700 lb.

All posted weights were gathered from the EPA & NTEA.

Septic System Connections

The City of Suffolk has approximately 5,000 septic systems located within the James River Watershed. The City participates in the Commonwealth's mandated pump-out program and requires pump-outs on a five year basis. The City's program began in 2009 and the city is currently in year 6 of the rotation.

The City currently provides sanitary sewer to neighborhoods served by septic systems on a petition request basis. Since 2009 approximately 348 homes have been connected to the public sanitary sewer system.

Limited guidance is available for the calculation of stormwater credits generated from utility upgrades such as pump outs or connection to sanitary sewer. Based on DEQ technical assistance a value of 2.75 persons per household (http://quickfacts.census.gov/qfd/states/51/51800.html) and 3.6 lbs of nitrogen per person was used to generate the load reduction. Based on information currently available, calculations are provided in Table B.7 for septic to sanitary sewer conversions.

Septic to City Sewer Conversion 2009- Current			
Pump Station Area	Date of Conversion	# of Conversions	Load Reduction (lbs/N/yr)
PS 141 - Turlington Park	10/4/2015	60	594
PS 109 - Lake Speight	6/3/2015	70	693
PS 098 - Eclipse Phase 2	6/30/2015	172	1702.8
PS 099 - Eclipse Phase 3	6/30/2015		
PS 158 - Sleepy Hole Golf Course	12/28/2011	9	89.1
PS 162 - 651 Turlington Rd.	6/30/2015	37	366.3
	TOTAL	348	3445.2

Table B.7 – Septic Connection Calculations

Attachment C:

Results of Public Comment Period

Public Comment Process Description

An opportunity for receipt and consideration of public comment regarding the City of Suffolk's Chesapeake Bay TMDL Action Plan was made available prior to the finalization of the Action Plan. A Public Comment Period was open from June 30, 2015 through July 30, 2015. The following advertisement for this comment period was displayed on the City Website. A press release was issued and the comment period was mentioned in the local newspaper.

NOTICE OF PUBLIC COMMENT PERIOD

Chesapeake Bay TMDL Action Plan

Open From Tuesday June 30, 2015 through Thursday July 30, 2015

Your input is requested on the Draft Chesapeake Bay TMDL Action Plan. The City of Suffolk has developed this first-phase Total Maximum Daily Load (TMDL) Action Plan for the Special Condition of the Chesapeake Bay nutrient and sediment TMDL, as required in the 2013–2018 General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (Phase II MS4 Permit). This Plan was developed following the Virginia Department of Environmental Quality (DEQ) Chesapeake Bay TMDL Action Plan Guidance Document dated May 18, 2015.

Comments may be submitted by email to actionplancomments@suffolkva.us or by mail to the Department of Public Works, Attention Edward Heide, 442 West Washington St, Suffolk, VA 23434 by Thursday, July 30th.

Public Comment Results

Only one comment was received during the public comment period, it is attached to this document. These comments, as well as input from staff members, were considered when making revisions to the draft Chesapeake Bay TMDL Action Plan.

NRPA
NANSEMOND RIVER PRESERVATION ALLIANCE

NRPA Officers
Richard Barry President
John Wass VP/Treasurer
Jean Johnson Secretary

NRPA Directors
George Y. Birdsong
Steven Barnum
Dana Dickens
David Eberwine
John D. Eure
Paul E. Fisher
Sandy Hart
Thomas Hazelwood.
Lemuel Lewis
Brian Martin
Howard W. Martin, Jr.
John Newhard
Geoff Payne
Karla Smith
Dwight Schaubach
Joseph Verdirame, MD
James M. WInters
Nicholas Worth

Executive Director
Elizabeth Taraski

July 27, 2015

Department of Public Works
Attention: Edward Heide
442 West Washington Street
Suffolk, VA 23434

The purpose of this letter is to comment on Suffolk's Chesapeake Bay TMDL Action Plan, from the standpoint of the Nansemond River Preservation Alliance; an environmental organization focused on the Nansemond River and its watershed, Additionally, we make a recommendationon Suffolk's General Permit for Municipal Separate Storm Sewer Systems, Permit # VAR040029, Permit Year One Annual Report October 1, 2014, which we feel would help the storm water plan and the river.

We commend the City of Suffolk for the work being done to institutionalize the TMDL process and lead the way for cleaner water in our City. The NRPA stands ready to assist and support the City in these efforts. Below are the NRPA's comments.

TMDL Action Plan

100' Buffer: The NRPA is concerned about the lack of focus, specificity, and emphasis on the 100' vegetatedBuffer directed by the Chesapeake Bay Preservation Act. Specific suggestions are as follows:

- Pg 7, Para 5: A number of programs are mentioned, but not the 100' vegetated Buffer; it would be helpful to mention it.
- Pg 8, Para 7: The concern over runoff from impervious cover is well founded and the 100' Buffer is an effective countermeasure. However, the frequent recommendation by the City Planning Department; and approval of exceptions to the 100' vegetated Buffer by the Planning Commission; will make runoff a recurring problem. May 2012 – May 2014 there were 25 exceptions granted for placing impervious surfaces in the buffer.
- Pg 10, Unified Development Ordinance: The 100' vegetated Buffer should be highlighted as the method to provide "vegetative preservation"and "vegetative management".
- Pg 11, Section 31-611: The 100' vegetated Buffer could be specifically discussed in the context of this section. There also needs to be adequate measures for maintenance of buffers: small signs, some paid for by developers, are required to designate and identify buffers: and those who live adjacent to buffers should be

Nansemond River Preservation Alliance
P.O. Box 6090 Suffolk, VA 23433 757-745-7447 www.nansemondriverpreservationalliance.org

provided periodic written notice, perhaps in their water bills, of the importance of the buffer.

- Pg 11, Section 31-615: The 100' Buffer could be specified in this section. The negative impacts of waivers to the Buffer on clean water need to be understood and considered across all departments in City of Suffolk government.
- Pg 12, Chapter 35, City Code: The 100' Buffer could be mentioned to minimize non-point source pollution, as well as manage the quantity and quality of runoff.
- Pg 13, 2026 Comprehensive Plan: The policy of limiting development in critical areas needs to include the 100' vegetated Buffer along our waterways. The Nansemond River needs protection from those who see it as a convenient drain for whatever runs off the pavement and land.
- Pg 13, MS4 Permit and Annual Report: The 100' Buffer needs to be included as one of the controls, an area for education, and outreach for storm water impacts.
- Pg 20,Deerfield Pond: Shows the type of mixed signals the City is sending. We are retrofitting a pond, while at the same time giving exceptions to the Buffer on Bennetts' Creek. The same Bennett's Creek that is now closed by order of the state health department to shell fishing due to bacterial pollution. The 100' Buffer will work to help resolve these issues if strictly enforced.
- Pg 27, Hill Point: This is another example of mixed signals. If trees are good for reducing pollution at Deerfield Pond why are they not equally as good along the slope of the bank at Hill Point?

Minimum Standards: The NRPA believes that working towards and obtaining only minimum standards is insufficient for achieving acceptable water quality. The NRPA Report Card for 2014 shows expanded closure of the Nansemond River and all of Bennett's and Knott's Creeks for bacterial pollution. Phosphorus levels far exceed limits and water clarity is poor. In 2014 the State Health Department by order 063-008 closed an additional 800-1000 acres and the balance of Bennett's Creek to shell fishing due to non- point source pollution based on thirty months of observation.In August 2015 the Virginia Department of Environmental Quality, in its draft report concerning Chuckatuck Creek, noted that there must be a 96%reduction in non-point source bacteria loads to meet TMDL requirements. The trends are going in the wrong direction. Below are NRPA's specific comments:

- Pg 3, Second Para: A 40% reduction in the MS4 Expanded Service Area is a demanding requirement and will not be met easily.
- Pg 10, Chesapeake Bay Preservation Act Program: This entry states the city's adoption of the Chesapeake Bay Preservation Act "went beyond the requirements of the state mandate". However, Suffolk has been lax in enforcement of this law; for example, the significant exceptions recommended by staff and approved by the Planning Commission for impervious surfaces in the 100' Buffer. For example, May 2012 – May 2014, 25 exceptions were approved.
- Pg 10, Erosion and Sediment Control: Why do we only enforce minimum standards? Does the City believe it saves money by doing this? It could well be argued that an aggressive enforcement policy would save money.

- Pg 13, 2026 Comprehensive Plan: This section contains, in part, the following: "As Suffolk continues to grow and prosper it is critical that the City provide clear and concise policies to ensure the health of our natural systems. Without appropriate controls and focus, development could overwhelm the natural environment". The NRPA totally agrees with this assessment. It does not appear that minimal standards are sufficient to achieve this status.
- Pg 20, Deerfield Pond Retrofit: There are a number of ponds in Suffolk that yield pollution from bacteria to pesticides/herbicides. Curtailing the retrofit program based on one example seems to be short sighted. Particularly when, on Pg 22 a total load of 60 is listed for Deerfield Pond which is good. Suggest an analysis be done to determine which ponds would provide significant value if retrofitted.
- Pgs 29-30, Septic System Connections: A number of factors point to septic tanks as significant source of bacterial pollution. Yet, the City of Suffolk has a passive policy of only extending septic tanks to neighborhoods that petition for their addition. That policy could be more aggressive and be targeted at areas where pollution is a problem. The draft TMDL for Chuckatuck Creek shows a requirement for a 96% reduction in nonpoint source bacteria loads. It does not seem feasible to achieve such a high number without extending the sewer system. The same situation may well apply to other City waterways.

Explanations and Calculations: There are areas in the action plan that we feel would benefit from expansion or further explanation to make it executable and readily understandableby the citizens of Suffolk. Similarly, we feel there needs to be disclosure of the underlying calculations used as they are so critical in determining the validity of the action plan. Below are the NRPA's general and specific comments:

General

- The TMDL Action Plan would benefit from a glossary that defines key terms and shows the source of the definition. This glossary would also have a list of acronyms and what they stand for in alphabetical order.
- An attachment should be added to the Action Plan that lists all of the actions that must be taken, who is the lead and assist for each action, what the metrics are for success, and the timeframe in which the action must be completed.
- An attachment should be added to the Action Plan that explains all of the calculations used to support the charts, graphs, and conclusion presented within the Action Plan. For example, how did you calculate the urban area?

Specific

- Pgs 3-4, Executive Summary: The wording in this section assumes an understanding of appropriate statutes, laws and regulations that most citizens do not have. A Preface that establishes the basic regulatory framework in which this Action Plan fits, the goals and objectives of the TMDL process from Suffolk's viewpoint, and the organization within the City of Suffolk government to implement the Action Plan would be helpful.

- Pg 6, Para 5, Table 4: The entry "Shoreline Management" is used in this table. And there is a reference to the term "Full Removal of Protocol 1". What does this entry and the defining term mean? We do see additional discussion on pgs 27-28 in Attachment B, however, that would not explain these phrases to the average citizen.
- Pg 7, Para 5: Oversized BMPs need to be built to specs and maintained. What is the spec history and maintenance of oversized BMPs built in 2005 or later. Were they built to spec? Are they being maintained?
- Pg 11&12, City Code Chapter 90 Article 7 – Stormwater Utility: An expanded description of this section would be helpful. How does this work? Where does the funding come from? What is the amount? How is it used?
- Pg 14: Public Works Stormwater Division is responsible for stormwater management, but which city department or portion of City government is responsible for TMDL compliance and this Action Plan?
- P16, Lone Star Lakes Land Use Conversion: Importantly, trees are mentioned as reducing nitrogen, phosphorus and TSS.An explanation of the mechanism of why trees rather than grasses yield this enhanced result would be helpful.
- Pg 18, Portsmouth Blvd Tree Planting: 2.3 acres is not a very large area. According to the regulations when converting agricultural to forest you need 100 trees per acre. What was the density for this effort? Are you counting saplings as trees?
- Pg 25, Table B.4, 1st line: No BMPs are referenced; however, credit is assigned for BMP?
- Pg 26, Table B.5: What were the calculations that yielded a reduction of 58.33 as it is a very large number?

Storm Water Management

- *We note that in the Virginia Stormwater Management Program, General Permit for Municipal Separate Storm Sewer Systems, Permit #VAR040029, Permit Year One Annual Report, dated October 1, 2014 that there is no BMP for the 100' Foot Buffer in Appendix B. This is a significant oversight that needs to be corrected.*

The NRPA main point of contact for these Action Plan Comments is Jim Winters, NRPA Director and Shoreline Committee Member jamesmwinters@yahoo.com.

NRPA wishes to thankthe SuffolkDepartment of Public Works andthe City Staff for the work which has been done on each of these important plans.

Sincerely,

Elizabeth Taraski
Executive Director
757-708-6114 (mobile)