Implementation Plan for the Fecal Coliform TMDL (Total Maximum Daily Load) for the Upper Nansemond River

June 2010

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TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1
- 1.1 Introduction 1
- 1.2 Review of Nansemond River Bacteria TMDL 1
- 1.3 Public Participation 2
- 1.4 Implementation Actions 3
- 1.5 Associated Costs and Benefits 3
- 1.6 Measurable Goals and Milestones 3
- 1.7 Stakeholders Roles and Responsibilities 4
- 1.8 Potential Funding Sources 4

2.0 INTRODUCTION 5
- 2.1 Purpose, Scope, and Timeframe 5
- 2.2 Regulatory Background 8
- 2.3 Designated Use and Water Quality Standard 8
- 2.4 Nansemond River TMDL Development Efforts 9
- 2.5 Nansemond River Watershed 10

3.0 STATE AND FEDERAL REQUIREMENTS 12
- 3.1 Background 12
- 3.2 State Requirements 12
- 3.3 Federal Requirements 12
- 3.4 Federal Consent Decree 12

4.0 REVIEW OF TMDL DEVELOPMENT 14
- 4.1 Description of Watershed Characteristics 14
- 4.2 Description of Impairment 16
- 4.3 Description of Water Quality Monitoring 18
- 4.4 Description of Water Quality Modeling 20
- 4.5 Description of Sources Considered 20

DRAFT

4.5.1 Point Source Contributions 20
4.5.2 Non-Point Source Contributions 20
4.6 TMDL Load Reductions and Allocation Results 21
5.0 ADDITIONAL INFORMATION SINCE TMDL DEVELOPMENT 23
5.1 Land use Changes 23
5.2 Shellfish Condemnation Areas Changes 24
5.3 Water Quality Monitoring Changes 24
5.4 Updated Shoreline Survey 24
6.0 PUBLIC PARTICIPATION 26
7.0 IMPLEMENTATION OPTIONS 27
7.1 Linking the TMDL to Implementation 27
7.2 Identifying Implementation Actions 27
7.2.1 Sanitary Sewer System Improvements 30
7.2.2 Septic System Programs 30
7.2.3 Stormwater Programs 31
7.2.4 Water Quality Monitoring 32
7.2.5 Boating Programs 33
7.2.6 Pet Waste Programs 34
7.2.7 Erosion and Sediment Control 34
7.2.8 Land Use Management 34
7.2.9 Agriculture Programs 35
7.2.10 Wildlife Contribution Controls 35
7.3 Implementation Costs and Benefits 36
8.0 MEASURABLE GOALS AND MILESTONES 39
8.1 Establishing Goals 39
8.1.1 TMDL Goals 39
8.1.2 Related Watershed Management Goals 39
8.2 Establishing a Timeline and Milestones for Implementation 39
8.3 Developing Tracking and Monitoring Plans 41
9.0 STAKEHOLDERS ROLES AND RESPONSIBILITIES 42

DRAFT

9.1 Federal 42
9.1.1 United States Environmental Protection Agency 42
9.2 State 42
9.2.1 Department of Environmental Quality (DEQ) 42
9.2.2 Department of Conservation and Recreation (DCR) 43
9.2.3 Virginia Department of Health (VDH) 43
9.2.4 Soil and Water Conservation District 43
9.2.5 Department of Game of Inland Fisheries 44
9.2.6 Virginia Marine Resource Commission 44
9.3 Regional 44
9.3.1 Hampton Roads Planning District Commission 44
9.3.2 Hampton Roads Sanitation District 45
9.4 City of Suffolk 45
9.5 Isle of Wight County 46
9.6 Private Sector, Non-governmental, and Citizen Groups 46
10.0 POTENTIAL FUNDING SOURCES 48
10.1 Requirements for Section 319 Fund Eligibility 49
REFERENCES 50

DRAFT

1.0 EXECUTIVE SUMMARY

1.1 Introduction

This Implementation Plan (IP) is a companion document to the report, "Fecal Bacteria Total Maximum Daily Load Development for the Nansemond River," The Nansemond River TMDL Study set allocations to limit bacteria pollutant loads discharged to the Nansemond River and Shingle Creek to levels that were modeled to achieve compliance with the state water quality criteria for bacteria for shellfishing waters and primary contact recreation. This IP bridges the gap between those specified pollutant load allocations and actual reductions in bacteria counts in the watershed by recommending a set of actions to be taken in the watershed during a fifteen year project timeframe.

State and Federal Requirements

Two sets of regulatory requirements for the development of TMDL IPs are applicable in the state of Virginia.

- §303(d) of the Federal Water Pollution Control Act of 1972 commonly known as the Clean Water Act (CWA)
- Virginia Water Quality Monitoring, Information and Restoration Act of 1997 (WQ MIRA)

CWA strives "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The inception of the federal TMDL program is found in section 303(d) of that legislation. WQMIRA requires the State to develop reports assessing water quality of state waters, to provide data to develop programs addressing water quality impairments, to develop TMDLs and to develop IPs.

1.2 Review of Nansemond River Bacteria TMDL

As a result of monitoring conducted by the Virginia Department of Health's Division of Shellfish Sanitation (DSS) and the Virginia Department of Environmental Quality (DEQ), portions of the Nansemond River and its tributaries were listed as impaired on Virginia's 1996 Section 303(d) list for being unable to attain the criteria for the primary contact recreation. In 2004, a 3.28 square mile area segment, named Nansemond River and tributaries, was listed as impaired for the Virginia Department of Health (VDH) shellfish harvesting use due to violations of the fecal coliform bacteria standards. The criteria are in place to protect the public from health effects associated with the consumption of bacteriologically contaminated shellfish.

A TMDL study for the Nansemond River, completed by DEQ in March 2006, examined the watershed characteristics and the sources of fecal coliform to the bays. Using monthly monitoring data, bacterial source tracking (BST), and a tidal volumetric model, DEQ assigned

maximum allowable loads to each source in the watersheds in order to bring the Nansemond River into compliance with the water quality standard for shellfish propagation and primary contact recreation.

Table 1-1: TMDL Reduction in Bacteria Loadings from Existing Conditions (Primary Contact Recreation Standard)

Waterbody Segment	Percent Reduction from Existing Condition					
	Direct Wildlife	NPS Forest/Wetlands	Direct Livestock	NPS Agriculture	Direct Human Loads	NPS Residential
Shingle Creek	0	0	0	0	100	0
Nansemond River Upper	0	0	90	100	100	50
Lake Meade Dam	0	0	90	50	100	50

Table 1-2: TMDL Reduction in Bacteria Loadings from Existing Conditions (Shellfishing Standard)

Waterbody Segment	Percent Reduction from Existing Condition					
	Direct Wildlife	NPS Forest/Wetlands	Direct Livestock	NPS Agriculture	Direct Human Loads	NPS Residential
Shingle Creek	97	98	100	99	100	99
Nansemond River Upper*	96	97	0	96	100	96
Lake Meade Dam	0	0	0	0	100	0
* Assumes Shingle Creek meets standard						

The core of this IP is a set of actions found in Section 7 aimed to reduce the levels of bacteria in the Nansemond River watershed. The actions chiefly target bacteria from human and pet ("anthropogenic") sources. This reflects the staged implementation recommended by the Virginia Department of Environmental Quality and referenced in the TMDL Study.

1.3 Public Participation

Two public meetings were held in the watershed to engage the public in the development of the TMDL Implementation Plan for the Nansemond River Watershed. A work group composed of representatives from city departments, the Hampton Roads Planning District Commission (HRPDC), and state and federal agencies was formed to guide development of the TMDL IP.

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1.4 Implementation Actions

The management actions outlined in this IP capitalize on existing and planned programs and efforts within the Nansemond watershed and will be implemented in four phases. Ongoing actions have already been initiated in response to other regulatory programs, but are expected to reduce bacteria loads to the waterbodies. Phase I actions are those that have been recently initiated or will be initiated in the near future in response to the TMDL and are scheduled for completion within five years. Phase II activities are those that are planned for implementation within the next five to ten years and may not have approved funding sources yet. Phase III actions may require regulatory changes, so they may be implemented as necessary if actions undertaken in the previous phases do not significantly improve water quality within the study area. All management actions were divided into the following ten management categories:

- Sanitary Sewer System Improvements
- Septic System Programs
- Stormwater Programs
- Monitoring
- Boating Programs
- Pet Waste Programs
- Erosion and Sediment Control
- Land Use Management
- Agricultural BMPs
- Wildlife Contribution Controls

1.5 Associated Costs and Benefits

The primary benefit of the implementation of the management actions described in this IP is the reduction of bacteria levels in the Nansemond River and tributaries. The programs and actions contained within this IP will serve to reduce the anthropogenic sources of bacteria within the Nansemond River Watershed. Because many of the programs mentioned in this report also serve purposes other than to just reduce bacteria and because they cover areas larger than the Nansemond Watershed, the costs of reducing bacteria levels in the Nansemond Watershed can be difficult to estimate. City of Suffolk staff estimated costs for management categories using knowledge of current program costs and best professional judgment.

1.6 Measurable Goals and Milestones

The goal of the TMDL developed for the Nansemond River is to bring the impaired water segments within the Nansemond watershed into compliance with the water quality standard

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for bacteria in shellfishing waters. Once the water segment achieves compliance with the bacteria criteria, then the segment can be removed from the 303(d) Impaired Waters List. Throughout the fifteen year project timeframe, DSS and DEQ will continue monthly monitoring of stations throughout the Nansemond watershed. Currently, this monitoring program includes four DSS stations at the mouth of the Nansemond and two DEQ stations in the headwaters. The City of Suffolk has requested DEQ and DSS to resume monitoring at inactive stations and is pursuing establishment of its own monitoring program. Project progress will be tracked throughout the timeframe of the implementation plan, and the effectiveness of the management actions proposed in this IP will be evaluated at the end of five, ten, and fifteen years.

1.7 Stakeholders Roles and Responsibilities

Stakeholders are individuals who live or have land management responsibilities in the watershed, including government agencies, businesses, private individuals and special interest groups. Stakeholder participation and support is essential for achieving the goals of this TMDL effort. Stakeholders for this project were identified at the beginning of IP development and invited to sit on the Workgroup for the project.

1.8 Potential Funding Sources

One of the objectives of this TMDL Implementation Plan was to maximize utilization of existing programs and resources to achieve the goal of reducing bacteria levels within the Nansemond Watershed. In general funding for these programs and the management actions described in this IP will come from four sources:

- Locality funds
- Private / nonprofit funds
- Virginia State funds
- Federal funds

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Table 7-1 Management Options for Implementation of Nansemond River TMDL

Management Category	Management Option	Development Phase
Sanitary Sewer Improvements	Implement schedule defined by Regional SSO Consent Order (9/26/2007 – 11/26/2013)	Ongoing
	Sewer System Evaluation Survey Plan	Complete
	SSES Field Activities – System Assessments	Ongoing
	RSOBC – Maintenance, Operation and Management Plan	Complete
	Flow Monitoring Plan and Flow Evaluation Reports	Complete
	Flow Monitoring Program – SSES Basins	Complete
	Find and Fix Field Activities (Severe Defects)	Ongoing
	Long Term Rehabilitation Plan Development	Ongoing
	HRSD Federal Consent Decree	Ongoing
	Turlington Park Sewer Extension	Ongoing
	Lake Speight Sewer Extension	Ongoing
	Nansemond Shores and Holiday Point Sewer Extension	Complete
	Cedar Point Sewer Extension	Complete
	Bennett's Harbor Sewer Extension	Complete
	Participation in HRFOG education program	Ongoing
Septic System Programs	CBPA Septic Tank Pump Out and Inspection Information	Ongoing
	Continue to update septic system locations through pump out program	Ongoing
Stormwater Programs	Enforcement of Illicit Discharge provisions within the Stormwater Management Ordinance	Ongoing
	Participation in HRSTORM education program	Ongoing
	Stormwater Medallion Program	Phase I
	Outfall inventory and reconnaissance	Phase I
	Estimate Stormwater contribution from urbanized area to bacteria loading	Phase II
	Water quality monitoring at outfalls	Phase III
Monitoring	Regional Bacteria Source Tracking Study – Shingle Creek	Phase I
	Establish additional monitoring stations on River	Phase II
Boating Programs	Expanded Boater Education Program	Phase I
	Explore No Discharge Zone Designation	Phase III
Pet Waste Programs	"Scoop the Poop" Campaign	Ongoing
	Pet waste containers in regional parks	Ongoing
	Explore "Scoop the Poop" ordinance	Phase III
Erosion and Sediment Control	Enforcement of Suffolk/IOW Erosion and Sediment Control Ordinance	Ongoing
	No wake zones at Constance Wharf and Bennett's Creek	Ongoing
Land Use Management	Chesapeake Bay Preservation Area Ordinance	Ongoing
	Living Shoreline Program	Phase III
Agriculture Programs	Virginia Agricultural BMP Cost Share Program	Ongoing
	Investigate grant funding for horse owner programs	Phase III
Wildlife Contribution Controls	DGIF deer control programs	Ongoing

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