

# 2012 State of the Nansemond Report

Published by the Nansemond River Preservation Alliance Water Quality Committee

## NRPA Mission Statement

The mission of the Nansemond River Preservation Alliance is to raise public awareness and encourage environmental stewardship of the Nansemond River, Chuckatuck Creek, Bennett's Creek, and their tributaries and wetlands by developing and implementing environmental programs to protect the waterways and initiating collaborative actions with individuals, businesses, civic organizations and governmental agencies. NRPA activities include: a monthly water quality monitoring program, publishing a bi-annual water quality report, developing environmental education programs for the community and the schools, promoting actions to preserve the region's water quality, wetlands and wildlife refuges and improving public access to the waterways for low impact recreational activities.

**The Nansemond River Preservation Alliance supports the Environmental Protection Agency in its efforts to restore our waterways to full health. Specifically, NRPA supports the City of Suffolk's Watershed Implementation Plan to significantly reduce pollution in the Nansemond River. NRPA is an advocate for protection of wetlands and maintenance of forested areas in the watershed.**

## About the Nansemond River

The Nansemond River was named for the Native American tribe that fished its waters for thousands of years before European settlers arrived. In 1608, Capt. John Smith sailed into the Nansemond River and in 1642, Anglican settlers formed a Parish near the shores of the Nansemond, known today as St. Johns Church.

The Nansemond River originates in downtown Suffolk. Lakes Cahoon, Kilby and Meade were once streams which were the headwaters of the Nansemond. They have since been separated from the River by dams and are now owned by the City of Portsmouth. Lakes Burnt Mills and Prince were once streams which were the headwaters of the Western Branch but were also impounded by dams and are now owned by the City of Norfolk. Except for lake overflow, the Nansemond River has no significant source of fresh water.

The Nansemond River runs more than 20 miles from downtown Suffolk to its confluence with the James River. Bennett's Creek, which feeds into the Nansemond downstream of the Rt. 17 Bridge, is a major tributary. The Nansemond Watershed drains 161,358 acres of land in Suffolk and Isle of Wight County. However, a significant portion of the rain water drains into the aforementioned Lakes. Salinity at the mouth of the Nansemond averages 15 parts per thousand (brackish) but only 3 ppt near downtown Suffolk. Much of the Nansemond River, outside of the navigation channel, is of shoal depth. Tidal rise and fall averages slightly less than 3 feet.

Chuckatuck Creek, which parallels the Nansemond River for a portion of its length, feeds into the James just north of the Nansemond. Upper Chuckatuck Creek is connected to Crane Lake, one of the 12 Lonestar Lakes, which originated as marl mining pits. The remaining Lakes are isolated from Chuckatuck Creek and several serve as part of the Suffolk municipal water supply.

The Nansemond Watershed has a legacy of agriculture, from tobacco in the 18<sup>th</sup> century to peanuts, soybeans and cotton today. But the real legacy of the Nansemond stems from its once thriving oyster, crab and shad fisheries which are all but gone today as the result of pollution and disease, loss of habitat and over fishing<sup>1</sup>.

Today, development is reducing the forests and threatening the wetlands in the Nansemond Watershed.

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<sup>1</sup> For more information, the reader is referred to *The River Binds Us*, edited by Karla Smith, Hallmark Publishing Co., 2007.

## Pollution

Much of the Nansemond River has been classified as **impaired** by State agencies due to high levels of fecal bacteria. Other sources of pollution include sediment and phosphorus. Further, water clarity in the Nansemond River and Chuckatuck Creek is poor, denying sunlight to the submerged grasses which produce oxygen and feed aquatic animals.

The EPA, under a consent decree, ordered all jurisdictions bordering the Chesapeake Bay and tributaries to submit Watershed Implementation Plans (WIPs) for significant reductions in pollutants discharged into the Bay. The consent decree is based upon the science of total maximum daily loads (TMDLs), the levels which waterways can absorb and dissipate. However, much work remains to restore the Nansemond River to full health.

## Bacteria

The principle pollutant in the River is fecal bacteria which results from untreated storm water runoff, animal waste, faults in sanitary sewer pump stations and lines and improperly maintained septic systems. Monitoring by the Virginia Department of Environmental Quality, conducted from 1985 to 2010, indicated high levels of bacteria pollution in the upper Nansemond<sup>2</sup> (south of Rt. 125). Monitoring by NRPA and the City of Suffolk, conducted from 2011 to 2012, shows improvement in the upper Nansemond, despite the Oct. 29, 2012 spill into Shingle Creek. However, the Shingle Creek to Constant's Wharf portion of the River remains impaired for recreation.

The Virginia Department of Health has opened much of the lower Nansemond for shellfish harvesting.

**2012 Grade, lower Nansemond: B+**

**2012 Grade, upper Nansemond: D-**

## Nitrogen & Phosphorus

Nitrogen and phosphorus pollution result from use of fertilizers on agricultural and suburban lands. Runoff during rains carries pollution-bearing sediment into the River, either directly or via the storm water system. These nutrients promote the growth of algae which consume the dissolved oxygen necessary to support marine life. In 2010, nitrogen and phosphorus levels in much of the upper Nansemond exceeded algae bloom thresholds.<sup>3</sup> Monitoring conducted from 2011 through 2012 showed improvement in nitrogen levels. However, phosphorus levels still exceeded algae bloom threshold levels for much of the River.

**2012 Grades for Nitrogen: C+**

**2012 Grades for Phosphorus: D+**

## Dissolved Oxygen

Marine animals suffocate without sufficient levels of dissolved oxygen. Dissolved oxygen is produced by underwater plants through photosynthesis. Reducing nutrients will reduce algae and increase dissolved oxygen. In 2012, dissolved oxygen levels in the Nansemond River were sufficient to support marine life.

**2012 Grade: B**

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<sup>2</sup> Virginia DEQ data from 1985 to 2010: geometric mean fecal coliform levels at the Rt. 460 Bridge and at Shingle Creek were 680 cfu/100 ml vs. target levels for shell fishing and recreation of 14 cfu/100 ml of 200 cfu/ml, respectively. 2011 – 2012 geometric means at the Rt. 460 Bridge and Shingle Creek were 224 cfu/100 ml and 337 cfu/100 ml, respectively.

<sup>3</sup> DEQ advises that algae blooms may appear at phosphorus levels > 0.01 mg/L. Measured levels exceeded 0.01 mg/L.

## Water Clarity

Underwater grasses (Submerged Aquatic Vegetation) provide water filtration and produce dissolved oxygen. In addition, they provide food for aquatic animals such as Blue Crabs. SAVs depend on clear water for sunlight to enable photosynthesis. In 2012, water clarity in the Nansemond River was poor due to algae and sediment.<sup>4</sup>

**2012 Grade: D**

## Habitat

### Wetlands

Wetlands comprise the interface between the Nansemond River and its shoreline. Wetlands act as a filter to remove pollutants such as bacteria, nitrogen, phosphorus and sediment which might otherwise enter the River from storm water runoff. Wetlands also provide a habitat for animals, especially juveniles, and they contribute to the beautiful views which we all value.

The Nansemond River and its tributaries are blessed with more than 29,000 acres of wetlands. However, there are no wetlands to filter a major source of pollution in the Nansemond, untreated storm water runoff from downtown Suffolk.

In 1988, the Virginia General Assembly enacted the Chesapeake Bay Preservation Act (the "Bay Act") designed to preserve its wetlands in order to protect the Bay from pollution due to storm water runoff. The key provisions of the Act were the establishment of a Resource Protection Area (a defined shoreline boundary) together with a 100 foot vegetated buffer adjacent to the shoreline. NRPA has taken actions to educate individuals, businesses and officials about the Bay Act and also recommended best practices used in other communities designed to protect the waterways for current and future generations.

**2012 Grade: C+**

## Oyster Restoration

Nansemond River Preservation Alliance has made significant progress in establishing an Oyster Growers Program by working with schools, citizens who own shoreline property, and local Boy Scout and Girl Scout troops. Volunteers are learning to raise seed oysters, transplant them in reef sanctuaries and are being trained to use scientific equipment. The oysters will become natural filters as they grow to adulthood. The goals of the program are to: 1) provide environmental education, 2) restore oyster reefs in the Nansemond and Chuckatuck Creek and 3) foster environmental stewardship among youth organizations. However, much restoration work remains to be done to effect meaningful improvements in local oyster habitats.

**2012 Grade: B-**

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<sup>4</sup> Secchi Disk readings in minimally impaired streams exceed 1.0 meters; levels in the upper Nansemond were <0.5m.

## Open Space and Public Access

The Nansemond River and its tributaries are surrounded by nearly 35,000 acres of forested land. However, that land is slowly giving way to development.

The City of Suffolk maintains several public parks with water access or views, including Bennett's Creek Park, Constant's Wharf Park and Lone Star Lakes Park. Only Bennett's Creek Park has a boat ramp with access to the Nansemond River. However, the City of Suffolk has budgeted for a kayak and canoe launch facility at Sleepy Hole Park. NRPA has also opened a dialogue with the Suffolk Dept. of Parks and Recreation to construct a kayak and canoe launch facility at Constant's Wharf.

The U.S. Fish and Wildlife Service maintains the Nansemond Wildlife Refuge, located south of Sleepy Hole Park. Although the Refuge is not open to the public at present, the City of Suffolk hopes to provide viewing access in the future through the former radio transmitter site adjacent to the preserve.

The only active public marina in either the Nansemond River or Chuckatuck Creek is located at Constant's Wharf in downtown Suffolk.

**2012 Grade: C+**

## Pollution Control Efforts

### Storm Water System Improvements

The Suffolk Department of Public Works has instituted several programs to comply with the EPA requirements to limit pollution due to storm water runoff, including stricter enforcement of erosion fences for developers, a storm water medallion program to prevent dumping of pollutants into storm drains and programs to limit pet waste which may enter the River.

NRPA is encouraged by the Department of Public Works program of extensive pollution monitoring in the Nansemond River. However, the City's efforts to comply with EPA requirements are in the beginning stages of a ten to fifteen year long Watershed Implementation Plan and progress will be, understandably, slow.

**2012 Grade: C+**

### Sanitary Sewer Improvements

Suffolk's Department of Public Utilities has employed a two phased approach to meet the new EPA requirements. The first, assessment, consists of smoke testing and video camera analysis of sanitary sewer mains to find any breaches in integrity. This phase will pinpoint old sewer lines which need replacement in the second phase, implementation. In addition, the City has targeted for replacement, a number of old sewage pumping stations which fail periodically, causing raw sewage to spill into the storm drain system and ultimately into the River.

**NRPA urges the City to proceed as expeditiously as possible to replace faulty pumping stations.**

Hampton Roads Sanitation District employs a system of pumping stations and pipes to collect the sewage from the City's pumping stations and transport it to HRSD's treatment facility near the Monitor Merrimac Bridge. On October 29, 2012, HRSD's large diameter forced main crossing under Shingle Creek at Wilroy Road, burst, spilling millions of gallons of raw sewage into the Creek and the Nansemond River. Immediately after the spill, fecal bacteria counts reached extreme levels. However, within a month, bacteria from the spill had died and levels

were consistent with earlier measurements. According to HRSD's investigation, the pipe was previously damaged and time will tell if the damaged pipe has been the main source of the high bacteria counts in Shingle Creek.

The vast majority of homes in Suffolk are served by City sewer service. The Department of Public Utilities requires registration and pump-out of private septic systems every five years and will continue to convert septic systems to City sewer service where feasible.

**2012 Grade: C**

## **Clean Boating**

Aside from recreational fishing, boating activity on the Nansemond River is relatively low. The only active public marina on the Nansemond, Constant's Wharf, has a pump out station. The scattering of private docks along the River and along Chuckatuck and Bennett's Creeks have few if any live-aboards who might discharge waste. However, NRPA will continue its efforts to educate area boaters about Virginia Laws prohibiting overboard discharge of sewage and other pollutants.

**2012 Grade: B+**

## **Education and Public Awareness, Membership**

NRPA firmly believes that the River and creeks belong to everyone and that they provide great meaning to people's lives. Our programs enhance the quality of life for our citizens while empowering them to be lifelong environmental stewards. We believe that all families, regardless of their socioeconomic level, can make a difference in restoring the health of their waterways. NRPA's driving force is the citizen volunteer who lives in the City of Suffolk.

NRPA's environmental education programs and activities work towards preserving and restoring our beautiful natural resources for future generations. In less than two years, NRPA has attracted 400 members (donors and volunteers) and organized five primary operating committees: Water Quality, Environmental Education, Historic Significance, Shoreline and Improving Public Access.

A sampling of our programs and activities include:

- The NRPA Oyster Growers Program educates students about the significance of the waterways and how they can make a difference. During the 2011-12 school year, 700 children participated in the program and are now environmental stewards. Eighteen families are participating in the Oyster Growers Program.
- Workshops and programs that educate citizens about home-based, best practices that can help protect the waterways. Topics include; living shorelines, rain gardens, planting native flora, a community storm water medallion program with the City and environmental regulations and policies.
- Community-wide annual programs such as the NRPA River and Creek Fest – a fun and exciting way for all citizens to learn about water quality testing, meet their river "critters", experience Suffolk waterways and enjoy the outdoors.

## 2012 Grades:

**Education and Awareness: A**

**Membership: A**

## Summary

NRPA is able to report progress in several areas, during the period from 2010 to 2012, including bacteria and nitrogen pollution levels, oyster restoration, public access and education and public awareness. However, much work remains to be done to restore the Nansemond River to full health. Fortunately, NRPA along with community organizations and local government agencies are collaborating to achieve this goal.

A summary report card follows this page. For more information, including supporting documentation for this Report, the reader is referred to *Baseline Levels of Pollution in the Nansemond River as of 2010*, and *Levels of Pollution in the Nansemond River – 2011 through 2012*, posted on our website, [nansemondriverpreservationalliance.org](http://nansemondriverpreservationalliance.org).

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