

Stormwater Watch

PUBLIC SERVICES DEPARTMENT

STORMWATER SERVICES

Spring 2013

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UNCW Surface Water
Quality Annual Report

Questions?

Stormwater Services Division

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Billing Questions (CFPUA) 332-6550

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Plan aims to clean up Bradley & Hewletts Creeks



Before it was developed, the Wilmington area consisted mainly of forests, wetlands and sand dunes. Most rainwater was absorbed into the ground, where it was filtered naturally by soil and plants.

Today, buildings, streets and parking lots prevent rainwater from soaking into the ground. Instead, it runs over these hard surfaces, picking up oil, pet waste, fertilizers and other pollutants. This contaminated runoff then flows into creeks and waterways, resulting in shellfish harvest closures and recreational swimming advisories.

The City of Wilmington partnered with the North Carolina Coastal Federation, the Town of Wrightsville Beach, UNCW and

Withers & Ravenel Engineering to develop a plan to restore Hewletts and Bradley Creeks.

The focus of the plan is to encourage local residents and businesses to become more stormwater-friendly by using rain gardens, rain barrels and rerouting downspouts to allow stormwater to soak into the earth.

After gathering public input, the Bradley & Hewletts Creek Watershed Restoration Plan was adopted by City Council with the goal of reducing the total amount of polluted runoff flowing into these creeks.

The plan is ambitious and will be a long-term, cooperative effort, but the city and its partners are confident that by empowering residents and businesses to reduce polluted runoff, the water quality in Hewletts and Bradley Creeks can be restored. The City recently hired a Watershed Coordinator to spearhead this very important initiative.



WHICH WATERSHED
DO YOU LIVE IN?

Find out at
wilmingtonnc.gov/watersheds

The State of Wilmington's Waterways 2012 UNCW Surface Water Quality Report

(Following is a summary of the condition of major creeks and waterways, not drinking water, within the City limits.)

Water Classifications

The NC Division of Water Quality applies classifications to waterways which define the best uses to be protected within those waters (i.e. swimming, fishing, drinking water supply, aquatic life). These classifications have an associated set of water quality standards to protect their designated uses. These standards may be designed to protect water quality, fish and wildlife, the free flowing nature of a stream, or other special characteristics. In addition, there may be a supplemental classification applied to protect several different uses or special characteristics within the same waterway. Listed below are the freshwater and saltwater classifications that apply to Wilmington's waterways. For more information, visit: <http://portal.ncdenr.org/web/wq/ps/csu>

Freshwater Classifications

Class C Waters protected for secondary recreation (fishing, boating and other activities involving minimal and infrequent skin contact), wildlife, agriculture, biological integrity, and fish/aquatic life propagation and survival.

Supplemental Classification

Swamp Waters (Sw) Waters that naturally have low flow and other characteristics which differ from creeks draining land with steeper topography.

Saltwater Classifications

Class SC Saltwaters protected for secondary recreation (such as fishing, boating, and other activities involving minimal skin contact) and fish/aquatic life propagation and survival.

Class SB Saltwaters used for primary recreation such as swimming, and all Class SC uses.

Class SA Saltwaters used for commercial shellfish harvesting, primary recreation such as swimming, and all Class SC/SB uses. SA waters are also High Quality Waters (HQW) by definition.

Supplemental Classifications

High Quality Waters (HQW) Saltwaters rated excellent based on biological, physical, and chemical characteristics and having primary or functional fish habitat and nursery areas.

Outstanding Resource Waters (ORW) Unique and special saltwaters with excellent water quality and/or having national, ecological, or recreational significance and outstanding fish habitat.

State Status/Reason

Indicates whether or not a creek is supporting its State classification and the reason why.

NC 303(d) List of Impaired Waters

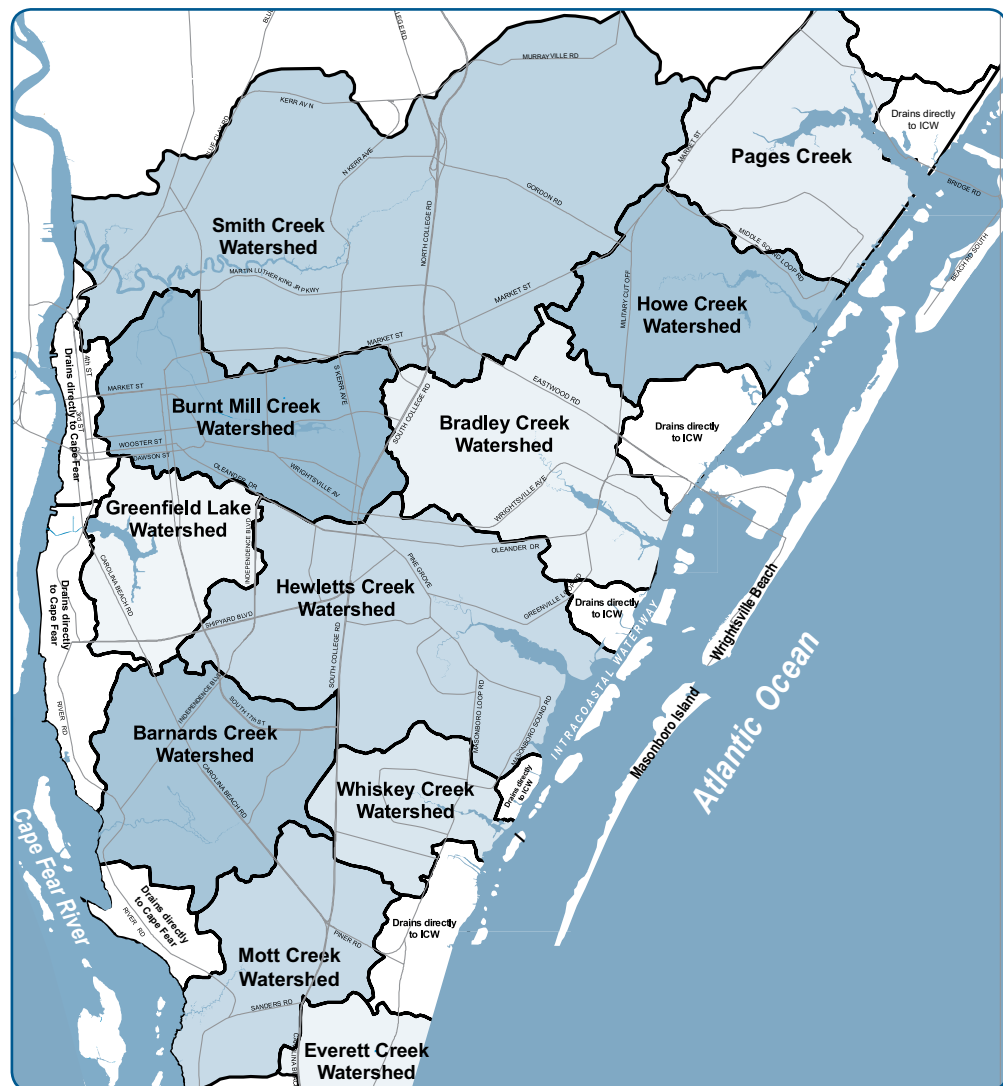
Section 303(d) of the Clean Water Act requires states to develop and frequently update a list of waters that do not meet water quality standards or have impaired uses. Unfortunately, several of Wilmington's waterways are on the North Carolina 303(d) List because of pollution such as bacteria and nutrients.

The State of Wilmington's Waterways 2012 UNCW Surface Water Quality Report is a summary of the current health and condition of the major creeks and waterbodies that fall within Wilmington's city limits. UNCW water quality sampling information was provided by Dr. Michael Mallin of the UNCW Center for Marine Science and lead scientist for the Wilmington Watersheds Project. Each water quality sampling summary is based on data collected between the months of January-December 2012 and is presented from

a watershed perspective, regardless of political boundaries.

The summary describes each watershed by size, state classification, state status, reason for impairment and UNCW sampling summary. For more information on the current health of Wilmington's waterways and to read Dr. Mallin's entire report, please visit:

uncw.edu/cms/aelab/



UNCW Results Summary: Fecal coliform bacterial contamination continues to be the number one problem affecting Wilmington's waterways. All of the tidal creeks (which drain to the Intracoastal Waterway) in the City limits are closed to shellfishing due to high fecal coliform bacteria levels. It's worth noting that the JEL Wade Park stormwater wetland along the southernmost branch of Hewletts Creek has considerably improved water quality in that branch of the creek.

The State of Wilmington's Waterways 2012 UNCW Surface Water Quality Report

(Following is a summary of the condition of major creeks and waterways, not drinking water, within the City limits.)

Water Definitions



Cape Fear River

Watersheds that drain to Cape Fear River

Smith Creek

Size of watershed: 13,896 acres

State classification/Use: C, Sw

State Status: Currently supporting use

Reason: Meets standards for ecological/biological integrity and aquatic life.

UNCW Sampling Summary: One sampling station on Castle Hayne Road showed periodic low dissolved oxygen and high fecal coliform levels. The lower sampling station at Castle Hayne Road had elevated concentrations of two PAHs.

Burnt Mill Creek

Size of watershed: 4,252 acres

State classification/Use: C, Sw

State Status: Impaired. On 303(d) list

Reason: Poor ecological and biological integrity

UNCW Sampling Summary: This creek had very poor water quality, with algal blooms in the middle and lower portion of the creek, incidents of low dissolved oxygen and high fecal coliform levels. Creek sediments were polluted by toxic organic compounds called polycyclic aromatic hydrocarbons (PAHs).

Greenfield Lake

Size of watershed: 2,551 acres

State classification/Use: C, Sw

State Status: No current rating for aquatic weeds

Reason: Inconclusive data from State

UNCW Sampling Summary: Tributaries into the lake had problems with severe low dissolved oxygen. The main lake had problems with algal blooms and high fecal coliform bacteria, but had generally good dissolved oxygen levels. Lake sediments in some areas were polluted at levels known to be harmful to aquatic life by copper, lead, zinc, and PAHs.

Barnards Creek

Size of watershed: 4,161 acres

State classification/Use: C, Sw

State Status: Currently supporting use

Reason: Meets standard for ecological and biological integrity.

UNCW Sampling Summary: Not sampled.

Mott Creek

Size of watershed: 3,328 acres

State classification/Use: C, Sw

State Status: No current rating

Reason: Not currently monitored by State

UNCW Sampling Summary: Not sampled.



Intracoastal Waterway

Watersheds that drain to Intracoastal Waterway

Howe Creek

Size of watershed: 3,518 acres

State classification/Use: SA, ORW

State Status: Impaired. On 303(d) list and closed to shellfishing

Reason: Fecal coliform bacteria

UNCW Sampling Summary: There were minor problems with algal blooms and low dissolved oxygen, but the primary problem continues to be high fecal coliform bacteria pollution in the upper part of the creek.

Bradley Creek

Size of watershed: 4,631 acres

State classification/Use: SC

State Status: No current rating

Reason: Not currently monitored by State

UNCW Sampling Summary: There were only minor problems with algal blooms in the south branch of the creek, but high fecal bacteria levels impacted all three sampling stations, and there were minor dissolved oxygen problems.

Hewletts Creek

Size of watershed: 7,435 acres

State classification/Use: SA, HQW

State Status: Impaired. On 303(d) list and closed to shellfishing

Reason: Fecal coliform bacteria

UNCW Sampling Summary: There were some problems with low dissolved oxygen, but no major algal blooms occurred. High levels of fecal coliform bacteria polluted three of five sampling stations in this creek; however, water quality in the southernmost branch of the creek has improved since the J.E.L. Wade Park stormwater wetland was installed.

Whiskey Creek

Size of watershed: 2,095 acres

State classification/Use: SA, HQW

State Status: Impaired. On 303(d) list and closed to shellfishing

Reason: Fecal coliform bacteria

UNCW Sampling Summary: One station was sampled from Masonboro Loop Rd; there were problems with low dissolved oxygen, but otherwise good water quality at this sampling station.

Algal Bloom Rapidly occurring growth and accumulation of algae in a waterway resulting from excess nutrients that can lead to low dissolved oxygen levels and fish kills. (Sources: fertilizers, grass clippings, pet waste)

Best Management Practice (BMP) An action or landscape modification that reduces the amount of pollution and/or the quantity of stormwater flowing into waterways. BMPs can be non-structural, such as picking up after your pet, or structural, such as rain barrels or rain gardens.

Dissolved Oxygen (DO) The amount of oxygen available in water. Fish and aquatic organisms require adequate levels of DO to survive.

Fecal Coliform Bacteria Bacteria present in the intestines and feces of warm-blooded animals. High levels of fecal coliform bacteria in a waterway indicate the presence of other disease-causing pathogens which can cause sickness and disease in humans. (Sources: pet & animal waste, sewer overflows, septic system failure)

Hypoxia Low dissolved oxygen levels in a waterway which can result in fish kills. (Source: excess nutrients, algal blooms)

Nutrients Substances needed by plants and animals for growth (i.e. nitrogen and phosphorus); however, excessive nutrients in a waterway can lead to harmful aquatic weed and algae growth, low DO levels and fish kills. (Sources: fertilizers, yard waste, pet waste)

Pathogens Disease-causing organisms such as bacteria and viruses. (Sources: pet waste)

PAHs (Polycyclic Aromatic Hydrocarbons) Chemicals that are produced by burning fossil fuels, which can be toxic to humans and aquatic life and can persist in the environment for a long time. (Sources: auto exhaust, motor oil, parking lot sealcoats, roofing tars, coal power plants)

Sediment Particles of silt, clay, dirt, or sand that wash into waterways as a result of land-disturbing activities or natural weathering. Sediment can settle to the bottom or remain suspended in water. Other pollutants may attach to sediment particles. (Sources: construction sites with failing sediment/erosion control, eroding streambanks, and exposed soil).

Tidal Creek A saltwater creek that is influenced by tides. Many tidal creeks have oyster reefs along their shorelines.

Turbidity A cloudy condition in water caused by suspended sediment.

Watershed An area of land that drains into a specific body of water such as a creek, lake, or river.

Stormwater 101

WHEN YOU'RE WASHING YOUR CAR ON THE DRIVEWAY, REMEMBER
YOU'RE NOT JUST WASHING YOUR CAR ON THE DRIVEWAY...



Anything that flows into storm drains and ditches ends up directly in our creeks and waterways without being treated.

So wash vehicles on the grass or at a commercial car wash to prevent soap and dirty water from polluting our waters and the fish that live in them.

You can be the solution to stormwater pollution!