

CITIZENS HELP PREVENT STORMWATER POLLUTION

Citizens play an integral role in identifying and reporting stormwater pollution. They are the “eyes and ears” in the community that have notified the city and reported pollution draining into Wilmington’s stormwater system and waterways. Only rain is allowed in a storm drain or drainage ditch.

Reports from the community about these illicit discharges have included foaming soap suds in a creek, improperly maintained restaurant grease traps, yard waste and debris blown into storm drains, motor oil being dumped in a ditch, and illicit pipes carrying wastewater and sediment into local creeks.

Public Services compliance officers are tasked with investigating each reported instance of pollution and ensuring that violators correct the situation. When making a report, please include the date, time, location, source, type of pollution, and responsible party, if this information is known. Photos are also helpful for investigating a report. Your contact info is not required, but is helpful if Compliance Officers need more information. See the ad below for how to report stormwater pollution. ■



Compliance Officers investigated foaming suds entering a local creek.

Stormwater 101

See it. Report it.

Stormwater Pollution
910.341.1020

wilmingtonnc.gov/reportstormwaterpollution

NPDES STORMWATER PERMIT



The City of Wilmington is required to hold and implement a National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater permit. The permit program falls

under the Environmental Protection Agency’s Clean Water Act and aims to protect and restore water quality and aquatic habitat, safeguard drinking water sources and human health, and encourage pollution prevention within the community.

The six required elements of the city’s permit include Public Education, Public Involvement, Illicit Discharge Detection and Elimination, Construction Site Runoff Controls (1-5 acres), Post-Construction Site Runoff Controls, and Good Housekeeping/ Pollution Prevention of Municipal Facilities. The city will be audited this year and a new 5-year permit will be issued. Read more about the city’s permit and associated ordinances at:

wilmingtonnc.gov/stormwaterregs

MONTHLY RAIN BARREL SALES

In cooperation with the City of Wilmington, the New Hanover Soil & Water Conservation District holds rain barrels sales for the public three times a month.

Using a rain barrel prevents stormwater pollution from draining into local creeks. Plants and gardens love naturally-collected rainwater.

The IVY Rain Barrel holds 50-gallons and sells at a discounted rate of \$85. Monthly rain barrel sales are held:

- **2nd Thursday**, 9 a.m.-4:30 p.m., New Hanover County Arboretum
- **3rd Saturday**, 8 a.m.-1 p.m., Wilmington Farmer’s Market at Tidal Creek Co-op
- **4th Tuesday**, 12 p.m.-7 p.m., New Hanover County Arboretum



Learn More



Wilmington, NC | Spring 2023

STORMWATER WATCH

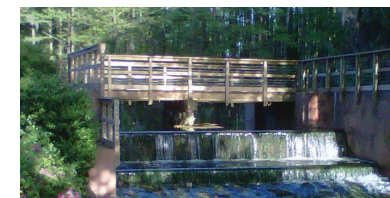
GREENFIELD LAKE SPILLWAY GETS A MAKEOVER

Major work to the Greenfield Lake spillway began this past fall to repair this aging structure. Greenfield Lake typically has a constant water level. However, when it rains, excess water in the lake drains over the spillway and eventually into the Cape Fear River.

The spillway had been slowly settling and cracking adjacent to the lake edge for several years. Although the spillway did not appear to be in eminent danger of failure, the condition of the spillway prompted the city to make repairs sooner than later.

The restoration work includes the installation of helical piers (anchors) under the spillway foundation to stabilize it and prevent future settling and cracking.

In order to perform repairs, the project required diverting water in Greenfield Lake from draining over the spillway. A safe pedestrian corridor was also established around the spillway work within Greenfield Park. ■



The Greenfield Lake spillway prior to construction repairs.

wilmingtonnc.gov/stormwaterprojects

LOCAL FESTIVAL HELD ON EARTH DAY

Earth Day is celebrated worldwide in 193 countries yearly on April 22. Earth Day events are important for raising awareness and participating in activities that benefit our planet.

This year, Wilmington’s annual Earth Day Festival will be held on **Saturday, April 22, 2023** from **12 p.m.-6 p.m.** at Long Leaf Park.

The city’s Stormwater and Heal Our Waterways programs are major sponsors of the event and will host interactive exhibits. This year’s theme is “Invest in Our Planet.”

The Earth Day Festival features environmental information and activities with 70+ exhibitors. This FREE fun-filled family event offers live music, food trucks, raffle prizes, and a Kid Zone for children to make art. On-site free parking and trolley shuttles from satellite locations are planned.

wilmingtonearthday.com



CONTACT

Stormwater
Administration..... 910.343.4777
Drainage/Maintenance..... 910.341.4646
Billing Questions 910.343.4777

Report Stormwater Pollution Hotline
910. 341.1020
wilmingtonnc.gov/reportstormwaterpollution

City of Wilmington Public Services Department
P.O. Box 1810, Wilmington, NC 28402

Public Services Department Director
Dave Mayes
Stormwater Manager
Fred Royal

Stormwater Watch Editor
Jennifer Butler

910-343-4777
wilmingtonnc.gov/stormwater



The Public Information Report is printed using recycled paper.



HEWLETTS CREEK PROGRESS

Hewletts Creek is the largest tidal creek watershed within the city limits. The watershed, which is the area of land that drains into the creek, is 7,435 acres—almost twice the size of LAX airport!

Hewletts Creek includes an estuary, which is an area where freshwater and saltwater mix. This creates a unique habitat that supports popular commercial fish species, crabs, oysters, and many other aquatic organisms. Unfortunately for oyster lovers, shellfish harvest in Hewletts Creek is currently prohibited due to high bacteria levels from stormwater runoff.

To address these closures, City Council adopted a voluntary watershed restoration plan in 2012. The plan focuses on installing practices like rain barrels, cisterns, rain gardens, and man-made wetlands that can intercept stormwater runoff, filtering bacteria and other pollutants before reaching Hewletts Creek. The constructed wetland at Wade Park, for example, filters stormwater runoff from 590 acres of the Hewletts Creek Watershed. To date, the watershed residents and businesses are also helping to divert and filter 5,225,622 gallons of stormwater runoff from Hewletts Creek every time it rains. More efforts like these can help further improve water quality in Hewletts Creek. ■

[Learn more and get involved in improving Hewletts Creek water quality at healourwaterways.org](http://healourwaterways.org)

THE STATE OF WILMINGTON'S WATERWAYS

2022 UNCW SURFACE WATER QUALITY REPORT

(The following is a summary of the condition of major creeks and waterways, not drinking water, within the city limits.)

The State of Wilmington's Waterways 2022 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. The water quality sampling summary is based on data collected between the months of January-December 2022 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 or to read Dr. Mallin's entire report, please visit:

<http://uncw.edu/cms/aelab/research.html>

Water Definitions

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)

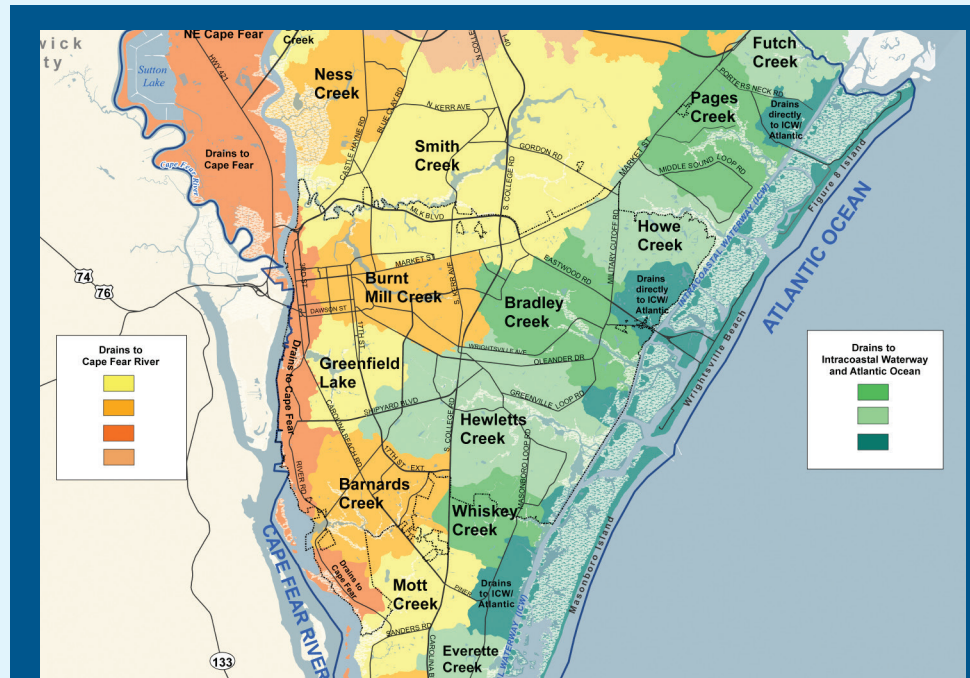
Biological Integrity The ability of an ecosystem to support and maintain a balanced and indigenous community of organisms.

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 actions, such as picking up after your pet, or on-the-ground practices, such as rain barrels and rain gardens.

Chlorophyll a Allows plants to photosynthesize and gives plants their green color. Waters that have high chlorophyll a levels are typically high in nutrients (phosphorus and nitrogen), which cause algae to grow or bloom. When algae die, it depletes oxygen from the water and can cause fish kills.

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 counts of fecal coliform bacteria in a waterway indicate the presence of other disease-causing pathogens which can cause sickness and disease in humans and animals. (Sources: pet/animal waste, sewer overflows, septic system failure)



UNCW Results Summary:

Lower Burnt Mill Creek and upper Bradley Creek maintain some of the most polluted waters in the city. Note that upper Bradley Creek is currently undergoing large-scale stream restoration work.

Greenfield Lake continues to host nuisance algal blooms and the tributary creeks of Jumping Run Branch and Squash Branch continue to load high fecal bacteria and nutrients into the lake. Under a grant from the NC 319 program, extensive water sampling in upper Jumping Run Branch was conducted for the past two years and design plans for wetland rehabilitation to remove nutrients were recently completed.

Hypoxia Low dissolved oxygen levels in a waterway which can result in fish kills.

Nutrients Substances (e.g. nitrogen and phosphorous) needed by plants and animals for growth; 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) Toxic byproducts of petroleum and fossil fuels, which can be harmful 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 caused by land-disturbing activities or natural weathering. Sediment can settle to the bottom or remain suspended in water. (Sources: construction sites with failing/erosion control, eroding streambanks, 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.

Water Classifications

The NC Division of Water Resources applies classifications to waterways which define the best uses to be protected within those waters (e.g. 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 waterbody. Listed below are the freshwater and saltwater classifications that apply to Wilmington's waterways. For more information, visit: <https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/classifications>

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 that drain land with steeper topography.

Saltwater Classifications

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

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

Class SA Saltwaters used for commercial shellfishing and all Class SC/SB uses. SA waters are also High Quality Waters (HQW) by supplemental classification.

Supplemental Classifications

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

Outstanding Resource Waters (ORW)

Unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance.

State Status/Reason

Indicates whether or not a creek is supporting its State classification/use 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. This newsletter is based on the NC 303(d) List, which is available for viewing at: <https://deq.nc.gov/about/divisions/water-resources/water-planning/modeling-assessment/water-quality-data-assessment/integrated-report-files>. Unfortunately, several of Wilmington's waterways are on the 303(d) list because of pollution, such as bacteria and nutrients, which is washed from the land by stormwater runoff.



Cape Fear River

Watersheds that drain to the Cape Fear River (CFR)

Smith Creek

Size of watershed: 16,650 acres
State classification/Use: C, Sw
State Status: Currently supporting use
Reason: Meets standards for Class C waters
UNCW Sampling Summary: Smith Creek is normally sampled at the Castle Hayne Street bridge; however, the bridge was under repair all year and sampling was not performed due to safety issues.

Burnt Mill Creek

Size of watershed: 4,207 acres
State classification/Use: C, Sw
State Status: Impaired. On NC 303(d) List
Reason: Does not meet standards for Class C waters, specifically for biological integrity of benthos (bottom dwelling organisms)
UNCW Sampling Summary: The upper creek maintained good dissolved oxygen levels and low turbidity, but had occasional fecal bacterial issues and algal blooms; there was a notable bloom in May. The lower creek had good dissolved oxygen levels and low turbidity, but was impacted by a large algal bloom in May and had some high fecal bacteria counts.

Greenfield Lake

Size of watershed: 2,465 acres
State classification/Use: C, Sw
State Status: Impaired. On NC 303(d) List
Reason: Does not meet standards for Class C waters, specifically for Chlorophyll a
UNCW Sampling Summary: The Squash Branch tributary into the lake was severely impacted by low dissolved oxygen levels, but the Jumping Run Branch tributary was not. However, both streams suffered from high fecal coliform counts. These tributaries are the main contributors of elevated nitrogen and phosphorus to the lake. The lake itself continued to suffer from high fecal coliform counts and algal blooms, particularly at the park dock.

Barnards Creek

Size of watershed: 4,173 acres
State classification/Use: C, Sw
State Status: Currently supporting use
Reason: Meets standards for Class C waters
UNCW Sampling Summary: Barnards Creek is sampled at two locations which showed problems with fecal coliform, and algal blooms at one station.

Mott Creek

Size of watershed: 3,342 acres
State classification/Use: C, Sw
State Status: Currently supporting use
Reason: Meets standards for Class C waters
UNCW Sampling Summary: Not sampled in 2022.



Intracoastal Waterway

Watersheds that drain to the Intracoastal Waterway (ICW)

Howe Creek

Size of watershed: 3,516 acres
State classification/Use: SA, ORW
State Status: Impaired. On NC 303(d) List; closed to shellfishing
Reason: Does not meet standards for Class SA waters, specifically for fecal coliform bacteria; a portion of Howe Creek is also impaired for dissolved oxygen
UNCW Sampling Summary: Not sampled in 2022.

Bradley Creek

Size of watershed: 4,583 acres
State classification/Use: SC, HQW
State Status: Currently supporting use
Reason: Meets standards for Class SC waters
UNCW Sampling Summary: Bradley Creek is sampled at two sites along Wrightsville Avenue and two sites in the upper north branch (Clear Run). The upper sites were impacted by low dissolved oxygen and high fecal coliform counts, and an algal bloom in February 2022. The two Wrightsville Avenue sampling stations had generally good water quality.

Hewletts Creek

Size of watershed: 7,478 acres
State classification/Use: SA, HQW
State Status: Impaired. On NC 303(d) List; closed to shellfishing
Reason: Does not meet standards for Class SA waters, specifically for fecal coliform bacteria
UNCW Sampling Summary: Hewletts Creek did not experience algal blooms or elevated turbidity and dissolved oxygen was generally good. However, fecal coliform counts were elevated on most sampling occasions in the middle tributary branch entering the main creek.

Whiskey Creek

Size of watershed: 2,078 acres
State classification/Use: SA, HQW
State Status: Impaired. On NC 303(d) List; closed to shellfishing
Reason: Fecal coliform bacteria
UNCW Sampling Summary: Not sampled in 2022.

**All waters in the State of North Carolina are impaired for mercury, based on high levels found in the tissues of several fish species.*