



The City of *Durham* North Carolina

Annual Sanitary Sewer System Report
FY 2009 – 2010

Welcome to the City's annual summary of the performance of Durham's sewer system. In addition to informing our customers about the sewer system this report also meets the requirements of House Bill 1160 passed by the North Carolina General Assembly in 1999. The bill requires owners and/or operators of wastewater collection and treatment systems to provide an annual report to users or customers. Each year's report summarizes the treatment works' and collection system's performance over a twelve-month period. This report is available to all customers, and is submitted to the North Carolina Department of Environment and Natural Resources.

About the Department

All water and sewer operational units are a part of the Department of Water Management. The Water and Sewer Maintenance Division is responsible for the operations and maintenance of the collection system. Sometimes referred to as the sanitary sewer system, this is the series of pipes that transport wastewater to the treatment facilities operated by the Wastewater Divisions. Wastewater includes all used domestic and process water from any drain leaving a residence, business, industry or other facility and entering the collection system.

Wastewater travels through underground sewer pipes to the treatment plant. At the plant, wastewater is treated by physical, biological and chemical processes before it is returned to the environment via receiving streams. The City is committed to protecting the environment and the health of downstream users by ensuring that Durham's wastewater discharge meets all applicable standards. Because of this high level of treatment, water downstream of a water reclamation facility may be cleaner than the water upstream of the facility.

This report describes the collection system operation, the wastewater treatment process and the City's grease reduction initiative. As with any large municipal system, occasional blockages cause backups and overflows. Included in this report is a table listing the spills and overflows that occurred this year and the steps taken to mitigate the impact and prevent recurrences. ALL incidents were reported to the state within 24 hours of their occurrence. By policy, news releases to inform the public are distributed by the end of the next business day after the occurrence.

The Annual Sanitary Sewer System Report is available at City Hall, Water Management and Public Works facilities and on the City's website: www.durhamnc.gov. Additional copies of the report may be requested by calling Water Management at (919) 560-4381.

Durham's Sewer System Facilities

	Collection System	Water Reclamation Facilities	
Name of Facility	Operations Center	North Durham Water Reclamation Facility	South Durham Water Reclamation Facility
Permit number	WQCS00005	NCOO23841	NCOO47597
Address	1110 Martin Luther King Jr. Pky	1900 East Club Blvd.	6605 Farrington Rd.
Operator in Responsible Charge (ORC)	Tom Lucas	John Dodson	Robert Dodson
Phone number	919-560-4344	919-560-4384	919-560-4386

Down the Drain! Where does it go?

When wastes exit a home, business or industry via piping, the wastewater enters the collection system. These pipes carry wastewater away from homes, businesses, schools, hospitals and industries. The waste flows by gravity or may flow to lift stations located in strategic areas throughout the service area. Pumps in the lift stations do just that – they “lift” the wastewater to a higher elevation where it again flows by gravity, ultimately to one of the City’s two water reclamation facilities. Sixty-two pump stations for the collection system are monitored and maintained by Plant Maintenance division staff.

Durham sits on a ridgeline that generally runs along Pettigrew Street and the railroad tracks. Wastewater on the north side of the ridgeline flows to the North Durham Water Reclamation Facility and after treatment is ultimately discharged into the Neuse River Basin. The South Durham Water Reclamation Facility receives wastewater that flows south of the ridgeline. After processing, the discharge flows into the Cape Fear Basin. Durham County owns and operates a third wastewater treatment plant that serves most of Research Triangle Park, Parkwood and a few other southern Durham neighborhoods. The Durham County sewer system report is posted at www.co.durham.nc.us.

Collection System Performance

City departments continue to use the Geographical Information System (GIS) mapping of the collection system which provides an accurate method of tracking both operations and maintenance activities. Now, approximately 1100 miles of the collection system are represented by GIS mapping. During this reporting period, Water and Sewer Maintenance crews and City

Maintenance Activities	
Activity	Linear Ft.
Lateral Service	51,092
Flushing	1,307,273
Inspections (TV'd)	413,790
Mains replaced	26,145
Easements mowed	1,179,748

contractors conducted numerous maintenance activities to clean and rehabilitate the collection system.

In addition to the activities in the table (left), crews repaired/replaced 389 sewer services and responded to 775 blockages.

Improper disposal of grease continues to be the number one cause of blockages in the sewer system.

City staff will continue to focus resources on repeat blockages and promote a maintenance campaign to alleviate the environmental and financial impacts of this problem. One major element of the program has been an extensive cleaning of problem areas of the system. The second major

element of the program is the education, prevention and enforcement effort coordinated by the Department's Industrial Pretreatment Program (see page 4). Funding of infrastructure rehabilitation is a high priority of the department's Capitol Improvement Projects (CIP).

Water Reclamation Facility Plant Performance

The City's two wastewater treatment facilities – North Durham and South Durham Water Reclamation Facilities (WRFs) - have the combined capacity to treat (or reclaim) 40 million gallons per day (MGD) of wastewater. During this reporting period, the average daily flow treated by the two plants was 20.38 MGD. There were three reporting violations for the North Durham WRF for this reporting period. There was an oversight to collect 2 samples in December 2009 and 1 sample in January 2010 for low level mercury analysis. An updated sampling plan has been implemented to ensure collection of samples as required by the facility's permit.

Currently the North Durham WRF is under going a \$9.0 million upgrade and expansion that includes an addition of a sixth aeration tank, upgrade to the ultraviolet disinfection system and other improvements. These upgrades will allow the plant to treat close to its permitted capacity of 20 MGD. They will also improve the efficiency of the existing basins by additional air monitoring and control. The upgrade of the ultraviolet disinfection facility will replace existing equipment that has become outdated. This upgrade will improve the overall efficiency by using fewer UV lamps and providing technology which will adjust lamp power usage.

Also, North Durham WRF is under going a \$1.5 million upgrade to construct additional cover over the biosolids storage pads as well as some improvements to the existing covered biosolids pad. Covering the biosolids pads ensures that the material stored there prior to land application can remain dry reducing ultimate disposal costs.

The City commissioned an updated optimization study to evaluate the impact of proposed regulations to reduce total nitrogen and total phosphorus loads. This December 2009 report was based on finalization of the Jordan Lake Nutrient Reduction Strategy and the preliminary Falls Lake Nutrient Management Strategy. Pilot tests and recommendations from the optimization study were implemented at the water reclamation facilities to ensure regulatory compliance.



North Durham WRF
(located off of E. Club Blvd.)



South Durham WRF
(located off of Farrington Road)

Industrial Pretreatment Program/Grease Reduction Initiative

Industrial Pretreatment Program staff survey facilities discharging into the sewer system and issue permits to facilities in certain categories, determined either by the type of business activity they conduct or the type(s) of wastewater discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the North Durham Water Reclamation Facility or the South Durham Water Reclamation Facility – to assimilate, treat and remove substances from the waste. Currently, staff monitors eleven significant industrial users and hundreds of commercial establishments with high-strength discharges.

To help in the effort to reduce grease blockages in the sewer system, the Industrial Pretreatment Program staff coordinates the education and inspection portion of the grease reduction initiative. Grease enters the sewer system from both household drains as well as through poorly maintained grease traps in restaurants and other food service establishments. To meet the 250 mg/L limit for FOG (fats, oils and grease), food preparation and/or processing facilities must clean their removal systems (grease traps) on a monthly basis. More frequent cleaning will be required if a facility



Grease can be poured directly into a Fat Trapper with a sealable liner.

discharges more than 250 mg/L of FOG. Less frequent cleaning may be permitted if the facility can demonstrate that the 250 mg/L limit can be met with an alternate cleaning schedule. Cleaning and removal records must be maintained for three years and available for inspection on request.

While restaurants and other food service establishments typically use commercial processors to collect and remove grease from their grease traps, it is not practical for homeowners and residential customers to contract such services. For this reason, the City has provided – at no extra cost to citizens – a collection container for used cooking oil at the Waste Disposal and Recycling Center at 2115 East Club Boulevard.

Residents are strongly encouraged to implement measures designed to insure that FOG is not introduced to the sanitary sewer. To further assist customers with this effort, the Industrial Pretreatment Program distributes small residential grease collection units called Fat Trappers. Customers can call 560-4386 and ask for Pretreatment staff for more information on how to obtain a Fat Trapper.

Notice Under the Americans with Disabilities Act

The City of Durham will not discriminate against qualified individuals with disabilities on the basis of disability. Anyone who requires an auxiliary aid or service for effective communications, or assistance to participate in a City program, service, or activity, should contact the office of Stacey Poston, Acting ADA Coordinator, Voice: 919-560-4197 x21254, TTY: 919-560-4809; Stacey.Poston@durhamnc.gov, as soon as possible but **no later than 48 hours** before the scheduled event.