

**PLEASE
REPORT SSO's!**

*Sanitary Sewer
Overflows
or
Backups*

919-544-8280

Notification:

This Performance Annual Report covering July 1, 2010 through June 30, 2011, was forwarded to the NC Department of Environment and Natural Resources. Public notice of the report was advertised in the Durham Herald Sun newspaper and is available for review at the following locations:

Durham County Administrative
Complex, Clerk's Office
200 East Main Street, Durham, NC

Durham County Main Library
300 N. Roxboro Street, Durham, NC

Durham County South Regional Library
4505 S. Alston Ave, Durham, NC

Or, the Durham County web site:

www.engineering.durhamcountync.gov

Certification:

I certify under penalty of law that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named system and that those users have been notified of its availability.



Joseph R. Pearce, P.E.
Utility Division Manager
Durham County Engineering
Department—August 20, 2011

Pretreatment Program

The Triangle Wastewater Treatment Plant implements an Industrial Pretreatment Program to control pollutants which may cause pass through or interfere with the treatment plant's processes, which may contaminate sewage sludge, or potentially be hazardous to workers health and safety. Currently there are thirty-eight permitted industries that are regularly inspected and monitored to ensure their discharges meet specific permit limits. Fifteen of these industries are Significant Industrial Users (SIUs). None of the permitted facilities was in Significant Non-Compliance (SNC) during 2010.

Durham County is required by the NPDES permit and NCAC 02H .0905 to complete an Industrial Waste Survey (IWS) once every five years. The Industrial Waste Survey was completed in 2011. Durham County staff compiled a list of potential industrial users from the following sources: NC Manufacturers Register, Research Triangle Park Owners & Tenants Directory, the billing list of all Durham County sewer customers and the 2009 North Carolina Biotechnology Directory. Approximately one hundred and fifty (150) surveys were mailed. Durham County held an information session on November 11, 2010 at the Research Triangle Foundation to provide assistance to users in completing the survey. Based on the survey, fifty-six (56) site visits were conducted and seven (7) additional permits were or will be issued.

The IWS was approved by the Division of Water Quality (DWQ) on June 23, 2011. Durham County also implements the IPP for the contributory users from the Town of Cary.



Flow Proportional Composite Sampler

TWWTP Laboratory

The Triangle Wastewater Treatment Plant's laboratory staff collects and analyzes wastewater samples as required by the NPDES permit. Currently, the laboratory is certified by the Division of Water Quality Laboratory Certification Branch to analyze pH, dissolved oxygen, temperature, chlorine, total suspended solids, and fecal coliform. The laboratory also analyzes nitrates, nitrites, orthophosphate, ammonia, chemical oxygen demand, settability, mixed liquor suspended solids and mixed liquor volatile suspended solids for process control.



Facility / System
Name:

Triangle Wastewater
Treatment Plant
5926 NC Hwy. 55 East
Durham, NC 27713
919-544-8280

Applicable Permits:

Wastewater
Treatment Plant
NC0026051

Collection System
WQCS00038

Stormwater
COCNCGI10054

Bulk Reclaimed Water
WQ0032821

Owned and Operated
by:

Durham County
Engineering
Department
Utility Division

Phone: 919-544-8280
Fax: 919-544-8590

Contact:

Joseph R. Pearce
Utility
Division Manager

Triangle Wastewater
Treatment Plant
5926 NC Hwy. 55 East
Durham, NC 27713

919-544-8832

Durham County Triangle Wastewater Treatment Plant Performance Annual Report

July, 2010—June, 2011



Effluent Clarifier at the Triangle Wastewater Treatment Plant

The purpose of the Triangle Wastewater Treatment Plant (TWWTP) Performance Annual Report is to keep citizens informed and to maintain compliance with State Requirements and the Clean Water Act of 1999 (House Bill 1160). This report summarizes the performance of the County-owned, operated and maintained TWWTP and associated wastewater collection system. This report includes activities during the County's fiscal year 2010-2011 (July 1, 2010 through June 30, 2011).

Overview

The Durham County Wastewater collection and treatment system serves residential, commercial, and industrial users, including the Research Triangle Park (RTP). During the last year, the Triangle Wastewater Treatment Plant (TWWTP) treated an average of 5.37 million gallons per day (MGD) of wastewater. Included in this flow is wastewater from the Town of Cary under an Interlocal Agreement between Durham County and the Town of Cary, to treat up to 6 MGD of the Town's wastewater through 2013.

Collection System



Manhole After Rehabilitation

The collection system consists of gravity sewer lines, pump stations, and forcemains to convey wastewater to the treatment plant. Durham County owns and maintains approximately 109 miles of sewer main with eleven pumping stations. All pump stations are equipped with telemetry that provides notification of alarm conditions.

Ten of the eleven stations have generators with automatic power transfer for emergency power during outages.

The station without the automatic power transfer generator is currently served by a portable diesel pump.

A manhole survey of our entire system was completed in 2011. The approximately 2500 manholes were field surveyed with three-dimensional GPS coordinates. This data will be used to accurately track manhole inventory, catalogue previous maintenance work and provide a basis to prioritize upcoming sewer rehabilitation.

Treatment System



Fine Bar Screens at TWWTP

- **Influent Pump Station** - sized for 12 MGD average flow, and located above the 100 year flood elevation to avoid flooding.
- **Fine Screens** - removes large materials prior to the beginning of the treatment process.
- **Grit Removal** - removes small dense inorganic materials prior to the beginning of the treatment process.
- **Five Stage Biological Nutrient Removal System** - provides the ability to biologically remove nitrogen and phosphorous during treatment with carbon source addition.
- **Chemical Polishing** - sodium aluminate is used to remove additional phosphorus from water by chemical precipitation.
- **Clarifiers** - quiescent zone where biomass is separated from treated water.
- **Tertiary Filters** - filtering to remove additional biomass.
- **Ultraviolet Disinfection** - disinfection process without harmful by-products.
- **Reaeration** - supplemental dissolved oxygen provided prior to discharge to Northeast Creek.

Performance

Durham County has a multi-faceted collections system maintenance program which includes sewer cleaning, manhole inspections, easement maintenance and priority line inspections. The following chart lists the spills and overflows from July 2010 through June 2011.

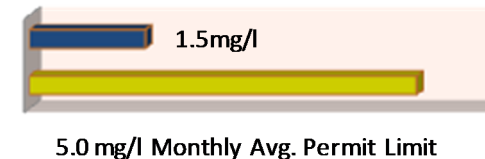
Collection System

Location	Date	Volume Discharged (gallons)	Volume to Surface Water (gallons)	Cause	Remedy
Triangle Expressway between Hobson Rd. & NC 147	8/17/2010	25,000	25,000	Pipe failure on an inter-connect line between two trunk lines	Plugged and isolated the line and began a program of channel crossing inspections and repairs.
TW Alexander Drive	9/16/2010	600	600	Bypass line plug failure	Repaired concrete pipe plug
5208 Alston Avenue	2/10/2011	12,000	3,000	Grease accumulation	Removed grease utilizing hydraulic cleaning. Placed line on regular inspection and grease cleaning schedule.

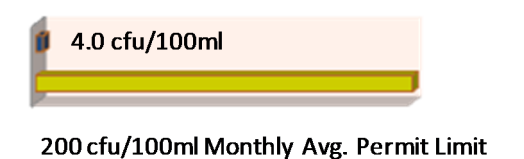
Treatment System

The TWWTP discharge was compliant in all sampling events for the past year, while treating 1,961,010,000 gallons of wastewater.

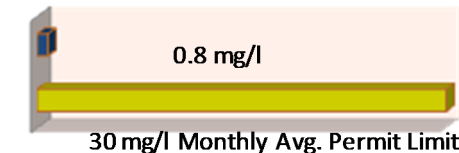
BIOCHEMICAL OXYGEN DEMAND (BOD)



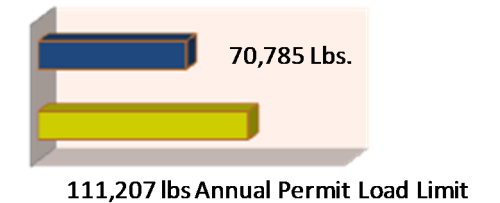
FECAL COLIFORM



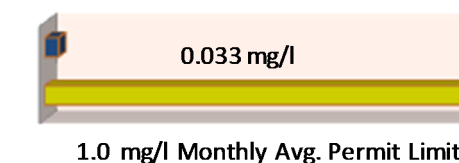
TOTAL SUSPENDED SOLIDS



TOTAL NITROGEN



AMMONIA-NITROGEN



TOTAL PHOSPHORUS

