

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



Sewer Collection and Wastewater Treatment Facilities July 1, 2010 through June 30, 2011

On July 21, 1999, North Carolina Governor James Hunt signed a law, House Bill 1160, that placed reporting requirements on the owners or operators of wastewater treatment and wastewater collection facilities in North Carolina. Part of this new legislation was a requirement to provide the user or customers of the system with an annual report of the past year's performance including a summary of violations.

The purpose of these reports is to provide an understandable and informative description of the **wastewater treatment facilities and collection system**, describe the regulations with which these facilities must comply, and promote a general awareness of these facilities and their role in protecting the environment.

The City of High Point operates two wastewater treatment facilities and a wastewater collection system that collects and transports the wastewater to each of these two facilities. The names and permit information for these facilities are listed below as well as those professionals designated by the State of North Carolina as Operators in Responsible Charge (ORC):

Eastside WWTP	Westside WWTP	Sewage Collection System
5898 Riverdale Drive Jamestown, NC 27282 Ph: 336.822.4732 NPDES Permit: NC0024210 ORC: Randy Smith	1044 West Burton Road Thomasville, NC 27360 Ph: 336.822.4782 NPDES Permit: NC0024228 ORC: Michael Swan	816 East Green Street High Point, NC 27260 Ph: 336.883.3691 Collection Permit: WQCS00010 ORC: Bart Hepler

This report is available for viewing at City Hall (Public Services) or by logging onto our web site at www.highpointnc.gov. Customers will be notified of its availability by printed notice on water and sewer bills. Questions, comments, or requests for additional copies of this report should be directed to the Public Services Department at (336) 883-3410. This report has been completed by staff of the City's Public Service's Department and is accurate to best of our knowledge and belief.

A handwritten signature in black ink that reads "Terry Houk".

Terry Houk

Assistant Director, Public Services

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



SYSTEM OVERVIEW

The Public Services Department bears the responsibility for wastewater collection and treatment. The Divisions in the Department that are involved in wastewater collection and treatment are: Water & Sewer Mains, Residuals Management, Central Laboratory Services, Maintenance Services, Westside Wastewater Treatment Plant and Eastside Wastewater Treatment Plant.

The City's wastewater collection and wastewater treatment facilities provide service to homes, commercial establishments and industries. For this report period, there were approximately 38,000 connections through which an average of 17 million gallons of wastewater traveled each day. This wastewater is collected, treated and then discharged back into the receiving stream. The City also treats wastewater from Jamestown, Archdale and Sedgefield.

State agencies assure that stringent standards are met before the treated wastewater can be released into a receiving stream. These standards are listed in a National Pollutant Discharge Elimination System (NPDES) permit. Each facility that releases treated wastewater into surface water; a stream for example, must possess one of these permits. These permits regulate the type and amounts of pollutants that a facility can discharge. The discharge limits in these permits are based on a stream's ability to withstand the addition of pollutants without having noticeable impact on the stream's water quality. These complex permits include monitoring requirements and discharge limits. Some vary with seasons and have different maximums for daily values, weekly averages, monthly averages and quarterly averages.

Wastewater treatment is a complex process that is often taken for granted. However, it requires expensive equipment and skilled operations, maintenance, laboratory, solids handling and engineering personnel working constantly to assure adequate treatment twenty-four hours a day, seven days a week, and 365 days a year!

COLLECTION SYSTEM OVERVIEW

High Point's wastewater collection system consists of approximately 653.9 miles of gravity wastewater lines, which is an additional 1.1 miles over last year's total; 16.1 miles of pressurized force mains; 23 wastewater lift stations, and 16,684 manholes. Every day more than 17 million gallons of wastewater flows through this system, from homes and businesses, to either the Eastside or Westside Wastewater Treatment Plants. The collection system has both gravity lines and force mains. Wastewater discharged in neighborhoods flows by gravity into the collection system. The size of the collection system line increases to handle the higher flow as more and more wastewater is collected from other areas. Once the gravity lines get too deep, the flow must be pumped or lifted up, by the City's lift stations, to a higher elevation where gravity lines can be once more utilized. The lift stations are monitored 24 hours a day for proper operation. The Mains Division has four crews that are responsible for line cleaning and emergency response to calls from the public dealing with collection system problems.

A State mandated grease (FOG) program has been instituted. The collection system maintenance crew has been working diligently at keeping the lines clean. A concerted effort is needed between the City and its citizens in order to reduce the grease related problems in the collection system.

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



Despite the City's best effort, sanitary sewer overflows (SSO's) happen in High Point, just as they do in every municipality in North Carolina. A SSO is when wastewater escapes from the wastewater collection system to the ground or surface waters. The North Carolina Division of Water Quality defines a reportable SSO as any spill to the ground in excess of 1000 gallons or any spill, regardless of the amount, which reaches surface waters. During this report period, the City of High Point had 11 reportable SSO's. Approximately 46% of SSOs in the City can be attributed to grease, 9% to sewer main breaks, 9% attributed to roots, 9% to debris blockages, and 9% I&I, and 18% to vandalism. The SSO's are summarized in the appendix.

What the Mains Division is doing to Prevent/Reduce Spills

- Inspect, repair, renovate or replace sewers and pump stations as needed to eliminate leaks or to increase system capacity.
- Inspect and clear collection lines with cutting and flushing equipment.
- Educate customers about proper grease disposal.
- Clear collection system easements to keep roots from growing into collection lines; limit plantings allowed along easements.
- Operate a continuous monitoring and alarm system at pump stations; maintain and repair pumps; use generators for backup power; replace pump stations with gravity sewers when practical; monitor and inspect pump stations to identify improvement needs.
- Ask customers to contact the City if they see debris or trash being deposited into the collection system.

Corrective Actions

Follow-up actions depend on the cause and severity of the spill and may include:

- cleanup and disinfection;
- inspection and clearing of mains;
- increased inspections or other maintenance;
- repair, renovation or replacement of pipes; and
- in some cases, replacement of sewers or pump equipment with larger capacity facilities

EASTSIDE WASTEWATER TREATMENT PLANT

The Eastside Wastewater Treatment Plant is designed and operated as a biological nutrient removal 5-stage (BNR) facility. Essentially, this means that an environment has been created that encourages the growth of phosphorus removing bacteria that will consume phosphorous at higher than normal levels, thus removing it before the water is discharged. Also, another environment will be created that forces the bacteria to use oxygen from nitrogen compounds thereby reducing the amount of total nitrogen in the treated effluent. The reduction of phosphorous and nitrogen in the plant's effluent will help in reducing the potential for algae growth in Randleman Lake, to which the treated effluent is discharged.

Other treatment processes include screening, grit removal, primary clarification, 5-stage activated sludge, secondary clarification, effluent filtration, ultraviolet disinfection, post aeration and solids handling, (dewatering and incineration) and odor control. All of these major processes and numerous other minor processes are used to support the biological treatment process.

The Eastside WWTP treated an average of 13.56 MGD during the fiscal year 2010 - 2011.

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



Eastside was compliant with its NPDES permit for all twelve months of the 2010 - 2011 fiscal (reporting) year. The current permit became effective on February 1, 2007 and expires on August 31, 2011. Application has been made for NPDES permit renewal.

WESTSIDE WASTEWATER TREATMENT PLANT

The Westside WWTP is an activated sludge facility. Treatment processes include coarse bar racks, influent lift pumps, fine screening, grit removal, primary clarification, aerated sludge, biological filtration, final clarification, alum addition for phosphorus precipitation, lime slurry addition for alkalinity/pH adjustment, tertiary filters, DAF sludge thickening/ dewatering, and ultraviolet light disinfection.

During the 2010 - 2011 fiscal year, Westside WWTP reported four NPDES violations to the North Carolina Division of Water Quality.

A new NPDES permit was issued to the Westside WWTP on July 10, 2009 by the DWQ. This permit became effective August 1, 2009 and will be in effect until midnight April 30, 2014. On November 1, 2005 the new seasonal phosphorus limits became effective, which are based on seasonal discharge poundage. The winter season is, November 1 - March 31, (7808 lbs.). The summer season is, April 1 – October 31, (5533 lbs.).

An average of 3.69 MGD (million gallons per day) was treated during the fiscal (reporting) year 2010 - 2011.

Plant upgrade and renovation of the Westside WWTP is currently underway. Phase 1 was completed in November of 2009 and has been in service since that time. In this phase a new Preliminary Treatment Facility (PTF) was constructed which also included an odor control system.

The contract for Phase 2 was signed in December with work commencing in January 2010. This phase includes the construction of effluent filters, an effluent pump station, installation of an additional UV disinfection unit, installation of a rotary drum thickener, and construction of an earthen berm for flood prevention. This phase is currently 89 % complete.

Design for Phase 3 for Biological Nutrient Removal (BNR) is currently underway at the Westside Plant in anticipation of growth and increasingly strict NPDES discharge limits.

MAINTENANCE SERVICES

The City of High Point Eastside Wastewater Treatment Plant, Westside Wastewater Treatment Plant, and all lift stations are maintained by the centralized Water and Sewer Maintenance Department. The centralized maintenance department consists of mechanics, electricians, electronics technicians, an assistant maintenance superintendent and a maintenance superintendent. The main maintenance shop is centrally located at the Ward Water Filtration Plant, with satellite shops at the Westside and Eastside Wastewater Treatment Plants. All the technicians are highly trained with many years of maintenance experience.

The electronics section technicians are qualified to perform technical and skilled work in the maintenance, repair and replacement of electrical, electronic and pneumatic equipment at the treatment and collection facilities. This section has individuals that possess a thorough knowledge and background in troubleshooting

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



and programming PLC based systems, performing computer based technical assistance for the wastewater treatment plants and lift stations, creating graphic screens and programming the SCADA systems so that the lift stations and wastewater treatment equipment can be remotely monitored and, in some cases, controlled from a centralized location. They also are responsible for installing and repairing all hardware and software for the computers and peripheral devices and creating databases and spreadsheets so that historical data can be maintained and accessed easily.

The electrical section personnel work hand-in-hand with the electronics staff and are qualified to perform general skilled maintenance and repair of electric motors, high and low voltage switching equipment, electrical control systems, i.e., centrifuge/incinerator controls; circuits, lighting, heating and air conditioning electrical components, UV disinfection systems and troubleshoot the diesel generator electrical systems, etc.

The mechanical technicians troubleshoot and repair complex pumping and wastewater treatment equipment. They are capable of dismantling and overhauling gearboxes, grit collection equipment, conveyors, mechanical grinders, pumps of all types, blowers and compressors, mixers, centrifuges, fluidized bed incinerator, control valves and various other process equipment. They possess technical skills such as proper alignment techniques, welding, use of cutting torch and some limited machine shop skills.

An on-call Maintenance team is available after hours, weekends and holidays to respond to emergency and equipment breakdowns at the water filtration plant, both wastewater plants, and all lift stations.

The mission of the Water and Sewer Maintenance Department is to maintain the equipment at the Eastside Wastewater Treatment Plant, the Westside Wastewater Treatment Plant and all Lift Stations so that they remain in compliance with all federal, state and local regulations. This goal is accomplished by responding to corrective maintenance work orders in a timely manner and by performing preventive maintenance as scheduled.

LABORATORY SERVICES

Most laboratory analyses are performed at the City's state-certified laboratory located at the Ward Water Filtration Plant. The central Water Quality Lab provides comprehensive analytical monitoring and compliance support for the Public Services Department, Plants Division. This ensures monitoring and reporting compliance with all permitted State, Federal and local laws and ordinances. The central Water Quality Lab provides necessary and required testing to assure safe, clean drinking water, as well as performing analysis on the incoming and outgoing flows from both Wastewater Treatment facilities, as stipulated by the NPDES permits. On average, the lab reports 13,000 tests to the state, 8,500 tests that aid in the safe and efficient operation of the plants and over 200,000 tests required by certifying authorities to assure accuracy.

The Industrial Pretreatment Program manages industrial and non-residential discharges into the City's sanitary sewer system. Staff of the Industrial Pretreatment Program survey facilities discharging into the sewer system and issue permits to those falling into certain categories, determined either by the type of business activity they conduct or the type(s) of waste discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the Westside WWTP or the Eastside WWTP – to assimilate, treat and remove substances from the incoming waste stream. There were no discrepancies noted during the

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



State inspection of IPP in 2010 - 2011. Some major changes are being implemented in IPP, and Headworks analysis has been updated.

RESIDUALS MANAGEMENT

The City's Residuals Management Division has the task of disposing of the wastewater sludge from Westside WWTP and Eastside WWTP, and the disposal of alum sludge generated by the Ward Water Plant.

Sludge produced by the wastewater plants is dewatered at high speed centrifuge facilities located at each wastewater plant. Residuals Management handled approximately 40,000,000 gallons of wastewater sludge and produced approximately 4,000 dry tons of dewatered bio-solids. These bio-solids were thermally destructed in a fluidized bed incinerator located at the Eastside WWTP, producing approximately 3,000 tons of disposable ash.

EPA and State compliance with air quality standards is also the responsibility of Residuals Management. Since Residuals Management operates under a State air quality permit, it is also responsible for overseeing additional State air quality permits issued to the City. There were no compliance issues with the air quality standards during this reporting year.

In addition to wastewater sludge, Residuals Management oversees the dewatering and disposal of alum sludge produced by the treatment of drinking water at the Ward Water Treatment Plant. During this physical year, approximately 2,350 dry tons alum bio-solids were dewatered and approximately 10,900 wet tons of alum bio-solids were disposed.

Residuals Management has been able to carry out its mission of providing efficient and prompt service with its staff of dedicated employees.

WHAT IS THE CITY RESPONSE?

The City of High Point is committed to improving and maintaining compliance with all regulations regarding the wastewater system. Major capital improvement projects include:

- \$755,000.00 to upgrade/replace two sewer pump stations
- \$1,600,000.00 for sewer system improvements
- \$7,000,000.00 for Bio-Solids Disposal Improvements
- \$11,000,000.00 for improvements to the Westside WWTP - Phase 2
- 50% completion of the design for Westside Phase 3 improvements

CUSTOMER RESPONSIBILITIES

The leading cause of overflows is debris and grease blockages in the lines. While the collection system is designed to handle and safely transport sanitary waste to our treatment plants, too much grease or non-biodegradable material placed into the system can cause clogs and result in sanitary sewer overflows (SSOs). Dumping any fats and oils derived from animal and vegetable sources, including meats, nuts, cereals and beans, down any drain – home or business – can cause a stoppage that forces raw, untreated waste to spill **into our yards, streets, and streams.**

Annual Wastewater Report

City of High Point, Public Services Department
Report for FY 2010-2011



It is very important to keep all foreign materials, such as grease and other household debris from entering the system, as these can cause blockages.

You can help the City of High Point reduce the number of overflows by following these simple steps:

- Collect grease, fats and oils from cooking in a container and dispose of it in the garbage instead of pouring it down the drain.
- Always scrape silverware, cookware, and dishes prior to washing.
- Place food scraps in the garbage for disposal with you household solid waste.

Please call the City of High Point to report water main break or sanitary sewer overflow. **To report a problem, please call 883-3111.** Your assistance is appreciated!

APPENDIX

DATE	ADDRESS	AMOUNT (GALLONS)	CAUSE
01-Jul-10	1589 SKEET CLUB SUITE 105	51	Grease
27-Aug-10	1110 SURRETT DR	1800	Vandalism
02-Sep-10	5898 RIVERDALE RD	344045	Sewer Main Break
20-Sep-10	2011 E LEXINGTON AV	100	Debris
30-Sep-10	MCGUINN & TERRELL	3000	Inflow & Infiltration
21-Dec-10	2208 DELANIE PT	800	Grease
17-Mar-11	1210 BALES CHAPEL RD	4800	Vandalism
23-Apr-11	1573 SKEET CLUB	800	Grease
13-May-11	707 ARLINGTON ST	75	Grease
21-Jun-11	SCIENTIFIC ST & PRUITT PL	190	Grease
02-Feb-11	921 FLICKER LN	3800	Roots