

ROANOKE RAPIDS SANITARY DISTRICT

1000 Jackson St., Roanoke Rapids, NC 27870

Wastewater Treatment Plant 536-4884
 Collection System 537-9747
 Administrative Office 537-9137
 Pay-By-Phone (888) 626-9056



Board of Commissioners:
 P. W. Heaton, Chairman
 J. D. Bailey, Secretary
 D. L. Shaffer, Member

PERMITS:
 NPDES - NC0024201
 LAND APPLICATION - WQ0001989
 LAB - NC70
 COLLECTION SYSTEM - WQCS00027

Administrative Officers:
 Dan Brown, P.E., CEO
 Calvin Potter, Finance Officer
 Gregg Camp, ORC, WWTP
 Charles Turner, ORC, Collection System

2009 **Wastewater System Report** www.rrsd.org

MISSION STATEMENT

To affordably provide the highest quality water services; safely collect wastewater and return clean water to the environment while promoting public trust and partnerships to the benefit of our associates and satisfaction of our customers.

The Roanoke River Wastewater Treatment Plant (WWTP) operated by the Roanoke Rapids Sanitary District (RRSD) treats wastewater from Roanoke Rapids, Gaston, Halifax County and Northampton County. Wastewater from industry, businesses, and homes enters collection system pipes and flows to the WWTP. Harmful pollutants, as determined by the North Carolina Division of Water Quality (DWQ), are removed by the treatment process. The public health and environment is protected through the discharge of high quality wastewater to the Roanoke River. Cost effective treatment is performed to maintain reasonable rates for customers of the RRSD.

DWQ has determined wastewater includes conventional and non-conventional pollutants. Conventional pollutants contain suspended solids from fecal matter or food. Non-conventional pollutants contain dissolved metals like copper and zinc. Pollutants can come from organic sources such as plant or animal origin or inorganic sources such as mineral origin. All pollutants combined are called plant loading. Plant loading comes from two sources; controllable (industrial) and non-controllable (residential). Residential wastewater must meet RRSD's general use ordinance. It prohibits such items as petroleum products, toxic substances and cooking grease.

ROANOKE RIVER WWTP FUN FACTS

Location: 135 Aqueduct Road; Weldon, NC 27890
 DWQ Plant Classification: IV (Largest State Classification)
 Hours of Operation: 24 hours a day, 365 days a year
 (Note: DWQ requires a licensed operator onsite at all times)
 Year Constructed: 1963.
 Treatment & Flow Capacity Expansion: 1983
 Original Design Capacity: 5.5 Million Gallons per Day (MGD)
 Current Design Capacity: 8.34 MGD
 Design Peak Flow: 12.5 MGD
 Treatment Type: Secondary Biological
 2009 Average Daily Flow (ADF): 4.1 MGD
 2009 ADF Range: 2.7 MGD to 13.7 MGD
 2008 ADF: 4.0 MGD
 NPDES Permit Effective Period: 2007 – 2012
 Number of Employees: 16 (including nine Licensed Operators)
 Departments: Operations, Certified Laboratory, and Maintenance
 Year Clean Water Act passed: 1970 (EPA established)

EN ESPANOL

El informe contiene informacion importante sobre la calidad del agua residual en su comunidad. Traduzcalo o hable con alguien que lo entienda bien.

Permit Violations - In 2009, there were no monitoring, reporting, or NPDES permit violations. There have been no parameter limited violations since 2004.

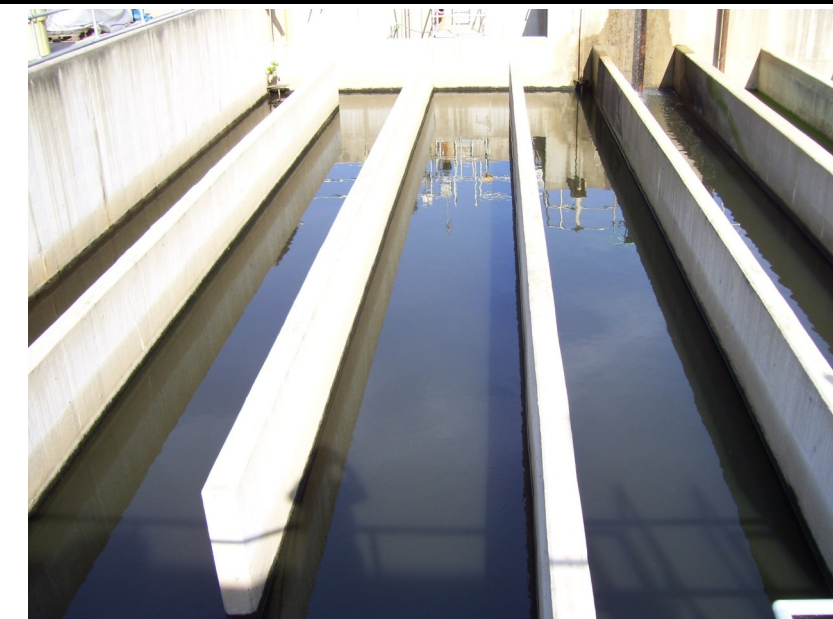
Bypasses - There was one reportable bypass in 2009. Nearly 6 and one half inches of rain fell in three days increasing flows to nearly 18 million gallons. More than two times the total rated plant capacity of 8.3 MGD and more than four times the ADF of 4.1 MGD in 2009. As a result the plant could not process all of the incoming flow and approximately 63,000 gallons of partially treated wastewater were spilled. DWQ was notified by phone within 24 hours and a follow up written report within 5 days. Due to the volume of spill additional requirements were met. A press release for over 1,000 gallons and a public notice over 15,000 gallons.

Bypass Control - Wastewater that comes into the plant from storms faster than can be treated is stored in two tanks capable of holding approximately seven hundred fifty thousand (750,000) gallons. In 2009 approximately 1,500,000 gallons were stored and returned to the plant from various high flow events and maintenance projects. To prevent bypasses during a power outage, there is an emergency diesel generator large enough to power the entire plant. The fuel tank holds enough fuel to run the generator for two days before refueling is required. In 2009 there were no power outages. At an average daily flow of 4,100,000 in 2009 this is more than one third of an average day of flow. Over 39 million gallons have been prevented from bypassing since 2000.


NPDES Permit Limits

Effluent Parameter	Weekly	Monthly	2009 Actual
TSS	45 mg/l	30 mg/l	16.2 mg/l
CBOD	37.5mg/l	25 mg/l	5.8 mg/l
Fecal Coliform	400 colonies	200 colonies	13 colonies

ph = continuous monitoring must be between 6.0 and 9.0 units.
 Residual Chlorine = continuous monitoring must be less than 50 ppb.
 WET = quarterly testing must be Pass.
 Note: - Permit requirements for TSS & CBOD removal are 85%.
 - Also test only/no limit parameters include nitrogen, phosphorus, dissolved oxygen & metals such as copper & zinc.




Chlorine Disinfection Process



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- **HYDRO-PAY - 537-9137**
- **ONLINE BILL PAY - www.rrsd.org**
- **PAY-BY-PHONE - (866) 626-9056**

DEFINITIONS

WASTEWATER PROGRAMS AND SERVICES

I/I - Inflow of rain water or water from swollen creeks. Infiltration of ground water into old deteriorated collection system pipes. Excess I/I is expensive to treat at the WWTP and uses valuable capacity reserved for future economic development. *It is a violation of the Sewer Use Ordinance to connect roof drains or basement water pumps to the wastewater collection system.*

NPDES - DWQ issues RRSD a National Pollutant Discharge Elimination System permit, which is reviewed and approved by the Environmental Protection Agency (EPA). During the next five years DWQ will do extensive testing not only on the waters of the Roanoke River but also its aquatic life to validate the limits that must be met in the NPDES permit.

PPA - Priority Pollutant Analysis tests for dozens of wastewater contaminants such as benzene, chloroform, and trichloroethane determined by EPA to be harmful to the WWTP. Elevated levels of any of these contaminants lead to a system-wide investigation to find the source before contaminants interfere with the WWTP.

CBOD - Carbonaceous Biochemical Oxygen Demand represents the Biological Oxygen Demand (BOD) from organic compounds and oxidation of inorganic compounds like ferrous iron and sulfide. Any BOD from nitrifying organisms, which consume oxygen in the nitrification process of converting ammonia to nitrate, is removed by adding a nitrification inhibitor. Effluent is tested for CBOD daily and the results are reported to DWQ monthly. Over 98% of CBOD in the wastewater is removed.

TSS - Total Suspended Solids include all particles suspended in water which will not pass through a filter. Suspended solids are present in residential wastewater and many types of industrial wastewater. Effluent is tested for TSS daily and the results reported to DWQ monthly. Over 93% of the TSS in the wastewater is removed.

Effluent - Treated wastewater discharge into the Roanoke River.

Bypass - Incomplete treatment of wastewater into the Roanoke River.

WET - Whole Effluent Toxicity refers to the total toxic effect to aquatic organisms from all pollutants contained in a facility's wastewater (effluent). RRSD uses the "Pass or Fail" Acute Toxicity test procedure and it is one way EPA implements the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. Quarterly WET tests measure our wastewater's effect on the water flea's (*Ceriodaphnia Dubia*) ability to survive, grow and reproduce.

mg/l - A milligram per liter of water is equivalent to 1 ppm (part-per-million) because a liter of water weighs 1,000 grams and a milligram is 1 one thousandth of a gram. 1 ppm = 1 drop of gas in an auto gas tank or one minute in two years.*

ppb - A part-per-billion is equivalent to 1 microgram per liter (ug/l). 1 ppb = one second of time in 32 years or about one drop of water in a swimming pool.*

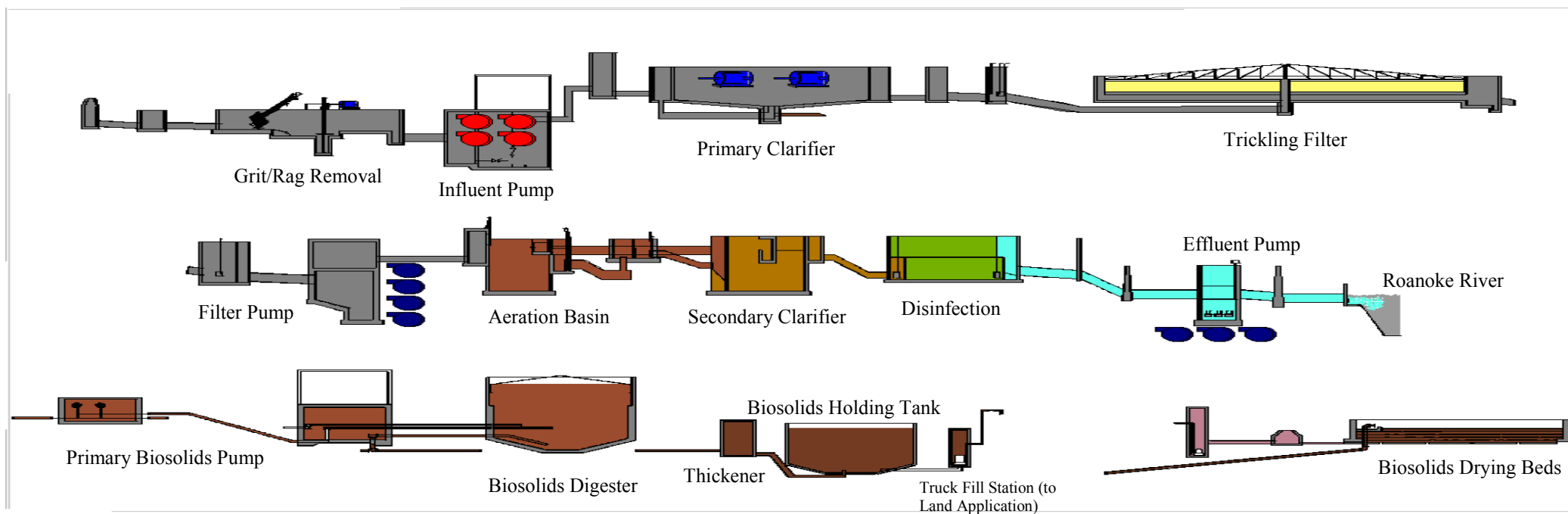
Collection System - The collection system consists of six pump stations and 130 miles of sewer pipes connecting homes and businesses to the WWTP. Main sizes are 8 inches in subdivisions and 12 to 30 inches along the river and creeks. The oldest pipes have been in the ground and in use since before 1930. During 2009 over 18.5 miles of sewer lines were TV inspected and cleaned. In 2009 we had nine (9) reportable Sanitary Sewer Overflows (SSO) at eight locations, the Greenbrier Pump Station was rebuilt and *The NC Rural Center* awarded RRSD \$480,000 in grants for Belmont Area I/I study, Capital Improvement Plan preparation and Bells Creek Outfall Replacement projects.

Pretreatment Program - The pretreatment program monitors local industries that discharge a controllable load. Overloading may interfere with the WWTP or cause pass through of the plant of a pollutant. The plant capacity to treat pollutant loading from controllable and uncontrollable sources is known from plant design capacity; verified by the results of certified lab testing. Available pollutant loading may be allocated to industry or left in reserve for future growth. Just as DWQ issues RRSD a permit to limit our discharge to the Roanoke River; RRSD issues industry permits to limit discharge to the WWTP.


FOG Program - Fats, Oils and Grease (FOG) are a controllable load discharged by restaurants or homeowners. The program is regulated by Ordinance as a condition of the Collection System Permit issued under a DWQ administrative order to reduce SSOs. One full time employee is responsible for public education, enforcement and inspection of grease traps. Placing ads in newspapers and distributing brochures to restaurants help educate the public about both the monetary and environmental benefit that the elimination of FOG has on the District. In addition to homeowner plumbing bills and collection system costs, FOG loading interferes with WWTP processes.

Bio-Solids Program - Removal of TSS and CBOD by the wastewater treatment process produces solids, which must be treated using anaerobic digestion and lime stabilization to reduce harmful pathogens. The anaerobic digestion process heats primary solids to 95° F with mixing in the absence of oxygen. Lime stabilization raises the pH of secondary solids to 12.0 for a specified period of time. Thousands of tests are performed annually on residual solids to ensure regulated levels of treatment are met. In 2009, approximately 3,000,000 gallons of solids were stabilized. Once stabilized, solids can be land applied for its nutrient value, moisture content, and soil amendment properties. DWQ issued RRSD a 5-year Land Application permit in 2007 that authorizes the District to safely manage the application of bio-solids. The District has over 3,000 acres permitted with local area farmers for this program. There are periods when crop rotations or weather conditions prevent land applying bio-solids. In 2004, the District purchased 150 acres of pasture land for bio-solids application. No bio-solids were applied to RRSD land in 2009. During 2009 an agreement with the Soil Conservation Service was entered. The plan was to develop a model site and enhance wildlife attraction. Trees were cut, areas fenced off and buffer zones created.

*Analogies are used to help people understand the magnitude of a concentration; not to minimize the risk of a concentration-its effect on human health or the environment



RRSD Wastewater Treatment Plant Profile



The Grease Goblin says " don't pour grease down the drain or toilet. Let it cool, place in a container and throw it in the trash."

PAY YOUR WATER BILL ONLINE **START TODAY**

See the "Getting Started" instructions @ www.rrsd.org