

WHAT TO DO WHEN THE DRAINS STOP FLOWING?

City of Wilson
Wastewater Collection
and Treatment System Report
Fiscal Year 2015-2016



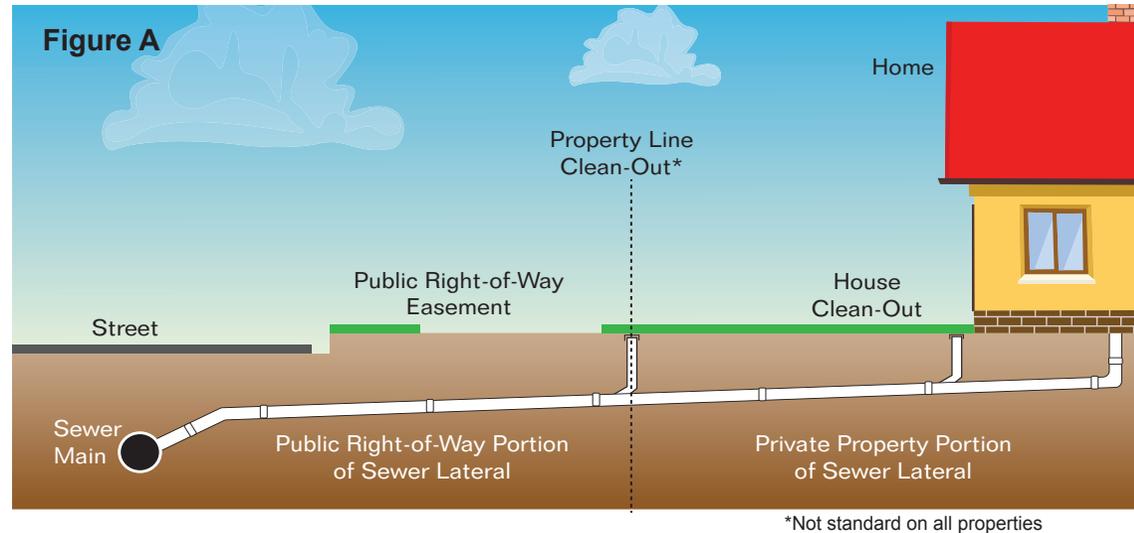
WHAT TO DO WHEN THE DRAINS STOP FLOWING?

When wastewater (sewer) stops draining in your home, it is a very serious problem that can be considered a plumbing emergency. Since the water has no place to go, it starts to come back up into the household plumbing.

When wastewater is not draining properly, determine if the drainage problem is only affecting one fixture, or multiple fixtures. If it is only one fixture, then the blockage is probably related to the fixture itself, or the interior plumbing near the fixture. If you cannot clear the blockage yourself then you should seek a plumbing professional. If multiple drains in the home are not flowing properly, then you may have a blockage in the sewer drain that flows from the home to the City's sewer main. When you have a clogged sewer drain, you should not use any of the plumbing in the home until the stoppage is cleared.

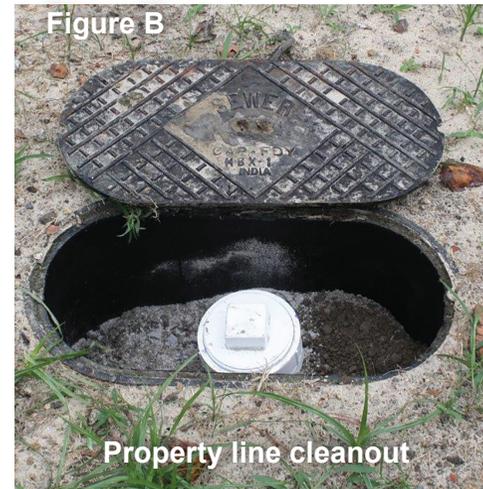
Who is responsible for clearing the sewer line blockage?

Responsibility for the maintenance of sewer piping from the home to the sewer main connection is shared between the property owner and the City of Wilson. The property owner is responsible for the piping from home to the property line cleanout. The City of Wilson maintains the sewer line beginning at the property line cleanout. Please see **Figure A** to understand your sewer pipe maintenance responsibilities.



Whom should I call first?

If you have multiple fixtures that are not draining properly, try to locate your property line cleanout. (**Figure B**) It is typically located a few feet from the edge of your property near the street. It should be flush with the ground, but may be covered by landscaping. Some homes may not have a property line cleanout. If you can locate the cleanout, try to remove the cover of the cleanout. If you feel any pressure, stop immediately and contact the City of Wilson. If you remove the cover and you see standing water in the pipe, or it is trying to flow up through the cleanout, contact the City of Wilson. If water appears to be flowing freely at this point, then the stoppage is prior to the property line cleanout and is the property owner's responsibility.



What will the City do when called?

If you think there is a blockage after the property line cleanout, contact the City of Wilson Unified Communications Center at 399-2424. A service crew will be dispatched to inspect the sewer lines and they will clear any blockages that are within the City's area of responsibility at no cost to you. If they determine the blockage is prior to the property line cleanout, you will be notified so you can contact a plumbing professional.

Collection System Maintenance and Projects Completed:

- 71.6 miles of pipe cleaned
- 6,700 feet of pipe replaced
- 149 sewer services replaced
- 39 grease blockages cleared from sewer mains

MISSION STATEMENT

Protecting our Environment and Water Quality, through Teamwork and Excellent Service, now and for future generations.

This report provides information concerning the City of Wilson's wastewater collection and treatment system performance for July 1, 2015 to June 30, 2016 as required in the North Carolina Clean Water Act of 1999 (House Bill 1160).

HOMINY CREEK WATER RECLAMATION FACILITY (WRF)

The WRF is located in Wilson at 3100 Stantonsburg Road. It is a state-of-the-art regional treatment plant that processes wastewater for approximately 20,000 metered customers and a service population of approximately 50,000. The City of Wilson also treats wastewater from the Town of Black Creek, the Town of Lucama and the Town of Sims.

The term water reclamation defines the treatment or processing of wastewater to make it reusable with specific treatment reliability. Reclaimed water must also comply with very stringent water quality criteria. The term water reuse defines the use of treated wastewater for beneficial uses, such as agricultural irrigation and industrial cooling. The City of Wilson is committed to reusing reclaimed water in areas that drinking water is not needed such as irrigation water for Wedgewood Golf Course, Burt Gillette Athletic Complex and industrial process/cooling water. The reclaimed water system is part of the City's water conservation plan.

NPDES PERMIT COMPLIANCE

The WRF was compliant with all NPDES permit limits this year.

Table Definitions & Key

PPM (Parts per Million) - a unit of measurement. Parts per million compares to 1 minute in 2 years.

BOD (Biochemical Oxygen Demand) - a required test that determines the amount of oxygen required by microorganisms to consume pollutants. BOD is measured in PPM.

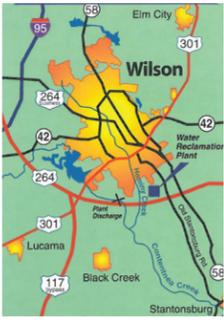
TSS (Total Suspended Solids) - a required test that measures the amount of suspended solids in a sample. TSS are measured in parts PPM.

FC (Fecal Coliform) - a required test used to determine the presence of disease causing organisms. FC are harmless but are used as indicators of other organisms (if FC are present others may be present). FC is measured as number of colonies per 100 milliliters of sample.

MGD (Million Gallons per Day) - a unit of measurement for flow volume.

PLANT PERFORMANCE

Pollutant	Concentration
Ammonia Nitrogen	PPM*
Average	0.10
Permit Limit	1.0/3.0 (summer - monthly/weekly) 2.0/6.0 (winter - monthly/weekly)
Biochemical Oxygen Demand	PPM
Average	2.0
Permit Limit	5.0/7.5 (summer - monthly/weekly) 10.0/15.0 (winter - monthly/weekly)
Total Phosphorus	PPM
Average	0.34
Permit Limit	2.00 (quarterly)
Total Suspended Solids	PPM
Average	0.30
Permit Limit	30.0/45.0 (monthly/weekly)
Total Nitrogen	Lbs/Yr
Pounds Discharged	56,180
Permit Limit	157,886
Fecal Coliform	Colonies/100 milliliters (ml) of sample
Average	5
Permit Limit	200/400 (monthly/weekly)
Chronic Toxicity	
Test Performed Quarterly	Passed all
Permit Limit	Pass or Fail
Flow	Million Gallons per Day (MGD)
Average	9.44
Permit Limit	14.00 (monthly)



Sanitary sewer overflows (SSOs) occur when untreated sewage is discharged into the environment prior to reaching the sewer treatment facilities. These typically occur at manholes, pump stations, or broken sewer pipes. Infiltration/inflow (I/I) is unwanted water that enters the sewer collection system through deteriorating older pipes, leaking manholes, illegal connections such as roof drains, etc. During heavy rains pipes can become overloaded from I/I and cause SSOs. Pipe stoppages caused by fats, oils and grease can also lead to SSOs. Replacing

SANITARY SEWER OVERFLOWS (SSOs)

and rehabilitating these lines and manholes reduces I/I into the sanitary sewer system, thus protecting the public health, improving treatment plant efficiency and reducing system maintenance. Generators provide emergency back-up power for pump stations and help prevent SSOs.

During fiscal year 2015-2016, the City of Wilson experienced one (1) reportable SSO. The WRF treated 3.5 billion gallons of wastewater during this period.

April 7, 2016

500 Harrison Drive

Total: 225 gallons

Cause - Pipe Failure

Customers who observe a sanitary sewer overflow should report these as emergencies to the City of Wilson Unified Communications Center at 399-2424.

Cientes que observan un desbordamiento del drenaje sanitario, deben reportar estas situaciones de emergencia al centro de comunicaciones unificadas de la Ciudad de Wilson, al telefono 252-399-2424.

HOW DOES YOUR PUBLICLY OWNED TREATMENT SYSTEM WORK?

The treatment system uses the same physical, chemical and biological processes used by nature to clean water. Everything we know about water, chemistry, bacteria, hygiene and engineering has gone into this system we use to purify our wastewater. The City maintains about 360 miles of sanitary sewers lines (piping system that collects and transports the wastewater) and 20 pumping stations that help carry wastewater from homes, schools, commercial buildings and industrial sources to the treatment plant.

Once at the Water Reclamation Facility (WRF) the treatment process begins. The treatment plant is designed to treat 14 MGD. The plant currently averages treating 9.4 MGD. The following describes the treatment process:

Physical Methods - Primary Treatment

- Bar Screens - catch and remove large material (wood, rocks, etc) as they flow past.
- Grit Chamber - removes heavy particles that settle rapidly like gravel, sand, seeds and coffee grounds. As the water enters the chamber, gravity causes the grit to settle to the bottom.
- Sedimentation (settling) Tanks - as water flows into the tanks, heavy organic particles settle to the bottom and are withdrawn and pumped to the solids handling facilities for additional treatment. Floatable material is skimmed off and pumped to the solids handling facilities.

Primary treatment removes approximately 45% of the pollution.

Biological Methods - Secondary Treatment

- Activated Sludge - wastewater is mixed with microorganisms. During constant aeration (mixing air containing oxygen into the wastewater) the microorganisms (bacteria) absorb oxygen and feed on the pollutants.

- Final Settling Tanks - solids made up of microorganism from the activated sludge process settle to the bottom. Some of the microorganisms are sent back to the activated sludge process to continue eating pollutants and some are removed and sent to the solids handling facilities for disposal.

Secondary treatment removes approximately 95% of the pollution; HOWEVER, in order for the WRF to comply with permit limits additional treatment is needed.

Physical/Chemical/Biological Methods - Advanced Treatment

- Nutrient Removal - nutrients (phosphorous and nitrogen) can cause an over abundance of algae growth in waterways. As the algae dies bacteria feed on the decaying matter using up oxygen needed by fish and other aquatic life. This depletion of oxygen can lead to fish kills. Phosphorous and nitrogen are removed biologically and chemically at the treatment plant.
- Filtration - removes those particles that primary and secondary treatment could not remove. The wastewater passes through sand filters that remove remaining particles. Filtration removes 99.9% of the pollution.
- Disinfection - the final stage of treatment uses sodium hypochlorite (liquid bleach containing chlorine) to disinfect the water. Disinfection kills off any disease-causing organisms that may remain after passing through the other treatment steps. Chlorine can cause problems in rivers and streams so we remove the chlorine before discharging the treated water to Contentnea Creek.

Returning the Water to Nature or Reusing the Water

Most of this clean water - now called effluent - is discharged into Contentnea Creek but some of the effluent is sent to the City's reclaimed water system (beneficial reuse) to be used for irrigation or industrial process water and cooling water.

What's Left Behind

Now, what about the material that has been removed from the water? These solids are called residuals: heavy matter that must be treated in order to safely return to the environment.

The following steps are used to further treat the residuals:

- Enclosed, heated tanks called digesters use microorganisms to turn the residuals into inert (inactive), harmless organic matter.
- Belt filter presses are used to remove water from the residuals to reduce the volume that must be disposed of.
- Land application (beneficial reuse) of treated residuals. The treated residuals (organic material) are used by area farmers as a fertilizer and soil amendment.

Biogas

A by-product of the digestion process described above is the production of methane gas (biogas). The WRF uses part of the biogas produced as fuel to heat the digesters, thus significantly reducing the amount of time required to digest the solids. The excess is burned off by a waste gas burner. The City has future plans to install a system that will utilize the excess biogas to generate energy that can be used to operate other equipment or used for green energy credits.



DISPOSABLE DOES NOT MEAN FLUSHABLE

Flushing paper towels and other garbage down the toilet wastes water and can create sewer backups and SSOs. The related costs associated with these SSOs can be passed on to ratepayers. Even if the label reads "flushable", you are still safer and more environmentally correct to place the item in a trashcan.

- ✗ Baby wipes, diapers
- ✗ Cigarette butts
- ✗ Rags and towels
- ✗ Cotton swabs, medicated wipes (all brands)
- ✗ Syringes
- ✗ Candy and other food wrappers
- ✗ Clothing labels
- ✗ Cleaning sponges
- ✗ Toys
- ✗ Plastic items
- ✗ Aquarium gravel or kitty litter
- ✗ Rubber items such as latex gloves
- ✗ Sanitary napkins
- ✗ Hair
- ✗ Underwear
- ✗ Disposable toilet brushes
- ✗ Tissues (nose tissues, all brands)



FOR MORE WATER QUALITY INFORMATION

City of Wilson - Water Resources

(252) 399-2492
www.wilsonnc.org/water-resources

N.C. Environmental Education

www.eenorthcarolina.org

Lower Neuse Basin Association

www.lnba.net

River Guardian Foundation, Inc.

www.riverguardfdn.org

NCDEQ

(919) 733-2321
www.deqnc.gov

Water's Worth It

www.watersworthit.org

Sound Rivers

www.soundrivers.org

WHAT THE CUSTOMER CAN DO TO HELP

In order to help the City of Wilson continue a high standard of water quality and protection of the environment please follow these simple steps:

DO NOT pour grease, fats and oils from cooking down the drain - instead, collect the grease in a container and dispose of it in the garbage.

DO NOT use the toilet as a wastebasket - place a wastebasket in each bathroom for the disposal of solid waste, disposable diapers, condoms, and personal hygiene products that DO NOT belong in the sewer system.

DO NOT use the sink to dispose of food scraps - instead, place food scraps in the garbage for disposal with solid wastes, or better yet, start a compost pile.

