

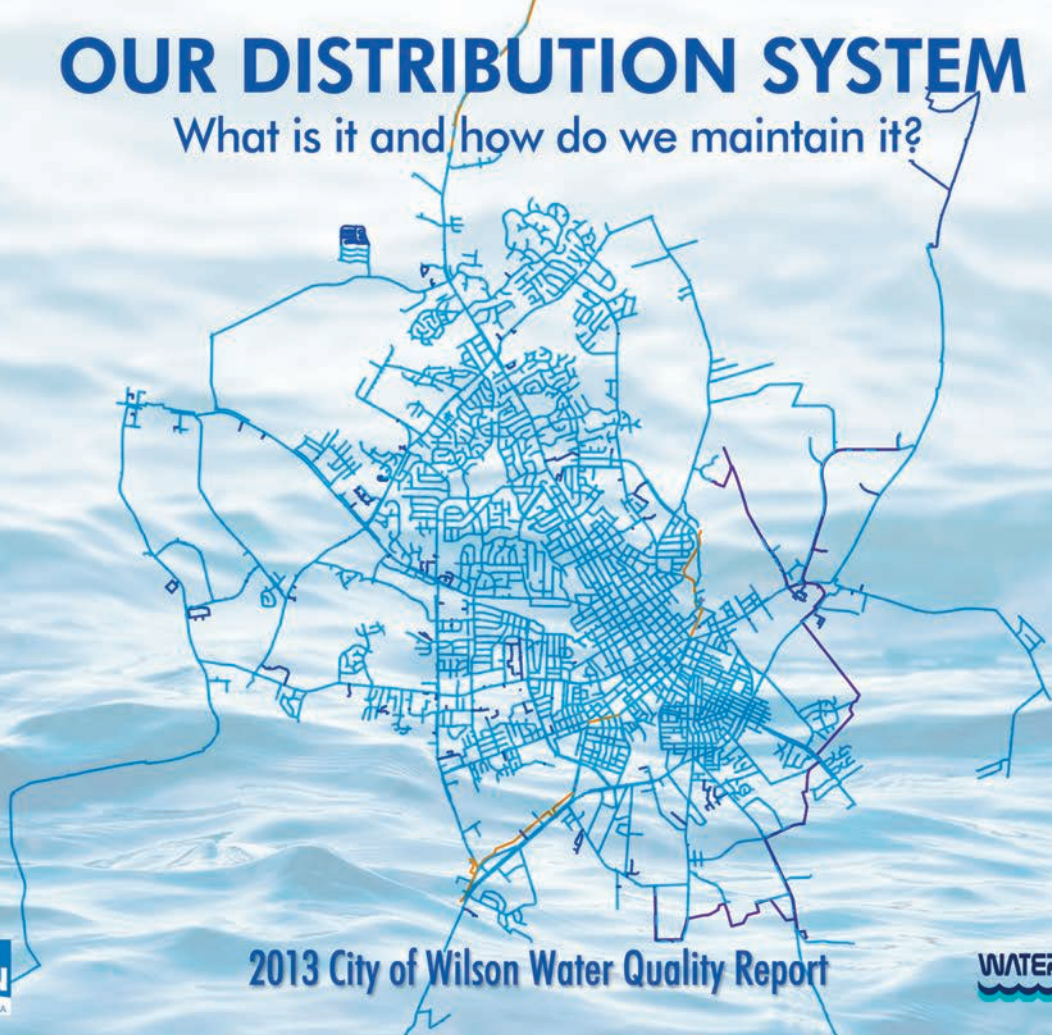
City of Wilson

WATER RESOURCES

Wiggins Mill Water Treatment Facility
P.O. Box 10
Wilson, NC 27894

OUR DISTRIBUTION SYSTEM

What is it and how do we maintain it?

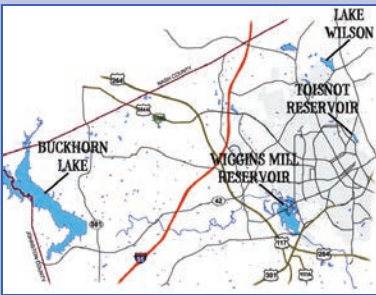


OUR DISTRIBUTION SYSTEM

What is it and how do we maintain it?

The **Water Infrastructure Division** of the Water Resources Department is tasked with maintaining our distribution system and operates a number of programs to accomplish this. The distribution system is an interconnecting maze of underground pipes that delivers the water to your homes, businesses, fire hydrants, and to our elevated storage tanks. The water mains system, which has been in service since 1895, consists of over 400 miles of pipes, ranging in size from 2 inches to 30 inches in diameter. **The Hydraulic Model** program maps where all of these lines are including sizes, valves, and other information. These water mains will have a service tap for the water meter that goes to your home or business. These pipe taps range in size from 5/8" for your home and up to a 10" for a business.

Where do we get our water?



The City of Wilson obtains its water supply from two sources. The first source is Contentnea Creek and consists of the Buckhorn Lake and the downstream Wiggins Mill Reservoir. Buckhorn Lake is the City's largest water supply reservoir and is an impoundment on the Contentnea Creek approximately 12 miles west of the city. Water is released from Buckhorn Lake into Contentnea Creek and is pumped from the downstream Wiggins Mill Reservoir to the Wiggins Mill Water Treatment Plant and to the Toisnot Water Treatment Plant. The other water supply source for the City is Toisnot Reservoir and consists of Lake Wilson and the downstream Toisnot Reservoir, which together provide water for the Toisnot Water Treatment Plant. A connection from the Tar River Reservoir to upstream of Lake Wilson is also available as a water supply during emergency conditions.



Water Meter Program

The Water Meter program maintains over 21,000 meters that are certified and tested to ensure they work properly for you.



The Hydrant Maintenance Program

The Hydrant Maintenance program oversees over 2,800 fire hydrants in our system. With the aid of the Wilson Fire/Rescue Services, all of the hydrants are tested every year. We have fire hydrants dating back to 1904. Occasionally they need replaced or repaired due to age or from vehicle accidents. The crews can generally dig up and replace an entire unit in under a day.



Leak Detection Program

The Infrastructure Division repaired over 150 leaks during 2013. Some leaks were detected through the Leak Detection program before they were ever seen above the ground. They use listening devices and permaloggers to actually detect a leak underground. Once a leak has been reported to dispatch at to 296-3403, "CALL 811 BEFORE YOU DIG" will be notified to mark any underground utilities. This can take up to 3 days for them to respond. After all of the utilities are marked, the crews can work safely repairing the leak. The Infrastructure Division also installs new water mains to replace old ones or for new subdivisions or business areas. Over the past few years they have installed an average of over 5,000 feet of new water mains every year.



Cross Connection and Backflow Program

Our Cross Connection and Backflow program helps ensure the safety of our drinking water. Special devices are mandated on a water tap that has the potential to contaminate our drinking water system if there was a backflow condition. Primarily these will be used for businesses and on sprinkler systems.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Wilson is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Source Water Assessment Program (SWAP)

The North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information, and a relative susceptibility rating of Higher, Moderate, or Lower. The relative susceptibility rating of each source of the City of Wilson was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings are summarized in Figure A.



Wiggins Mill

Susceptibility Rating

Higher | Moderate

SWAP Report Date

March 2010 | March 2010



Toisnot

Figure A

The complete SWAP Assessment report for the City of Wilson may be viewed on the Web at <http://www.ncwater.org/pws/swap>. Please note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this website may differ from the results that were available at the time this report was prepared. To obtain a printed copy of this report, please mail a written request to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or e-mail request to swap@ncdenr.gov. Please indicate your system name, PWSID, and provide your name, mailing address, and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

It is important to understand that a susceptibility rating of “higher” does not imply poor water quality, only the systems’ potential to become contaminated by PCSs in the assessment area.

For more water quality information:

City of Wilson Water Resources
Wiggins Mill Water Treatment Facility
P.O. Box 10, Wilson, NC 27894
Telephone: (252) 399-2378

North Carolina Department of Environment and Natural Resources (DENR)
512 North Salisbury Street
P.O. Box 27687, Raleigh, NC 27611-7867
Telephone: (919) 733-2321

Environmental Protection Agency (EPA)
401 M Street, SW, Washington, DC 20460
Telephone: (202) 260-2090

Safe Drinking Water Hotline
Telephone: (800) 426-4791

American Water Works Association (AWWA)
6666 West Quincy Avenue Denver, CO 80235
Telephone: (303) 794-7711

The City of Wilson Water Resources is affiliated with the following organizations: American Water Works Association, North Carolina Water Works Operators Association, North Carolina Rural Water Association, and Water Environment Federation

City Council Meetings are held on the third Thursday of each month. Your participation is welcome.

How is the water treated?

Raw water is pumped from either Toisnot Reservoir or Wiggins Mill Reservoir to the treatment facilities. At certain times of the year, the lakes are treated with copper sulfate to limit algae growth which could cause bad tastes and odors. When raw water enters the facility, a substance commonly called ferric sulfate reacts with natural alkalinity, added lime, or sodium hydroxide to cause small particles to cling to one another after strong mixing. Powdered activated carbon is added to control taste and odor causing substances that occur naturally in the raw water. The water is then mixed slowly and another chemical called polymer is added. The particles are then much larger. The water then enters large tanks called settling basins where the heavy particles settle. Other chemicals are added to remove minerals in the filters. The water is then filtered through sand and anthracite to remove remaining fine particles. Chlorine is added to kill harmful bacteria, protozoans, and viruses. Lime or sodium hydroxide and a corrosion inhibitor are added to maintain pH and minimize the potential for corrosion in distribution lines and household plumbing. Fluoride is added to aid in the prevention of tooth decay. The water is then pumped into the distribution system for home, business, and industrial use.

City of Wilson's Water Treatment Facilities

Regulated at the Treatment Plant

Substance	Date Last Tested	Unit	MCL	MCLG	Level Detected	Range Detected	Major Sources in Drinking Water	Meets EPA Requirements
Turbidity	Continuous	NTU	TT = % of samples ≤ 0.3NTU	95%	100%	N/A	Soil runoff	YES
			TT=1 NTU	N/A	0.29	0.02 – 0.29		
Fluoride	Daily	ppm	4	4	0.69	0.50 – 0.86	Erosion of natural deposits; water additives which promotes strong teeth; discharge from fertilizer and aluminum factories	YES

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.

Disinfection By-Product Precursors Contaminants

Substance	MCL	MCLG	Level Detected (RAA Removal Ratio)	Range (Monthly Removal Ratio)	Major Sources in Drinking Water	Meets EPA Requirements
Total Organic Carbon (TOC) (Removal Ratio) - Treated Water	TT	N/A	1.54	1.49 – 1.68	Naturally present in the environment	YES
STEP 1 TOC Removal Requirements						
Source Water TOC (mg/L)	Source Water Alkalinity			Note: Depending on the TOC in our source water the system MUST have a certain % removal of TOC or must achieve alternative compliance criteria. If we do not achieve that % removal there is an "alternative % removal." If we fail to meet that, we are in violation of a treatment technique. Our water system used STEP 1 as the method to comply with the D/DBP treatment technique requirements		
		0 – 60	>60 – 120			
> 2.0 – 4.0	35	25	15			
> 4.0 – 8.0	45	35	25			
> 8.0	50	40	30			

Unregulated at the Treatment Plant*

Substance	Date Last Tested	Unit	Secondary MCL	Level Detected	Range Detected	Meets EPA Requirements
Sulfate	3/12/2013	ppm	250	74	70 - 78	YES

City of Wilson's Distribution System

Disinfectants and Disinfection By-Products Contaminants

Substance	Date Last Tested	Unit	MCL	MCLG	Average Level Detected	Range Detected	Major Sources in Drinking Water	Meets EPA Requirements
THM's [Total Trihalomethanes]	Quarterly	ppb	80	N/A	54.6	30 - 108	By-product of drinking water chlorination	YES
HAAs [Total Haloacetic Acids]	Quarterly	ppb	60	N/A	29.9	24 - 147	By-product of drinking water disinfection	YES
Chlorine	Continuous	ppm	MRDL = 4	MRDLG = 4	0.76	0.20 – 2.00	Water additive used to control microbes	YES

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer. Some people who drink water containing haloacetic acids in excess of the MCL over many years have an increased risk of getting cancer.

Regulated at the Tap

Substance	Date Last Tested	Unit	MCL	MCLG	Level Detected	Range Detected	Major Sources in Drinking Water	Meets EPA Requirements
Lead	2013	ppb	AL = 15	0	<3 (90th percentile) 0 exceeded Action Level	<3 – 6	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	YES
Copper	2013	ppm	AL = 1.3	1.3	0.267 (90th percentile) 0 exceeded Action Level	<0.050 – 0.535	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	YES

Unregulated in the Distribution System*

Substance	Date Last Tested	Unit	Average Level Detected	Range Detected	Meets EPA Requirements
Hexavalent Chromium (Dissolved)	9/3/2013	ppt	61	32 - 96	By-product of drinking water chlorination YES
Strontium	9/3/2013	ppb	41.3	32 - 57	By-product of drinking water disinfection YES
Chlorate	9/3/2013	ppb	40.7	26 - 51	Water additive used to control microbes YES

*Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

Table Definitions and Key

TT Treatment Technique- A required process intended to reduce the level of a contaminant in drinking water.

AL Action Level – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MRDL Maximum Residual Disinfectant Level – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG Maximum Residual Disinfectant Level Goal – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A Not applicable – Information not applicable/not required for that particular water system or for that particular rule.

MCL Maximum Contaminant Level – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG Maximum Contaminant Level Goal – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

NTU Nephelometric Turbidity Units – Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppm parts per million- One part per million corresponds to four drops of hot sauce in a 55 gallon drum.

ppb parts per billion- One part per billion corresponds to one drop of hot sauce in a large tanker truck, like those used to haul gasoline.

ppt parts per trillion - One part per trillion would correspond to one drop of hot sauce in 1000 of the large trucks from above.