



**City of
Washington**
NORTH CAROLINA
2016 Annual Drinking Water Quality Report
Water System Number: 04-07-010

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is a snapshot of last year's water quality. Included are details about your source(s) of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and to providing you with this information because informed customers are our best allies. **If you have any questions about this report or concerning your water, please contact Water Resources Division at (252) 927-9374 or (252) 975-9310, 8 a.m. – 5 p.m., Monday through Friday. For water –related emergencies contact (252) 975-9320 at any time. We want our valued customers to be informed about their water utility.**

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environment Quality (NCDEQ), 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 susceptibility rating of Higher, Moderate, or Lower.

The relative susceptibility rating of each source for the City of Washington and the Beaufort County Southside Water System 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 below.

Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating	SWAP Report Date
(City of Washington) Well # 1	Lower	July 2015
(City of Washington) Well #2	Lower	July 2015
(City of Washington) Well #3	Lower	July 2015
(City of Washington) Well #4	Lower	July 2015
(City of Washington) Well #5	Lower	July 2015
(City of Washington) Well # 6	Lower	July 2015
(City of Washington) Well # 7	Lower	July 2015
(City of Washington) Well # 8	Lower	July 2015
(Beaufort County Southside) Well # 1	Lower	July 2015
(Beaufort County Southside) Well # 2	Lower	July 2015
(Beaufort County Southside) Castle Hayne 62	Moderate	July 2015
(Beaufort County Southside) Castle Hayne 64	Lower	July 2015
(Beaufort County Southside) Pee Dee 62	Moderate	July 2015
(Beaufort County Southside) Pee Dee 64	Lower	July 2015

The complete SWAP Assessment report for the City of Washington and the Beaufort County Southside Water System (Water System Number 04-07-035) may be viewed on the Web at: www.ncwater.org/pws/swap. Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this CCR was prepared. If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to swap@ncdenr.gov. Please indicate your system name, number, 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 system’s potential to become contaminated by PCSs in the assessment area.

When You Turn on Your Tap, Consider the Source

The City of Washington's water comes from ground water out of the Castle Hayne Aquifer. The City has installed eight wells into the aquifer to remove the water from the ground. These wells, located 5 to 10 miles east of Washington, pump raw water to the Regional Water Treatment Plant, located near the Douglas Cross Roads Community. At the plant, raw water is treated to remove odor, iron, manganese, and hardness. Before the water enters the plant, it is aerated to remove odors. It is then injected with potassium permanganate to oxidize the dissolved iron and manganese. The oxidized iron and manganese are filtered out, and then 65% of the water passes through high capacity resin filters for the removal of calcium and magnesium (hardness). The finished water from the resin filters is completely soft. It is then blended with the unsoftened water so that it will have about 60-75 mg/l of total hardness. As the water leaves the filters, chlorine is added as a disinfectant to make sure no bacteria are present, and a chloramine residual is kept in the water system. Phosphate is added to protect pipe lines in the water distribution system and prevent corrosion and rusty water from getting to the customers. Fluoride also is added in the treatment process to keep 0.75 mg/l in the water for the control of cavities in children's teeth. Treated water is stored at the plant in two tanks which have a capacity of 2.5 million gallons. From these storage tanks, water is pumped into the system and to three elevated storage tanks located in the City of Washington. As the water is pumped to these tanks, ammonia is added. This ammonia combines with the chlorine to make up chloramines, a type of disinfectant. The elevated storage tanks, when full, will store 1.3 million gallons of water.

Some City of Washington customers are supplied with water from the City of Washington and Beaufort County Southside Water System. This includes the Industrial Park and customers along Market Street Extension. The water from the Beaufort County Southside Water System comes from six ground wells that have been installed into the Castle Hayne and Pee Dee Aquifers. These wells are located along Hwy 33 East 5 to 10 miles east of Chocowinity and along Old Sandhill Road. These wells pump raw water to two water treatment plants, which are also located along Hwy 33 East and Old Sandhill Road. At the treatment plants, the water is treated to remove odor, iron, manganese, and hardness. Chlorine and Ammonia (Chloramines) are added as disinfectant to prevent bacteria growth. The treated water is then pumped into the Beaufort County Northside Water System.



What EPA Wants You to Know

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 microbial 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 Washington 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 stormwater 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 stormwater 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 stormwater 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.

Water Quality Data Tables of Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The tables below list all the drinking water contaminants that we detected in the last round of sampling for each particular contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2016.** The EPA and the State allow us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

Important Drinking Water Definitions:

EPA – Environmental Protection Agency, a federal government agency

FDA – Food and Drug Administration, a federal government agency

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

Non-Detects (ND) - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.

Parts per million (ppm) or Milligrams per liter (mg/L) - One part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter (ug/L) - One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

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

Maximum Residual Disinfection Level (MRDL) – 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.

Maximum Residual Disinfection Level Goal (MRDLG) – 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.

Maximum Contaminant Level (MCL) - 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.

Maximum Contaminant Level Goal (MCLG) - 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.

Locational Running Annual Average (LRAA) – The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule.

Tables of Detected Contaminants

Microbiological Contaminants in the Distribution System - For systems that collect *less than 40* samples per month

Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria (presence or absence)	N/A	1	0	TT*	Naturally present in the environment
<i>E. coli</i> (presence or absence)	N	0	0	Routine and repeat samples are total coliform-positive and either is <i>E. coli</i> -positive or system fails to take repeat samples following <i>E. coli</i> -positive routine sample or system fails to analyze total coliform-positive repeat sample for <i>E. coli</i> <u>Note:</u> If either an original routine sample and/or its repeat samples(s) are <i>E. coli</i> positive, a Tier 1 violation exists.	Human and animal fecal waste

* If a system collecting fewer than 40 samples per month has two or more positive samples in one month, an assessment is required.

Turbidity*

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.173 NTU	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	N/A	Less than 95% of monthly turbidity measurements are \leq 0.3 NTU	

* 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

Inorganic Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	City of Washington	Range Low High	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	8/28/14	N	0.86	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Contaminant (units)	Sample Date	MCL Violation Y/N	Beaufort County Southside	Range Low High	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	06/14/16	N	0.47	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Lead and Copper Contaminants

Contaminant (units)	Sample Date	Your Water	# of sites found above the AL	MCLG	AL	Likely Source of Contamination
Copper (ppm) (90 th percentile)	2016	0.137	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)	2016	ND	0	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits

Testing for Lead and Copper is required every 3 years. The data presented in this report is from the most recent testing done in accordance with the regulations.

Disinfectants and Disinfection Byproducts Contaminants

	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chloramines (ppm)	2016	N	2.47	1.0	3.68	4	4.0	Water additive used to control microbes

Disinfectants and Disinfection Byproducts Contaminant - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
TTHM (ppb)								
B01	2016	N	21.6	21.6	21.6	N/A	80	Byproduct of drinking water disinfection
B02	2016	N	19.5	19.5	19.5	N/A	80	
HAA5 (ppb)								
B01	2016	N	10.9	10.9	10.9	N/A	60	Byproduct of drinking water disinfection
B02	2016	N	9.3	9.3	9.3	N/A	60	

For TTHM: 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.

For HAA5: Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

The PWS Section requires monitoring for other miscellaneous contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic effects or aesthetic effects (such as taste, odor, and/or color) in drinking water. The contaminants with SMCLs normally do not have any health effects and normally do not affect the safety of your water.

Other Miscellaneous Water Characteristics Contaminants

Contaminant (units)	Sample Date	City of Washington	Range Low/High	SMCL
Iron (ppm)	Yearly Average	0.04	0.01 - 0.15	0.3 mg/L
Manganese (ppm)	Yearly Average	0.010	0.001 - 0.023	0.05 mg/L
Sodium (ppm)	8/28/14	84.86	N/A	N/A
pH	Yearly Average	7.59	7.33 – 7.92	6.5 to 8.5
Hardness (ppm)	Yearly Average	64	46 - 86	N/A
Temperature (°F)	Yearly Average	65°	63° - 66°	N/A
Chlorides (ppm)	Yearly Average	13.5	3.2 – 25.7	N/A

Contaminant (units)	Sample Date	Beaufort County Southside	Range Low/High	SMCL
Iron (ppm)	Yearly Average	0.03	0 – 0.11	0.3 mg/L
Sodium (ppm)	06/14/16	101.95	N/A	N/A
pH	Yearly Average	7.8	7.0 – 8.2	6.5 to 8.5
Hardness (ppm)	Yearly Average	55	34 - 68	N/A
Chlorides (ppm)	09/20/16	19.7	8-46	N/A

Water Conservation Tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers – a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

Annual Reversion to Free Chlorine

It is customary for water systems using chloramines to revert back to free chlorine for about 6 weeks annually. The City of Washington typically does this in April and May. Free chlorine serves to remove any microbial growth that may have formed while using chloramines, which is a less potent but more stable disinfectant. This is a standard water treatment practice to keep our distribution system clean and free of potentially harmful bacteria. During this period, customers may notice more chlorine taste and odor. This will go away once the water system has returned to chloramines. Shortly after the reversion period the City of Washington will perform hydrant flushing to aid in the reversion process. You may notice some discoloration of your water during this time. If this happens, please run your water for five minutes to clear your service line. If the discoloration persists, please contact the Water Resources Division at (252) 927-9374 or (252) 975-9310, 8 a.m. – 5 p.m., Monday through Friday or (252) 975-9320 at any time.
