

2018 Annual Drinking Water Quality Report

Town of Benson

PWS ID # 03-51-025

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 where your water comes from, 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 anything concerning your water, please contact Town Hall at 919-894-3553. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our scheduled meetings. They are held at the Municipal building on the second Tuesday of each month at 7:00 PM.

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).

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.

When You Turn on Your Tap, Consider the Source

The water that is used by this system is purchased water from the City of Dunn and Johnston County West.

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environmental Quality (DEQ), 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 for Benson 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 the table below:

Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating
Cape Fear River	Higher
Neuse River	Higher

The complete SWAP Assessment report for the Town of Benson may be found on the Web at: <http://www.ncwater.org/?page=600> 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 the water system ID name and number which is Town of Benson 03-51-025 along with 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.

Water Quality Data Tables of Detected 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, 2018 through December 31, 2018.** 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.

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 regulations are warranted.

Important Drinking Water Definitions:

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

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.

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.

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.

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

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.

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

Tables of Detected Contaminants

Lead and Copper Contaminants

Contaminant (units)	Sample Date	Your Water	# of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (ppm) (90 th percentile)	7/12/16	0.172	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) (90 th percentile)	7/12/16	5	0	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits

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 Town of Benson 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>.

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chlorine (ppm)	2018	N	0.86	0.21	1.81	4	4.0	Water additive used to control microbes
Chloramine (ppm)	2018	N	2.41	0.81	3.18	4	4.0	Water additive used to control microbes

Stage 2 Disinfection Byproduct Compliance - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range Low High	MCLG	MCL	Likely Source of Contamination
TTHM (ppb)							
Location B01	2018	N	51	27-90	N/A	80	Byproduct of drinking water disinfection
Location B02	2018	N	44	24-85	N/A	80	Byproduct of drinking water disinfection
HAA5 (ppb)							
Location B01	2018	N	41	31-62	N/A	60	Byproduct of drinking water disinfection
Location B02	2018	N	19	2-29	N/A	60	Byproduct of drinking water disinfection

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.*

REVISED TOTAL COLIFORM RULE:

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	Absent	0	TT*	Naturally present in the environment
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E.coli

(Presence or absence)	N	N/A	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>	
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Note: If either an original routine sample and/or its repeat samples(s) are *E. coli* 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

2018 Annual Drinking Water Quality Report

City of Dunn

Water System Number: NC 03-43-010

Tables of Detected Contaminants

REVISED TOTAL COLIFORM RULE

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	N/A	N/A	TT*	Naturally present in the environment
<i>E. coli</i> (presence or absence)	N	Absent	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

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	0.26 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 ≤ 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	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	5/17/18	N	0.75	N/A	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Nitrate/Nitrite Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Nitrate (as Nitrogen) (ppm)	1/8/18	N	1.1	N/A	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Synthetic Organic Chemical (SOC) Contaminants Including Pesticides and Herbicides

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Atrazine (ppb)	2018	N	0.2	0.0 - 0.44	3	3	Runoff from herbicide used on row crops
Simazine (ppb)	2018	N	0.18	0.0 - 0.25	4	4	Herbicide runoff

Lead and Copper Contaminants

Contaminant (units)	Sample Date	Your Water	Number of sites found above the AL	MCLG	AL	Likely Source of Contamination
Copper (ppm) (90 th percentile)	2018	0.11	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)	2018	0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Radiological Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Beta/photon emitters (pCi/L)	10/01/18	N	4.4	N/A		0	50 *	Decay of natural and man-made deposits

* Note: The MCL for beta/photon emitters is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles.

Total Organic Carbon (TOC)

Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	TT	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	N	1.29	0.94 - 1.54	N/A	TT	Naturally present in the environment	Step 1

STEP 1 TOC Removal Requirements			
Source Water TOC (mg/L)	Source Water Alkalinity mg/L as CaCO3 (in percentages)		
	0 - 60	> 60-120	> 120
> 2.0 - 4.0	35.0	25.0	15.0
> 4.0 - 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation	Your Water	Range	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2018	N	0.7 ppm	0.03 - 2.7 ppm	4	4.0	Water additive used to control microbes
Chloramines (ppm)	2018	N	2.48 ppm	1.0 - 3.6 ppm	4	4.0	Water additive used to control microbes

Stage 2 Disinfection Byproduct Compliance - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range Low High	MCLG	MCL	Likely Source of Contamination
TTHM (ppb)					N/A	80	Byproduct of drinking water disinfection
Location							
B01	2018	N	64	29 - 64	N/A	80	Byproduct of drinking water disinfection
B02	2018	N	63	27 - 62	N/A	80	Byproduct of drinking water disinfection
B03	2018	N	65	30 - 65	N/A	80	Byproduct of drinking water disinfection
B04	2018	N	64	29 - 66	N/A	80	Byproduct of drinking water disinfection
HAA5 (ppb)					N/A	60	Byproduct of drinking water disinfection
Location							
B01	2018	N	21	16 - 27	N/A	60	Byproduct of drinking water disinfection
B02	2018	N	21	15 - 25	N/A	60	Byproduct of drinking water disinfection
B03	2018	N	22	17 - 29	N/A	60	Byproduct of drinking water disinfection
B04	2018	N	24	11 - 36	N/A	60	Byproduct of drinking water disinfection

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 misc. 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	Your Water	Range		SMCL
			Low	High	
Sodium (ppm)	2018	29.8	N/A		N/A
Sulfate (ppm)	2018	29	N/A		250 mg/L
pH	2018	7.6	N/A		6.5 to 8.5

Cryptosporidium

Our system monitored for *Cryptosporidium* and found levels of 0.011 Oocyst.per liter.

Sample Date	Your Water (average)	Range	
		Low	High
2018	0.011 Oocyst/L	0.00 - 0.286	

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes *Cryptosporidium*, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water and/or finished water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

Additional Monitoring of Other Contaminants

LT2 Monitoring Giardia / 0.127 Cysts per Liter in the Untreated Raw Water.

Sample Date	Your Water (average)	Range	
		Low	High
2018	0.027 cyst/L	0.00	1.05

LT2 Monitoring E Coli / 114.2 CFU per Liter in the Untreated Raw Water

Sample Date	Your Water (average)	Range	
		Low	High
2018	114.2 CFU/L	6.3	1733



2018 Annual Drinking Water Quality Report

Johnston County Public Utilities

PWS # 40-51-018 EAST
PWS # 03-51-070 WEST



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 from where your water comes, 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.

Éste informe contiene información muy importante sobre la calidad de su agua potable. Una copia de este reporte en español está disponible en la Oficina de Servicio Público en el Centro de Land Use.

The Johnston County water system has two service areas called **Johnston East** and **Johnston West**. The Johnston East service area is generally described as the area east of the Neuse River and south of I-95. The Johnston West service area is the area west of the Neuse River and north of I-95. Please refer to the map.

Water supplied to the Johnston East service has free chlorine as a secondary disinfectant since April 2011. Water supplied to the Johnston West service area has chloramines

(a combination of chlorine and ammonia) as a secondary disinfectant. The quality data for both service areas are provided to all customers.

We provide service for communities, towns and cities throughout our county including most unincorporated parts of the county and the towns of Archer Lodge, Four Oaks, Princeton, Kenly, Clayton, and Wilson's Mills. The County system also supplements the towns of Micro, Benson, Pine Level, Smithfield, Selma, and Fuquay Varina with additional water.

In 2018 our water department produced and provided approximately 2.7 billion gallons of water to our customers. Our water source is surface water from the Neuse River, which forms just above Durham where the Eno and Flat Rivers converge. The Neuse River flows approximately 190 miles through eastern North Carolina to the Pamlico Sound. Our intake and treatment facility are located one half mile east of Wilson's Mills, N.C. There are two reservoirs on site. Each reservoir contains 35 million gallons. The treatment system has five main steps to remove or reduce harmful contaminants: presedimentation, coagulation, clarification, filtration by multimedia high rate filters, and disinfection. Once treatment is complete, water is pumped into elevated storage tanks for distribution throughout the water system. Johnston County also purchases water from the Town of Smithfield and Harnett County on a bulk basis. The source of the Smithfield supply is the Neuse River and Harnett County supply is the Cape Fear River. The treatment processes are similar to the county's. Water purchased from Smithfield and Harnett County mixes with water produced by the county in the distribution system.

The U.S. Environmental Protection Agency (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 (EPA) Safe Drinking Water Hotline (800-426-4791). 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 that 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.

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 Water Drinking 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. Johnston County Public Utilities 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 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 assessments 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 the source for Johnston County Public Utilities was determined by combining the contaminant rating (number and location of PCSs within watershed) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the watershed and its delineated assessment area.). 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 PCS's in the assessment area. The assessment findings are summarized in the table below:

Susceptibility of Sources to Potential Contaminant Sources (PCSs)		
Source Name	Susceptibility Rating	SWAP Report Date

Neuse River	Higher	September 2017
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The complete SWAP Assessment report for Johnston County Public Utilities may be viewed on the Web at: <http://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 request to swap@ncdenr.gov. Please indicate the system name of Johnston County, PWS# 03-51-070, 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 PCS’s in the

assessment area. If you have any questions about this report or concerning your water utility, please contact Chandra Farmer, P.E., Director of Utilities and Engineering, by calling (919) 209-8333 or by writing to this address: Johnston County Utility Dept. PO Box 2263, Smithfield, North Carolina 27577. We want our valued customers to be informed about their water utility. You can attend Board of Commissioners meetings on the first Monday of each month, at 10:00 a.m., in the Johnston County Courthouse, at 212 Market Street, Smithfield, NC. Find out more on the Internet at www.jcutil.com/ccr.

Definitions:

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

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.

MRDLG - Maximum Residual Disinfection 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.

MRDL - Maximum Residual Disinfection 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.

90th Percentile – 90% of samples are equal to or less than the number in the chart.

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

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

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

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

ppb – parts per billion – 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.

ppm – parts per million – milligrams per liter (mg/l) – One part per million corresponds to one minute in two years or a single penny in \$10,000.

RAA – Running annual average

TT – Treatment Technique – A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

LRAA – 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.

Level 1 Assessment - A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment - A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

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 analyses completed from January 1 through December 31, 2018.** 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.

Water Quality Data Table(s) Johnston County WEST PWS# 03-51-070: 2018

Disinfectant Residuals Summary 2018								
Contaminant(units)	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chlorine (ppm)	2018	N	0.51	0.03	3.16	4	4.0	Water additive used to control microbes
Chloramines (ppm)	2018	N	2.76	0.0	3.94	4	4.0	Water additive used to control microbes

Stage 2 Stage 2 Disinfection Byproduct Compliance – Based on Locational Running Annual Average (LRAA)

Disinfection Byproduct	Units	MCLG	MCL	Your Water (highest LRAA)	Range		Year Sampled	MCL Violation (Yes / No)	Likely Source of Contamination
					Low	High			
TTHM	ppb	N/A	80	43			2018	No	Byproduct of drinking water disinfection
B01					33	46			
B02					32	46			
B03					30	49			
B04					28	52			
B05					28	49			
B06					35	56			
B07					29	48			
B08					39	47			
HAA5	ppb	N/A	60	35			2018	No	Byproduct of drinking water chlorination
B01					26	54			
B02					25	45			
B03					25	36			
B04					17	33			
B05					16	37			
B06					15	28			
B07					16	34			
B08					31	37			

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 chance of getting cancer

Inorganic Contaminants 2018

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			

Copper (90 th percentile)	ppm	July 2018	0.119	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (90 th percentile)	ppb	July 2018	0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Radiological Contaminants						
Contaminant (units)	Sample Date	MCL Violation Yes/No	Your Water (RAA)	MCLG	MCL	Likely Source of Contamination
Alpha emitters (pCi/L)	2007	No	0.13	0	15	Erosion of natural deposits
Beta/photon emitters (pCi/L)	2007	No	1.57	0	50*	Decay of natural and man-made deposits
Combined radium (pCi/L)	2007	No	0.05	0	5	Erosion of natural deposits

*Note: The MCL for beta particles is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles

Total Organic Carbon (TOC): 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 the alternative % removal, we are in violation of a Treatment Technique. (2018)							
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)

Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.46	1.27 – 1.60	N/A	TT	Naturally present in the environment	Step 1
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Step 1 TOC Removal Requirements (%)

Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO ₃ (in percentages)		
	0 – 60	> 60 – 120	> 120
> 2.0 – 4.0	35.0	25.0	15.0
> 4.0 – 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Water Characteristics Contaminants: The PWS section requires monitoring of other misc contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic 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.

Contaminant (units)	Sample Date	Your Water	Range		Secondary MCL
			Low	High	
Sodium (ppm)	March 2018	36.1	N/A		N/A
pH	March 2018	6.5	N/A		6.5 to 8.5

Smithfield Water Treatment Plant 2018 Data		
Susceptibility of Sources to Potential Contaminant Sources (PCSs)		
Source Name	Susceptibility Rating	SWAP Report Date
Neuse River	Higher	September 2017

Water Quality Data Table(s) Town of Smithfield Water Treatment Plant: 2018

Town of Smithfield Water Treatment Plant 2018 Data					
Contaminant	Units	Level Detected	Range		Sample Date
			Low	High	

Haloacetic Acids (Haa5)	ppb	43.0 (AVG)	24.8 - 51.8	2018
Total Trihalomethanes (TTHMs)	ppb	34.0 (AVG)	24.0 - 65.0	2018
Chloramines	ppm	3.49	0- 3.4	2018
Chlorine	ppm	1.18	0.98 - 1.55	2018
Fluoride	ppm	<0.01	N/A	2018
Turbidity	NTU	0.105 (highest)	100% of samples below limit	2018
Copper	ppm	0.1088 (90 th percentile)	N/A	2016
Lead	ppb	.004 (90 th percentile)	N/A	2016
Sulfate	ppm	33.9	N/A	2018
pH	N/A	7.50	N/A	2018
Sodium	ppm	29.4	N/A	2018
Simazine	ppb	0.1	0.0 - 2.4	2018

Step 1 TOC Removal Requirements (%)			
<i>Source Water TOC</i> (mg/L)	Source Water Alkalinity Mg/L as CaCO ₃ (in percentages)		
	0 - 60	> 60 - 120	> 120
> 2.0 - 4.0	35.0	25.0	15.0
> 4.0 - 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Contaminant (units)	<i>TT</i> Violation Yes/No	<i>Your Water</i> (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.30	1.06 – 1.45	N/A	TT	Naturally present in the environment	Step 1 and Alt.#4
Alternati ve Complia nce Criteria (ACC)							
Alt. 1	Source Water TOC < 2.0 mg/L						
Alt. 2	Treated Water TOC < 2.0 mg/L						
Alt. 3	Source Water SUVA ≤ 2.0 L/mg-m						
Alt. 4	Treated Water SUVA ≤ 2.0 L/mg-m						
Alt. 5	Treated Water Alkalinity < 60 mg/L (for softening systems only)						
Alt. 6	THM & HAA RAA's ≤ 1/2 MCL & uses only chlorine						
Alt. 7	Source TOC RAA < 4.0 mg/L and Source Alkalinity > 60 mg/L and THM & HAA RAAs ≤ 1/2 MCL						
Water Quality Data Table(s)							

Water Quality Data Table(s) Johnston County East PWS# 40-51-018: 2018	

Stage 2 Disinfectant Byproduct Compliance- Based on Locational Running Average (LRAA) 2018								
Disinfection Byproduct	Units	MCLG	MCL	Your Water (highest LRAA)	Rang e Low High	Year Sampled	MCL/ Violati on (Yes / No)	Likely Source of Contamination
TTHM	ppb	N/A	80	66		2018	No	Byproduct of drinking water disinfection
B01					16 - 59			
B02					50 - 82			
B03					44 - 84			
B04					6 - 65			
HAA5	ppb	N/A	60	37		2018	No	Byproduct of drinking water chlorination
B01					26 - 35			
B02					25 - 52			
B03					26 - 43			
B04					0 - 45			

Inorganic Contaminants								
Fluoride	ppm	4	4	0.40	N/A	2018	No	Erosion of natural deposits; Water additive which promote strong teeth; discharge from fertilizer and aluminum factories

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 chance of getting cancer.

Lead and Copper Contaminants: Pregnant women, infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

Contaminant	Units	Sample Date	Your Water	Number of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (90 th percentile)	ppm	July 2017	0.14	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (90 th percentile)	ppb	July 2017	0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Disinfectant Residuals Summary

Contaminant (units)	Year Sampled	MRDL Violation	Your Water (highest PAA)	Range (Low - High)	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2018	N	1.59	0.22 - 3.27	4	4.0	Water additive used to control microbes

Contaminant (units)	Treatment Technique (TT) Violation	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (units)	Y/N				
Turbidity (NTU) - Highest single turbidity measurement	N	0.385 NTU	N/A	Turbidity > 1 NTU	

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	Soil runoff
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*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.

Total Organic Carbon (TOC): 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 the alternative % removal, we are in violation of a Treatment Technique. (2018)

Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.62	1.36 – 1.73	N/A	TT	Naturally present in the environment	Step 1

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO ₃ (in percentages)		
	0 – 60	> 60 – 120	> 120
> 2.0 – 4.0	35.0	25.0	15.0
> 4.0 – 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Water Characteristics Contaminants: The PWS section requires monitoring of other misc contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic 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.

Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	April 2018	37.96	N/A	N/A
pH	April 2018	7.4	N/A	6.5 to 8.5

Synthetic Organic Chemical (SOC) Contaminants including Pesticides and Herbicides								
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Simazine (ppb)	2018	N	0.27	0.09	0.16	4	4	Herbicide runoff

Water Quality Data Table(s) Harnett County Water Treatment Plant : 2018

Harnett County Water Treatment Plant 2018 Data				
<i>Contaminant</i>	Units	Level Detected	Range Low High	Sample Date
Chloramines	ppm	2.98	1.15 - 3.98	2018
Chlorine(only month of March)	ppm	0.58	0.0 – 2.70	2018
Fluoride	ppm	0.54	N/A	2018
Turbidity	NTU	0.10 (highest)	100% of samples below limit	2018
Copper	ppm	0.155 (90 th percentile)	N/A	2016
Lead	ppb	0 (90 th percentile)	N/A	2016
Sulfate	ppm	63.8	N/A	2018
pH	N/A	6.8	N/A	2018
Sodium	ppm	54.11	N/A	2018
Chlorite(Distribution)	ppm	0.275	0.13 – 0.43	2018
Chlorine Dioxide	ppb	16.5	0 - 602	2018

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO ₃ (in percentages)		
	0 – 60	> 60 – 120	> 120
> 2.0 – 4.0	35.0	25.0	15.0
> 4.0 – 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Source Name	Susceptibility Rating	Swap Report Date
Cape Fear River	Moderate	Aug 31, 2017
Dunn/Cape Fear River	Higher	Aug 31, 2017

Harnett County Water Treatment Plant Disinfection Byproduct Precursors Contaminants 2018 Data							
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.33	1.1 – 1.50	N/A	TT	Naturally present in the environment	Step 1

Harnett County Water Treatment Plant Microbiological Contaminants 2018					
Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria (presence or absence)	N	4.0%	0	>5% triggers level 1 assessment	Naturally present in the environment

Fecal Coliform or <i>E. coli</i> (presence or absence)	N	0%	0	<p>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></p> <p><u>Note:</u> if either an original routine sample and/or its repeat sample(s) are <i>E. coli</i> positive, a Tier 1 violation exists.</p>	Human and animal fecal waste
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Stage 2 Disinfectant Byproduct Compliance- Based on Locational Running Average (LRAA) Harnett County 2018									
Disinfection Byproduct	Units	MCLG	MCL	Your Water (highest LRAA)	Range		Year Sampled	MCL/ Violation (Yes / No)	Likely Source of Contamination
					Low	High			
TTHM	ppb	N/A	80	59.7			2018	No	Byproduct of drinking water disinfection
B01					37.2	55.0			
B02					36.2	50.1			
B03					32.7	44.0			
B04					41.4	59.7			
B05					38.3	55.0			
B06					28.0	44.5			
B07					29.2	52.4			
B08					37.3	56.2			
HAA5	ppb	N/A	60	26.0			2018	No	Byproduct of drinking water chlorination
B01					18.9	24.9			
B02					16.2	23.2			
B03					14.5	19.1			
B04					17.9	26.0			
B05					19.5	23.8			
B06					20.8	22.9			
B07					15.5	24.9			
B08					18.5	17.1			

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 chance of getting cancer.

In 2018, our system performed monthly source water monitoring for *Cryptosporidium* to satisfy the EPA Long Term 2 Enhanced Surface Water Treatment Rule. A level of 0.09 cysts/Liter was found in our source water (prior to treatment) for the months of February 2018 and April 2018.

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monthly monitoring indicated the presence of these organisms in our source water in January 2017. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, and abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may spread through means other than drinking water. In our continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in the water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements. Our staff in the Johnston County Utility Department work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

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