



2012 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.

Este 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 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 2012 our water department produced and provided approximately 3.2 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 system on a bulk basis. The source of the Smithfield supply is the Neuse River and the treatment processes are similar to the county's. Water purchased from Smithfield 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 purpose of the assessment 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 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	February 19, 2010

The complete SWAP Assessment report for Johnston County Public Utilities 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 web site may differ from the results that were available at the time this CCR 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 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 Timothy G. Broome, 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.johnstonnc.com.

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.

We routinely monitor for over 150 possible 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 the 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, 2012. The EPA or the State requires 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 :

Contaminant	Units	MCLG	MCL	Your Water	Range Low High	Sample Date	Violation (Yes / No)	Likely Source of Contamination
Disinfectants & Disinfection By-Products Contaminants								
Total Haloacetic Acids (HAA5)	ppb	N/A	60	41.0 (RAA)	15.3 - 81.3	2012	No	Byproduct of drinking water chlorination
Total Trihalomethanes (TTHM)	ppb	N/A	80	51.2 (RAA)	5.0 - 106	2012	No	Byproduct of drinking water chlorination
Chlorine	ppm	MRDLG=4	MRDL=4	2.15 (Average)	0.20 – 3.78	2012	No	Water additive used to control microbes
Chloramine	ppm	MRDLG=4	MRDL=4	2.68 (RAA)	1.85 – 3.75	2012	No	Water additive used to control microbes
Inorganic Contaminants								
Fluoride	ppm	4	4	0.51	N/A	March 2012	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.								

Turbidity* Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.214 NTU	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100 %	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

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	# of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (90 th percentile)	ppm	July 2012	0.088	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 2012	<3.0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Radioactive 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.							
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	1.38	1.22 – 1.57	N/A	TT	Naturally present in the environment	Step 1

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)	January 2012	N	0.18	ND – 0.18	3	3	Runoff from herbicide used on row crops

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

Water Characteristics Contaminants: Secondary Contaminants, required by the NC Public Water Supply Section, are substances that affect the taste, odor, and/or color of drinking water. These aesthetic contaminants 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)	March 2012	37.2	N/A	N/A
pH	March 2012	6.2	N/A	6.5 to 8.5

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

Town of Smithfield Water Treatment Plant 2012 Data				
Contaminant	Units	Level Detected	Range Low High	Sample Date
Haloacetic Acids (Haa5)	ppb	42 (AVG)	22 - 66	2012
Total Trihalomethanes (TTHMs)	ppb	57 (AVG)	22 - 96	2012
Chloramine	ppm	2.80	1.00 - 4.20	2012
Chlorine	ppm	1.67	0.14 - 1.90	2012
Total Coliform Bacteria	presence/absence	0	NA	2012
Fecal Coliform or E. coli	presence/absence	0	NA	2012
Fluoride	ppm	0.84	N/A	7/3/12
Turbidity	NTU	0.27 (highest)	100% of samples below limit	2012
Copper	ppm	0.260 (90 th percentile)	N/A	8/24/10
Lead	ppb	4 (90 th percentile)	N/A	8/24/10
Sulfate	ppm	46.5	N/A	7/3/12
Chloroform	ppb	40	14 - 70	2012
Bromodichloromethane	ppb	13	6 - 22	2012
Chlorodibromomethane	ppb	3.0	1 - 4	2012
pH	N/A	7.6	N/A	7/3/12
Sodium	ppm	51.4	N/A	7/3/12

Smithfield Water Treatment Plant 2012 Data		
Susceptibility of Sources to Potential Contaminant Sources (PCSs)		
Source Name	Susceptibility Rating	SWAP Report Date
Neuse River	Higher	February 2010

Town of Smithfield Water Treatment Plant Disinfection Byproduct Precursors Contaminants 2012 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	0.99	0.77 – 1.09	N/A	TT	Naturally present in the environment	Step 1 and ACC#4

Alternative Compliance Criteria (ACC)

Alt. 1	Source Water SUVA \leq 2.0 L/mg-m
Alt. 2	Treated Water TOC $<$ 2.0 mg/L
Alt. 3	Source Water SUVA \leq 2.0 L/mg-m
Alt. 4	Treated Water SUVA \leq 2.0 L/mg-m
Alt. 5	Treated Water Alkalinity $<$ 60 mg/L (for softening systems only)
Alt. 6	THM & HAA RAA's \leq 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 \leq 1/2 MCL

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

Water Quality Data Table(s) Johnston County EAST PWS# 40-51-018

Contaminant	Units	MCLG	MCL	Your Water	Range Low High	Sample Date	Violation (Yes / No)	Likely Source of Contamination
Disinfectants & Disinfection By-Products								
Total Haloacetic Acids (Haa5)	ppb	N/A	60	18 (RAA)	0.0- 26.7	2012	No	Byproduct of drinking water chlorination
Total Trihalomethanes (TTHMs)	ppb	N/A	80	51 (RAA)	6 - 109	2012	No	Byproduct of drinking water chlorination
Chlorine	ppm	MRDLG=4	MRDL=4	1.12 (Average)	0.30 – 2.84	2012	No	Water additive used to control microbes
Inorganic Contaminants								
Fluoride	ppm	4	4	0.42	N/A	April 2012	No	Erosion of natural deposits; Water additive which promote strong teeth; discharge from fertilizer and aluminum factories
<p>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.</p>								

Turbidity* Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.284 NTU	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100 %	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.

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	# of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (90 th percentile)	ppm	April 2012	0.129	1	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (90 th percentile)	ppb	April 2012	8	3	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

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.

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	1.80	1.64 – 2.29	N/A	TT	Naturally present in the environment	Step 1

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			
Atrazine (ppb)	July 2012	N	0.13	ND	0.13	3	3	Runoff from herbicide used on row crops

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: Secondary Contaminants, required by the NC Public Water Supply Section, are substances that affect the taste, odor, and/or color of drinking water. These aesthetic contaminants 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 2012	66.4	N/A	N/A
pH	April 2012	7.2	N/A	6.5 to 8.5

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.

