



# County of Brunswick Water Quality Report–2012

## IMPORTANT PHONE NUMBERS

**BILLING QUESTIONS**  
[\(910\) 253-2655](tel:(910)253-2655)

## WATER EMERGENCIES

8:00 a.m. to 4:30 p.m.  
[\(910\) 253-2657](tel:(910)253-2657)

## AFTER HOURS

4:30 p.m. to 8:00 a.m.  
Northwest WTP  
[\(910\) 371-3490](tel:(910)371-3490)

211 WTP  
[\(910\) 454-0512](tel:(910)454-0512)

EPA SAFE DRINKING WATER HOTLINE  
1-800-426-4791

## SOURCE WATER ASSESSMENT

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## WATER QUALITY

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## IMPORTANT CONSERVATION TIPS

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## FROM THE DIRECTOR

The Public Utilities Maintenance Department would like to let you know that we are here to serve you with any of your water needs 24 hours a day. If you plan to dig and are not sure who to call, we can help. We have all the numbers you will need to contact other utilities for locates. If you have any water quality issues or feel that your meter is not working, please contact our office at (910) 253-2657; we will be glad to work with you to solve any water issues. If you have questions about your backflow device or need it inspected, we can help -- please call (910) 253-2683.

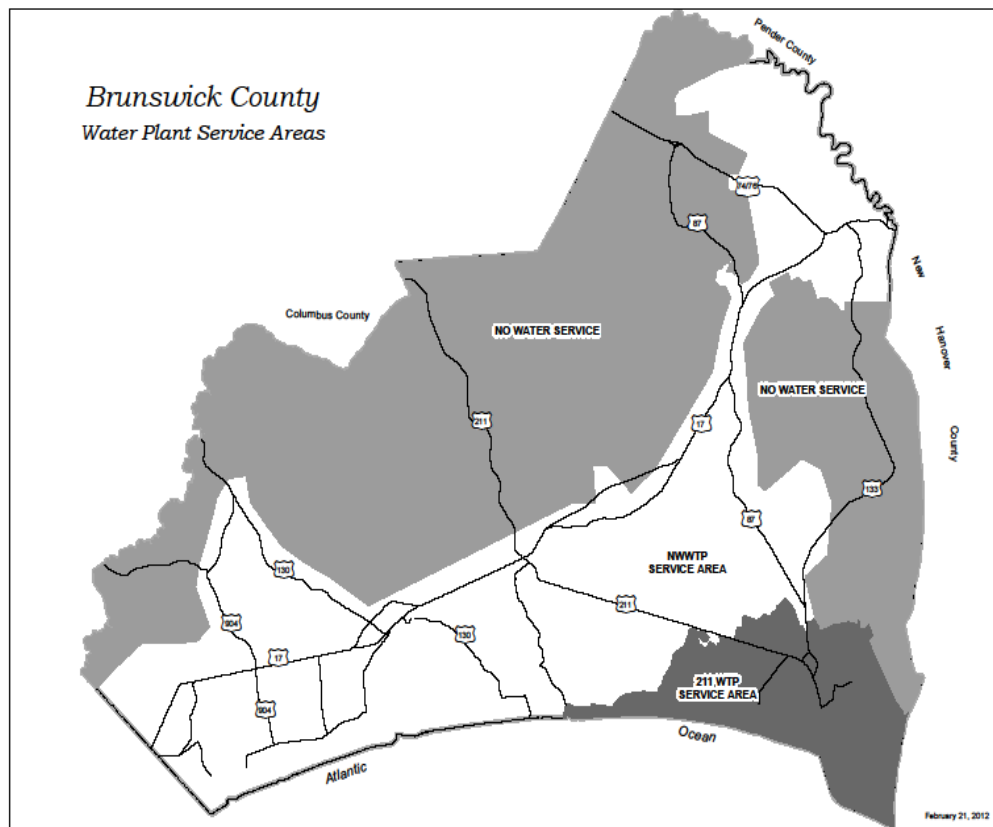
### Interesting Facts:

Total Brunswick County Water System Capacity: 30 MGD

The Greatest One Day System Demand of the Year for 2012 was 25.01 MGD, on July 7, 2012

## Find Your Service Area

This year we have three data tables on pages 3 & 4, each of which represents the water quality coming from our two water treatment plants and the distribution system. Citizens in Northwest and Leland and all the way down HWY 17 to Carolina Shores receive water from the Northwest WTP (NWWTP) and citizens in the area of HWY 211 near the town of St. James, Southport, and Oak Island primarily receive water from the 211 WTP.



## No Violations

Brunswick County Public Utilities did not violate any drinking water standards for 2012.

## Sources of Drinking Water

**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. 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.

### The NC Source Water Assessment Program (SWAP)

The North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate, or Lower.

The relative susceptibility rating of each source for Brunswick County 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 as of March 2009 are summarized in the table below.

#### Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating
Cape Fear River	Moderate
Well # 1,2,3,5,6a,8,11,12,12a,15,16,17,18, & 19	Moderate

The complete SWAP Assessment Report for the Brunswick County Water System may be viewed on the Web by typing the address below into your browser. [http://swap.deh.enr.state.nc.us/swap\\_app/pdfreports/0410045\\_2\\_19\\_2010\\_17\\_22.PDF](http://swap.deh.enr.state.nc.us/swap_app/pdfreports/0410045_2_19_2010_17_22.PDF)

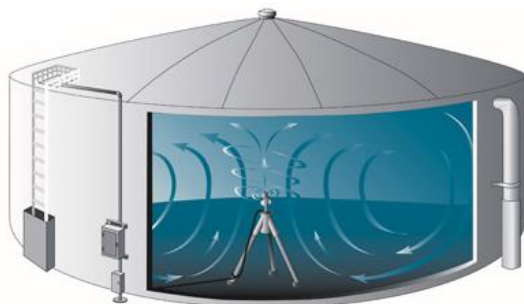
To obtain a printed copy of this report please contact the Source Water Assessment Staff by phone at (919) 707-9098. It is important to understand that a susceptibility rating of “higher” does not imply poor water quality, only the systems’ potential to become contaminated by PCSs in the assessment area.

## Water Treatment Division

Our water comes from two sources, the Cape Fear River, which is pumped to us by the Lower Cape Fear Water and Sewer Authority, and groundwater from the Castle Hayne Aquifer. The Northwest Water Treatment Plant in the Leland area treats the water from the Cape Fear River and our second source is utilized by the 211 Water Treatment Plant in Southport. Fourteen (14) different groundwater wells are tapped into the Castle Hayne Aquifer approximately 175 ft. below the ground’s surface.

### Northwest Water Treatment Plant

Northwest WTP staff had another great year, this time without all the construction. Congratulations to Michael Cartrette for attaining his C-Surface Water Treatment Certification. This year two PAX water treatment mixers were added to the existing 4 million gallon clearwell. These mixers are designed to aid in mixing the water within the tank to help prevent stratification, stagnant water zones, and to reduce the potential for disinfection byproduct formation.



A PAX mixer in action

### 211 Water Treatment Plant

The 211 Water Treatment Plant staff continues to provide quality water service to the areas of Southport, Oak Island, and St. James Plantation.

The 211 WTP is currently under design for a sludge removal system. Lime sludge is generated by the treatment process when lowering the hardness and iron levels in the raw water.



**Terms & abbreviations used in the table below:**

- **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.
- **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.
- **Action Level (AL):** the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.
- **N/A:** not applicable • **nd:** not detectable at testing limit • **ppb:** parts per billion or micrograms per liter • **ppm:** parts per million or milligrams per liter • **pCi/l:** Pico-curies per liter (a measure of radiation) • **MGD:** million gallons a day

<b>Water Quality Results For 2012</b>						
Listed below are the results of water quality sampling performed from January 1, 2012, to December 31, 2012.						
Questions and Comments: Contact Glenn Walker, Water Treatment Plant Superintendent, 910-371-3490 or gwalker@brunswickco.net						
<b>Northwest Water Treatment Plant Analysis</b>						
<b>REGULATED ORGANIC CHEMICALS</b>	<b>EPA's MCL</b>	<b>EPA's MCLG</b>	<b>Your Water Amount Detected</b>	<b>Range Low High</b>	<b>Violation Y/N</b>	<b>Source of Contaminant</b>
Turbidity	Treatment Technique Limit of 1.0ntu	N/A	Average 0.054ntu	Percent of samples ≤ 0.3ntu	N	Soil Runoff
			Maximum 0.374ntu	99.99%		
Raw Water TOC	Treatment Technique 45% Removal Efficiency	N/A	Average 6.1 ppm	4.9 7.7	N	Naturally Present in the Environment
Finish Water TOC		N/A	Average 3.0 ppm	2.6 3.4		
Total Organic Carbon (TOC)		N/A	Removal Efficiency Average 50.1 %	34% - 66%		
<b>REGULATED INORGANIC CHEMICALS</b>			<b>Your Water Amount Detected</b>	<b>Range Low High</b>	<b>Violation Y/N</b>	
Chlorite	1.0ppm	0.8ppm	Average 0.72ppm	0.40 0.99	N	By-product of Disinfection
Chlorine Dioxide	0.8ppm	0.8ppm	Average < 0.1ppm	0.0 0.34	N	Water Additive Used to Control Microbes
Fluoride	4ppm	4ppm	0.72ppm	0.14 1.23	N	Water Additive which Promotes Strong Teeth
Sulfate	250ppm	N/A	15.1	N/A	N	Part of the Treatment Process, Erosion of Natural Deposits
Orthophosphate	17ppm	N/A	Average 1.42ppm	1.1 2.2	N	Water Additive Used to Control Corrosion
Total Chlorine	4ppm	4ppm	Average Minimum 2.66ppm	1.4 3.3	N	
Monochloramine Disinfectant Residual	4ppm	4ppm	3.03ppm	2.64 3.31	N	Water Additive Used to Control Microbes
<b>UNREGULATED SUBSTANCES</b>			<b>Your Water Amount Detected</b>	<b>Range Low High</b>	<b>Violation Y/N</b>	
Hardness	Non Regulated	N/A	30.4	20 41	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	0.006	0 0.07	N	Part of the Treatment Process, Erosion of Natural Deposits
Manganese	Non Regulated	N/A	0.004	0 0.02	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0.11	0.02 0.24		Water Additive Used to Control Microbes
Sodium	Non Regulated	N/A	<b>30.1ppm</b>	N/A	N/A	Part of the Treatment Process, Erosion of Natural Deposits
<b>CRYPTOSPORIDIUM</b>	<b>EPA's MCL</b>		<b>Brunswick County Amount Detected</b>	<b>Range Low High</b>	<b>Violation Y/N</b>	
Cape Fear River 2008	N/A		0.210 oocyst	0.0 0.210	N	Naturally Present in the Environment Sampling Study Ended 12/2008

**Northwest WTP monitored for Cryptosporidium** (a protozoan) monthly and detected oocysts (egg-like structure) in two samples out of twelve in the Cape Fear River raw water supply. Cryptosporidium is a microbial parasite which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monitoring of the source water indicates the presence of these organisms. Current test methods do not enable us to determine if the organisms are dead or if they are capable of causing disease. The Northwest WTP takes precautions to kill and remove Cryptosporidium oocysts by using Chlorine Dioxide as a pre-oxidant disinfectant in our raw water supply line and then again applying Chlorine Dioxide just after filtration. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immunocompromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. Immunocompromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease, and it may be spread through means other than drinking water.

## HWY 211 Groundwater Treatment Plant Analysis

Questions and Comments: Contact Jeremy Sexton, Water Treatment Plant Superintendent, 910-454-0512 or jsexton@brunscoco.net

	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range High	Low	Violation Y/N	Source of Contaminant
<b>UNREGULATED SUBSTANCES</b>							
Turbidity	Non Regulated	N/A	<b>Average 0.399 ntu</b>	0.02	3.1	N	Part of the Treatment Process, Erosion of Natural Deposits
pH	Non Regulated	N/A	-----	6.7	8.4	N	Part of the Treatment Process
CO2	Non Regulated	N/A	6.2	3	12	N	Part of the Treatment Process
Alkalinity	Non Regulated	N/A	45.6	25	200	N	Part of the Treatment Process, Erosion of Natural Deposits
Hardness	Non Regulated	N/A	76.4	51	240	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	0.008	0	0.2	N	Part of the Treatment Process, Erosion of Natural Deposits
Chloride	Non Regulated	N/A	22.3	18	31	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0.09	0	0.49	N	Water Additive Used to Control Microbes
<b>REGULATED INORGANIC CHEMICALS</b>			<b>Brunswick County Amount Detected</b>	<b>Range Low</b>	<b>High</b>	<b>Violation Y/N</b>	<b>Source of Contaminant</b>
Flouride	4ppm	4ppm	0.79	0	1.3	N	Water Additive Used to Promote Strong Teeth
Orthophosphate	17ppm	N/A	1.63	0.4	3	N	Water Additive Used to Control Corrosion
Total Chlorine	4ppm	4ppm	3.2	2	4	N	Water Additive Used to Control Microbes
Monochloroime	4ppm	4ppm	3.11	2.2	3.7	N	Water Additive Used to Control Microbes

## Distribution System Analysis

LEAD AND COPPER	Action Level (AL)	MCLG	Brunswick County Amount Detected	# of Samples above the AL	Exceedence of the Action Level? Y/N	
Copper 90th percentile 6/1/11 - 9/30/11	1.3ppm	1.3ppm	<b>90% of samples are ≤0.95ppm</b>	0	N	Corrosion of Household Plumbing
Lead 90th percentile 6/1/11 - 9/30/11	0.015ppm	0ppm	<b>90% of samples are ≤0.003ppm</b>	1	N	Corrosion of Household Plumbing
ORGANIC CHEMICALS	EPA's MCL		Brunswick County Amount Detected	Range Low	High	Violation Y/N
Total Trihalomethanes	80ppb	N/A	<b>Average 20.2ppb</b>	1.0	52.0	N
Total Haloacetic Acids	60ppb	N/A	<b>Average 15.5ppb</b>	2.0	44.0	N
Nitrate	10ppm	10ppm	<b>1.46</b>	N/A		N
<b>PESTICIDES, VOLATILE, &amp; SYNTHETIC ORGANIC CHEMICALS</b>		<b>There Were No Regulated Pesticides, Volatile or Synthetic Organic Chemicals Detected in the Distribution System for the 2012 Sample Period</b>				

### The EPA and Brunswick County Want You to Know About Potential Household Lead Contamination

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 building materials and components associated with service lines and home plumbing. Brunswick 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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>.

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



# Brunswick County Water Quality Report 2012 Continued:

## Customer Input

Our Utility Board meets on the second Monday of each quarter at 5:30 p.m. in the Parks & Recreation/Mental Health Building at the Government Complex in Bolivia. Please feel free to participate in these meetings.

## Water Quality in the Home

Remove and flush faucet aerators regularly. This helps to keep debris such as pipe solder and sediment from clogging aerator screens, as well as provide the best quality water possible.

## Ways You Can Conserve Water!

Brunswick County Public Utilities asks that you use water wisely. By following the recommendations outlined below, you may be able to reduce the amount of water you use.

### • IRRIGATE DURING OFF PEAK HOURS

Peak demand for water is between 5:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m. If irrigation is necessary, irrigate during off peak times. This will help to ensure proper water pressure for more efficient irrigating.

### • REDUCE IRRIGATION FREQUENCY

For established lawns, daily irrigation is not required. Irrigate only when there is no moisture in the root zone.

### • WHEN PURCHASING NEW OR REPLACEMENT APPLIANCES AND FAUCETS

Look for the Energy Star compliant symbol and the EPA's Water Wise symbol. These ensure the appliances are both energy and water efficient.

