



ANNUAL WATER QUALITY REPORT

City of Shelby PWS ID # 01-23-010

Water Testing Performed in 2014

The City of Shelby's goal is to deliver an adequate supply of safe drinking water to our customers. On an average day in Shelby, our water system delivers 5.8 million gallons of water to over 21,000 people. Our Mayor, City Council, City Manager, Utilities Director, Assistant Utilities Director, Treatment Operators, Laboratory Operators, Distribution Operators, and Customer Service Representatives all work together to meet and exceed Environmental Protection Agency (EPA) and State standards to provide our customers with reliable and safe tap water.

Our drinking water once again meets and exceeds all state and federal drinking water standards.

Overview

The City of Shelby is proud of the high quality water it produces. This annual water quality report describes the source of our water, lists the results of our tests and contains important information about our water and your health. The City of Shelby will notify you immediately if there is any reason for concern about our water. We are happy to show you how we have surpassed water-quality standards! We are committed to providing you with a safe and dependable supply of water, while keeping you informed of our efforts.

Where Does My Water Come From?

Shelby's water comes from the surface water source of the First Broad River that flows along the west side of town. The City of Shelby is permitted to withdraw up to 18 million gallons per day (MGD) from the First Broad River. The City is capable of utilizing the Broad River for up to 9 MGD for secondary backup water supply.

How It Is Treated

Shelby has one water treatment plant located at 801 West Grover Street. Water is transferred from the river into a series of three on-site reservoirs at the water treatment plant. These reservoirs hold a three-day supply of raw water. The water treatment plant, built in 1953 and upgraded in 1994, has a production capacity of 12 MGD. Once at the plant, raw water is mixed with caustic soda to adjust the pH and aluminum sulfate (alum) to cause dirt particles to coagulate (clump) together. After mixing, the water flows into settling basins where heavy particles are removed through settling. The water then flows through filters, which traps and removes the remaining smaller particles. We add chlorine to prevent bacterial growth and fluoride is added to promote dental health. We then distribute water to our customers through a distribution system which consists of 220 miles of lines and three (3) above ground storage tanks. The staff at the water treatment plant is continually conducting tests at the plant and throughout the City's distribution system to assure high water quality.

The City's water treatment plant welcomes visitors. If you would like a tour of the plant or if you have any questions about this report or the quality of your water, please call the City of Shelby Water Treatment Plant at (704) 484-6885.

Visit us at www.cityofshelby.com



National Primary Drinking Water Regulation Compliance
ISO 14001 Certified



*The City of Shelby also operates electric, sewer and gas systems and is a member of North Carolina One Call.
Know what's below!! For all requests for locating utilities, please call 811 **BEFORE** you dig.*

Water Quality Table Information

The City routinely monitors for over 150 contaminants in your drinking water according to Federal and State laws. The table located on page 2 and 3 shows the contaminants which were detected during January—December 2014. Both regulated and unregulated contaminants are listed and the table below contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health, the amount detected, the likely sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

The presence of contaminants does not necessarily indicate that water poses a health risk. 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 a year old.

For your information, the definitions of MCL and MCLG are listed below:

- Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water.
- Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health.

MCLs are set as close to the MCLGs as feasible by the EPA and the City of Shelby is using the best available treatment technology. MCLGs allow for a margin of safety.

Key to Table		
• AL = Action Level	• MRDLG = Maximum Residual Disinfectant Level Goal	• ppt = parts per trillion, or nanograms per liter
• MCL = Maximum Contaminant Level	• N/A = Not Applicable	• SS = Secondary Standards (non-enforced guidelines)
• MCLG = Maximum Contaminant Level Goal	• NR = Not Regulated	• TT = Treatment Technique
• MFL = Million Fibers Per Liter	• NTU = Nephelometric Turbidity Units	• ppm = parts per million
• mg/L = Milligrams per liter (mg/L)	• ppq = parts per quadrillion, or picograms per liter	• ppb = parts per billions, or micrograms per liter (ug/L)
• MRDL = Maximum Residual Disinfectant Level		

Contaminants					
Microbiological Contaminants					
<u>Contaminant, Units</u>	<u>Our Water</u>	<u>MCLG</u>	<u>MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Total Coliform Bacteria	0	0	One positive monthly sample	Naturally present in the environment.	No
Fecal Coliform or E. Coli (presence or absence)	0	0	0 <i>Note 1</i>	Human and animal fecal waste.	No
<i>Note 1: The MCL is exceeded if a routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E. Coli positive.</i>					

Turbidity (Highest)						
<u>Contaminant—Units</u>	<u>Sample Date</u>	<u>MCL</u>	<u>MCLG</u>	<u>Our Water</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Turbidity, NTU	1/10/14	1.0	N/A	0.831	Soil run-off	No
In January, recorded lowest %	98.9%	<i>Note 2</i>				
<i>Note 2: 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.</i>						

Inorganic Compounds							
<u>Contaminant—Units</u>	<u>Sample Date</u>	<u>MCLG</u>	<u>MCL</u>	<u>Our Water</u>	<u>Range</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Barium, mg/L	1/14/14	2	2	.017	N/A	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	No
Fluoride, mg/L	11/27/14	4	4	1.04	0.32 - 1.04	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories	No

Unregulated Inorganic Contaminants						
<u>Contaminant—Units</u>	<u>Sample Date</u>	<u>MCLG</u>	<u>MCL</u>	<u>Our Water</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Sulfate, mg/L	1/14/14	N/A	250	19.4	Naturally occurring minerals; treatment process.	No
Sodium, mg/L	1/14/14	N/A	N/A	12.1	Naturally occurring minerals; treatment process.	No

Asbestos Contaminant				
<u>Contaminant, Units</u>	<u>Sample Date</u>	<u>MCLG/MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Total Asbestos, MFL	2/5/13	7 / 7	Decay of asbestos cement water mains; erosion of natural deposits	No

Contaminants (continued)

Nitrate/Nitrite Contaminants

<u>Contaminant, Units</u>	<u>Our Water</u>	<u>Range</u>	<u>MCLG/MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Nitrate (as Nitrogen) ppm	0.61	N/A	10 / 10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	No
Nitrite (as Nitrogen) ppm	0	N/A	1 / 1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	No

Disinfection Byproduct Precursors Contaminants

<u>Contaminant, Units</u>	<u>Our Water (RAA)</u>	<u>Range</u>	<u>MCLG</u>	<u>MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Total Organic Carbon, ppm Raw Water	1.49	0.0 - 2.9	N/A	TT	Naturally Present in the Environment	No
Total Organic Carbon, ppm Treated Water	0.43	0.0 - 0.0	<2.0	TT	Naturally Present in the Environment	No

Depending on the Total Organic Carbon (TOC) in our source water, the system MUST have a certain % removal of TOC or must achieve alternative compliance criteria. Our water system uses Alternative Compliance Criteria 2, which means our treated water TOC must be <2.0mg/L. If we fail to meet this limit we are in violation of a treatment technique.

Disinfectants and Disinfection By-products

<u>Contaminant, Units</u>	<u>Our Water (RAA)</u>	<u>Range</u>	<u>MCLG</u>	<u>MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
TTHM, ppb (Total Trihalomethanes)	0.051	0.010 - 0.075	N/A	0.080	By-product of drinking water disinfection.	No
HAAS, ppb (Total Haloacetic Acids)	0.018	0.004 - 0.026	N/A	0.060	By-product of drinking water disinfection.	No
Chlorine (ppm)	0.75	0.24 - 1.85	MRDLG=4	MRDL=4	Water additive used to control microbes.	No

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.

Unregulated Volatile Organic Contaminants

<u>Contaminant, Units</u>	<u>Sample Date</u>	<u>Our Water</u>	<u>Range</u>
Dichloroacetic Acid (mg/L)	7/8/14	0.017	0.003 - 0.017
Trichloroacetic Acid (mg/L)	7/8/14	0.012	0.003 - 0.012
Bromodichloromethane (mg/L)	10/1/14	0.010	0.003 - 0.010
Chloroform (mg/L)	7/8/14	0.062	0.009 - 0.062
Dibromochloromethane (mg/L)	7/8/14	0.001	0.001 - 0.001

Synthetic Organic Chemical (SOC) Contaminants Including Pesticides and Herbicides

<u>Contaminant, Units</u>	<u>Sample Date</u>	<u>Our Water</u>	<u>Range</u>	<u>MCLG</u>	<u>MCL</u>	<u>Likely Source of Contamination</u>	<u>Violation</u>
Atrazine	4/14/11	0.00022	0.00 - 0.00022	0.003	0.003	Run off from herbicide used on row crops.	No

EPA Unregulated Contaminant Monitoring Rule 3

<u>Contaminant, Units</u>	<u>Sample Date</u>	<u>Our Water</u>	<u>Range</u>	<u>Secondary MCL</u>
Hexavalent Chromium	8/7/14	0.00009	0.00004 - 0.0009	N/A
Vanadium	8/7/14	0.0004	0.003 - 0.0004	N/A
Strontium	8/7/14	0.033	0.021 - 0.033	N/A
Chlorate	11/4/14	0.037	0.023 - 0.037	N/A

Lead and Copper Contaminants

<u>Contaminant, Units</u>	<u>Sample Date</u>	<u>Our Water</u>	<u># of Sites above AL</u>	<u>MCL / MCLG</u>	<u>Likely Source of Contamination</u>
Copper, mg/L 90th percentile	8/28/13	0.140	0	AL = 1.3 / 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
Lead, mg/L 90th Percentile	8/28/13	0.0016	0	AL = 0.015 / 0	Corrosion of household plumbing systems; erosion of natural deposits; leaching of wood preservatives.

Source Water Assessment Program (SWAP) Results

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 Containment 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 the City of Shelby was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerable 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.

2014 Susceptibility of Sources to Potential Contaminant Sources (PCSs)	
SOURCE NAME:	SUSCEPTIBILITY RATING:
First Broad River	Moderate
Broad River	Moderate

The complete SWAP Assessment Report for the City of Shelby may be viewed on the Web at <http://www.deh.enr.state.nc.us/pws/swap>. To obtain a printed copy of this report, please mail a written request to: Source Water Assessment Program—Program Request, 1634 Mail Service Center, Raleigh, NC 27699-1634. Or email a request to: swap@ncmail.net. Please indicate your system name, PWSID, and provide your name, mailing address and phone number. If you have any questions about the SWAP report, please contact the Source Water Assessment staff by phone at (919) 715-2633. 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.

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency’s Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791.

Additional Lead Information

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 Shelby is responsible for providing high quality drinking water, but cannot control the variety of materials used in home 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 two 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>.

Required Additional Health Information

To insure that tap water is safe to drink, EPA prescribes limits on the manner of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water. 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 the 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).

The sources of drinking water (both tap water and bottled water) include rivers, streams, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and 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:

- (A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (B) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban runoff, industrial or domestic.
- (C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- (D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban runoff and septic systems.
- (E) Radioactive contaminants, which can be naturally occurring or be the result of certain gas production and mining activities.

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 a 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 are available from the Safe Drinking Water Hotline (800-426-4791).