



ANNUAL WATER QUALITY REPORT

City of Shelby PWS ID # 01-23-010

Water Testing Performed in 2016

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 5.9 million gallons of water to over 21,000 people. Our Mayor, City Council, City Manager, Water Resources Director, Plant Supervisor, 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 four (4) 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 <http://www.cityofshelby.com/departments/utilities/water-resources/water-treatment-plant>



National Primary Drinking Water Regulation Compliance
ISO 14001 Certified



The City of Shelby also operates electric, gas, and sewer systems and is a member of North Carolina 811.
*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 2016. 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 | | | | | |
|---|---|--|--|--|--|
| <ul style="list-style-type: none"> • AL = Action Level • MCL = Maximum Contaminant Level • MCLG = Maximum Contaminant Level Goal • MFL = Million Fibers Per Liter • mg/L = Milligrams per liter (mg/L) • MRDL = Maximum Residual Disinfectant Level | <ul style="list-style-type: none"> • MRDLG = Maximum Residual Disinfectant Level Goal • N/A = Not Applicable • NR = Not Regulated • NTU = Nephelometric Turbidity Units • ppb = parts per billions, or micrograms per liter (ug/L) | <ul style="list-style-type: none"> • ppm = parts per million, or milligrams per liter (mg/L) • ppq = parts per quadrillion, or picograms per liter • ppt = parts per trillion, or nanograms per liter • SS = Secondary Standards (non-enforced guidelines) • TT = Treatment Technique | | | |

| Contaminants | | | | | | | |
|---|--|-----------------------------|---|--|---------------------------------------|------------------------|---|
| Microbiological Contaminants | | | | | | | |
| Contaminant (units) | <u>MCL Violation</u> Y/N | Your Water | MCLG | MCL | <u>Likely Source of Contamination</u> | | |
| Total Coliform Bacteria (presence or absence) | N | 0 | 0 | N/A* | Naturally present in the environment | | |
| Fecal Coliform or E. Coli (presence or absence) | N | 0 | 0 | Note: If either an original routine sample and/or its repeat samples are <i>E. coli</i> positive, a Tier 1 violation exists. | | Human and animal waste | |
| <i>*If a system collecting fewer than 40 samples per month has two or more positive samples in one month, an assessment is required.</i> | | | | | | | |
| Turbidity* | | | | | | | |
| Contaminant (units) | <u>Treatment Technique (TT)</u> Violation Y/N | Your Water | Treatment Technique (TT) | Violation If: | <u>Likely Source of Contamination</u> | | |
| Turbidity (NTU) - Highest single turbidity measurement | N | 0.10 NTU | Turbidity > 1 NTU | | Soil run-off | | |
| Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits | N | 99.5% | Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU | | | | |
| <i>*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 | | | | | | | |
| Contaminant (units) | Sample Date | <u>MCL Violation</u> Y/N | Your Water | <u>Range</u> Low—High | MCLG | MCL | <u>Likely Source of Contamination</u> |
| Fluoride (mg/L) | 5/13/2016 | N | 1.06 | 0.00—1.06 | 4 | 4 | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories |

Contaminants (continued)

Unregulated Inorganic Contaminants

| <u>Contaminant (units)</u> | <u>Sample Date</u> | <u>Your Water</u> | <u>Range</u> | | <u>Secondary</u> |
|----------------------------|--------------------|-------------------|--------------|-------------|------------------|
| | | | <u>Low</u> | <u>High</u> | <u>MCL</u> |
| Sulfate (mg/L) | 1/11/2016 | 20.0 | N/A | | 250 |
| Sodium (mg/L) | 1/11/2016 | 14.2 | N/A | | N/A |

Disinfection Byproduct Precursors Contaminants

| <u>Contaminant (units)</u> | <u>TT Violation Y/N</u> | <u>Your Water</u> | <u>Range Monthly</u> | | <u>MCLG</u> | <u>TT</u> | <u>Likely Source of Contamination</u> | <u>Compliance Method (Step 1 or ACC#)</u> |
|--|-------------------------|----------------------------|----------------------|------------|-------------|-----------|---------------------------------------|---|
| | | <u>(RAA Removal Ratio)</u> | <u>Removal Ratio</u> | <u>Low</u> | | | | |
| Total Organic Carbon (removal ratio) (TOC)-TREATED | N | 0.34 | 0.0 | 1.0 | <2.0 | TT | Naturally present in the environment | ACC2 |

Disinfectants and Disinfection Byproducts Contaminants

| <u>Contaminant (units)</u> | <u>MCL/MRDL Violation Y/N</u> | <u>Your Water</u> | <u>Range</u> | | <u>MCLG</u> | <u>MCL</u> | <u>Likely Source of Contamination</u> |
|---|-------------------------------|-------------------|--------------|-------|-------------|------------|---|
| | <u>LRAA</u> | <u>Low</u> | <u>High</u> | | | | |
| TTHM (mg/L) [Total Trihalomethanes] | | | | | N/A | 0.080 | By-product of drinking water chlorination |
| B01-040 | N | 0.061 | 0.032 | 0.057 | | | |
| B02-055 | N | 0.033 | 0.013 | 0.042 | | | |
| B03-200 | N | 0.030 | 0.011 | 0.043 | | | |
| B04-023 | N | 0.058 | 0.041 | 0.061 | | | |
| HAA5 (mg/L) [Total Haloacetic Acids] | | | | | N/A | 0.060 | By-product of drinking water chlorination |
| B01-040 | N | 0.020 | 0.011 | 0.029 | | | |
| B02-055 | N | 0.020 | 0.009 | 0.034 | | | |
| B03-200 | N | 0.020 | 0.009 | 0.033 | | | |
| B04-023 | N | 0.019 | 0.005 | 0.022 | | | |
| Chlorine (mg/L) | N | 0.94 | 0.20 | 1.85 | MRDL G =4 | MRDL =4 | Water additive used to control microbes |

Volatile Organic Chemical (VOC) Contaminates

| <u>Contaminant (units)</u> | <u>Sample Date</u> | <u>MCL Violation Y/N</u> | <u>Your Water</u> | <u>Range</u> | | <u>MCLG</u> | <u>MCL</u> | <u>Likely Source of Contamination</u> |
|----------------------------|--------------------|--------------------------|-------------------|--------------|-------------|-------------|------------|--|
| | | | | <u>Low</u> | <u>High</u> | | | |
| Dichloromethane (mg/L) | 1/11/2016 | N | 0.0010 | 0.00 | 0.0010 | 0 | 5 | Discharge from pharmaceutical and chemical factories |

Unregulated Volatile Organic Contaminates

| <u>Contaminant (units)</u> | <u>Sample Date</u> | <u>Your Water</u> | <u>Range</u> | <u>Secondary MCL</u> |
|-----------------------------|--------------------|-------------------|---------------|----------------------|
| Dichloroacetic Acid (mg/L) | 7/12/2016 | 0.021 | 0.004 - 0.021 | N/A |
| Trichloroacetic Acid (mg/L) | 7/12/2016 | 0.012 | 0.004 - 0.012 | N/A |
| Bromodichloromethane (mg/L) | 7/12/2016 | 0.007 | 0.002 - 0.007 | N/A |
| Chloroform (mg/L) | 7/12/2016 | 0.002 | 0.000 - 0.002 | N/A |
| Dibromochloromethane (mg/L) | 7/12/2016 | 0.053 | 0.007 - 0.053 | N/A |

Lead and Copper Contaminants

| <u>Contaminant (units)</u> | <u>Sample Date</u> | <u>Your Water</u> | <u># of Sites Found Above the AL</u> | <u>MCLG</u> | <u>MCL</u> | <u>Likely Source of Contamination</u> |
|------------------------------------|--------------------|-------------------|--------------------------------------|-------------|------------|---|
| Copper (mg/L) (90th percentile) | 7/25/2016 | 0.095 | 0 | 1.3 | AL=1.3 | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. |
| Lead (mg/L) (90th Percentile) | 7/25/2016 | 0.0016 | 0 | 0 | AL=0.0015 | Corrosion of household plumbing systems; erosion of natural deposits; leaching of wood preservatives. |

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 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.

| 2016 Susceptibility of Sources to Potential Contaminant Sources (PCSs) | |
|--|------------------------|
| SOURCE NAME: | SUSCEPTIBILITY RATING: |
| First Broad River | Moderate |
| Broad River | Higher |

The complete SWAP Assessment Report for the City of Shelby may be viewed and printed on the Web at <http://www.ncwater.org/?page=600>. If you have questions about the program or the report, please contact SWAP staff at (919) 707- 9098 or e-mail the program at swap@ncdenr.gov. 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. 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.

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.

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.

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.

More information about contaminants, lead, and other potential health effects can be obtained by visiting the EPA’s Safe Drinking Water Hotline webpage at <https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline>, and visiting their Frequently Asked Questions webpage at <https://safewater.zendesk.com/hc/en-us?faq=true>.