

# **Annual Water Quality Report 2017 (Water testing performed in 2016)**

## **City of Greenbrier Water & Wastewater Department**

202 West College Street

P. O. Box 466

Greenbrier, TN. 37073

PWSID# 0000271

## **We've Come a Long Way**

Once again, we proudly present our annual water quality report covering all testing performed between January 1 and December 31, 2016. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day - at any hour - to deliver the highest quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

For more information about this report, or for any questions relating to your drinking water, please call William T. Maitland at 615-643-4531.

## **How can I get involved?**

Our Board of Mayor and Alderman meets on the first Monday night of each month at 7:00 P.M. at City Hall, which is located at 790 West College Street. Please feel free to participate in these meetings.

## **Important Health Information**

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.

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 may be particularly at risk for infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) has guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

## **Substances that could be in Water**

In order to ensure that tap water is safe to drink, U.S. EPA and the Tennessee Department of Environment and Conservation prescribe regulations which limit the number of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these 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, 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, in some cases, radioactive material; and can pick up substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater 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 stormwater 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 stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

### **Where Does My Water Come From?**

Your water, which is surface water, comes from the Red River. Our goal is to protect our water from contaminants and we are working with the State to determine the vulnerability of our water supply to contamination. The Tennessee Department of Environment and Conservation (TDEC) has prepared a Source Water Assessment Program (SWAP) Report for the water sources serving this water system. The SWAP report assesses the susceptibility of untreated water sources to potential contamination. The Springfield Water System is rated as reasonably susceptible to potential contamination. To ensure safe drinking water, all public water systems treat and routinely test their water.

### **Source Water Assessment**

A Source Water Assessment Plan (SWAP) is now available at Springfield Water Treatment Plant. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reaches our source water. It also includes an inventory of potential sources of contamination within the delineated area, and a determination of the water supply's susceptibility to contamination by the identified potential sources.

An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scorings and the overall TDEC report to the EPA can viewed online at [www.tn.gov/environment/article/wr-wq-source-water-assessment](http://www.tn.gov/environment/article/wr-wq-source-water-assessment) or you can contact the City of Springfield Water and Wastewater Department at 615-382-1600 or call TDEC EAC at 1-888-891-8332 (1-888-891-TDEC).

### **Lead in Home Plumbing**

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. We are 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 [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

### **Fact or Fiction (2017)**

A person can live about a month without food, but only about a week without water. (Fact: Dehydration symptoms generally become noticeable after only 2% of one's normal water volume has been lost.)

A person must consume a half-gallon of water daily to live healthily. (Fact: A person should drink at least 64 ounces, or 8 cups, of water each day.)

Methods for the treatment and filtration of drinking water were developed only recently. (Fiction: Ancient Egyptians treated water by siphoning water out of the top of huge jars after allowing the muddy water from the Nile River to settle. And, Hippocrates, known as the father of medicine, directed people in Greece to boil and strain water before drinking it.)

There is the same amount of water on Earth now as there was when the Earth was formed. (Fact: The water that comes from your faucet could contain molecules that dinosaurs drank!)

A typical shower with a non-low-flow showerhead uses more water than a bath. (Fiction: A typical shower uses less than a bath.)

About half the water treated by public water systems is used for drinking and cooking. (Fiction: Actually, the amount used for cooking and drinking is less than 1% of the total water produced!)

One gallon of gasoline poured into a lake can contaminate approximately 750,000 gallons of water. (Fact)

### **Fats, Oil, & Grease (FOG)**

You may not be aware of it, but every time you pour fat, oil, or grease (FOG) down your sink (e.g., bacon grease), you are contributing to a costly problem in the sewer collection system. FOG coats the inner walls of the plumbing in your house as well as the walls of underground piping throughout the community. Over time, these greasy materials build up and form blockages in pipes, which can lead to contaminate local waters, including drinking water. Exposure to untreated wastewater is a public health hazard. FOG discharged into septic systems and drain fields can also cause malfunctions, resulting in more frequent tank pump-outs and other expenses.

Communities spend billions of dollars every year to unplug or replace grease-blocked pipes, repair pump stations, and clean up costly and illegal wastewater spills. Here are some tips that you and your family can follow to help maintain a well-run system now and in the future:

#### **NEVER:**

Pour fats, oil, or grease down the house or storm drains.

Dispose of food scraps by flushing them.

Use the toilet as a waste basket.

#### **ALWAYS:**

Scrape and collect fat, oil, and grease into a waste container such as an empty coffee can, and dispose of it with your garbage.

Place food scraps in waste containers or garbage bags for disposal with solid waste.

Place a wastebasket in each bathroom for solid wastes like disposable diapers, creams and lotions, and personal hygiene products including non-biodegradable wipes.

### **Tap vs. Bottled**

Thanks, in part to aggressive marketing; the bottled water industry has successfully convinced many people that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25 percent of bottled water is actually just bottled tap water (40 percent according to government estimates).

The Food and Drug Administration is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about 70 percent of all bottled water sold in the United States.

People spend 10,000 times more per gallon for bottled water than they do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to \$1,400

annually. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their Web site at [www.nrdc.org/water/drinking/bw/exesum.asp](http://www.nrdc.org/water/drinking/bw/exesum.asp).

### **What's a Cross-Connection?**

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (back siphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, you can call the Safe Drinking Water Hotline at (800)426-4791 or call the city's water technician at 615-634-4531.

### **Violations**

#### **City of Greenbrier – Testing Violation**

In 2016, the City of Greenbrier had six water sample that tested positive for total coliform. The City of Greenbrier repeated the test at the locations. The second test results were negative. According to regulations of the Total Coliform Rule (TCR), the water system was required to collect and submit 3 repeat bacteriological sample results and report the measured disinfectant residuals when a positive sample occurs.

### **Test Results**

Our water is monitored for many different kinds of contaminants on a very strict sampling schedule. The information below represents only those substances that were detected; our goal is to keep all detects below their respective maximum allowed levels.

The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

<b>Regulated Substances</b>							
<b>City of Springfield/City of Greenbrier Water &amp; Wastewater Department</b>							
<b>Substance (Unit of Measure)</b>	<b>Year Sampled</b>	<b>MCL [MRDL]</b>	<b>MCLG[M RDLG]</b>	<b>Amount Detected</b>	<b>Range Low-High</b>	<b>Violation</b>	<b>Typical Source</b>
Atrazine (ppb)	2016	3	3	0.7	BDL – 1.1	No	Runoff from herbicide used on row crops
Chlorine (ppm)	2016	[4]	[4]	3.3	1.3 - 3.3	No	Water additive used to control microbes
Fluoride (ppm)	20156	4	4	.70	0.09 - 1.18	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] Stage 2(ppb)	2016	60	N/A	51	9-94	No	By-product of drinking water disinfection
Nitrate (ppm)	2016	10	10	6.8	4.0 – 6.8	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] – Stage 2 (ppb)	2016	80	N/A	46	11-88	No	By-product of drinking water disinfection
Total Coliform Bacteria [RTCR-After April 2016] (positive samples)	2016	TT	N/A	0	N/A	No	Naturally present in the environment
Total Organic Carbon (% removal)	2016	TT	N/A	.35	.20-.35	No	Naturally present in the environment
Turbidity (NTU)	2016	TT	N/A	.17	.02-.17	No	Soil runoff

Turbidity (Lowest Monthly percent of samples meeting limit)	2016	TT=95% of samples <0.3 NTU	N/A	100%	N/A	No	Soil runoff
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**Tap water samples were collected from sample sites throughout the community**

**City of Greenbrier Water and Wastewater Department**

Copper (ppm)	2015	1.3	1.3	0.082	0/20	No	Corrosion of household plumbing systems; Erosion of natural deposits;
Lead (ppm)	2015	15	0	.0005	0/20	No	Corrosion of household plumbing systems; Erosion of natural deposits

**Unregulated Substances**

**City of Springfield Water & Wastewater Department**

<b>Substance (Unit of Measure)</b>	<b>Year Sample</b>	<b>Amount Detected</b>	<b>Range Low-High</b>	<b>Typical Source</b>
Bromodichloro- methane (ppm)	2016	2.9	NA-N/A	N/A
Chloroform (ppm)	2016	2.7	N/A-N/A	N/A
Sodium (ppm)	2016	3.5	N/A-N/A	N/A
Chlorodibromo- methane (ppm)	2016	.07	N/A-N/A	N/A

Unregulated contaminants are those for which the 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. For additional information call the Safe Drinking Water Hotline at (800)426-4791.

### **Total Coliform Bacteria Footnote for City of Greenbrier Water & Wastewater Department**

- During the past year, there have been numerous tests for over 80 contaminants that may be present in drinking water. In addition, there were 133 compliance samples tested in 2016 for coliform bacteria with six testing positive. Upon retest, sample was negative.

### **Haloacetic Acids [HAA] Footnote for the City of Greenbrier Water & Wastewater Department**

- Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased of getting cancer.

### **Total Trihalomethanes [TTHMs] Footnote for the City of Greenbrier Water & Wastewater Department**

- During the past year, there were numerous tests for TTHM. None of the test results were above the safe limit of .0800. The average test result was .04128.

### **Turbidity Footnote for City of Springfield Water & Wastewater Department**

- Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

## **Table Definitions**

ppm (parts per million): One-part substance per million parts water (or milligrams per liter).

ppb (parts per billion): One-part substance per billion parts water (or micrograms per liter).

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

BDL (Below Detection Limit): Indicates that the substance was not found by laboratory analysis.

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 Disinfectant 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 Disinfectant 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.

NA: Not applicable

ND: (Not detected): Indicates that the substance was not found by laboratory analysis.

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected Values for TTHMs and HAAs are reported as LRAAs.