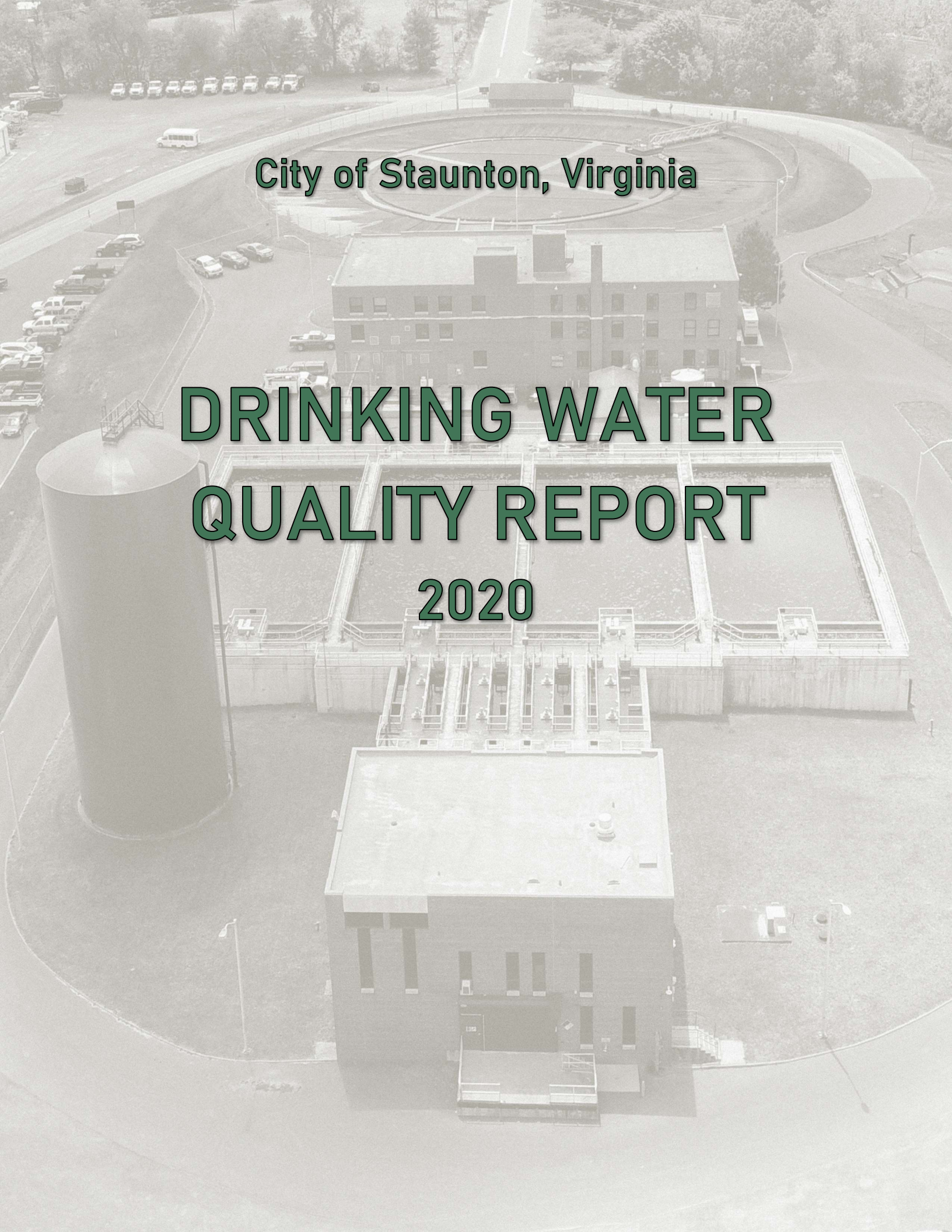


City of Staunton, Virginia

DRINKING WATER QUALITY REPORT

2020

FIRST THINGS FIRST

If you read nothing else in this report, you need to read this: Staunton's drinking water is extremely clean, far exceeding all state and federal quality standards.

FROM THE DIRECTOR

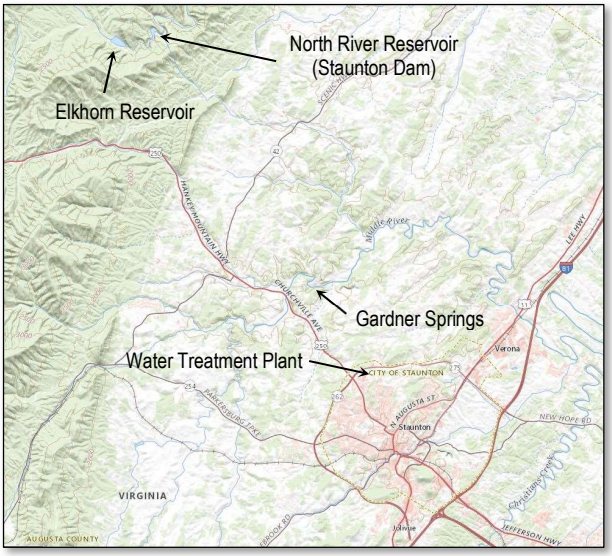
I am pleased to present you with your 2020 Drinking Water Quality Report. This report, which is required by the Safe Drinking Water Act, is also known as the Consumer Confidence Report. I have no doubt that the contents of this report will make you confident in the quality of your drinking water, but my hope is that it will leave you feeling something else as well: proud. Proud of our high-quality water sources. Proud of the fact that our drinking water far exceeds every regulatory standard. But most of all, proud of the men and women who work at our Water Treatment Plant. Twenty-four hours a day, seven days a week, they are checking on each piece of equipment, conducting laboratory tests, and pursuing additional training and certifications. In 2020, their efforts were recognized with the Virginia Department of Health's Gold Award for Excellence in Treatment Plant Operations. It is the seventeenth consecutive year their efforts have been awarded, but the first Gold Award, the highest possible achievement.

There is no higher compliment to any water system than be invisible; that it be taken for granted that every sink, every bathtub, and every drinking fountain is an almost endless source of clean water. But I hope today, as you read this report, you'll spend a little time thinking, and feeling rightfully proud, about your tap water.

Jeffrey M. Johnston, P.E.
Director of Public Works

WHERE DOES YOUR WATER COME FROM?

The City of Staunton's highly-skilled and dedicated staff uses state-of-the-art equipment to provide the best possible drinking water. But the real secret to our amazing drinking water is the remarkable quality of our water sources.



Elkhorn Reservoir

North River Reservoir (Staunton Dam)

The first is a pair of reservoirs on the North River within the George Washington National Forest, northwest of the City. Together, the Elkhorn Reservoir and North River Reservoir (also known as Staunton Dam) can store up to 368 million gallons of water. Water from these reservoirs flows entirely by gravity (no pumps or energy required!) through twelve miles of pipe to the Staunton Water Treatment Plant on Craigmont Road. The Forest Service strictly controls development and activities around the reservoirs to protect them from pollution and other contamination.

Did you know?

In the late 1800's and early 1900's, Staunton's water came from a series of springs in Gypsy Hill Park. It was pumped up to a storage tank on Reservoir Hill. The tank is gone (although the name remains), but the springs are still in the park, and they still produce water. Both the Duck Pond and Lake Tams are filled with Gypsy Hill spring water!

Gardner Springs

Staunton's other source of water is Gardner Springs, a natural spring on the banks of the Middle River just east of Churchville. The spring can produce over four million gallons of water each day, which is pumped three miles to the Water Treatment Plant. If needed, the City can also access water from the Middle River, using the pumps at Gardner Springs, but that wasn't needed in 2020. Your drinking water is a mixture of both reservoir and spring water.

WHAT IS IN YOUR WATER?

Before we treat it, your water can contain bacteria, minerals, metals, and chemicals. Even after we treat it, the water is still not pure. It does not have any bacteria, but it may contain small amounts of metals and minerals. But you can drink water with tiny amounts of metals and minerals without getting sick. In fact, small amounts of minerals give water its taste, and some (like fluoride) provide health benefits. Scientists at the Environmental Protection Agency and the Virginia Health Department's Office of Drinking Water are constantly reviewing and revising the drinking water standards, so you don't need to worry about the quality of your drinking water. Staunton's drinking water not only exceeded all state and federal requirements, it also won the Office of Drinking Water's Gold Award, the highest recognition for water treatment excellence. We've included detailed test results later in the report, but here are the things we are testing for:

Turbidity: Turbidity is just a fancy way to say how clear the water is. Soil runoff is the primary cause of turbidity problems.

Bacteria: Bacteria is naturally present everywhere in the environment, but we go to great lengths to keep it out of your drinking water.

What's the deal with fluoride?

Like many water systems, Staunton adds fluoride during the water treatment process. Since so much of water treatment involves taking things out of the water, why would anyone want to put something back in? The answer is literally right under your nose: it's your teeth.

Starting around 1900, dental researchers began to notice that the teeth of people (especially children) in certain areas were being affected by something in their environment. By the 1940's scientists had connected naturally occurring fluoride to dental health. Soon after, water systems in locations without natural fluoride began to add it to their drinking water to improve dental health. Today, most residents of the United States drink fluoridated water. Adding anything to drinking water will always be controversial, which is why Staunton closely follows the fluoridation guidelines of the American Dental Association, the Centers for Disease Control, the National Institute of Health, and the Virginia Department of Health.

What about lead?

Recent issues at other water systems in the country have highlighted the danger of lead in drinking water. Elevated levels of lead can cause serious health problems, especially for pregnant women and young children. The water in our distribution system has very low levels of lead, but some buildings, especially older ones, could have lead pipes and plumbing fittings that can raise the amount of lead in the water that comes from the tap. There are some things you can do to reduce the possibility of lead in your drinking water.

- Let the water run before using it for drinking or cooking. Water that has been sitting in your pipes is more likely to have higher levels of lead.
- Only use cold water to drink or cook. Hot water releases more lead from pipes than cold water. Boiling water does not remove lead, and can even raise the concentration.
- Test your water to see how much lead is in it before and after you run the water. Test kits are available at home improvement stores and online.

Inorganic Contaminants: These include nitrates, which are also present in natural deposits, but can also come from fertilizer run-off or septic systems. They also include barium, another naturally occurring element that can also be the result of mining and metal processing. Also fluoride, which can dissolve into water from natural deposits in the ground.

Radiological Contaminants: This is a measure of radioactivity in the water, which can come from both natural and mand-made deposits.

Lead & Copper: These are two inorganic contaminants that have their own special testing requirements. While both elements can be found in the natural environment, their special consideration is due to their presence in water distribution and plumbing features.

Disinfection Contaminants: Disinfection is an important part of the treatment process, but it can create unwanted by-products. Organic carbon in the water can react with the chlorine we use as a disinfectant to produce undesirable chemicals called trihalomethanes and haloacetic acids. We test for both of these substances, as well as the organic carbon that contributes to them. Finally, we test for the leftover chlorine in the water. We want the water to have just enough chlorine to keep it clean after it leaves the water treatment plant until it gets to you, but not enough to impact the quality of the water.

How "hard" is your drinking water (and what does that mean, anyway)?

"Hardness" is a measure of minerals, mostly calcium and magnesium, dissolved in water. Water with a lot of dissolved minerals is called "hard" and water with very little is referred to as "soft". Hardness is measured in parts per million (ppm). Water with less than 60 ppm is considered "soft" and water with more than 120 ppm is "hard". Your drinking water is a mix of spring water (which tends to be harder) and surface water (that tends to be softer), and normally runs around 110 ppm, making it "moderately hard".

Hardness isn't really a quality issue (both hard and soft water are perfectly safe to drink), but it can be a nuisance. Hard water can interfere with soaps and detergents. It can also reduce the efficiency of water heaters, coffee makers and other appliances. Staunton's drinking water isn't hard enough to create widespread issues, but if your personal preference is for softer water, water softening systems are available.

Staunton's Water Treatment Plant

HOW IS YOUR WATER TREATED?

There are four basic steps in water treatment:

Source Water

Thickening: The water that comes into the plant from our natural water sources is put in large mixing basins. Safe chemicals are then added to make the tiny particles suspended in the water clump together, creating much larger particles. This process is called flocculation or coagulation, which are just other ways of saying thickening.

Settling: The larger particles are too heavy to stay suspended in the water. Over time, they fall (settle) to the bottom of the mixing basin, where they are removed.

Filtering: The water that comes off the top of the mixing basin is filtered through layers of fine sand and charcoal to remove even smaller pollutants.

Cleaning: The water coming out of the filters is very clear, but it may still contain some bacteria or viruses. Chlorine is added to disinfect (clean) the water. Fluoride, the same thing that is in your toothpaste, is also added to help prevent tooth decay.

Drinking Water

YOUR WATER DATA

Before looking at all the test data, there are a number of terms it would be helpful to know:

Non-detect (ND) - lab analysis indicates that the contaminant is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - corresponds to one drop in a hot tub.

Parts per billion (ppb) - corresponds to one drop in an Olympic-size swimming pool

Parts per trillion (ppt) - corresponds to one drop in a six-acre lake

Picocuries per liter (pCi/L) - a measure of radioactivity in water.

Nephelometric Turbidity Unit (NTU) - a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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

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. MCLGs are the “ideal standard”.

Variances and exemptions - state or EPA permission not to meet an MCL or a treatment technique under certain conditions.

How do they know how much is OK to drink?

The Environmental Protection Agency sets the allowable limits for all contaminants in drinking water. The limits are set so that person who drinks two liters of water every day for seventy years will have a very low lifetime risk of health issues from contaminants in the water (one-in-ten-thousand to one-in-a-million, depending on the severity of the health issue). These limits are constantly reviewed and adjusted to reflect the latest science and research. There are established limits for a large number of contaminants, and while our report only lists the ones that were found, we do test for them all.

THE DETAILED TEST RESULTS

Unless otherwise indicated, all tests were conducted in 2020

Microbiological Contaminants							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Turbidity (Clarity)	NA	0.3 NTU 95% of monthly samples must be < 0.3 NTU	Max turbidity = 0.1 NTU 100% of samples were < 0.3 NTU	No	Daily	Soil runoff.	YES
Total Coliform Bacteria	0	Presence of coliform bacteria in less than 5% of the monthly samples	One sample in April	No	Monthly	Naturally present in the environment.	YES
Inorganic Contaminants							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Fluoride	4 ppm	4 ppm	Range: 0.49 ppm to 0.88 ppm Average: 0.67 ppm	No	Daily	Erosion of natural deposits; discharge from fertilizer and aluminum factories.	YES
Nitrate	10 ppm	10 ppm	0.69 ppm	No	January	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.	YES
Barium	2 ppm	2 ppm	0.0206 ppm	No	January	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.	YES
Radiological Contaminants (Sampled every 6 years)							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Combined Radium	0 pCi/L	5 pCi/L	0.93 pCi/L	No	February 2016	Erosion of natural deposits.	YES
Alpha Emitters	0 pCi/L	15 pCi/L	2.4 pCi/L	No	February 2016	Erosion of natural deposits.	YES
Gross Beta	0 pCi/L	50 pCi/L	2.8 pCi/L	No	February 2016	Decay of natural and man-made deposits.	YES

Lead & Copper							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Copper	0	1.3 ppm	0.157 ppm average None of the 30 samples collected exceeded the limit	No	June-August	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.	YES
Lead	0	15 ppb	2.2 ppb average None of the 30 samples collected exceeded the limit	No	June-August	Corrosion of household plumbing systems; erosion of natural deposits.	YES
Disinfection By-products							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Total Trihalomethanes (TTHM's)	0 ppb	80 ppb	Average: 18.6 ppb Range: 8.0 ppb to 53.2 ppb	No	Quarterly	By-product of drinking water chlorination.	YES
Haloacetic Acids (HAA5's)	NA	60 ppb	Average: 18.7 ppb Range: 10.4 ppb to 39.8 ppb	No	Quarterly	By-product of drinking water chlorination.	YES
Disinfection By-Products Precursors							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Total Organic Carbon (TOC's)	NA	TT	ND	No	Quarterly	Naturally present in the environment.	YES

Disinfectant Residual Contaminants							
What are we looking for?	**The ideal goal (MCLG)**	**The highest level allowed (MCL)**	**What did we find?**	**Were there any violations?**	**When did we check?**	**Where does it come from?**	**Does it meet Regulatory Standards?**
Chlorine	4 ppm	4 ppm	1.19 ppm to 1.69 ppm	No	Monthly	Drinking water disinfection	YES

WANT TO KNOW MORE?

If you have any questions about water treatment, feel free to contact Mr. Seth Hoilman, the Chief Operator of the Staunton Water Treatment plant at (540) 332-4961, or hoilmansc@ci.staunton.va.us

You can find more information about drinking water at these sites:

The Safe Drinking Water Act:
https://www.epa.gov/sdwa

CDC Guide to Understanding your Water Quality Report:
https://www.cdc.gov/healthywater/drinking/public/understanding_ccr.html

Requirements of the Water Quality Report:
https://www.epa.gov/sites/production/files/2014-05/documents/guide_grg_ccr_2011.pdf

Information on Lead in Drinking Water
https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water

Staunton's water is part the Lewis Creek, Middle River, Shenandoah River, and Potomac River watersheds. If you'd like to get involved with water quality efforts, here are some organizations you can contact:

Lewis Creek Advisory Committee
https://www.ci.staunton.va.us/board-commissions#LCC

Friends of the Middle River
https://www.friendsofthemiddleriver.org/water-quality-monitoring-overview

Potomac Conservancy
https://potomac.org/lands

Come see for yourself!

Interested groups or individuals are welcome to visit the Water Treatment Plant. The plant is an active industrial site, so we can't allow "drop in" visits, but you can contact the plant at (540) 332-3896 to schedule a tour. Come see where you water comes from and meet the people who make it happen!