

STAFFORD  
*Virginia*

STAFFORD COUNTY UTILITIES

2022

In 2022, your drinking water quality met or exceeded every state and federal requirement that safeguards public health.



# TABLE OF CONTENTS

Message from the Director	3
Community Participation	4
Where Does My Water Come From?	5
How Your Water is Treated	6
How Much Water Do You Use?	7
Source Water Assessment	8
Lead in Home Plumbing	9
Important Health Information	10
Per- and Polyfluoroalkyl Substances (PFAS)	11
Benefits of Flushing Water Mains	12
Substances in Water	13
Regulated Substance Table 2022	14
Definitions	15



# MESSAGE FROM THE DIRECTOR

Dear Customers:

The Stafford County Department of Utilities is pleased to present this year's Water Quality Report. The health and safety of our customers is always our number one priority. The information in this report summarizes the results of hundreds of tests taken during the 2022 calendar year, ensuring the water we provide to you meets all requirements of the Virginia Department of Health (VDH) and the Environmental Protection Agency (EPA).

The Department of Utilities provided nearly 10 million gallons of water per day in 2022, through more than 700 miles of water line, to serve more than 125,000 valued customers. In order to provide this high volume of water, the department treats almost 4 billion gallons of drinking water annually at Stafford County's two Water Treatment Facilities, Lake Mooney and Smith Lake.

The dedicated team of Utilities staff work around the clock—twenty-four hours a day, seven days a week, 365 days a year—through weekends, holidays and extreme weather to ensure the highest quality water is delivered to our customers each and every day. Stafford's water system is monitored and maintained by our team of highly skilled operators, engineers, technical experts and administrative staff to ensure our drinking water meets or exceeds the U.S. Environmental Protection Agency's safe drinking water requirements.

These accomplishments highlight the integrated approach we take every day to protect public health by effectively managing our water resources, raising awareness about important water-related issues, and providing exceptional customer service.

With every call taken and every test performed out of hundreds annually, Stafford Utilities demonstrates their commitment to our customers and the community. We drink the same water you drink and are committed to ensuring that high-quality water is available every time you reach for your tap.



CHRIS EDWARDS, P.E.

Director of Utilities

una versión en español de este informe está disponible en nuestro sitio web:  
[www.staffordcountyva.gov/waterqualityreport](http://www.staffordcountyva.gov/waterqualityreport)





---

## COMMUNITY PARTICIPATION

---

Today, we face many water-related issues, including the protection of our water resources, timely renewal and replacement of aging pipes, planning to meet current and future water needs and treatment facilities upgrades that meet increasingly stringent water quality requirements. We ask for and value your input as these issues are discussed. The Stafford County Board of Supervisors meet on the first and third Tuesdays of each month and the Utilities Commission meets the second Tuesday of each month in the Board Chambers located at 1300 Courthouse Road, Stafford, VA. Please call (540) 658-8630 or visit the County website at [www.staffordcountyva.gov](http://www.staffordcountyva.gov) for a schedule of meeting dates and times.



---

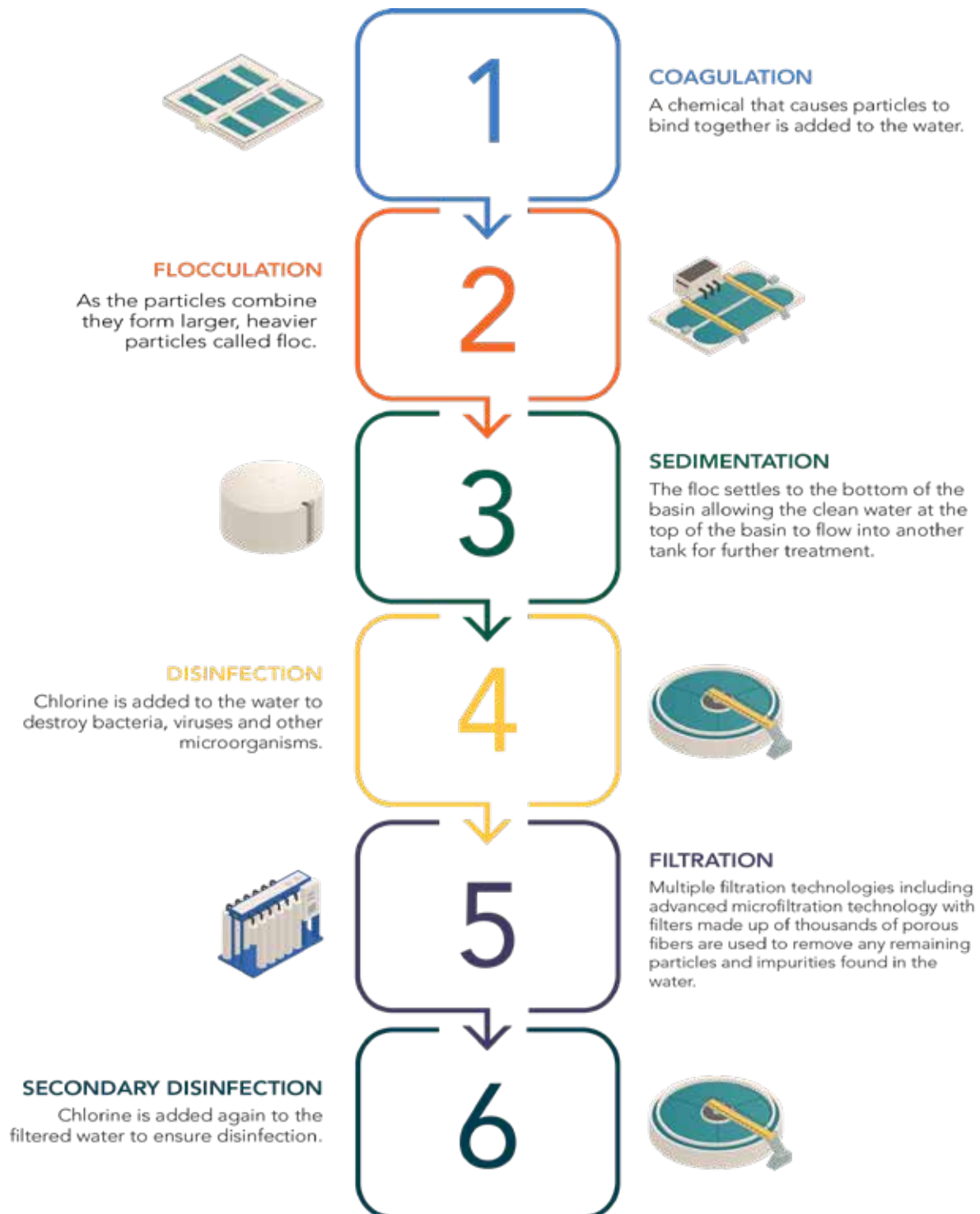
## WHERE DOES MY WATER COME FROM?

---

Stafford County has three surface water sources for its supply. The Smith Lake Water Treatment Plant draws water from the Smith Lake reservoir, pictured above. The Lake Mooney Water Treatment Plant draws water from the Lake Mooney reservoir as well as by pumping water from the Rappahannock River. Combined, our treatment facilities provide roughly 3.7 billion gallons of clean drinking water every year.

# HOW YOUR WATER IS TREATED

To ensure that high-quality, clean drinking water is available to you every time you reach for your tap, Stafford County uses advanced technologies and practices in the drinking-water treatment process.



# HOW MUCH WATER DO YOU USE

The average family in Stafford County uses approximately 6,000 gallons of water each month. The first step in changing the way you use water in the future is by understanding how much water you use today. An easy way to understand individual water use is to look at your water bill.



Toilet:  
1.6 gallons per flush



Shower:  
2.5 gallons per minute



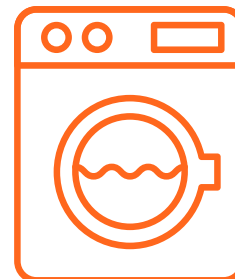
Dishwasher:  
12 gallons per load



Water Faucets:  
5 gallons per minute



Garden Hose:  
9-17 gallons per minute



Washing Machine:  
40 gallons per load

Source: United States Environmental Protection Agency, WaterSense





---

## SOURCE WATER ASSESSMENT

---

In 2002, the Virginia Department of Health (VDH) conducted an assessment of our water reservoir at Smith Lake to determine how susceptible it is to contamination. An assessment of Lake Mooney and the Rappahannock River was completed in early 2019. Since there are industrial, commercial, agricultural and residential land uses in our watersheds and our sources are open to the environment, they are susceptible to contamination. We operate state-of-the-art treatment facilities to a standard that ensures protection of public health. We also ask for your help to properly dispose of trash, waste oil, antifreeze, and other hazardous materials and minimize application of fertilizer and pesticides so that they do not enter streams, storm drains and other water bodies. You can report illegal dumping to the Stafford County Sheriff's Office at (540)-658-4400. A copy of the Smith Lake and the Lake Mooney assessment is available by calling us at (540) 658-8600.





---

## 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. The Stafford County Department of Utilities is responsible for providing high quality drinking water and follows all EPA corrosion inhibitor treatment guidelines, but cannot control the variety of materials and components associated with service lines and home plumbing. 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 EPA's Safe Drinking Water Hotline at 1-800-426-4791 (TTY 711) or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## LAKE MOONEY WATER TREATMENT FACILITY



---

## IMPORTANT HEALTH INFORMATION

---

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised individuals, such as those undergoing chemotherapy, organ transplant recipients, those with HIV/AIDS or other immune system disorders, and some elderly people and infants can be particularly at risk from infections. If you feel you are at risk, please seek advice about drinking tap water from your health care providers. EPA/CDC 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.



## FACTS ABOUT PER - AND POLYFLUOROALKYL SUBSTANCES (PFAS)

PFAS are a group of man-made chemicals that have been manufactured and used worldwide, including in the United States, in consumer products, industrial applications and in firefighting since the 1940s. There are between 6,000 and 10,000 different chemical compounds in the PFAS family and they are used to make products that resist heat, oil, stains, grease and water. Two of these compounds—perfluorooctanoic acid and perfluorooctanesulfonic acid—have been the most extensively produced and studied, and there is evidence that exposure to elevated levels of PFAS can lead to adverse health outcomes in humans.

### **Reducing Your Exposure to PFAS**

- Support efforts to protect drinking water sources and keep PFAS out of water supplies.
- Cook with stainless steel, cast-iron, glass, or ceramics. Don't use nonstick cookware.
- Read product labels and avoid products with "PTFE" or "perfluoro-" and "polyfluor-".
- Look for coats, hats, and boots labeled water-resistant. They're less likely to have PFAS than waterproof products.
- Make popcorn on the stove or in an air popper instead of microwave bags.
- Steer clear of ordering food in grease-resistant wrappers or containers.
- Avoid carpets and upholstery treated to be stain or water-resistant; decline stain treatment.
- Ask manufacturers if their products contain PFAS. These chemicals are often not listed.

To learn more and view Stafford County's most recent PFAS results, visit [www.staffordcountyva.gov/PFAS](http://www.staffordcountyva.gov/PFAS).





---

## BENEFITS OF FLUSHING WATER MAINS

---

Utilities crews conduct hydrant flushing on an annual basis throughout Stafford County in order to ensure that high-quality water is available to residents, firefighters and Stafford businesses.

The flushing process cleans the water system by opening the fire hydrants to increase water flows, allowing crews to "flush" any minerals and sediment that naturally accumulates in water mains over the course of the year. By testing each of the 6,000 hydrants in Stafford County, Utilities crews can check and record water pressure to ensure each hydrant is properly maintained and available for use in the event of a fire.

For more information and tips for minimizing water discoloration during hydrant flushing, please visit [www.staffordcountyva.gov/flushing](http://www.staffordcountyva.gov/flushing).



---

# SUBSTANCES IN WATER

---

## POTENTIAL SOURCES OF WATER CONTAMINANTS



- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses
- Inorganic contaminants such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharge, oil and gas production, mining or farming
- 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 and urban storm water runoff septic systems

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water that 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 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).

Stafford County  
Table of Detected Contaminants

Regulated Contaminants (samples taken from the water distribution system)							
Parameter	Average Results	Range of Results	Units	MCL	MCLG	In Compliance? Yes / No	Source
Haloacetic Acids (HAA5s)	27.500 (highest 4-qtr. compliance avg.)	4 - 36 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 60 ppb	None	Yes	Byproduct of drinking water disinfection
Trihalomethanes (TTHMs)	61.900 (highest 4-qtr. compliance avg.)	21 - 75.3 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 80 ppb	None	Yes	Byproduct of drinking water disinfection
Fluoride	0.850	0.76 - 0.93	ppm	4	4	Yes	Added to water to promote strong teeth
Nickel	0.002	0.0 - 0.003	ppm	0.1	0.1	Yes	Erosion of natural deposits
Barium	0.008	< QL - 0.008	ppm	2	2	Yes	Erosion of natural deposits
Total Organic Carbon (TOC)	The running annual average of quarterly TOC percent removals ranged from 1.79 to 1.82		None	Treatment Technique: Running annual avg. of quarterly TOC % removals must be >= 1.0		Yes	Naturally present in the environment
Secondary / Unregulated Contaminants							
Parameter	Average Results	Range of Results (individual sites)	Units	SMCL	N/A	In Compliance? Yes / No	Source
Orthophosphate	0.580	0.41 - 0.75	ppm	N/A	N/A	N/A	Added as corrosion inhibitor
Sodium	28.050	25.3 - 30.8	ppm	N/A	N/A	N/A	Erosion of natural deposits
Sulfate	27.950	27.3 - 28.6	ppm	250.0	N/A	N/A	Erosion of natural deposits, fertilizer runoff
Chloride	16.350	15.6 - 17.1	ppm	250.0	N/A	N/A	Erosion of natural deposits
Silica	5.540	2.32 - 8.76	ppm	N / A	N/A	N/A	Erosion of natural deposits
Chlorine (samples taken from the water distribution system)							
Parameter	Highest 12-Month Running Annual Average	Range of Results (individual sites)	Units	MRDL	MRDLG	In Compliance? Yes / No	Source
Chloramines	3.600	0.2 - 4.2	ppm	4.0	4.0	Yes	Added as water disinfectant
Metals (samples taken from the customer's tap)							
Parameter	Action Level	MCLG	Test Results	Number of sampling locations above the EPA Action Level	In Compliance? Yes / No	Source	
Lead	90% of all test results must be 15 ppb or less	15 ppb	Results from 2021 <QL to 7 ppb; 100% of the 51 samples taken were 15 ppb or less	0	Yes	Corrosion in household plumbing systems	
Copper	90% of all test results must be 1.3 ppm or less	1.3 ppm	Results from 2021 <QL to 0.3 ppm 100% of the 51 samples 1.3 ppm or less	0	Yes	Corrosion in household plumbing systems	
Turbidity (samples taken from filtered water at the treatment facility)							
Parameter	MCL		Units	Max. Detected	Lowest Percentage of Monthly Samples Meeting Limit	In Compliance? Yes / No	Source
Turbidity	Treatment Technique (TT) - at least 95% of all samples taken each month must be 0.3 NTU or less; 1 NTU maximum		NTU	0.21	100% of all samples taken were 0.3 NTU or less	Yes	Soil erosion from runoff

1. Tests were performed for an additional 103 possible contaminants which were NOT DETECTED.
2. Lead, copper, and total coliforms are reported to the Health Dept. on a County-wide basis. Levels in the table are also County-wide (not each service area).
3. Lead and copper test results are from 2021. Testing will again take place in 2024.

# DEFINITIONS

---

- **AL, Action Level:** the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that an owner shall follow.
- **Level 1 Assessment:** a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks.
- **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.
- **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.
- **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.
- **NTU, Nephelometric Turbidity Units:** a measurement of the clarity of water.
- **pCi/L, Picocuries per liter:** measure of radioactivity
- **PPM, Parts per million:** measure of concentration equal to 1 cent in \$10,000 or about 1 minute in 694 days.
- **PPB, Parts per billion:** measure of concentration equal to 1 cent in \$10 million or about 1 minute in 1,902 years.
- **QL, Quantification Limit:** the lowest level at which a test method can be accurately reported.
- **SMCL, Secondary Maximum Contaminant Level:** non-health based standards established for contaminants that can adversely affect the taste, odor, or appearance of water.
- **TT, Treatment Technique:** required process intended to reduce the level of a contaminant in drinking water.





# 2022

**WATER QUALITY  
REPORT**

## **STAFFORD COUNTY DEPARTMENT OF UTILITIES**

1300 Courthouse Road  
Stafford, Virginia 22554

Phone  
(540) 658-8616

Website  
<https://utilities.staffordcountyva.gov>