

# 2024

## Drinking Water Quality Report



*Rapidan Service Authority*

# Wilderness

PWSID #6137999

# 2024 Drinking Water Quality Report

Rapidan Service Authority (RSA) is pleased to present to you the Annual Water Quality Report. This report is designed to inform you, the customer, about the quality of water and services delivered to you every day. RSA's goal is to always provide you with a safe and dependable supply of drinking water. We want you to understand the efforts made to continually improve the water treatment process and protect our water resources. RSA is committed to ensuring the quality of your water.

## Your Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes or reservoirs, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Substances (referred to as contaminants) in source water may include: (i) microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; (ii) inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; (iii) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; (iv) organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and (v) radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

Your drinking water comes from the Rapidan River. A source water assessment of the Rapidan River was completed by the Virginia Department of Health in 2024 and may be obtained by contacting RSA. While all surface water sources are vulnerable to contamination due to changing atmospheric conditions and land use activities, no known contamination was discovered during the period of review.

Water from the Rapidan River is treated by RSA to not only meet State and Federal regulations, but also to be aesthetically pleasing for customers. Treatment involves a variety of chemical and mechanical processes:

- Sodium Permanganate and diffused aeration oxidize metals and organics to make subsequent treatment processes more effective.
- Polyaluminum Chloride and Aluminum Sulfate are used for "coagulation" – a chemical process used to aggregate suspended particles into larger "floc" that are easier to remove by settling and filtration.
- Treated water is then filtered via a sand and anthracite gravity filter or a microfiltration membrane.
- Fluoride (Hydrofluorosilicic Acid) is added to help promote strong teeth and prevent tooth decay.
- Orthophosphate is added to prevent corrosion of lead and copper from plumbing materials.
- Sodium Hydroxide is used to increase pH and alkalinity.
- Chlorine (Sodium Hypochlorite) is used to disinfect the water before heading to your tap.

## Protecting Your Water

Rapidan Service Authority employees are working around the clock to provide top quality water to every tap. We ask that all our customers help us protect and conserve our water sources, which are the heart of our community, our way of life, and our children's future. We also want to remind all of our customers to be aware of possible cross connections to the potable water system. A cross connection is a link between the potable water system and any non-potable source and can affect not only your home, but it can also affect the entire potable water supply. **If you think you have the possibility of a cross connection, please contact RSA immediately.**

In our continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements and must be approved by the RSA Board of Members following a public hearing.

RSA wants its valued customers to be informed about their water utility. If you have concerns to share with our Board, you may attend any of our regularly scheduled meetings. They are held, as needed, on the third Thursday of the month at 2:00 P.M in the counties we serve – Orange and Madison. Visit [rapidan.org/calendar-of-events](https://rapidan.org/calendar-of-events) for more details on meeting dates and locations.

If you have any questions about this report or your water utility, please contact **David Jarrell at (434) 985-7811**.

## Definitions

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in the water provided by waterworks. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health. RSA routinely monitors for contaminants in the drinking water, in accordance with Federal and State regulations. The table on the next two pages shows the results of testing for the most recent monitoring period. In this table you will find terms and abbreviations you might not be familiar with. To help you better understand these terms we have provided the following definitions:

- *Action Level (AL)*: the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- *Level 1 Assessment*: A Level 1 Assessment is a study of the water system to identify potential problems and determine, if possible, why total coliform bacteria have been found in our water system.
- *Level 2 Assessment*: A Level 2 Assessment is a very detailed study of the water system to identify potential problems and determine, if possible, why an E-coli MCL violation has occurred and / or why total coliform bacteria have been found in our water system on multiple occasions.
- *Maximum Contaminant Level (MCL)*: 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.
- *Maximum Contaminant Level Goal (MCLG)*: 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.
- *Maximum Residual Disinfectant Level Goal (MRDLG)*: the level of 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.
- *Maximum Residual Disinfectant Level (MRDL)*: 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
- *Nephelometric Turbidity Unit (NTU)*: a measure of the clarity of water. Turbidity in excess of 5 NTUs is just noticeable to the average person.
- *Non-Detects (ND)*: laboratory analysis indicates that the constituent is not present.
- *Parts per million (ppm) or milligrams per liter (mg/l)*: one part per million corresponds to one minute in two years or a single penny in \$10,000.
- *Parts per billion (ppb) or micrograms per liter (ug/l)*: one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.
- *Picocuries per liter (pCi/l)*: a measure of radioactivity.
- *Treatment Technique (TT)*: A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
- *Ultraviolet (UV)*: A treatment method to disinfect water using ultraviolet light.



Water Quality Results								
Detected Contaminant	Sampling Year	Violation	Level Detected/ Range	Units	MCLG	MCL	Likely Source of Contamination	
Microbiological Contaminants								
E-coli Bacteria	2024	No	0	Presence or absence	0	Routine and repeat samples are total coliform positive and one is E-coli positive	Human and animal fecal waste	
Chemical & Radiological Contaminants								
Barium	2024	No	0.015	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	
Fluoride	2024	No	0.81	ppm	4	4	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories	
Nitrite + Nitrate	2024	No	0.5	ppm	10	10	Runoff from fertilizer use; leaching from septic systems; erosion of natural deposits	
Turbidity % samples ≤0.3 NTU	2024	No No	0.24 100%	NTU %	N/A N/A	TT 95%	Soil runoff	
Disinfection By-Products, Precursors & Residuals								
Chlorine	2024	No	1.16 (0.02 – 2.1)	ppm	MRDLG =4	MRDL =4	Water additive used to control microbes	
Total Organic Carbon	2024	No	RAA 1.07	Removal Ratio	N/A	TT	Naturally present in the environment	
Haloacetic Acids Site DS001 Site DS002 Site DS003 Site DS004	2024	No No No Yes, Q1-4	60 (46 - 72) 51 (31 - 58) 47 (33 - 52) 66 (39 - 76)	ppb	N/A	60	By-product of chlorination	
Total Trihalomethanes Site DS001 Site DS002 Site DS003 Site DS004	2024	No No No No	54 (35 - 72) 55 (36 - 64) 41 (27 - 45) 62 (44 - 89)	ppb	N/A	80	By-product of chlorination	
Lead & Copper Contaminants	Sampling Year	AL Exceeded?	Results of 90 <sup>th</sup> % Value (and range of all results)	Units	MCLG	Action Level	# of Sample Sites Exceed AL	Likely Source of Contamination
Lead	2024	No	5.51 (0 – 59)	ppb	0	15	2	Corrosion of household plumbing systems
Copper	2024	No	0.118 (0 – 0.245)	ppm	1.3	1.3	0	Corrosion of household plumbing systems

## Other Results (Unregulated Parameters) of Customer Interest

Parameter	Year	Result	Unit	EPA Secondary Standard	Basis of Interest or Concern
Iron	2024	ND	ppm	0.3	Iron may cause red/orange staining of plumbing fixtures, appliances, clothing, or other surfaces.
Manganese	2024	ND	ppm	0.05	Manganese may cause black/brown staining of plumbing fixtures, appliances, clothing, or other surfaces.
pH	2024	7.8 – 8.1 (monthly averages)	S.U.	6.5 -8.5	pH measures how acidic or alkaline (basic) a substance is, on a scale of 0 to 14. Low pH water may be corrosive, and high pH water may cause mineral deposit accumulation in plumbing. A slightly alkaline pH is ideal.
Sodium	2024	8.36	ppm	N/A	Some people must track their nutritional sodium intake closely for health purposes.
Total Dissolved Solids (TDS)	2024	58.5	ppm	500	TDS measures the total amount of dissolved organic and inorganic material in water, including minerals, salts, metals, etc. Water with TDS over 500 may have an objectionable taste. Likewise, water with very low TDS (under 50) may yield a “flat” taste due to low mineral content.
Total Hardness (as CaCO <sub>3</sub> )	2024	38	ppm	N/A	This is equivalent to 2.2 grains per gallon, considered to be “soft” water, not requiring additional softening.

## Other Unregulated Contaminants – UCMR 5

The Federal Safe Drinking Water Act amendments of 1996 require the EPA to publish a list of 30 unregulated contaminants every five years. These are contaminants in treated water that are currently unregulated yet may negatively impact the safety of drinking water supplies should the contaminants be present above a certain threshold. The contaminants are tested by public water supplies across the country over a three-year period. This monitoring requirement is known as the Unregulated Contaminant Monitoring Rule (UCMR), and we are currently in the fifth round of such testing. The 30 contaminants for UCMR 5 include 29 PFAS compounds and the metal lithium. RSA was required to sample quarterly for a 12-month period at the Wilderness water treatment plant. Samples were analyzed by a certified laboratory in Pennsylvania. We are pleased to report that there were no detectable compounds in any of the samples. The detection limits for the PFAS compounds were from 2-5 parts per trillion (ppt), and for lithium it was 9 parts per billion (ppb).

## Violation Information

### Haloacetic Acids

In 2024, drinking water being served to our customers in the Wilderness water system did not comply with the Primary Maximum Contaminant Level (MCL) for Haloacetic Acids in Quarters 1-4 at Site 4 (Germanna). Notices were sent directly to all customers.

Haloacetic Acids are one of the many contaminants monitored in your drinking water on a regular basis. They are formed via a chemical reaction between organic material found naturally in drinking water and chlorine which is used to disinfect your water. There are several factors which influence the formation of these contaminants, including organics content, chlorine concentration, pH, and temperature.

Compliance with the Primary Maximum Contaminant Level for Haloacetic Acids is based on an average of the prior four quarters of test results for each testing location. In the Wilderness water system, there are four testing locations: Ramsay Rd (DS001), Flat Run Rd at Locust Grove Middle School (DS002), Wilderness Shores Way (DS003), and Route 3 at Germanna Community College (DS004). Testing results we received show that our system exceeded the standard, or maximum contaminant level (MCL), for Haloacetic Acids at one of four locations. The standard for Haloacetic Acids is 60 ppb (parts per billion). Compliance values for each location are listed in the table below.

Location	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
DS001	55 ppb	60 ppb	60 ppb	57 ppb
DS002	51 ppb	51 ppb	47 ppb	50 ppb
DS003	47 ppb	47 ppb	41 ppb	39 ppb
DS004	64 ppb	66 ppb	61 ppb	62 ppb

Rapidan Service Authority is working to resolve the elevated results. The RSA Board has made this issue a priority and directed the study, design, and installation of Granular Activated Carbon (GAC) filtration in addition to changes to the treatment process to improve organics removal. GAC filtration will not only help address the Haloacetic Acids but can also be effective in preventing odor related situations, like what recently occurred. While this is underway, RSA will continue moving toward design and construction of a new treatment plant with modern technology, in accordance with the Orange County Water Supply Plan, Germanna-Wilderness Area Plan, and RSA’s Germanna-Wilderness Water Improvement Plan.

### Level 1 and Level 2 Assessments

Our water system violated a drinking water regulation due to late submission of a “Level 1 Assessment.” A Level 1 assessment is required whenever a waterworks has two or more total coliform positive samples during a monitoring period. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found. The assessment evaluates conditions throughout the waterworks to determine possible causes for the total coliform positive sample results. Sanitary defects (conditions that could provide a pathway of entry for microbial contamination into the distribution system) identified by the assessment are to be corrected and noted in the assessment.

During the June 2024 monitoring period, our waterworks received results of four total coliform positive samples. These were both the initial and repeat samples from two homes’ outdoor hose bibs. Results from upstream and downstream sites bracketing both locations were negative. All samples were negative for E. coli; however, this caused the exceedance of the Level 1 treatment technique trigger, which required the completion of a Level 1 Assessment. We failed to complete the assessment and submit the required assessment report by the July 7, 2024 deadline. The report was submitted on July 10, 2024.

In 2024, one Level 1 assessment and one Level 2 assessment were required to be completed for our waterworks. Both assessments were completed. There were no corrective actions required; however, RSA plans to install dedicated sampling stations to avoid sanitary issues with privately-owned plumbing and sample taps.

## OEL Assessment

Our water system violated a drinking water regulation due to late submission of an “Operational Evaluation Level Report.” During the 1st and 2nd Quarter of 2024, we exceeded the Haloacetic Acids (HAA5s) operational evaluation level (OEL) and therefore were required to submit a report to evaluate potential causes for the exceedance. This report is due within 90 days of being notified of the exceedance. Our water system failed to comply with the requirement to submit an OEL report for exceedances of the HAA5s OEL. We did not submit the report by the July 3, 2024 deadline. The report was submitted on July 10, 2024.

## Additional Health Information

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).

MCL’s are set at very stringent levels by the U.S. Environmental Protection Agency. In developing the standards, EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs at levels that will result in no adverse health effects for some contaminants or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other contaminants.

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 (800-426-4791).

## Lead Education Statement

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. RSA is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family’s risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact RSA at (540) 972-2133. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at <http://www.epa.gov/safewater/lead>.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

In accordance with the Environmental Protection Agency’s Lead and Copper Rule Revisions (LCRR), RSA has prepared an inventory of service line materials. A copy of the inventory can be obtained by contacting the RSA office at (540) 972-2133.

The waterworks owners prepared this Drinking Water Quality Report with the assistance and approval of the Virginia Department of Health (VDH). Please call our office at (540) 972-2133 if you have questions regarding your water system.