



2024

2024 ANNUAL DRINKING WATER QUALITY REPORT FOR TOWN OF MIDDLEBURG



INTRODUCTION

We are pleased to present this Annual Drinking Water Quality Report (Consumer Confidence Report) for calendar year 2024 as required by the Safe Drinking Water Act (SDWA). This report is designed to inform you about the details and quality of drinking water delivered by your water system. Our goal is to provide you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water must meet Federal and State requirements administered by the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Health (VDH).

If you have questions about this report, want additional information about any aspect of your drinking water or want to know how to participate in decisions that may affect the quality of your drinking water:

Danny Davis – Town Manager
10 West Marshall Street, P.O. Box 187, Middleburg, VA 20118
Telephone: (540) 687-5152 Email: ddavis@middleburgva.gov

Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información. Copias en español de este informe pueden ser hechas a petición.

GENERAL INFORMATION ABOUT DRINKING WATER

Across the United States, sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or underground, it dissolves naturally occurring minerals and, in some cases, radioactive materials and can pick up substances resulting from the presence of animals or from human activity. Water from surface sources is treated to make it safe to drink while groundwater may or may not have any treatment.

Contaminants that may be present in source water include:

- Microbial contaminants: include viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants: include 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.
- Pesticides and herbicides: may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants: include 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: may be naturally occurring or can result from oil and gas production as well as mining activities.

In order to ensure that tap water is safe to drink, U. S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water in order to provide 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 (EPA) Safe Drinking Water Hotline (800-426-4791).

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 / Centers for Disease Control (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 (800-426-4791).

SOURCES, TREATMENT, AND ASSESSMENT OF MIDDLEBURG'S DRINKING WATER

The sources for the Town of Middleburg's drinking water are five groundwater wells located in or near the Town of Middleburg. All wells are treated by chlorination for disinfection and phosphate is added to prevent oxidation in the distribution system. In addition, water softening, and greensand filtration is provided for three of the Town's wells to reduce the levels of iron and manganese and radiological contaminants.

The Virginia Department of Health conducted a source water assessment of Wells #2 and #3 in 2002. The wells were determined to be highly susceptible to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last 5 years of the date of the report.

SOURCE WATER PROTECTION

The Town of Middleburg subsequently adopted a Source Water Protection Plan (SWPP), which includes recommendations (action items) for protecting the Town's source water. Copies of the plan, information on protecting your drinking water, and tips on reducing water consumption are available at the Town Office, 10 West Marshall Street, Middleburg, Virginia 20118 or on the Town's website at www.middleburgva.gov.

The Source Water Protection Team (SWPT) is responsible for advising the Town Council on the implementation of action items recommended in the SWPP. The SWPT meets on a quarterly basis and meetings are open to the public. To-date, the SWPT has implemented numerous action steps, including assisting with closure of unneeded wells in Town; mapping the Town's well recharge area; converting septic systems to the Town's sanitary sewer system; and working on public education materials to emphasize the importance of protecting groundwater.

One key aspect of source water protection is to identify and eliminate leaks. **If you suspect a leak, please contact a plumber or the Town Office at the numbers or website above.**

DEFINITIONS

In the tables for the report, and elsewhere in this report, you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

Unit Description			
Term	Definition	Term	Definition
ppm	parts per million, or milligrams per liter (mg/L)	% positive samples/month	Percent of samples taken monthly that were positive
ppb	parts per billion, or micrograms per liter (µg/L)	NA	not applicable
pCi/L	picocuries per liter (a measure of radioactivity)	ND	Not detected
mrem/yr	millirems per year (a measure of radiation absorbed by the body)	NR	Monitoring not required, but recommended.
NTU	Nephelometric Turbidity Units. 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.		
Important Drinking Water Definitions			
Term	Definition	Term	Definition
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 disinfection 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.
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.	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.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.	MNR	Monitored Not Regulated
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.	MPL	State Assigned Maximum Permissible Level
Variances and Exemptions	State or EPA permission not to meet an MCL or a treatment technique under certain conditions.	RAA	Running Annual Average is the average of analytical results for samples taken during the previous four calendar quarters.

CONTAMINANT MONITORING

The Town of Middleburg constantly monitors for various contaminants in the water supply to meet all Federal and State regulatory requirements. The tables that follow list contaminants that had some level of detection and a select few contaminants of consumer concern that were not detectable. Many other contaminants have been analyzed, but were not present or were below the detection limits of the lab equipment and may not be listed in these tables.

All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old.

TABLE OF DETECTED CONTAMINANTS

Microbiological Contaminants								
We are pleased to announce that the Town of Middleburg did not have any detection of total coliform or E. Coli in the treated water for the 2024 calendar year. All monthly samples complied with EPA standards.								

Contaminants	MCLG	MCL	Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfection By-Products								
(There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants)								
TTHMs [Total Trihalomethanes] (ppb)	-	80	<u>4.7</u>			2024	No	By-product of drinking water disinfection.
Inorganic Contaminants								
Barium (ppm)	2	2	<u>0.064</u>	ND	0.064	2022 & 2023	No	Erosion of natural deposits.
Fluoride (ppm)	4	4	<u>0.35</u>	ND	0.35	2023	No	Erosion of natural deposits.
Nitrate [measured as Nitrogen] (ppm)	10	10	<u>0.13</u>	ND	0.13	2024	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Radioactive Contaminants								
Alpha emitters (pCi/L)	0	15	<u>8.1</u>	0.4	8.1	2023 & 2024	No	Erosion of natural deposits.
Beta emitters (pCi/L)	0	50 ¹	<u>12.3</u>	1.1	12.3	2023 & 2024	No	Decay of natural and man-made deposits.
Radium (combined 226/228) (pCi/L)	0	5	<u>3.0</u>	0.4	3.0	2023 & 2024	No	Erosion of natural deposits.
¹ The MCL for beta particles is 4 mrem/year. The U.S. EPA considers 50 pCi/L to be the level of concern for beta particles.								

Contaminants	MCLG	MCL	Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Optional (Non-Regulated) Contaminants								

Contaminants	MCLG	MCL	Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Sodium (ppm)*	-	-	<u>104</u>	15.2	104	2022 & 2023	No	Erosion of natural deposits; runoff from road deicing chemicals; industrial sources.
*There is presently no established standard for sodium in drinking water.								

Contaminants	MCLG	Action Level	90 th Percentile Value	Range of Individual Results		No. of sample sites exceeding the Action Level	Sample Date	Violation	Typical Source
				Low	High				
Lead & Copper									
Copper (ppm)	1.3	1.3	<u>0.598</u>	ND – 0.685		0	2023	No	Corrosion of household plumbing systems; Erosion of natural deposits.
Lead (ppb)	0.0	15	<u>5.33</u>	ND – 12.2		0	2023	No	Corrosion of household plumbing systems; Erosion of natural deposits.

Disinfectant	MCLG	MCL	Level Found (Range)	Sample Date	Violation	Typical Source
Disinfection Residual						
Chlorine (ppm)	4	4	RAA: 0.921 Range: 0.2 – 2.5	Monthly	No	Water additive used to control microbes.

VIOLATION INFORMATION

We are pleased to report that the **Town of Middleburg** did not have any violations during **2024**.

PFAS (PER-AND POLYFLUOROALKYL SUBSTANCES)

Per- and polyfluoroalkyl substances, also called “PFAS,” are a group of manufactured chemicals that have been used in industry and consumer products since the 1940s. PFAS have characteristics that make them useful in a variety of products, including nonstick cookware, waterproof clothing, stain-resistant carpets and fabrics, and firefighting foam, as well as in certain manufacturing processes. There are thousands of different PFAS. The domestic production or use of some PFAS (like PFOA and PFOS) has been largely phased out but others continue to be used. PFAS tend to break down extremely slowly in the environment and can build up in people, animals, and the environment over time. PFAS have been found in water, air, and soil across the nation and around the globe. Because of this, PFAS can end up in the water sources that communities rely on for drinking water.

The Environmental Protection Agency (EPA) has established legally enforceable levels for six PFAS in drinking water: PFOA, PFOS, PFHxS, PFNA, and HFPO-DO and a mixture of two or more of PFHxS, PFNA, HFPO-DA, and PFBS known as the Hazards Index. Initial PFAS baseline testing must be completed by the year 2027 to establish ongoing monitoring standards at each facility.

During the past calendar year, the **Town of Middleburg** had the first half of initial PFAS baseline monitoring completed in 2024 with the second half slated to be completed in 2025. From the testing done in 2024, there were MCL exceedances detected in only well #3, which is generally used for emergencies only. The other two wells that were tested were below the MCL or established EPA trigger levels for additional monitoring. The chart provided below are the PFAS that were detected, level detected, and typical source. Any questions or further information can be directed at the listed contact above or to Inboden Environmental Services at (540) 477-3300.

PFAS Detected / Unit of Measurement	Highest Level Detected	Range Detected	Method Reporting Level	Sample Date	Typical Source
PFBA (Perfluorobutanoic acid) (ng/L)	7.9	1.6 – 7.9	2.0	September 2024	Breakdown product of other PFAS used in stain-resistant fabrics, paper food packaging, carpets manufacturing photographic films.
PFPeA (Perfluoropentanoic acid) (ng/L)	24.0	0.8 – 24.0	2.0	September 2024	It has been used as a substitute for longer-chain perfluoroalkyl carboxylic acids in consumer products, such as stain- and grease-proof coatings on food packaging, couches, and carpets.
PFBS (Perfluorobutane sulfonate) (ng/L)	7.8	0.9 – 7.8	2.0	September 2024	Used as a surfactant in industrial processes and in water-resistant or stain-resistant coatings on consumer products such as fabrics, carpets, and paper.
PFHxS (Perfluorohexane sulfonate) (ng/L)	1.4	0.4 – 1.4	2.0	September 2024	Used in stain-resistant fabrics, fire-fighting foams, food packaging, and as a surfactant in industrial processes.
PFHpA (Perfluoroheptanoic acid) (ng/L)	8.0	1.1 – 8.0	2.0	September 2024	Various consumer products.
PFHxA (Perfluorohexanoic acid) (ng/L)	16.0	0.8 – 16.0	2.0	September 2024	Breakdown product of other PFAS used in stain-resistant fabrics, paper food packaging, carpets manufacturing photographic films.
PFOA (Perfluorooctanoic acid) (ng/L)	11	1.0 – 11.0	2.0	September 2024	Industrial surfactant in chemical processes and as a material feedstock.
PFOS (Perfluorooctane sulfonic acid) (ng/L)	6.6	0.8 – 6.6	2.0	September 2024	Non-stick and stain-resistant consumer products, food packaging, fire-fighting foam, and industrial processes.
PFNA (Perfluorononanoic acid) (ng/L)	0.9		2.0	September 2024	They are found in products like food packaging, cookware, outdoor gear, carpets, furniture, and firefighting foams.
6:2 FTS (6:2 fluorotelomer sulfonate) (ng/L)	0.5		2.0	September 2024	Used as a replacement for traditional PFAS like PFOS and PFOA in applications like aqueous film-forming foam (AFFF) products, paints, coatings, adhesives, waxes, polishes, and cleaning products.

ADDITIONAL HEALTH INFORMATION

Certain contaminants (such as radon, arsenic, nitrate, and lead), if present in your drinking water, may be of special concern to consumers. If any of those contaminants are present, health information is provided below to inform you about them.

Nitrate

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 for advice from your health care provider.

Lead

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 **Town of Middleburg** 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 **Inboden Environmental Services at (800) 648-1010**. 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>.

Lead Service Line Inventory

In 2024 we developed a service line inventory as required by the EPA Lead and Copper Rule Revisions. None of our service lines are known to be made of lead or lead containing materials. Please call **Inboden Environmental Services at (800) 648-1010** for details on how to access the service line inventory.

This Drinking Water Quality Report was prepared by:

Inboden Environmental Services, Inc.
5790 Main Street
Mt. Jackson, VA 22842
(800) 648-1010



Assistance was provided by the Virginia Department of Health, Office of Drinking Water,
Culpeper Field Office.