Important information about your drinking water

TOWN OF FRONT ROYAL

2025 ANNUAL WATER QUALITY REPORT

Este informe contiene informaicon muy importante sobre la calidad de su agua béber. Traduscalo o hable con alguien que lo entienda bien.

PROUDLY PRESENTED BY
TOWN OF FRONT ROYAL
DEPARTMENT OF
PUBLIC WORKS
PWS ID # 2187406
www.frontroyalva.com

So Let's Talk Water

Continuing Our Commitment to You

Once again, the Town of Front Royal provides you our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2025. We are pleased to inform you that our compliance with all state and federal drinking water laws remains exemplary. As always, we are committed to delivering the best quality drinking water to you. To that end, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

Where does our water come from?

The Town draws surface water from three sources: the South Fork of the Shenandoah River, Happy Creek, and Sloan Creek. Our Treatment facility produces drinking water that is supplied to you through the Town's water distribution system.

How is our water treated?

Treatment begins with oxidation with addition of sodium permanganate of the raw water, followed by coagulation through the addition of Poly Aluminum Chloride, which causes the small particles in the water to adhere to one another and grow in size. Flocculation occurs next to slowly mix the water causing the particles to grow even larger. The water then passes into settling basins where the larger particles settle to the bottom of the basins. Sand and anthracite filters finish the removal of the particles not removed by settling. Before distribution, water is disinfected by UV, chlorine and lime is added for corrosion control. Finally, fluoride is added to the water for dental protection.

How is our water tested?

Our Water Treatment Plant (WTP) operators conduct approximately 100 tests each day to ensure the quality of our drinking water. The water is tested for chlorine, pH, turbidity, alkalinity, hardness, and fluoride. Thank you for your interest in our water. If you have any questions about your drinking water, please contact:

Matthew McDunn, WTP Manager, at (540) 636-7474 or *mmcdunn@frontroyalva.com*

Testing Results

Last year your tap water met all U.S. Environmental Protection Agency and state drinking water health standards. The Town vigilantly safeguards its water supplies and we are proud to report that our system has not violated a maximum contaminant level or any other water quality standard.

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration remove cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immune-compromised people are at greater risk of developing life threatening illness. We encourage immune-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

Lead in Drinking Water

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. The Town of Front Royal is responsible for providing high quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may bary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instruction provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requiring replacement service line, you may need to flush your pipes for a longer period.

If you are concerned about lead in your water and wish to have your water tested, contact the Town of Front Royal Water Treatment Plant at 540-636-7474. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at https://www.epa.gov/safewater.lead

Service Line Inventory

The Town of Front Royal completed the initial version of the Federally required service line inventory and submitted it to the State in October 2024 and updated it in December 2025. The Town has continued to update the inventory since then. To obtain a copy of the latest version of the inventory, please contact the Town of Front Royal Water Treatment Plant at 540-636-7474 or email Matthew McDunn mmcdunn@frontroyalva.com and submit a request.

Source Water Assessments

Source water assessments for the Town of Front Royal were completed by the Virginia Department of Health (VDH) on March 2, 2018. These assessments determined that the Town's three water sources may be susceptible to contamination because they are surface waters exposed to a wide array of contaminants at varying concentrations. Changing hydrologic, hydraulic, and atmospheric conditions promote migration of these contaminants from land use activities on concern within the assessment areas. More specific infor-

This report will not be mailed, copies are available upon request by contacting Matthew McDunn at 540-636-7474 or emailing mmcdunn@frontroyalva.com

DEFINITIONS

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

Contaminant: Any physical, chemical, biological, or radiological substance or matter in treatment.

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. MCLG's 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.

NA: Not applicable

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

pCi/L (picocuries per liter): A measure of radioactivity.

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

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

TT (treatment technique): A required process intended to reduce the level of contaminants in drinking water.

During 2025, we have taken numerous samples in order to determine the presence of several substances. The table below shows a summary of these test results where contaminant levels were detected. Many contaminants have been analyzed, but were not present or below detectible limits. We feel it is important that you know exactly what and how much of a contaminant was present in the water.

The state allows 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.

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

SUBSTANCE (UNIT OF MEASURE)	MCL (MRDL)	MCLG (MRDLG)	AMOUNT DETECTED	DATE OF SAMPLE	VIOLATION (YES/NO)	TYPICAL SOURCE
MICROBIOLOGICAL CONTAMINANTS						
E. COLI BACTERIA[1]	E. coli was detected but it was not confirmed with additional samples	0	1 positive sample	OCTOBER 2025	NO	MAY BE PRESENT IN THE ENVIRONMENT DUE TO HUMAN OR ANIMAL FECAL WASTE
TURBIDITY[2,3] (ntu)	TT	N/A	0.14	AUGUST 2025	NO	SOIL RUNOFF
RADIOACTIVE CONTAMINANTS						
ALPHA EMITTERS (pCi/L)	15	0	11.6	DECEMBER 2021	NO	EROSION OF NATURAL DEPOSITS OF CERTAIN MATERALS THAT ARE RADIOACTIVE AND MAY EMIT A FORM OF RADIATION KNOWN AS ALPHA RADIATION
BETA/PHOTON EMITTERS (pCi/L)[4]	50	0	4.80	DECEMBER 2021	NO	DECAY OF NATURAL OR MAN MADE DEPOSITS OF CERTAIN MINERALS THAT ARE RADIOACTIVE AND MAY EMIT FORMS OF RADIATION KNOWN AS PHOTONS AND BETA RADIATION
COMBINED RADIUM (pCi/L)	5	0	.913	DECEMBER 2021	NO	EROSION OF NATURAL DEPOSITS
INORGANIC CONTAMINANTS						
FLUORIDE (ppm)	4	4	0.58	APRIL 2025	NO	EROSION OF NATURAL DEPOSITS AND WATER ADDITIVE WHICH PROMOTES STRONG TEETH
NITRATE PLUS NITRITE (as NITROGEN) (ppm)	10	10	<0.1	APRIL 2025 ANNUALLY	NO	EROSION OF NATURAL DEPOSITS, OR FERTILIZERS
BARIUM (ppm)	2	2	0.022	APRIL 2025 ANNUALLY	NO	DISCHARGE OF DRILLING WASTES AND METAL REFINERIES; EROSION OF NATURAL DEPOSITS
SODIUM (ppm)	N/A	N/A	16.0	APRIL 2025 ANNUALLY	NO	EROSION OF NATURAL DEPOSITS; RUNOFF FROM ROAD DEICING CHEMICALS. There is no MCL for Sodium, but this information may be important for individuals following a sodium-restricted diet.
TOTAL ORGANIC CARBON (TOC)						
TOTAL ORGANIC CARBON[5,6] (ratio of actual to required removals)	TT	NA		2025 QUARTERLY	NO	NATURALLY PRESENT IN ENVIRONMENT
DISINFECTION RESIDUAL CONTAMINANTS						
CHLORINE (ppm)	4	4	AVERAGE 1.54 RANGE 0.2 - 2.70	2025 MONTHLY	NO	WATER ADDITIVE TO CONTROL MICROBES
DISINFECTANT BYPRODUCT CONTAMINANTS						
TTHMs TOTAL TRIHALOMETHANES (ppb)	80	0	65 RANGE 8.0 TO 117	2025 QUARTERLY	NO	BY-PRODUCT OF DRINKING WATER CHLORINATION
HAA5 HALOACETIC ACID (ppb)	60	0	39 RANGE 13.0 TO 56.0	2025 QUARTERLY	NO	BY-PRODUCT OF DRINKING WATER CHLORINATION
LEAD & COPPER (MOST RECENT MONITORING PERIOD)						
LEAD (ppb)	AL=15	0	90th percentile value <2.5 RANGE <2.5-57.4 1 SAMPLE > AL	SEPTEMBER 2024	90th percentile exceeds AL-NO NO	CORROSION OF HOUSEHOLD PLUMBING SYSTEMS; EROSION OF NATURAL DEPOSITS
COPPER (ppM)	AL=1.3	1.3	90th percentile value 0.0299 RANGE <0.005-0.1980 NO SAMPLES > AL	SEPTEMBER 2024	90th percentile exceeds AL-NO NO	CORROSION OF HOUSEHOLD PLUMBING SYSTEMS; EROSION OF NATURAL DEPOSITS; LEACHING FROM WOOD PRESERVATIVES

1—E. COLI WAS DETECTED, BUT IT WAS NOT CONFIRMED WITH ADDITIONAL SAMPLES, SO THIS DID NOT RESULT IN A VIOLATION. E. COLI ARE BACTERIA WHOSE PRESENCE INDICATES THAT THE WATER MAY BE CONTAMINATED WITH HUMAN OR ANIMAL WASTES. HUMAN PATHOGENS IN THESE WASTES CAN CAUSE SHORT-TERM EFFECTS, SUCH AS DIARRHEA, CRAMPS, NAUSEA, HEADACHES, OR OTHER SYMPTOMS. THEY MAY POSE A GREATER HEALTH RISK FOR INFANTS, YOUNG CHILDREN, THE ELDERLY AND PEOPLE WITH SEVERELY COMPROMISED IMMUNE SYSTEMS.

2—TURBIDITY IS A MEASURE OF THE CLOUDINESS OF THE WATER. WE MONITOR IT BECAUSE IT IS A GOOD INDICATOR OF WATER QUALITY AND THE EFFECTIVENESS OF OUR FILTRA-

3—TURBIDITY TREATMENT TECHNIQUE (TT) AT LEAST 95% OF ALL MEASURED TURBIDITY VALUES DURING A SINGLE MONTH MUST BE BELOW 0.3 NTU.

4—THE MCL FOR BETA EMITTERS IS 4 MREM/YEAR, WHICH IS A UNIT OF TOTAL CUMULATIVE YEARLY BURDEN TO THE HUMAN BODY BY BETA EMITTERS. THIS IS NOT MEASURED DIRECTLY IN THE LAB LIKE OTHER WATER SAMPLES, SO EPA HAS DESIGNATED 50 pCi/L AS A LEVEL OF CONCERN. IF AT LEAST 50 pCi/L BETA IS DETECTED, FURTHER TESTING OF BETA EMITTERS IS REQUIRED, IN ORDER TO DETERMINE IF THE LEVEL OF A CONSUMER'S EXPOSURE IS AT RISK OF EXCEEDING 4 MREM/YEAR

5—TOTAL ORGANIC CARBON (TOC) HAS NO HEALTH EFFECTS BUT PROVIDES FORMATION MEDIUM FOR DISINFECTION BY-PRODUCTS. THESE BY-PRODUCTS INCLUDE TRIHALOMETHANES (TTHM) AND HALOACETIC ACIDS (HAA5).

6—TOTAL ORGANIC CARBON TREATMENT TECHNIQUE MUST REMOVE A MINIMUM PERCENTAGE OF DETECTED CARBON. LEVEL OF REMOVAL REQUIRED VARIES DEPENDING ON SOURCE WATER.

VIOLATION INFORMATION

Monitoring and Reporting: The Town of Front Royal met all water quality and reporting requirements during the 2025 calendar year.

Water Quality: The Town of Front Royal was in full compliance with all water quality standards, and no violations occurred during the calendar year 2025.