2017 Annual Water Quality Report

Alexandria District
PWSID: VA6510010

VIRGINIA AMERICAN WATER

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

This report contains important information about your drinking water. If you do not understand it, please have someone translate it for you.

A Message from the Virginia American Water President

To Our Valued Customers:

Virginia American Water is proud to be your local water service provider, and I am pleased to share with you good news about the quality of your drinking water. Each year, we provide you with our Annual Water Quality Report, and Virginia American Water continues to supply drinking water that meets or surpasses all state and federal water quality regulations.

Virginia American Water delivers high-quality water to your homes and businesses by maintaining and improving the miles of pipeline hidden below the ground, the facilities that draw water from the source and the plants where the water is treated and tested.

Our plant operators, water quality experts, engineers and maintenance crews work 24/7 to ensure that water is always there when you need it. Delivering reliable water service to your tap also requires significant investment to upgrade the aging water infrastructure. In 2017 alone, we invested more than $20 million in water system improvements statewide.

We do this because Virginia American Water delivers more than just water service. We distribute a key resource for public health, fire protection, the economy and overall quality of life. Our job is to ensure that quality water keeps flowing not only today, but well into the future. It's part of our commitment to you and the communities we serve. We hope you agree that your water quality is worth every penny, and worth learning more about.

Please spend time reviewing this report. You'll learn details about the source and quality of your drinking water using data from water quality testing conducted for your local water system from January through December 2017.

Thanks for allowing us to serve you.

Sincerely,

Barry Suits
President

AT LESS THAN A PENNY PER GALLON WATER IS A GREAT VALUE™

Information on the Internet

Virginia American Water, a subsidiary of American Water (NYSE: AWK), is the largest investor-owned water utility in the state, providing high-quality and reliable water services to approximately 320,000 people.

With a history dating back to 1886, American Water is the largest and most geographically diverse U.S. publicly traded water and wastewater utility company. The company employs more than 6,900 dedicated professionals who provide regulated and market-based drinking water, wastewater and other related services to an estimated 15 million people in 46 states and Ontario, Canada. American Water provides safe, clean, affordable and reliable water services to our customers to make sure we keep their lives flowing. For more information, visit amwater.com.

The U.S. EPA Office of Water (www.epa.gov/safewater) and the Center for Disease Control and Prevention (www.cdc.gov) web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health. Also, the Virginia Department of Health and the Virginia Department of Environmental Quality have web sites that provide complete and current information on water issues in Virginia. These web sites are located at (www.vdh.virginia.gov) and (www.deq.state.va.us). All these web sites have numerous links that will direct you to other professional organizations, public education and public health topics related to water.

What Is a Water Quality Report?

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

To comply with Virginia Department of Health and U.S. Environmental Protection Agency (EPA) regulations, Virginia American Water issues a report annually describing the quality of your drinking water. The purpose of this report is to provide you an overview of last year's (2017) drinking water quality. It includes details about where your water comes from and what it contains. We hope the report will raise your understanding of drinking water issues and awareness of the need to protect your drinking water sources.

Where Does My Water Come From?

Virginia American Water, Alexandria District is classified as a consecutive water system. Your drinking water comes from two surface water treatment plants owned and operated by Fairfax Water. The J. J. Corbalis water treatment plant is located on the Potomac River. The Griffith plant is at the Occoquan Reservoir. To learn more about our watershed on the Internet, go to USEPA's Search Your Watershed at www.epa.gov/safewater.

Why does my water sometimes have a chlorine taste and odor?

During the months of April, May, and June, you may notice the taste and odor of chlorine in your water. Every year, during this time, Fairfax Water uses free chlorine instead of the less noticeable combined chlorine (chloramines) as a disinfectant. Free chlorine provides the best method of disinfection during the water main flushing program done each spring to maintain a high level of water quality. Keeping an open container of drinking water in the refrigerator allows the chlorine to dissipate, which usually improves the taste of the water. Change the water in your refrigerated container weekly.

Share This Report

Landlords, businesses, schools, hospitals and other groups are encouraged to share this important water quality information with water users at their location who are not billed customers of Virginia American Water and therefore do not receive this report directly.

Cryptosporidium Information for Potomac River and Occoquan Reservoir

Cryptosporidium is a microbial pathogen sometimes found in surface water throughout the United States. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100 percent removal. Fairfax Water consistently maintains its filtration process in accordance with regulatory guidelines to maximize removal efficiency. Our monitoring indicates the occasional presence of these organisms in the source water. Current test methods do not allow us to determine whether 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, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection.

Cryptosporidium must be ingested in order to cause disease. It may be spread through means other than drinking water, such as other people, animals, water, swimming pools, fresh food, soils and any surface that has not been sanitized after exposure to feces.

Fairfax Water is currently monitoring the Potomac River and Occoquan Reservoir for compliance with Round 2 of the EPA Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR Round 2). The EPA created this rule to provide for increased protection against microbial pathogens, such as *Cryptosporidium*, in public water systems that use surface water sources. Fairfax Water's LT2ESWTR Round 2 monitoring program began in April 2015 and involved the collection of one sample from water treatment plant sources each month for a period of two years. Monitoring for compliance with the LT2ESWTR Round 2 was completed in March 2017.

Under the LT2ESWTR Round 2, the average *Cryptosporidium* concentration determines whether additional treatment measures are needed. A *Cryptosporidium* concentration of 0.075 oocysts/Liter triggers additional water treatment measures. Fairfax Water's raw water *Cryptosporidium* concentrations consistently were below this threshold. Results for LT2ESWTR Round 2 monitoring for the period of 2015 – 2017 are as follows:

Source (before treatment)	Mean *Cryptosporidium* concentration (oocysts/Liter)	Final Bin Assignment under LT2ESWTR Round 2
Potomac River	ND	Bin 1 (no additional treatment required)
Occoquan Reservoir	0.007	Bin 1 (no additional treatment required)

Special Health Information

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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (800) 426-4791.

Water Information Sources

- **Virginia American Water**
  www.amwater.com/vaaw
- **Virginia Department of Health**
  www.vdh.state.va.us
- **United States Environmental Protection Agency (USEPA)**
  www.epa.gov/safewater
- **Safe Drinking Water Hotline:** (800) 426-4791
- **Centers for Disease Control and Prevention**
  www.cdc.gov
- **American Water Works Association**
  www.awwa.org
- **National Library of Medicine/National Institute of Health**
  www.nlm.nih.gov/medlineplus

Other Water Quality Parameters of Interest in Water, Not Regulated

What is the pH range of your water?
Water produced by Fairfax Water's treatment facilities averaged 7.6 pH units in the Alexandria Distribution system. A pH of 7.0 is considered neutral, neither acidic or nor basic.

How hard is your water?
Total hardness is a measure of the concentration of two minerals naturally present in water: calcium and magnesium. High hardness levels cause soap not to foam as easily as it would at lower levels. Hardness levels averaged 126 parts per million or 7.4 grains per gallon which is considered to be hard water.

How much sodium is in your water?
The sodium level for Alexandria was 20.1 ppm. This concentration is above the recommended maximum contaminant level of 20 mg/L for persons on a "strict" sodium diet.

Substances Expected to be in Drinking Water

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 U.S. Environmental Protection Agency's Safe Drinking Water Hotline (800) 426-4791.

The source of drinking water (both tap water and bottled water) includes rivers, lakes, 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.

Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

Lead in Drinking Water

Although we regularly test lead levels in your drinking water, it is possible that lead and/or copper levels at your home are higher because of materials used in your plumbing. If present, elevated levels of lead can cause serious 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. Virginia American Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead and copper exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. You can also use cold water for cooking, drinking, or making baby formula; use low lead containing faucets; and when replacing or working on pipes, use lead-free solder. Virginia American Water remains in full compliance with all of the requirements dealing with lead in drinking water. If you are concerned about lead in your drinking 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 National Lead Information Center (800-LEAD-FYI) or the Safe Drinking Water Hotline at 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

How to Read the Data Tables

Virginia American Water conducts extensive monitoring to ensure that your water meets all water quality standards. The results of our monitoring are reported in the tables to the left. While most monitoring was conducted in 2017, certain substances are required to be monitored less than once per year and represent the most current results available. For help with interpreting this table, see the "Table Definitions" section.

Starting with a **Substance**, read across. **Year Sampled** is usually in 2017 or year prior. **MCL** shows the highest level of substance (contaminant) allowed. **MCLG** is the goal level for that substance (this may be lower than what is allowed). **Average Amount Detected** represents the measured amount (less is better). **Range** tells the highest and lowest amounts measured. A **Yes** under **Compliance Achieved** means the amount of the substance met government requirements. **Typical Source** tells where the substance usually originates.

Unregulated substances are measured, but maximum allowed contaminant levels have not been established by the government.

Table Definitions and Abbreviations

- **Action Level:** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

- **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 disinfectant routinely allowed in drinking water. Addition of a disinfectant is necessary for control of microbial contaminants.

- **MRDLG (Maximum Residual Disinfectant Level Goal):** 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 contamination.

- **NA:** Not applicable

- **ND:** Not detected

- **NRL:** No regulatory limit

- **NTU - Nephelometric Turbidity Units:** Measurement of the clarity, or turbidity, of water.

- **pCi/L (picocuries per liter):** Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).

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

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

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

- **SS:** Single sample

- **%:** - means percent.

- **>:** - means greater than.

- **<:** - means less than.

Unregulated Contaminant Monitoring

Definition: Unregulated contaminants are those for which the U.S. Environmental Protection Agency has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether regulation is warranted.

The list of unregulated contaminants applicable for monitoring during 2013-2016 under the unregulated contaminants monitoring rule 3 is located on EPA's website at: http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/index.cfm

Water Quality Statement

We are pleased to report that during the past year, the potable water delivered to your home or business complied with, or was better than, all state and federal drinking water requirements. For your information, we have compiled a list in the table, showing what substances were detected in your drinking water during 2017. We feel it is important that you know exactly what was detected and how much of the substance was present in the water.

Your Drinking Water Quality Meets State and Federal Requirements

Turbidity – A Measure of the Clarity of the Process Water from Fairfax Water Treatment Facilities (J.J. Corbalis and Griffith Plants)

Year Sampled	MCL [3]	MCLG	Average Annual Turbidity	Highest Single Measurement	Lowest Monthly % Samples Meeting Treatment Technique Turbidity Limit	Compliance Achieved	Major Source in Drinking Water
2017	TT [1] (NTU) [2]	NA	0.04	0.80	99.999%	Yes	Soil runoff

[1] TT = Treatment Technique
[2] NTU = Nephelometric Turbidity Unit
[3] All turbidity readings were below the treatment technique requirements of not greater than 1 NTU for any single measurement and less than or equal to 0.3 NTU in 95% of all samples taken

Total Organic Carbon (TOC) Removal Measured from Fairfax Water Treatment Facilities (J.J. Corbalis and Griffith Plants)

Total Organic Carbon has no health effects. However, it provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes and haloacetic acids. Compliance with the treatment technique (TT) reduces the formation of these disinfection by-products.

Year Sampled	MCL	MCLG	Quarterly Running Annual Average [4]	Minimum	Maximum	Compliance Achieved	Major Source in Drinking Water
2017	TT [1] (ratio)	NA	1.3	1.0	1.7	Yes	Naturally present in the environment

[1] TT = Treatment technique.
[4] Quarterly Running Annual Average (QRAA) of the monthly ratio of actual Total Organic Carbon (TOC) removal versus required TOC removal between source and treated waters. QRAA is to be ≥1 to be in compliance.
NA = not applicable.

Bacterial Results (Measured in the Alexandria Distribution Network)

Substance (units)	Year Sampled	MCLG	MCL [5]	Highest Percentage Detected	Compliance Achieved	Typical Source
Total Coliform (% Positive samples)	2017	0	5 %	0.79 %	Yes	Bacteria naturally present in the environment

[5] No more than 5% of all the samples tested monthly can be positive.

Disinfection Levels (Measured in the Alexandria Distribution Network)

Substance (units)	Year Sampled	MRDL	MCL	Highest Monthly Average	Range Low-High	Compliance Achieved	Typical Source
Total Chlorine (ppm) [6]	2017	4	NA	2.9	0.9 - 3.5	Yes	Disinfectant used to control microbes

[6] Total Chlorine (Distribution System): In addition to chloramines, free chlorine was used as a disinfectant during the spring. The data shows values for both chlorine and chloramine levels.

Regulated Substances (Measured in the Alexandria Distribution System) - Disinfection By-products

Substance (units)	Year Sampled	MCL	Average Amount Detected[7]	Range Low-High [8]	Compliance Achieved	Typical Source
Total Trihalomethanes (TTHM) ppb [7]	2017	80	25.4	6.5 – 49.9	Yes	By-product of drinking water chlorination
Total Haloacetic Acids (THAA5) (ppb) [7]	2016	60	18.8	2.1 – 41.1	Yes	By-product of drinking water chlorination

[7] Average amount detected is the highest locational running annual average of the 8 stage two compliance sample sites
[8] Range is determined using results from all compliance sites.

Tap Water Samples (from Alexandria Distribution System): Lead and Copper Results for June- August, 2016

Substance (units)	Period of Year Sampled	MCLG	Action Level	Amount Detected 90th Percentile	Number of Samples	Homes Above Action Level	Compliance Achieved	Typical Source
Copper (ppm)	June-August	1.3	1.3	0.136	51	0	Yes	Corrosion of household plumbing
Lead (ppb)	June-August	0	15	ND	51	0	Yes	Corrosion of household plumbing

Regulated Substances (Measured in the Water Entering the Distribution Network by Fairfax Water from J.J. Corbalis, Griffith Treatment Facilities)

Substance (units)	Year Sampled	MCLG	MCL	Average Amount Detected	Range Low-High	Compliance Achieved	Typical Source
Alpha emitters (pCi/L) [9]	2014	0	15	1.79	ND – 3.01	Yes	Decay of natural and man-made deposits
Barium (ppm)	2017	2	2	0.032	ND - 0.053	Yes	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beta / photon emitters[10] (pCi/L) [10]	2017	0	50	2.28	ND – 3.82	Yes	Decay of natural and man-made deposits
Radium 226 (pCi/L)	2014	0	5	0.284	ND - 0.691	Yes	Decay of natural and man made deposits
Fluoride (ppm)	2017	4	4	0.6	ND - 0.8	Yes	Erosion of natural deposits; Water additive which promotes strong teeth
Nitrate - as nitrogen (ppm)	2017	10	10	1.16	0.76 – 1.69	Yes	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite - as nitrogen (ppm)[11]	2017	1	1	0.002	ND - 0.02	Yes	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Bromate (ppb)[12]	2017	10	0	0.5	ND - 10	Yes	By-product of drinking water disinfection

[9] Results are an average of Corbalis 2014 and Griffith 2013 plant data points. pCi/L= picocuries per liter.
[10]The MCL for the Beta particles is written as 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for Beta particles. Results derived from Griffith 2013 data an Corbalis 2017 data.
[11] This result is a mathematical average and is below the detection level for any individual sample result.
[12] Amount detected is the highest quarterly running annual average. The Bromate MCL is based on the highest quarterly running annual average (QRAA) of all monitored sites. The QRAA reported is a mathematical average and is below the detection level for any individual sample result

Unregulated Substances (Measured in the Alexandria Distribution System)

Substances (Units)	Year Sampled	MCLG	MCL	Amount Detected	Range Low-High	Compliance Achieved	Typical Source
Chloroform (ppb)	2017	NRL [13]	NRL [13]	39.0	2.5 – 39.0	NA	By-product of drinking water disinfection
Bromochloroacetic acid (ppb)	2017	NRL [13]	NRL [13]	4.8	1.7 – 4.8	NA	By-product of drinking water disinfection
Bromide (ppm)	2017	NRL [13]	NRL [13]	0.03	ND – 0.03	NA	By-product of drinking water disinfection
Dibromoacetic acid (ppb)	2017	NRL [13]	NRL [13]	1.7	ND – 1.7	NA	By-product of drinking water disinfection
Dichloroacetic acid (ppb)	2017	NRL [13]	NRL [13]	19.7	2.1 – 19.7	NA	By-product of drinking water disinfection
Monobromoacetic acid (ppb)	2017	NRL [13]	NRL [13]	4.7	ND – 4.7	NA	By-product of drinking water disinfection
Bromoform (ppb)	2017	NRL [13]	NRL [13]	0.6	ND -0.6	NA	By-product of drinking water disinfection
Trichloroacetic acid (ppb)	2017	NRL [13]	NRL [13]	15.9	ND – 15.9	NA	By-product of drinking water disinfection
Bromodichloromethane (ppb)	2017	NRL [13]	NRL [13]	8.6	2.1 – 8.6	NA	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2017	NRL [13]	NRL [13]	5.4	1.5 – 5.4	NA	By-product of drinking water disinfection
Chlorate (ppm)	2017	NRL [13]	NRL [13]	0.48	0.11- 0.48	NA	By-product of drinking water disinfection

[13] NRL = No regulatory limit.

Unregulated Substances (From the Distribution System) UCMR 3

Substance (units)	Year Sampled	Results	Range Low-High	Typical Source
Chlorate (ppb)	2015	190	180 – 190	Naturally occurring, discharge from steel and electronics manufacturing
Chromium (ppb)	2015	0.4	0.3 – 0.4	Discharge from steel and pulp mills
Hexavalent Chromium (ppb)	2015	0.08	0.07 – 0.08	Discharge from steel and pulp mills
Strontium (ppb)	2015	183.8	143.2 – 183.8	Soil Runoff