

TOWN OF
Herndon
VIRGINIA



**Drinking Water
Quality**

Annual Report 2013



Drinking Water Quality Annual Report 2013

This report, for Calendar Year 2013, is designed to inform citizens about the town's drinking water quality. Our goal is to provide the Town of Herndon with a safe and dependable supply of drinking water, and to inform concerned citizens of the efforts taken to protect the water supply. The quality of the drinking water must meet strict state and federal requirements administered by the Virginia Department of Health (VDH).

If you have questions about this report, or if you desire additional information about any aspect of your drinking water or desire to know how to participate in decisions that may affect the quality of your drinking water, please contact Andrew Barnes at the Department of Public Works at (703) 435-6853.

Si Usted tiene preguntas acerca de este reporte o si desea informacion adicional acerca de cualquier aspecto del agua para beber o desea saber como participar en decisiones que puedan afectar la calidad del agua que usted bebe; por favor contacte a Andrew Barnes del Departamento de Obras Publicas al (703) 435-6853.

Ordinances and resolutions pertaining to water quality and distribution are advertised locally prior to Town Council hearings. Town Council work sessions and regular sessions are held twice a month on Tuesday nights except for the months of December, June, July, and August. In each of these months Town Council meets for only one work session and one regular session.

Please refer to the town calendar regarding dates and times of these meetings.

General Information

Drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water is a health risk. More information 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 and Centers for Disease Control (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).

The sources of drinking water (both tap water and bottled water) include 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: (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; (2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; (3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; (4) 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 storm water runoff, and septic systems; (5) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities. 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. The Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Sources of Drinking Water in the Town of Herndon

The Town of Herndon purchases finished water from Fairfax Water. Fairfax Water draws surface water from two primary sources: the Potomac River and the Occoquan Reservoir, which is fed by the Occoquan River. Treatment facilities are located at opposite ends of Fairfax County and feed an interconnected distribution system. The James J. Corbalis, Jr. Treatment Plant, located in the northern part of Fairfax County, draws water from the Potomac River. The Frederick P. Griffith Jr. Treatment Plant, which draws water from the Occoquan Reservoir, is located on the southern border of Fairfax County. Even though Fairfax Water is an interconnected distribution system, because of the northern location of the Town of Herndon within Fairfax County, the Town of Herndon received water solely from the James J. Corbalis treatment plant during 2013.

Source Water Assessment and Protection

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive Source Water Assessment Programs that identify the watersheds that supply public tap water, provide an inventory of contaminants in the watershed, and assess susceptibility to contamination in the watershed. Source water assessments for Fairfax Water watersheds were conducted by the Virginia Department of Health. Based on the criteria developed by the state, the Potomac River and Occoquan reservoir were determined to be of high susceptibility to contamination. This determination is consistent with the state's finding of other surface waters (rivers, lakes, streams) throughout the Commonwealth of Virginia.

The assessment consists of maps of the watershed area that were evaluated, an inventory of known land use activities, and documentation of any known source water contamination within the last five years. A secure version of the report is available by contacting Fairfax Water at 703-698-5600, or by visiting Fairfax Water's website at www.fairfaxwater.org.

Treatment of the Town of Herndon Drinking Water Supply

Water treatment is the process of cleaning raw water so it is safe for human consumption. When raw water enters the treatment plant, coagulants are added to make small particles adhere to one another, become heavy, and settle in a sedimentation basin.

Ozone is used to reduce odors and organic materials. The water is then filtered to remove the remaining fine particles. Chlorine is added to kill harmful bacteria and viruses. A corrosion inhibitor is added to minimize dissolution of lead used in older household plumbing, and fluoride is added to protect teeth. If odors or unpleasant tastes are present in the raw water, powdered activated carbon and potassium permanganate may be added to the treatment process.

Test Results

Some sample results were obtained from Fairfax Water because that agency monitors and supplies the water source to our system.

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The tables list only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

Some of our water quality data is from testing done prior to 2013. However, the state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Even though some of our data may be more than one year old, it is accurate.

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

Compliance with EPA Drinking Water Standards:

Bacteriological Testing Requirements

The Town of Herndon is required to monitor the drinking water system for specific contaminants on a regular basis to ensure drinking water meets the National Primary Drinking Water Requirements.

As part of that monitoring, the Town of Herndon is required to collect samples for total coliform and fecal coliform. During 2013 1 total coliform was detected. Due to the positive results additional samples were collected in accordance to VDH regulations, the results of the additional samples were negative.

Cryptosporidium

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. Fairfax Water's 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, and 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 has completed monitoring of the Potomac River for compliance with the EPA Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). 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 monitoring program began in 2004 and involved the collection of two samples from water treatment plant sources each month for a period of two years. Once monitoring for compliance with the LT2ESWTR was complete, Fairfax Water continued to monitor for *Cryptosporidium* at water treatment plant sources.

Under the LT2ESWTR, the average *Cryptosporidium* concentration determined whether additional treatment measures were needed. A *Cryptosporidium* concentration of 0.075 oocysts/Liter would have triggered additional water treatment measures. Fairfax Water's raw water *Cryptosporidium* concentrations consistently remain below this threshold. The results for Potomac River 2013 are as follows.

Potomac River Recorded *Cryptosporidium* Concentrations for 2013

Source (before treatment)	Average <i>Cryptosporidium</i> concentration (oocysts/Liter)
Potomac River	0.00

Health Information about the Lead in Drinking Water

EPA has established an action level for lead in water of 15 ppb. When lead testing is performed as required by the EPA, 90 percent of the samples must contain less than 15 ppb. This is usually referred to as the 90th percentile results being less than 15ppb. The action level was not designed to measure health risks from water represented by individual samples. Rather, it is a statistical trigger value that, if exceeded, may require more treatment, public education, and possibly lead service-line replacement where such line exist.

The Town of Herndon has been testing for lead in accordance with EPA Standards and for testing performed in 2011 no sampling site has exceeded the action level. If lead is 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 Town of Herndon 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 exposure by flushing your tap for 15 to 30 seconds or until it becomes cold or reaches a steady temperature 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 Safe Drinking Water Hotline at 1-800-426-4791 or <http://water.epa.gov/drink/info/lead/index.cfm>

I. Definitions

Contaminants in your drinking water are routinely monitored according to federal and state regulations. The tables on the next two pages show the most recent results of our monitoring. In the tables 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 those terms.

Parts per million (ppm) - one part per million. This fraction corresponds to one minute in two years or a single penny in \$10,000.00.

Parts per billion (ppb) - one part per billion. This fraction corresponds to one minute in 2,000 years or a single penny in \$10,000,000.00.

Parts per trillion (ppt) - one part per trillion. This fraction corresponds to one minute in 2,000,000 years or a single penny in \$10,000,000,000.00.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity or cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of the filtration system.

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

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

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.

NRL - no regulatory limit.

Maximum Residual Disinfectant Level Goal (MRDLG) - 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.

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.

Minimum Reporting Level (MRL) - The minimum concentration that can be reported as a quantitated value for a target analyte in a sample following analysis.

Water Quality Results

II. Lead and Copper Contaminants

Contaminant	Units of Measurement	Action Level	MCLG	Results of samples for the 90th Percentile Value	Action Level Exceedance (Y/N)	Sampling Year	# of Sampling Sites Exceeding Action Level	Typical Source of Contamination
Lead	ppb	15	0	0.72	N	2011	0	Corrosion of household plumbing systems
Copper	ppm	1.3	1.3	0.094	N	2011	0	Corrosion of household plumbing systems

III. Microbiological Contaminants

Microbial Results	MCLG	MCL	Result	Violation	Major Source in Drinking Water
Total Coliform Bacteria	1	1 Positive sample	1	N	Naturally present in the environment
Fecal Coliform Bacteria	0	MCL is exceeded when a routine sample and repeat sample are Total Coliform positive, and one is also Fecal Coliform or E.coli positive.	0	N	Human and animal fecal wastes

A minimum of 25 samples are collected monthly from the distribution system for microbial analysis. In 2013, one routine samples collected was positive for Total coliform bacteria. In the required repeat testing of the original sample location and two other locations in close vicinity, test results for Total and Fecal Coliform bacteria were negative, therefore not exceeding the maximum contaminant level for fecal and total coliform.

IV. Turbidity

Contaminant	Treatment Technique Limits	Average Annual Turbidity	Level Detected	Violation (Y/N)	Sampling Year	Major Source of Contamination
Turbidity	1. 1 NTU maximum 2. 0.3 NTU, 95% of the time	0.04	1) Highest Single Measurement = 0.29 2) Lowest Monthly Percentage = 100%	N	2013	Soil Runoff

V. Total Organic Carbon

Contaminant	MCL	MCLG	Quarterly Running Annual Average	Minimum	Maximum	Major Source in Drinking Water
Total Organic Carbon	TT (ratio)	n/a	1.1	1.0	1.7	Naturally present in the environment

1. TT = Treatment Techniques, Total Organic Carbon has no health effects. However, it provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes and haloacetic acids. Compliance with the treatment technique reduces the formation of these disinfection byproducts.
2. Quarterly Running Annual Average for the monthly ratio of actual Total Organic Carbon removal versus required Total Organic Carbon removal between source and treated waters. QRAA is to be ≥ 1 to be in compliance.

VI. Disinfection and Disinfection Byproducts

Contaminant	Unit of Measurement	MRDLG	MRDL	Highest Quarterly Running Annual Average	Range of Individual Test Results	Violations (Y/N)	Sampling Year	Major Source of Contamination
Total Chlorine	ppm	4	4	1.71	0.4 - 3.0	N	2013	Water additive used to control microbes

Contaminant	Unit of Measurement	MCLG	MCL	Highest Quarterly Locational Running Annual Average	Range of Individual Test Results	Violations (Y/N)	Sampling Year	Major Source Of Contamination
Total Trihalomethanes (TTHMs)	ppb	NA	80	22	5.3 - 33.6	N	2013	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5)	ppb	NA	60	15	2.8 - 18.8	N	2013	Byproduct of drinking water chlorination

Contaminant	Unit of Measurement	MCLG	MCL	Highest Quarterly Running Annual Average	Range of Individual Test Results	Violations (Y/N)	Sampling Year	Major Source of Contamination
Bromate	ppb	0	10	1	ND - 8	No	2013	Byproduct of drinking water disinfection

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.

VII. Regulated Contaminants

Contaminant	Unit of Measurement	MCLG	MCL	Highest Level Detected	Range of Detection at Sampling Points	Violations (Y/N)	Sampling Year	Major Source of Contamination
Barium	ppm	2	2	0.048	0.029 – 0.048	N	2013	Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits
Fluoride	ppm	4	4	0.8	0.6– 0.8	N	2013	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Nitrate (as Nitrogen)	ppm	10	10	1.6	0.4– 1.6	N	2013	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as Nitrogen)	ppm	1	1	0.01	ND– 0.01	N	2013	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

VIII. Unregulated Contaminant Monitoring

The EPA uses the Unregulated Contaminant Monitoring (UCM) program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the Safe Drinking Water Act (SDWA). Data collected through this program will be used by the EPA to develop regulatory decisions for emerging contaminants. Monitoring for the Town of Herndon occurred between July and December of 2013 and will continue into 2014. Of the 30 contaminants on the EPA's list, 6 were detected in Herndon's water supply.

Contaminant	Unit of Measurement	MRL	Average Level Detected	Range of Detection at Sampling Points	Sampling Year
Chlorate	ppb	20	178	130 - 220	2013
Chromium, Total	ppb	0.2	0.313	0.26 - 0.34	2013
Hexavalent Chromium (CR-6)	ppb	0.03	0.190	0.1 - 0.28	2013
Molybdenum	ppb	1.0	1.3	ND - 1.3	2013
Strontium	ppb	0.3	162	110 - 200	2013
Vanadium	ppb	0.2	0.69	0.57 - 0.84	2013

