

The logo for Fairfax Water, featuring the company name in a bold, sans-serif font. A stylized water droplet is integrated into the letter 'o' of 'Water'. A horizontal line is positioned below the text, with the droplet shape extending through it.

**Fairfax Water**

Annual Report on

**WATER  
QUALITY  
2007**

**Q.** What's the short answer to "How's my water quality?"

**A.** Excellent! This report contains a lot of information and data. But the short answer is that, of the more than 120 contaminants for which we test, we found very few. Those found were in negligible amounts that are well below EPA's maximum contaminant levels. Fairfax Water's goal is to continue to deliver the highest-quality water possible to our customers. Through the use of the best available technologies in treating drinking water, we believe we do just that!

*Important Information from EPA about...*

## Drinking Water and People with Weakened Immune Systems

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 microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

*cont. on page 8*

# ANNUAL REPORT ON WATER QUALITY JUNE 2007

*Fairfax Water's goal is to provide a reliable, high-quality and dependable supply of drinking water to more than 1.3 million friends, neighbors, and family members in Northern Virginia who drink our water. We don't need any other reason to demand the highest in water quality standards and service!*

*This Annual Report on Water Quality was produced to inform you about the quality of your drinking water. We want to thank you for taking the time to read through the information. The information in this report represents data collected and reported in 2006.*

*Your drinking water must meet stringent state and federal requirements developed by the Environmental Protection Agency (EPA) and administered by the Virginia Department of Health. Fairfax Water tests the treated drinking water for more than 120 constituents. The regulated contaminants that were detected are listed on the charts at the center of this report. All of those listed are well below EPA's maximum contaminant levels.*

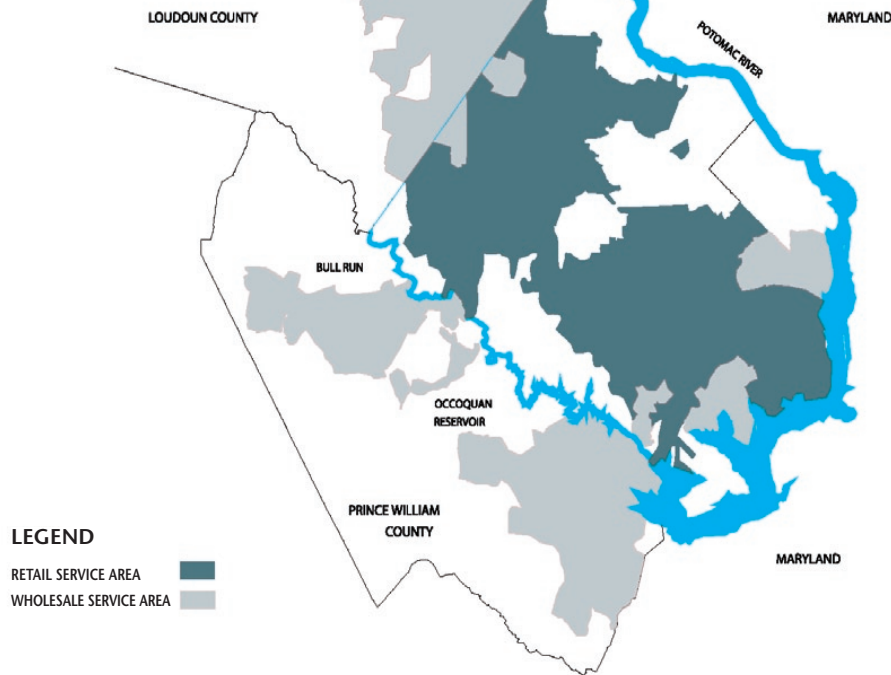
*This report was prepared under the requirements of the Safe Drinking Water Act. While we know our customers appreciate receiving this information, cost is always a concern. This report was designed, printed, and distributed for less than 13 cents per copy. If you have questions regarding this report, please call us at 703-698-5800.*

**Fairfax Water**

8570 Executive Park Avenue  
Fairfax, Virginia 22031  
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<http://www.fairfaxwater.org>



## Fairfax Water Service Areas



\*In 2006, Fairfax Water purchased small quantities of water from neighboring utilities. These purchases totaled only 0.1% of Fairfax Water's total water sold in 2006.

## What's the Source of My Water?

Fairfax Water draws surface water from two primary sources: the Potomac River and the Occoquan Reservoir, which is fed by the Occoquan River.\* Our treatment facilities are located at opposite ends of Fairfax County and feed an interconnected distribution system. The James J. Corbalis, Jr. Treatment Plant, located at the northern tip of our service area, draws water from the Potomac River. The Occoquan Reservoir, on the southern border of Fairfax County, supplies the Frederick P. Griffith, Jr. Treatment Plant near the Town of Occoquan.

## Water Quality Improvements

As Fairfax Water continues to meet or exceed all water quality standards, we need to remain diligent in our efforts to improve our product and service.

### Griffith Water Treatment Plant

The new Frederick P. Griffith, Jr. Water Treatment Plant was placed in service on May 4, 2006. The plant features advanced drinking-water treatment with ozone and granular activated carbon filters. Ozone is a powerful disinfectant and oxidant that enhances the already high quality of treatment by further reducing the production of disinfection

by-products (regulated substances by the EPA). Six-foot-deep carbon filters provide additional removal of natural organic substances that sometimes cause taste and odors in drinking water. The final result is a very high-quality drinking water being served to our more than 1.3 million customers in Northern Virginia. Fairfax Water's other drinking water treatment facility, the Corbalis Water Treatment Plant located in the northern end of Fairfax County, was the first drinking-water utility in Virginia to use ozone treatment in 2001.

*Need more information or additional copies of this report?*

*Contact Fairfax Water's Customer Service Department at 703-698-5800.*

**Q.** Can I store drinking water indefinitely?

**A.** No. The disinfectant in drinking water will eventually dissipate even if it is stored in a closed container. Some experts believe that water could be stored in a closed container up to six months before needing to be replaced.

**Q.** How are bacteria that can make people sick kept out of drinking water?

**A.** Chemicals called disinfectants are added to drinking water at the treatment plant to inactivate bacteria that may remain in the water after the treatment process. Fairfax Water's primary disinfectant is chlorine. Chloramines, a stable form of chlorine, are added to the treated drinking water to keep a disinfectant residual throughout the distribution system. During the spring months, Fairfax Water performs its annual flushing program. This flushing program is designed to remove residue from the water pipes that deliver water to your home.



## 2006 SUMMARY OF FINISHED WATER CHARACTERISTICS – FAIRFAX WATER

Components	Northern and Southern Water Treatment Plant Data Results							
	Units	MCLG	MCL	Average	Minimum	Maximum	Violation	Major Source in Drinking Water
Atrazine	ppb	3	3	0.03	ND	0.09	No	Runoff from herbicide used on row crops
Hexachlorocyclopentadiene	ppb	50	50	0.01	ND	0.07	No	Discharge from chemical factories
Chloroform	ppb	NRL	NRL	19.8	7.3	38.7	No	By-product of drinking water disinfection
Bromodichloromethane	ppb	NRL	NRL	10.2	3.7	48.5	No	By-product of drinking water disinfection
Chlorodibromomethane	ppb	NRL	NRL	2.2	0.6	3.0	No	By-product of drinking water disinfection
Metolachlor	ppb	NRL	NRL	0.01	ND	0.10	No	Runoff from herbicide used on row crops
Barium	ppm	2	2	0.034	0.026	0.044	No	Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits
Mercury [inorganic]	ppb	2	2	ND	ND	0.7	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland.
Fluoride	ppm	4	4	0.9	0.6	1.5	No	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Nitrate [as Nitrogen]	ppm	10	10	1.3	0.3	2.4	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite [as Nitrogen]	ppm	1	1	ND	ND	0.06	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Beta/photon emitters <sup>1,2</sup>	pCi/L	0	50	3.6	ND	4.9	No	Decay of natural and man-made deposits
Alpha Emitters <sup>3</sup>	pCi/L	0	15	0.7	0.2	1.6	No	Erosion of natural deposits
Radium 228 <sup>3</sup>	pCi/L	0	5	0.6	0.2	1.2	No	Erosion of natural deposits

Microbial Results <sup>6</sup>	MCLG	MCL	FW result	Major Source in Drinking Water	Violation
Total Coliform Bacteria	0	Presence not to exceed 5% of monthly samples	1.09%	Naturally present in the environment	No
Fecal Coliform Bacteria	0	A routine sample and repeat sample are Total Coliform positive, and one is also Fecal Coliform or E. coli positive.	0	Human and animal fecal wastes	No

Total Trihalomethanes (ppb)					
Quarterly Running Annual Average	Highest Quarterly System Running Annual Average	System Range	Violation	Major Source in Drinking Water	
MCLG	MCL				
0	80	27	4 - 40	No	By-product of drinking water disinfection

Haloacetic acids (5) (ppb)					
Quarterly Running Annual Average	Highest Quarterly System Running Annual Average	System Range (ppb)	Major Source in Drinking Water	Violation	
MCLG (ppb)	MCL (ppb)				
0	60	27	4 - 37	By-product of drinking water disinfection	No

Total Chlorine (ppm)						
MRDLG	MRDL	Highest Quarterly Average	Minimum	Maximum	Violation	Major Source in Drinking Water
4	4	3.4	1.0	5.0	No	Water additive used to control microbes

Metals <sup>7</sup>					
	Action Level	FCWA 90th Percentile	Number of Sites Above Action Level	Violation	Major Source in Drinking Water
Copper	1.3 ppm	0.064	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead	15 ppb	1	0	No	Corrosion of household plumbing systems; erosion of natural deposits

### Additional Water Quality Information

Fairfax Water tests for over 120 regulated and non-regulated parameters. The regulated parameters that were detected are listed on these pages. To learn more and view additional water-quality information, please visit our website at <http://www.fairfaxwater.org/water/index.htm>.

### Turbidity (NTU)

Turbidity levels are measured during the treatment process after the water has been filtered, but before disinfection. The turbidity level of filtered water shall be less than or equal to 0.3 NTU in at least 95% of the measurements taken each month, and shall at no time exceed 1 NTU.

MCL	TT(NTU)
MCLG	TT(NTU)
Average Annual Turbidity	0.07
Highest Single Measurement	0.50
Lowest Monthly % Samples Meeting Treatment Technique Turbidity Limit	100%
Major Source in Drinking Water	Soil runoff
Violation	No

### Some Terms Defined

Contaminants in your drinking water are routinely monitored according to federal and state regulations. The tables on these pages show the results of our monitoring for the period of January 1, 2005, to December 31, 2005 (unless otherwise noted). In the tables and elsewhere in this report, you will find many terms and abbreviations with which you might not be familiar. The following definitions are provided to help you better understand these terms:

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

**Maximum Contaminant Level Goal or 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 Contaminant Level or 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.

**Total Trihalomethanes:** A group of organic chemicals that are formed in the water-treatment process by the reaction of the disinfectant chlorine with natural organic matter in the source water. Compliance is based on a running annual average.

**Total Coliform:** A bacteria that indicates other potentially harmful bacteria may be present.

**90th Percentile:** Represents the highest value found out of 90 percent of the samples taken in a representative group. If the 90th percentile is greater than the action level, it will trigger a treatment or other requirement that a water system must follow.

**Turbidity:** A measure of the clarity of water. Turbidity is measured in Nephelometric Turbidity Units (NTU). Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth.

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

### Total Organic Carbon

MCL	TT <sup>4</sup> (ratio)
MCLG	N/A
Quarterly Running Annual Average <sup>5</sup>	1.2
Minimum	0.6
Maximum	1.6
Major Source in Drinking Water	Naturally present in the environment
Violation	No

### Key to Charts

MCLG	Maximum Contaminant Level Goal
MCL	Maximum Contaminant Level
MRDLG	Maximum Residual Disinfectant Level Goal
MRDL	Maximum Residual Disinfectant Level
N/A	Not Applicable
ND	Non-detect
NRL	No Regulatory Limit
NTU	Nephelometric Turbidity Unit
pCi/L	Picocuries per liter
ppb	Parts per billion, corresponds to one penny in \$10,000,000
ppm	Parts per million, corresponds to one penny in \$10,000
QRAA	Quarterly Running Annual Average
TT	Treatment Technique

<sup>1</sup> The MCL for the Beta particles is written as 4mrem/year. EPA considers 50 pCi/L to be the level of concern for Beta particles.

<sup>2</sup> Results are an average of Lorton/Occoquan 2003, Corbalis 2005, and Griffith 2006 data points.

<sup>3</sup> Testing performed in 2003 for Corbalis, Lorton, and River Station plants; 2006 for Griffith plant.

<sup>4</sup> TT = Treatment Technique, 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.

<sup>5</sup> Quarterly Running Annual Average (QRAA) of 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.

<sup>6</sup> Whenever positive samples occur, appropriate actions, such as investigation and recollection of samples, are taken until the concern is addressed.

<sup>7</sup> Testing performed in 2005.

Q. Where does lead in drinking water come from?

A. Although some utility source waters contain lead, Fairfax Water's sources do not. In 1986, lead was banned from being used in pipe and solder. In older homes where lead is present in pipe and solder connections, it may dissolve into the water after the water sits for long periods of time. We add a corrosion inhibitor to slow this dissolution process. If you think lead may be present in the plumbing of your home, let your cold water run from the faucet for 60 to 90 seconds prior to using for drinking or cooking.

Q. Is it okay to use water from the hot-water tap for drinking, cooking, or making baby formula?

A. Hot water generally comes from a hot-water heater that may contain impurities that should not be ingested. Some of these impurities might be metals from household plumbing that are concentrated in the heating process. Additionally, these impurities from household plumbing dissolve more rapidly in hot water, causing the amount of impurities to be higher in hot water.



## Source-Water Assessment and Protection

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive source-water assessment programs that do the following: identify the watersheds that supply public tap water; provide an inventory of contaminants present in the watershed; and assess susceptibility to contamination in the watershed. Source-water assessments for the watersheds were conducted by the Virginia Department of Health. Based on the criteria developed by the State, the Potomac River and the 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 evaluated watershed area, 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 or visiting our website at [www.fairfaxwater.org](http://www.fairfaxwater.org).

## Cryptosporidium

*Cryptosporidium* is a single-celled organism that lives and reproduces within the intestines of an animal host. During its life cycle it matures into resistant cells called oocysts that can be shed in feces. The disease caused by *Cryptosporidium* is called *Cryptosporidiosis* and is caused by infection with oocysts.

People can be exposed to oocysts from other people, animals, water, swimming pools, fresh food, soils, and any surface that has not been sanitized after exposure to feces. Symptoms range from a mild to incapacitating diarrhea, cramps, loss of appetite, weight loss, nausea, and low-grade fever.

Fairfax Water has completed monitoring the Potomac River and Occoquan Reservoir for compliance with the U.S. Environmental Protection Agency's (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. Even though the required compliance monitoring for the LT2ESWTR is complete, Fairfax Water is continuing to monitor for *Cryptosporidium* at water treatment plant sources on a monthly basis. The data collected in 2006 is summarized below:

Source (before treatment)	Average <i>Cryptosporidium</i> concentration (oocysts/Liter)
Potomac River	0.026
Occoquan Reservoir	0.021

Under the LT2ESWTR, the average *Cryptosporidium* concentration determines if additional treatment measures are needed. A *Cryptosporidium* concentration of 0.075 oocysts/Liter triggers additional water treatment measures. As noted in the table, Fairfax Water's source water *Cryptosporidium* concentrations are well below this threshold.

## Opportunities for Public Participation

Fairfax Water's Board of Directors normally meets the first and third Thursday of each month at 6:30 p.m. in the Board Room of its offices at 8570 Executive Park Avenue, Fairfax, Virginia. Notices of public hearings and other opportunities for public participation are posted in the lobby and on the website at [www.fairfaxwater.org](http://www.fairfaxwater.org).

## Questions and Answers about Lead in Drinking Water

### What is the EPA standard for lead in drinking water?

EPA has established an action level for lead in water of 15 parts per billion. When lead testing is performed as required by EPA, 90 percent of the samples must contain less than 15 parts per billion. This is usually referred to as the 90th percentile results being less than 15 parts per billion. 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 lines exist.

Fairfax Water has been testing for lead in accordance with this rule since 1992 and has consistently tested below the action level established in the Lead and Copper Rule.

In 2005, the 90th percentile value for lead was 1.0 part per billion, compared to the EPA action level of 15 parts per billion. The next round of testing is being conducted January through June 2007.

### What can I do in my home to reduce my exposure to lead in the drinking water?

- The simplest and most cost-effective solution is to flush your faucet. The EPA advises flushing the faucet for 60 to 90 seconds if the home water supply has been idle for six hours or more.
- Cook only with cold water.
- Some people choose to install a filter in their home. If you choose to use a water filter, follow these three rules:
  1. Choose one designed for the specific filtration desired (e.g., chlorine, lead, *Cryptosporidium*, etc.);
  2. Make sure the filter is approved by the National Sanitation Foundation ([www.nsf.org](http://www.nsf.org)); and,
  3. Maintain the filter as directed.

### Can I have the water in my house tested?

Yes. For information on having a lead-level test conducted, call our Customer Service Department at **703-698-5800**. The charge for lead-level testing of your home's water is \$35.00 per faucet. Additional information is available from EPA's Safe Drinking Water Hotline (800-426-4791).

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

A. During the months of April, May, and June, you may notice the taste and odor of chlorine in your water. That is because, during this time, we use free chlorine instead of the less noticeable combined chlorine (chloramines). Free chlorine provides the best method of disinfection during the water-main flushing 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. Remember - drinking water has a shelf life. Change out the water in your refrigerated container weekly.

## Water Quality and Treatment

Fairfax Water's goal is to continue to deliver to our customers the highest level of water quality possible. To reach this goal, Fairfax Water promotes the use of the best available technologies and practices in treating drinking water. Water treatment is the process of cleaning water to make it safe for human consumption. When untreated 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 passed through the settled water and the water is then filtered by carbon to remove remaining fine



particles. The water is then disinfected with chlorine to kill harmful bacteria and viruses. A corrosion inhibitor is added to help prevent lead leaching from older household plumbing. Fluoride is added to protect teeth. If odors or unpleasant tastes are present in raw or finished waters, powdered activated carbon and potassium permanganate are added to the treatment process.

## Ozone Treatment

One technology we use for both disinfection as well as taste and odor control is ozone treatment. Ozone is created by applying an electrical current to pure oxygen in specially designed chambers. From the chambers, ozone is disbursed in the settled water. Ozone breaks down organic matter in the water into small particles that are then captured in the filtration process. There are many benefits to using ozone, such as the inactivation of *Cryptosporidium* and *Giardia*, improvements in taste and odor, and reductions in the formation of disinfection by-products.

## Sources of Drinking Water

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 by-products 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.



## Contaminants

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.

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 Safe Drinking Water Hotline (800-426-4791).

Fairfax Water  
8570 Executive Park Avenue  
Fairfax, VA 22031

This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

이 보고서에는 귀하가 거주하는 지역의 수질에 관한 중요한 정보가 들어 있습니다. 이것을 번역하거나 충분히 이해하시는 친구와 상의하십시오.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradúzcalo o hable con alguien que lo entienda bien.

Bản báo cáo có ghi những chi tiết quan trọng về phẩm chất nước trong cộng đồng quý vị. Hãy nhờ người thông dịch, hoặc hỏi một người bạn biết rõ về vấn đề này.