

City of Manassas Park 2010 Water Quality Report



Continuing Our Commitment

Once again we proudly present our annual water quality report. This edition covers all testing completed from January 1, 2010 to December 31, 2010.

As in the past, we are committed to delivering the highest quality drinking water. To that end, we remain vigilant in meeting the challenges of improving the City's water quality, availability and delivery system assets to serve the citizens of Manassas Park well into the future.

For more information about this report, or for any questions relating to your drinking water, contact :
James A. Johnson, Jr., Public Works Director (703) 393-8840 or Laura Coughanour (703) 393-0881.



Lead in Drinking Water

Lead is a naturally occurring element in our environment. Consequently, our water supply is expected to contain small, undetectable amounts of lead. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. A dose that would have little effect on an adult can have a big effect on a small body.

On average, it is estimated that lead in drinking water contributes between 10% and 20% of the total lead exposure in young children.

All kinds of water may have high levels of lead. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Manassas Park provides drinking water supply at an optimum pH and mineral content level to help prevent corrosion in your home's pipes. The City of Manassas Park is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

The EPA estimates that more than 40 million U.S. residents use water that can contain lead in excess of the EPA's action level of 15 ppb. 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. Use only water from the cold-water tap for drinking, cooking and for making baby formula. Hot water is likely to contain higher levels of lead.

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 National Lead Information Center at 800-LEAD-FYI and the Safe Drinking Water Hotline at 800-426-4791 or at <http://www.epa.gov/safewater/lead>.

Water Sources—Where Does My Water Come From?

The city is divided into two zones: a high-pressure zone and a low-pressure zone. Hydraulic grade lines define these zones. The low-pressure zone serves all areas west of Route 28 and the high-pressure zone serves all areas east of Route 28.

The high-pressure zone is supplied with surface water drawn from the Potomac River, treated at Fairfax Water's Northern Treatment Facility, The James J. Corbalis Plant and purchased from the **Prince William County Service Authority (PWCSA)**

The low-pressure zone is supplied with surface water drawn from Lake Manassas, a 790+ acre impoundment on Broad Run located in Western Prince William County that holds 5.3 billion gallons of water at full capacity. Water from Lake Manassas is treated at the **City of Manassas Water Treatment Plant** and purchased from the City of Manassas.

For more information regarding these watersheds, go to the U.S. Environmental Protection Agency (EPA) Surf Your Watershed at www.epa.gov/surf.

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive Source Water Assessment Programs that provide the following information:

- Identification of watershed that supplies public tap water
- An inventory of contaminants present in the watershed
- An assessment of watershed susceptibility to contamination

The Virginia Department of Health (VDH) conducted a Source Water Assessment of the Lake Manassas Reservoir and the Potomac River in 2002. Both watersheds were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. This determination is consistent with the state's finding of other surface waters throughout the Commonwealth of Virginia.

VDH assessment reports consist of maps that illustrate source water assessment areas, an inventory of known land use activities and documentation of any known source water contamination within the last five years.

You may access these reports as follows:

City of Manassas: (Lake Manassas) Contact Tony Dawood, City of Manassas Deputy Director of Water & Sewer at (703) 257-8380.

PWCSA: (Prince William County Service Authority — Fairfax Water - Potomac River) call (703) 698-5600 or go to www.fairfaxwater.org and click on *Water Quality*.

Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as individuals 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. The U.S. EPA and Centers for Disease Control and Preventions (CDC) provide guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants, and are available from the Safe Drinking Water Hotline at 1-800-426-4791.

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state requires us to monitor for certain substances less than once per year because the concentration of these substances does not change frequently. In these cases, the most recent sample data are included along with the year in which the sample was taken.

Disinfection & Disinfection By-Products	Unit of Measure	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW - HIGH	VIOLATION	TYPICAL SOURCE
Chlorine	ppm	4	4	3.9	0.10 – 3.9	No	Water additive used to control microbes
Haloacetic Acids [HAA]	ppb	60	60	17	1 - 36	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes]	ppb	80	80	37	6.3 - 70.6	No	By-product of drinking water chlorination.

Contaminants	Unit of Measure	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW - HIGH	VIOLATION	TYPICAL SOURCE
Barium	ppm	2	2	0.038	0.021 - 0.048	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride	ppm	4	4	0.9	0.71 - 1.1	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	ppm	10	10	1.0	ND - 1.6	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite	ppm	1	1	0.05	ND - 0.08	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Beta/Photon Emitters ⁽¹⁾	pCi/L	50	0	1.5	ND - 4.04	No	Decay of natural and man-made deposits.

(1) The MCL for beta particles is 4 mrem/year. U.S. EPA considers 50 pCi/L to be the level of concern for beta particles. Testing performed in 2002 and 2008.
 ND - Non detect
 Contaminant information provided by the City of Manassas Water Treatment Facility and the PWCSA (Fairfax Water—John J. Corbalis Water Treatment Plant)

Total Organic Carbon ²	MCL [MRDL]	MCLG [MRDLG]	Quarterly ³ Running Annual Average	Range Low-High	VIOLATION	TYPICAL SOURCE
TT ⁴ (ratio)		n/a	1.3 ⁵	0.9 -1.7	No	Naturally present in the environment

(2) 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 reduces the formation of these disinfection by products.
 (3) Ratio of actual Total Organic Carbon removal versus required Total Organic Carbon removal between source and treated waters.
 (4) TT - Treatment Technique
 (5) Quarterly Running Annual Average (QRAA) of the monthly ratio of actual Total Organic Carbon removal versus required Total Organic Removal between source and treated waters.
 QRAA is to be ≥ 1 to be in compliance.
 n/a = not applicable
 Total Organic Carbon information provided by the City of Manassas Water Treatment Plant and the PWCSA (Fairfax Water— John J. Corbalis Water Treatment Plant)

Turbidity ⁶	MCL	MCLG	Average Annual Turbidity	Highest Single Measurement	Lowest Monthly % Samples meeting Treatment Turbidity Limit	TYPICAL SOURCE
	TT ⁷ (NTU ⁷)		n/a	0.05	0.26	100%

(6) Turbidity levels are measured during the treatment process after 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.
 (7) NTU = Nephelometric Turbidity Unit
 n/a = not applicable
 Turbidity information provided by the City of Manassas Water Treatment Plant and the PWCSA (Fairfax Water— John J. Corbalis Water Treatment Plant)

Lead and Copper	Unit of Measure	Action Level	MCLG	Amount Detected (90th Percentile)	Sites Above Action Level	Violation	TYPICAL SOURCE
Copper ⁸	ppm	ND	1.3	0.1	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead ⁸	ppb	ND	0	ND	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

(8) Lead and Copper: Tap water samples were collected from 60 sample sites throughout the community in 2009.

Microbiological Results	MCLG	MCL	Detection	Violation	TYPICAL SOURCE OF CONTAMINATION
Total Coliform Bacteria	0	Presence in less than 1 samples each month.	1	No	Naturally present in the environment

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Table Definitions

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

NRL: (No regulatory limit)

ND (Not Detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, 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).

Removal Ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

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

Turbidity: A measure of the clarity of the water, measured in Nephelometric Turbidity Units (NTU). Turbidity has no health effects, however it can interfere with disinfection while providing a medium for microbial growth.

QRAA: Quarterly Running Annual Average



2010 Statement on *Cryptosporidium* Monitoring

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Throughout its life cycle, it matures into resistant cells called oocysts that can be shed in feces. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100% removal. The disease *Cryptosporidiosis* may be caused by ingestion of *Cryptosporidium*.

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, abdominal cramps, loss of appetite, weight loss, nausea, and low-grade fever. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, the elderly, infants and small children 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 infections.

PWCSA Wholesale Water Source: Fairfax Water has completed monitoring of the Potomac River and Occoquan Reservoir 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.

Manassas Wholesale Water Source: The City of Manassas monitored Lake Manassas for compliance with the U.S. Environmental Protection Agency's (EPA) Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) in October 2006. The City of Manassas' monitoring program began in October 2006, and involves the collection of one sample from water treatment plant sources each month for a period of two years. This testing ended in September 2008.

Average *Cryptosporidium* Concentration (oocysts/Liter)

SOURCE (before treatment)	Average <i>Cryptosporidium</i> Concentration (oocysts/Liter)
Lake Manassas	0.016
Potomac River	0

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Substances That Might Be In Drinking Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration (FDA) 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 these contaminants does not necessarily indicate that the water poses a health risk.

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, in some cases radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants: such as viruses and bacteria, this 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 storm water 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 storm water runoff, and residential uses;

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

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 storm water runoff, and septic systems;

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

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791



Water Conservation Tips

Water conservation measures are an important first step in protecting our water supply. Such measures not only save the supply of our source water but can also save you money by reducing your water bill.

Here are a few suggestions to help you conserve water and save money:

Conservation measures you can use inside your home include:

- Fix leaking faucets, pipes, toilets
- Replace old fixtures; install water-saving devices in faucets, toilets, and appliances
- Wash only full loads of laundry
- Do not use the toilet for trash disposal
- Take shorter showers

You can conserve outdoors as well:

- Water the lawn and garden in the early morning or evening
- Use mulch around plants and shrubs
- Repair leaks in faucets and hoses

Information on other ways that you can help conserve water can be found at www.epa.gov/

Cross Connection Control

Cross-connections are unprotected connections between a potable water system and any source or system containing untreated water or a substance that may not be considered safe. Over the last several years, the American Waterworks Association has documented hundreds of incidents nationwide involving cross-connections that have resulted in backflow of contaminants into the potable water supply. Examples include illness caused by pesticides, antifreeze, metals, paint solvents and acid entering the supply.

You may not think of your home as having hazards that might affect the municipal water supply; however, a common garden hose submerged in a pool or a carwash bucket creates a cross connection. If a water main breaks or if a fire hydrant nearby is being used, water pressure drops and the potential exists for a suction event to occur. This means that water in your kiddie pool or carwash bucket could be drawn back into the water system. Once there, the contaminated water could spread quickly to thousands of people. This is a serious concern of all water utilities. We can treat water, but we need to continue to protect it once it leaves the treatment plant and flows through the distribution system.

To prevent contaminants from being drawn into our potable water supply through an undesirable reversal of flow in our distribution system, the Manassas Park Cross Connection Control Plan requires the installation of devices between the potable water supply and source of potential contamination. All homes and businesses should have backflow protection.

For additional information, please refer to our website at www.cityofmanassaspark.us under the tab, "Codes and Ordinances", Chapter 7, Article III.



City of Manassas Park Department of Public Works

James (Jay) Johnson, Director
(703) 335-8850
J.johnson@manassasparkva.gov

Laura Coughanour, Asst.
(703) 393-0881
L.coughanour@manassasparkva.gov