

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018



Presented By
City of Manassas

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

PWS ID#: 6685100

Our Mission Continues

We are pleased to present our annual water quality report covering testing performed between January 1 and December 31, 2018. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Community Participation

You are invited to participate in our Utility Commission meetings and voice your concerns about your drinking water. The Utility Commission meets on the second Thursday of each month, at 5:30 p.m., in the large conference room at the City of Manassas Public Works Building, 8500 Public Works Drive, Manassas, VA 20110. If you would like to attend or have any questions, please contact the Utility Department at (703) 257-8351.

Lead in Home Plumbing

If 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. We are responsible for providing high-quality drinking water, but we 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 30 seconds to 2 minutes 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 (800) 426-4791 or at www.epa.gov/safewater/lead.

The City of Manassas has regularly tested for lead in accordance with the U.S. EPA's Lead and Copper Rule, which was established in 1991. Because the City has demonstrated optimal results, we have been on a reduced monitoring schedule since 2012. The last set of lead and copper testing was performed in 2018 with outstanding results. (See the Test Results tables for more information.)

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



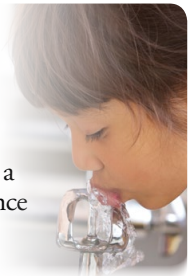
Where Does My Water Come From?

The City of Manassas has two reliable water supply sources for our customers. The primary source is the City of Manassas Water Treatment Plant, which draws water from Lake Manassas, an impoundment on Broad Run in Western Prince William County. The watershed for Lake Manassas covers approximately 74.5 square miles, with the reservoir covering over 880 acres. If needed during peak consumption periods or emergencies, water may be supplied from a second water source, the Prince William County Service Authority (PWCSA). Water from the PWCSA is treated at Fairfax Water's Northern Treatment Facility, the James J. Corbalis Plant, which withdraws water from the Potomac River. To learn more about our watershed, go to the U.S. EPA's Search Your Watershed at www.epa.gov/surf.

Table Talk

Get the most out of the Testing Results data table with these simple suggestions:

- For each substance listed, compare values in the Amount Detected column against the MCL (or AL, SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.
- If there is an ND, that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).
- The Range column displays the lowest and highest readings. Where NA shows, only a single sample was taken to test for the substance in 2018 with the exception of Turbidity.



Source Water Assessment

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive Source Water Assessment Programs to 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. The Virginia Department of Health (VDH) conducted a Source Water Assessment of Lake Manassas in 2002 and found it to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Plan. (It is important to understand that this high susceptibility rating does not imply poor water quality, only the system's potential to become contaminated within the assessment area.) The VDH assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern in Prince William County, and documentation of any known contamination within the five-year study period. The report is available by contacting the City Environmental Program Manager at (703) 257-8342. Another source water assessment will be conducted in the near future.

Water Treatment Process

The City of Manassas Water Treatment Plant's state-licensed operators use multiple processes to remove contaminants from our source water during water treatment. Water treatment is the process of producing pure, clean, high-quality drinking water from the source water. First, raw water from Lake Manassas enters the water treatment plant, where pre-filtration chemicals are added. These chemicals cause the particles contained in raw water to adhere to one another, making them heavy enough to settle out in settling basins, and be removed. After settling, water is filtered through layers of anthracite, gravel, and silicate sand. As smaller suspended particles are filtered out, clear water emerges.

After filtration, chlorine is added as a disinfectant to protect against any bacteria that may still be present. Chlorination is needed to deter the growth of bacteria while the water is flowing through pipes and into your home. We carefully monitor the amount of chlorine, adding the lowest quantity necessary to protect the safety of your water without compromising taste. Following chlorination, ammonia is added to stabilize the chlorine, pH is adjusted, ortho-phosphate is added to prevent corrosion, and fluoride is added to promote strong teeth. Treated finished drinking water is pumped through the distribution system via underground piping to customers in the City of Manassas, Manassas Park, and Prince William County.

The City of Manassas Water Plant is proud to have won an Award for Excellence in Waterworks Operations and Performance in 2018 from the Virginia Department of Health -- Office of Drinking Water.

Substances That Could Be in 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 regulations establish limits for contaminants in bottled water that 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, 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.

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



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BY THE NUMBERS



The number of Olympic-sized swimming pools it would take to fill up all of Earth's water. **800 TRILLION**

1 CENT The average cost for about 5 gallons of water supplied to a home in the U.S.

The amount of Earth's water that is salty or otherwise undrinkable, or locked away and unavailable in ice caps and glaciers. **99%**

50 GALLONS The average daily number of gallons of total home water use for each person in the U.S.

The amount of Earth's surface that's covered by water. **71%**

330 MILLION The amount of water on Earth in cubic miles.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call the City Environmental Program Manager at (703) 257-8342.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water. Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often 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.

Although *E. coli* was detected, the water system is not in violation of the *E. coli* MCL. Repeat sampling confirmed *E. coli* absence in the Manassas distribution system.

We participated in the 4th stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2018	2	2	0.02	NA	No	Erosion of natural deposits
Chlorine (ppm)	2018	[4]	[4]	3.0	0.2–3.9	No	Water additive used to control microbes
Dalapon (ppb)	2018	200	200	0.25	ND–1.00	No	Runoff from herbicide used on rights of way
<i>E. coli</i> ¹ (# positive samples)	2018	see footnote*	0	1	ND–1	No	Human and animal fecal waste
Fluoride (ppm)	2018	4	4	0.47	0.36–0.68	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs] (ppb)	2018	60	NA	37	22–46	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	0.25	NA	No	Runoff from fertilizer use
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	49	27–80	No	By-product of drinking water disinfection
Total Organic Carbon ² (removal ratio)	2018	TT	NA	1.34	1.23–1.60	No	Naturally present in the environment
Turbidity (NTU)	2018	TT	NA	0.099	0.041–0.099	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.127	0/30	No	Corrosion of household plumbing systems
Lead (ppb)	2018	15	0	0.41	0/30	No	Corrosion of household plumbing systems including fittings and fixtures

UNREGULATED AND OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Alkalinity (ppm)	2018	44	NA	A measure of the capacity of water to neutralize acids
Conductivity (µS/cm)	2018	219	NA	Also called specific conductance, a measure of the water's ability to conduct an electric current; Related to the number of ions in the water. Water with higher conductivity contains more ions.
Hardness (ppm)	2018	45	NA	A measure of the amount of calcium and magnesium in the water; Can cause mineral buildup in plumbing; Contributes to the effectiveness of soaps and detergents. The City of Manassas' water is in the slightly hard range.

¹The Revised Total Coliform Rule requires that routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*. Repeat sampling confirmed *E. coli* absence in the Manassas distribution system.

²The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

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

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

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.

NA: Not applicable

ND: Not detected 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.

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 a contaminant in drinking water.

