

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018



Presented By
**City of Hamilton
Water Production**

Our Mission Continues

We are once again pleased to present our annual water quality report covering all 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.

In 2018 the City of Hamilton produced 5.70 billion gallons of water not only for the citizens of Hamilton but also Butler County and commercial/industrial customers. The City of Hamilton Department of Infrastructure continues to improve and replace water mains to ensure safe drinking water for consumers. Included within this report are general health information, water quality test results, how to participate in decisions concerning your drinking water, and water system contacts.

Please remember that we are always available should you ever have any questions or concerns about your water. For more information about this report, or for any questions relating to your drinking water, please call **John Bui, Water Production Superintendent**, at (513) 785-7426.

Source Water Assessment

Ohio Environmental Protection Agency (EPA) completed a study of the drinking water sources at Hamilton's North and South Wellfields to determine susceptibility to contamination. According to this study, the aquifer that supplies water to Hamilton's wells has a high susceptibility to contamination. This determination is based on 1) lack of a protective layer of clay, 2) shallow depth of the aquifer, and 3) the presence of significant potential contaminant sources in the protection area. It is important to understand that this susceptibility rating does not imply poor water quality, only the system's potential to become contaminated within the assessment area. For more information on ground water quality in Ohio, visit: <https://epa.ohio.gov/ddagw/swap>

Important Health Information

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



Missed Reporting Deadlines

During the past year, the city of Hamilton received two Notices of Violation for not reporting certain events to Ohio EPA within the required time limits and one for reporting the wrong value for 90th-percentile lead concentration in the 2017 Consumer Confidence Report. At no time did these incidents pose a threat to public health and safety, nor did they have any impact on the high-quality drinking water provided to our customers. In order to stay in compliance with the Ohio EPA's notification rule (Chapter 3745, Ohio Administrative Code), the city has put in place a standard operating procedure for notifying Ohio EPA when a water system disturbance event occurs.

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. A list of laboratories certified in the State of Ohio to test for lead may be found at <http://www.epa.ohio.gov/ddagw> or by calling (614) 644-2752. 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.

Water Treatment Process

The treatment process consists of a series of steps. First, raw water is drawn from our deep wells and sent to the aerators. This process allows the dissolved gas such as carbon dioxide and hydrogen sulfide to release in the atmosphere and oxidizes any soluble metals such as iron and manganese and precipitate them out of the water. The water then goes to the solids contact clarifiers where lime (calcium oxide, CaO) is added. Flocculation occurs in the center cone where the lime slurry contacts the raw water. This flocculation zone is baffled and has a diameter of twenty-one (21) feet. The water then passes upward through a sludge blanket where the agglomerated floc particles become heavier and fall to the bottom of the basin where they form sludge. A large mixer circulates the water and sludge maintaining the reaction. The heavy solids settle to the bottom and the clear water rises to the top of the basins where it is collected through a series of radial launders. At this point, the water flows to the re-carbonation basins where carbon dioxide is added to adjust pH. After that the water is filtered through layers of anthracite coal and silicate sand. As smaller, suspended particles are removed, turbidity disappears and clear water collects in the under drain system and flows to the clearwell where we add chlorine dioxide for disinfection and fluoride to prevent tooth decay in children. Finally, water is pumped out to our distribution system and storage reservoirs via large capacity high service pumps.

We remain vigilant in delivering the best-quality drinking water

Public Meetings

We encourage public interest and participation in our community's future. City Council meetings are held at 6:00 p.m. on the second and fourth Wednesday of the month in the Council Chambers at 345 High Street. The Public Utilities Commission meets at 1:15 p.m. on the second Thursday of the month on the seventh floor in the Video Conference Room at 345 High Street. The public is welcome.

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, 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 aquifers. 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.



Where Does My Water Come From?

The City of Hamilton Water customers are fortunate because we enjoy an abundant water supply from the Great Miami Buried Valley Aquifer. Our water source is pulled from about 210 feet below the surface. This groundwater has traveled for miles underground naturally filtered by the sand and gravel deep underground. The North Water Treatment Plant was constructed in 1935 and South Water Treatment Plant was constructed in 1956, both draw from this underground water supply. This aquifer holds about 1.5 trillion or more gallons and is constantly being replenished from various sources. Combined, our treatment facilities provide roughly 5.7 billion gallons of clean drinking water in 2018.

The City of Hamilton meets 100% of customer drinking water needs with groundwater pumped from the Great Miami Buried Valley Aquifer. This sand and gravel aquifer was formed by glaciers covering Ohio as recently as 10,000 years ago and serves as the primary source of drinking water for many communities in southwest Ohio. Hamilton pumps groundwater to the North and South Water Treatment Plants using large capacity wells located in Hamilton and the City of Fairfield. To help ensure groundwater quality, the City is a member of a comprehensive Source Water Protection Program called The Hamilton To New Baltimore Groundwater Consortium that includes education, source control strategies, groundwater monitoring, and a contingency and emergency response plan. This program was developed in conjunction with the City of Fairfield, City of Cincinnati, and other local groundwater producers. This past year The Hamilton To New Baltimore Groundwater Consortium was successful at winning the Groundwater Guardian Award for the 21st consecutive year. We are known nationally for our protective strategies, youth and adult education outreach and raising awareness about protecting our water source. For more information on the City's Source Water Protection Program please contact the Groundwater Consortium Manager, Tim McLelland at (513) 785-2464, or visit the Groundwater Consortium website at www.gwconsortium.org.



Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The water we deliver must meet specific health standards. In the table below, we only show those substances that were detected in our water (a complete list of all our analytical results is available upon request). 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 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.

We participated in the fourth 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 U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water in order to determine if U.S. 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 Contaminants Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

Note that we have a current, unconditioned license to operate our water system.

REGULATED SUBSTANCES									
				South Plant		North Plant			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2018	2	2	0.018	NA	0.0572	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine Dioxide (ppb)	2018	[800]	[800]	510	60–510	530	160–530	No	Water additive used to control microbes
Chlorite (ppm)	2018	1	0.8	0.58	0.34–0.66	0.65	ND–0.67	No	By-product of drinking water disinfection
Fluoride (ppm)	2018	4	4	0.95	0.2–1.29	0.79	0.42–0.99	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate (ppm)	2018	10	10	1.33	NA	<0.1	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
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)	RANGE LOW-HIGH	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE	
Copper (ppm)	2018	1.3	1.3	0.0301	ND–0.0439	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits	
Lead (ppb)	2018	15	0	3	ND–5	0/31	No	Lead service lines, corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits	

UNREGULATED SUBSTANCES						
		South Plant		North Plant		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sulfate (ppm)	2012	68.1	NA	68.1 ¹	NA ¹	Naturally present; Industrial processes; Sewage treatment; Landfills; Industrial waste sites

UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4)						
		South Plant		North Plant		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Manganese (ppm)	2018	<0.0004	NA	0.0029	NA	Erosion of natural deposits; Manufacturing processes

OTHER NON REGULATED SUBSTANCES	
SUBSTANCE	AVERAGE DETECTED LEVEL
Hardness (ppm)	146
Calcium (ppm)	23
Magnesium (ppm)	26

¹ Sampled in 2018.

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 which, if exceeded, triggers treatment or other requirements which a water system must follow.

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): Indicates that the substance was not found by laboratory analysis.

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.