

# ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018



*Presented By*  
**Haverhill Water  
Department**

## 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.

This report can also be found online on the Haverhill Water Treatment Plant webpage or at <http://bit.ly/31C0DoH>

Please remember that we are always available should you ever have any questions or concerns about your water. The following is a list of telephone numbers where you can reach us.

<b>Billing Office</b>	(978) 374-2370
<b>Meter Division</b>	(978) 373-8487
<b>Water Treatment</b>	(978) 374-2385
<b>Water Maintenance</b>	(978) 374-2368
<b>Backflow/Cross-Connection</b>	(978) 374-2375

## 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>.



## Treatment Train Description

The water treatment plant is a conventional filtration plant, which includes coagulation, flocculation, and sedimentation (clarification). Pretreated water goes through a two-stage filtration process before it is fluoridated, after which it is disinfected with sodium hypochlorite and then pumped into the distribution system. Fluoride is added to prevent tooth decay and cavities. New processes went online in 2018, which are described in our Year in Review section.

Last year, the treatment plant processed 2.3 billion gallons of water. The distribution system is made up of three storage tanks with a capacity of 17 million gallons, 11 pumping stations, and approximately 300 miles of water main.

## 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](http://www.epa.gov/safewater/lead). If you would like to know if you have a lead service line, please call the Water Maintenance Division at (978) 374-2368.

## What Causes the Pink Stain on Bathroom Fixtures?

The reddish-pink color frequently noted in bathrooms on shower stalls, tubs, tile, toilets, sinks, and toothbrush holders and on pets' water bowls is caused by the growth of the bacterium *Serratia marcescens*. *Serratia* is commonly isolated from soil, water, plants, insects, and vertebrates (including man). The bacteria can be introduced into the house through any of the above-mentioned sources. The bathroom provides a perfect environment (moist and warm) for bacteria to thrive.

The best solution to this problem is to continually clean and dry the involved surfaces to keep them free from bacteria. Chlorine-based compounds work best, but keep in mind that abrasive cleaners may scratch fixtures, making them more susceptible to bacterial growth. Chlorine bleach can be used periodically to disinfect the toilet and help to eliminate the occurrence of the pink residue. Keeping bathtubs and sinks wiped down using a solution that contains chlorine will also help to minimize its occurrence.

*Serratia* will not survive in chlorinated drinking water.

## Water Treatment Process

Our drinking water comes from a combination of sources, all of which are surface water. This means that all our water comes from above-ground supplies: in our case, lakes and man-made reservoirs. Water is pumped from Millvale Reservoir and Crystal Lake into Kenoza Lake, where the water treatment plant is located, as needed. Water from Round Pond and Winnekenni Basin overflows into Kenoza Lake and is also part of our drinking water system.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) 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 and, in some cases, radioactive material, and can pick up 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 which 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.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Important Information About Your Drinking Water System

The Haverhill Water Department (PWS ID#3128000) received a notice of noncompliance (NON) for August 6, 2018, from the Massachusetts DEP regarding the building of the Crystal Springs Pump Station. At no time did this action affect water quality or quantity provided to the residents of Haverhill.

The Crystal Springs Pump Station is a proposed booster pumping station located off North Broadway in Haverhill. It will serve a portion of the Haverhill Water Department's distribution system. DEP received

the permit application for construction of the station on June 27, 2018. The transmittal form listed Haverhill Water Department as the applicant and indicated that the application was prepared by the city's consultant, Wright-Pierce.

On August 3, 2018, DEP provided comments on its technical review of the permit application to Wright-Pierce. On August 6, 2018, DEP became aware that construction on the pumping station had been started without written approval. On August 8, 2018, a representative of DEP's Northeast Region Drinking Water Program conducted a site visit and observed that the concrete for a foundation footing for the pump station had been poured. On August 15, 2018, DEP approved the plans for the booster station by letter.

Massachusetts Drinking Water Regulations, under 310 CMR 22.04(4), state that "No person shall commence construction or otherwise implement or operate a proposed new Public Water System or make substantial modifications to an existing Public Water System unless issued its prior written approval and any applicable permits." A new pump station is considered a substantial modification.

This serves as a public notice and the only action the city must take regarding the NON. The official address for the Haverhill Water Department is 131 Amesbury Road, Haverhill MA 01830. The contact person is Robert E. Ward.

We remain vigilant in delivering the best-quality drinking water

## QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Mary D'Aoust, Water Treatment Plant Chemist, at (978) 374-2385.

## 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 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.

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.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2014	15	0	0.21	NA	No	Erosion of natural deposits
Barium (ppm)	2018	2	2	0.009	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2018	[4]	[4]	1.38	1.04–2.0	No	Water additive used to control microbes
Combined Radium (pCi/L)	2014	5	0	0.54	NA	No	Erosion of natural deposits
Fluoride (ppm)	2018	4	4	0.6	0.15–0.86	No	Water additive that promotes strong teeth
Haloacetic Acids [HAAs] (ppb)	2018	60	NA	25.9	4.9–59	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	0.088	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2018	2	NA	0.05	NA	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
Total Organic Carbon <sup>1</sup> (ppm)	2018	TT	NA	2.9	1.8–2.9	No	Naturally present in the environment
TTHMs [Total Trihalomethanes] <sup>2</sup> (ppb)	2018	80	NA	65.1	40–87	No	By-product of drinking water disinfection
Turbidity <sup>3</sup> (NTU)	2018	TT	NA	0.40	0.06–0.40	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	NA	99	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)	2017	1.3	1.3	0.07	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2017	15	0	3.0	1/32	No	Corrosion of household plumbing systems; Erosion of natural deposits

## SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
<b>Chloride</b> (ppm)	2018	250	NA	132	NA	No	Runoff/leaching from natural deposits
<b>Manganese</b> (ppb)	2018	50	NA	7	NA	No	Leaching from natural deposits
<b>pH</b> (Units)	2018	6.5–8.5	NA	7.0	NA	No	Naturally occurring
<b>Sulfate</b> (ppm)	2018	250	NA	20	NA	No	Runoff/leaching from natural deposits; Industrial wastes
<b>Total Dissolved Solids [TDS]</b> (ppm)	2018	500	NA	156	NA	No	Runoff/leaching from natural deposits
<b>Zinc</b> (ppm)	2018	5	NA	0.94	NA	No	Runoff/leaching from natural deposits; Industrial wastes

<sup>1</sup> The value reported under Amount Detected is the lowest ratio of 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.

<sup>2</sup> Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.

<sup>3</sup> Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

## Definitions

**90th %ile:** Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the Action Level to determine lead and copper compliance.

**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.

**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).

**SMCL (Secondary Maximum Contaminant Level):** These standards are developed to protect aesthetic qualities of drinking water and are not health based.

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

## Year in Review

In 2017 the Haverhill Water Department broke ground on a 3-year construction project to update and renovate its water treatment plant. New and duplicated processes will ensure that Haverhill's water quality continues to meet and exceed Safe Drinking Water Act standards for generations to come.

In 2018 new processes went online. Dissolved air flotation (DAF) clarifiers and two sand filters are now in use. The DAF process replaces a mechanical, gravity-type clarifier for treated water. Solids that are removed from untreated water will now float up on air-saturated processed water to be collected and sent into the sewer system. DAFs can achieve this clarification on a much smaller footprint than the previous method, allowing for the addition of more filters to the plant. New chemical feed systems with updated pumps and tanks have also gone online. You can find more information on the project at [http://www.haverhillma.gov/departments/public\\_works\\_department/water\\_wastewater/kenoza\\_lake\\_wtp\\_improvements.php](http://www.haverhillma.gov/departments/public_works_department/water_wastewater/kenoza_lake_wtp_improvements.php).

During the summer and fall of 2018, the Distribution Division completed Phase 1 of the multiphase project to create a more dependable and more efficient system for the main transmission pipes from the treatment plant on Kenoza Lake to our primary water storage tank on Gale Hill. A new 12-inch water main was installed on South Williams Street and connected through the Carrington Estates project to Kingsbury Avenue to improve water flow throughout the neighborhood. A new section of 12-inch water main was installed across Route 125 at Cross Road to Boston Road to improve flow and provide alternative water supply paths for the Boston Road area.

The Meter Division, with Mass Installation Company, began a program to replace all the city's large commercial water meters from 1.5 through 10 inches in diameter. During 2018 118 of the 127 large commercial meters were replaced with new technology to improve accuracy and efficiency of meter reading.

The Meter Division replaced 3,004 non-working meters and installed 614 new meter reading radios. Of approximately 17,650 water meter accounts citywide, 1,950 accounts have not yet been converted and still must be read manually. Our goal is to have all these accounts converted to radio-read meters.



## Source Water Assessment

A Source Water Assessment Plan (SWAP) is available at the water treatment plant. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.

This report assesses activities in our watershed and identifies potential pollution hazards. These potential hazards, if handled properly, would not pose a threat to our water supplies, and include the following categories: fertilizer storage, livestock operations, manure storage/spreading, nurseries, pesticide storage/use, auto repair and body shops, bus and truck terminals, cemeteries, golf courses, junk/salvage yards, nursing homes, repair shops, sand and gravel mining/washing, fuel oil storage, lawn care/gardening, septic systems, aquatic wildlife, combined sewer overflows, composting facilities, fishing/boating, land application sewage sludge, schools, colleges/universities, snow dumping, stormwater drains/retention basins, and underground storage tanks. One or all of these hazards can be found within the watershed of Haverhill's water sources. A water department employee checks these areas weekly to identify any violations.

If you would like to view this report, please contact the water treatment plant at (978) 374-2385.

