

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2019



Presented By
Town of Hanover
Department of
Public Works

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, 2019. 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.

Please remember that we are always available should you ever have any questions or concerns about your water.

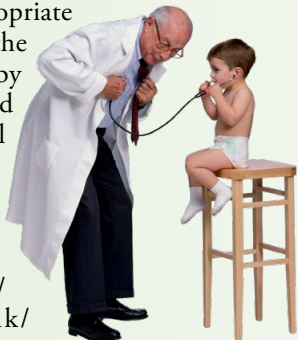


Where Does My Water Come From?

The Town of Hanover's water supply comes from nine groundwater sources. Pond Street Wells #1, #2, and #3 are located north of the Pond Street Water Treatment Plant (WTP) at 40 Pond Street; Beal Wells #1 and #2 are located east of the Beal WTP at Riverside Drive; Broadway Wells #1 and #2 are located adjacent to the Broadway WTP at 507 Broadway; and Hanover Wells #1 and #2 are located to the rear of 139 Hanover Street.

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>.



Administrative Consent Order

Currently, our system is operating under an Administrative Consent Order with the State for exceeding the maximum contaminant level (MCL) for total trihalomethanes (TTHMs), a disinfection by-product that forms when chlorine reacts with other naturally occurring organic chemicals in the water. 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 systems, and may have an increased risk of getting cancer. To address the elevated TTHM levels, we converted our disinfection process from chlorine to chloramines at all three water treatment plants starting on May 13, 2020. Chloramines produce lower concentrations of TTHMs because they are less reactive than chlorine with the natural organic matter found in our source water. For additional information on chloramines, please visit the Hanover DPW website at www.hanover-ma.gov/public-works/water-divisions/pages/chloramine-frequently-asked-questions.

Source Water Assessment

A Source Water Assessment Plan (SWAP) is available at our office. 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.

Hanover's wells are located in aquifers with high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e., clay) that can prevent contaminant migration. As a result, Hanover's sources are considered highly susceptible to contamination from a variety of sources such as petroleum products, industrial solvents, fertilizers, and microbial contaminants. Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area and does not imply poor water quality.

QUESTIONS?

For more information about this report, or for any questions related to your drinking water, please call Neal Merritt, Deputy Superintendent of Public Works (Water Operations), at (781) 826-3189.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribes 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 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;

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 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.

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.

Level 1 Assessment Update

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments. On November 5, 2019, we detected coliforms in our 0.63-million-gallon storage tank located off of Union Street. Per MassDEP regulations, we conducted and completed a Level 1 Assessment to identify potential problems and determine (if possible) why coliform bacteria were present. The assessment found no obvious issues with the storage

tank. Nonetheless, on November 14, we contracted the services of a tank inspection company (Suez) to disinfect the storage tank. A water sample collected from the tank on November 18 tested absent for coliform, and on November 25 the tank was returned to service.

We remain vigilant in delivering the best-quality drinking water

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.



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; 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 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 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.

| REGULATED SUBSTANCES | | | | | | | |
|---|-----------------|---------------|-----------------|-----------------------------------|----------------------------------|-----------|---|
| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | MCL [MRDL] | MCLG [MRDLG] | AMOUNT DETECTED | RANGE LOW-HIGH | VIOLATION | TYPICAL SOURCE |
| Chlorine (ppm) | 2019 | [4] | [4] | 0.47 | 0.01–2.00 | No | Water additive used to control microbes |
| Combined Radium (pCi/L) | 2015 | 5 | 0 | 1.90 | NA | No | Erosion of natural deposits |
| Fluoride (ppm) | 2018 | 4 | 4 | 0.13 | NA | No | Erosion of natural deposits |
| Haloacetic Acids [HAAs] (ppb) | 2019 | 60 | NA | 32 | ND–43 | No | By-product of drinking water disinfection |
| Nitrate (ppm) | 2019 | 10 | 10 | 1.04 | ND–1.32 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Perchlorate (ppb) | 2019 | 2 | NA | 0.18 | ND–0.22 | No | Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks and explosives. |
| TTHMs [Total Trihalomethanes]–Location: 70 Ponderosa Drive (ppb) | 2019 | 80 | NA | 92 | 52–118 | Yes | By-product of drinking water disinfection |
| TTHMs [Total Trihalomethanes]–Location: Hanover Fire Station 3, 925 Circuit Street (ppb) | | | | 86 | 37–92 | | |
| Tetrachloroethylene (ppb) | 2019 | 5 | 0 | 0.6 | ND–0.6 | No | Discharge from factories and dry cleaners and asbestos cement lined pipes |
| Total Coliform Bacteria (positive samples) | 2019 | TT | NA | 4 | NA | No | Naturally present in the environment |
| Tap Water Samples Collected for Copper and Lead 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 | 0.51 | 0/32 | No | Corrosion of household plumbing systems; Erosion of natural deposits |
| Lead (ppb) | 2017 | 15 | 0 | 6 | 0/32 | No | Lead services lines, corrosion of household plumbing systems including fittings and fixtures; erosion of natural deposits |

SECONDARY SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | SMCL | MCLG | AMOUNT DETECTED | RANGE LOW-HIGH | VIOLATION | TYPICAL SOURCE |
|--------------------------------|-----------------|------|------|--------------------|-------------------|-----------|--------------------------------|
| Manganese (ppb) | 2018 | 50 | NA | 14.1 | 2.0–25.4 | No | Leaching from natural deposits |

UNREGULATED SUBSTANCES ¹

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AMOUNT DETECTED | RANGE LOW-HIGH | TYPICAL SOURCE |
|--------------------------------|-----------------|--------------------|-------------------|---|
| Bromodichloromethane (ppb) | 2019 | 17.2 | 1.2–42.1 | By-product of drinking water chlorination |
| Bromoform (ppb) | 2019 | 4.6 | ND–30.5 | By-product of drinking water chlorination |
| Chlorodibromomethane (ppb) | 2019 | 11.8 | 2.2–27.0 | By-product of drinking water chlorination |
| Chloroform (ppb) | 2019 | 19.3 | ND–58.0 | By-product of drinking water chlorination |
| Dibromomethane (ppb) | 2019 | 1.3 | 1.3–1.3 | By-product of drinking water chlorination |
| Sodium (ppm) | 2019 | 62.7 | 62.7–62.7 | Discharge from the use and improper storage of sodium-containing de-icing compounds |
| Sulfate (ppm) | 2017 | 71 | 26–119 | Natural sources |

UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4)

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AMOUNT DETECTED | RANGE LOW-HIGH |
|----------------------------------|--------------|-----------------|----------------|
| Bromide (ppb) | 2018 | 194.8 | 62.7–399.0 |
| Total Organic Carbon [TOC] (ppb) | 2018 | 2,508 | ND–5,950 |

What's a Cross-Connection?

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand), causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed industrial, commercial, and institutional facilities in the service area to make sure that potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test backflow preventers to make sure that they provide maximum protection.

For more information on backflow prevention, contact the Safe Drinking Water Hotline at (800) 426-4791.



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.

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

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.

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.

¹ Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.