ANNUAL WATER QUALITY REPORT

Reporting Year 2022

Presented By

Town of Hanover
Department of Public Works

PWS ID#: 4122000

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, 2022. 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.

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 two 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.

> "Thousands have lived without love, not one without water."
>
> —*W.H. Auden*

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.

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.

Think before You Flush!

Flushing unused or expired medicines can be harmful to your drinking water. Properly disposing of unused or expired medication helps protect you and the environment. Keep medications out of our waterways by disposing responsibly. To find a convenient drop-off location near you, please visit https://bit.ly/3IeRyXy.

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 (e.g., 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 relating 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) 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.

What Are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of manufactured chemicals used worldwide since the 1950s to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. During production and use, PFAS can migrate into the soil, water, and air. Most PFAS do not break down; they remain in the environment, ultimately finding their way into drinking water. Because of their widespread use and their persistence in the environment, PFAS are found all over the world at low levels. Some PFAS can build up in people and animals with repeated exposure over time.

The most commonly studied PFAS are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). PFOA and PFOS have been phased out of production and use in the United States, but other countries may still manufacture and use them.

Some products that may contain PFAS include:

- Some grease-resistant paper, fast food containers/ wrappers, microwave popcorn bags, pizza boxes
- Nonstick cookware
- Stain-resistant coatings used on carpets, upholstery, and other fabrics
- Water-resistant clothing
- Personal care products (shampoo, dental floss) and cosmetics (nail polish, eye makeup)
- Cleaning products
- Paints, varnishes, and sealants

Even though recent efforts to remove PFAS have reduced the likelihood of exposure, some products may still contain them. If you have questions or concerns about products you use in your home, contact the Consumer Product Safety Commission at (800) 638-2772. For a more detailed discussion on PFAS, please visit http://bit.ly/3Z5AMm8.

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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2021	15	0	1.9	ND–1.9	No	Erosion of natural deposits
Barium (ppm)	2022	2	2	0.02	NA	No	Erosion of natural deposits
Chlorine (ppm)	2022	[4]	[4]	1.17	0.01–3.30	No	Water additive used to control microbes
Chromium (ppb)	2022	100	100	1.6	NA	No	Erosion of natural deposits
Combined Radium (pCi/L)	2021	5	0	1.74	1.12–1.74	No	Erosion of natural deposits
Dichloromethane (ppb)	2022	5	0	0.67	NA	No	Discharge from pharmaceutical and chemical factories
Fluoride (ppm)	2022	4	4	0.072	NA	No	Erosion of natural deposits
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2022	60	NA	42	3–35	No	By-product of drinking water disinfection
Nitrate (ppm)	2022	10	10	1.6	ND–1.6	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Perchlorate (ppb)	2022	2	NA	0.17	0.055–0.17	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
PFAS6 (ppt)	2022	20	NA	19	5–26	No	Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture- and oil-resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing these PFAS, such as firefighting foams.
Tetrachloroethylene (ppb)	2022	5	0	0.9	ND–0.9	No	Discharge from factories, dry cleaners, and asbestos-cement-lined pipes
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2022	80	NA	64	20–54	No	By-product of drinking water disinfection

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)	2022	1.3	1.3	0.37	0/60	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	2022	15	0	7	2/60	No	Lead service 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
Aluminum (ppb)	2021	200	NA	50	20–80	No	Erosion of natural deposits
Chloride (ppm)	2021	250	NA	106.8	98.6–115	No	Runoff/leaching from natural deposits
Copper (ppm)	2021	1.0	NA	0.10	0.05–0.15	No	Corrosion of household plumbing systems; erosion of natural deposits
Iron (ppb)	2021	300	NA	90	ND–90	No	Leaching from natural deposits
Manganese (ppb)	2021	50	NA	7	5–8	No	Leaching from natural deposits
Odor (TON)	2021	3	NA	5	ND–5	No	Naturally occurring organic materials
pH (units)	2021	6.5-8.5	NA	7.6	7.1–8.1	No	Naturally occurring
Total Dissolved Solids [TDS] (ppm)	2021	500	NA	328	305–350	No	Runoff/leaching from natural deposits
Zinc (ppm)	2021	5	NA	0.020	0.007–0.033	No	Runoff/leaching from natural deposits; industrial wastes

UNREGULATED SUBSTANCES [1]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2022	3.3	1.2–5.2	Trihalomethane; by-product of drinking water chlorination
Bromoform (ppb)	2022	3.7	ND–5.6	Trihalomethane; by-product of drinking water chlorination
Chlorodibromomethane (ppb)	2022	4.1	3.4–5.5	Trihalomethane; by-product of drinking water chlorination
Chloroform (ppb)	2022	1.8	0.2–2.8	Trihalomethane; by-product of drinking water chlorination
Nickel (ppb)	2022	1.3	NA	Naturally occurring
Perfluorobutanesulfonic acid [PFBS] (ppt)	2022	3.5	ND–6.0	NA
Perfluorohexanoic Acid [PFHxA] (ppt)	2022	3.9	ND–8.0	NA
Sodium (ppm)	2022	57	NA	Discharge from the use and improper storage of sodium-containing de-icing compounds
Sulfate (ppm)	2021	48.8	34.9–62.7	Natural sources

[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.

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.

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).

ppt (parts per trillion): One part substance per trillion parts water (or nanograms per liter).

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

TON (Threshold Odor Number): A measure of odor in water.