

# ANNUAL WATER QUALITY REPORT

Reporting Year 2022



*Presented By*  
**Chelmsford Water  
District**



## 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.

## Where Does My Water Come From?

Chelmsford Water District customers are fortunate because we enjoy an adequate water supply from 20 sources. Chelmsford Water District draws water from the Merrimack and Concord River basins. Our distribution reservoirs hold one of the state's largest capacities, 15.3 million gallons of water. Combined, our facilities provide roughly one billion gallons of clean drinking water each year. The Riverneck Road Treatment Plant was placed in service at the end of 2004 and has the capability to treat up to three million gallons of water per day. The Crooked Spring Treatment Plant was placed in service in spring 2007 and has the capability to treat up to four million gallons a day. The Smith Street Treatment Plant was refurbished and put back into service in fall 2012.

To learn more about our watershed, visit How's My Waterway at [www.epa.gov/waterdata/how-s-my-waterway](http://www.epa.gov/waterdata/how-s-my-waterway).

## 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>.



“Thousands have lived without love, not one without water.”

—W.H. Auden

## Source Water Assessment

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of public water supplies to potential contamination due

to land uses and activity within the recharge areas.

Established under the federal Safe Drinking Water Act, the program requires every state to inventory land uses within the recharge areas of all public water supply sources, assess the

susceptibility of drinking water sources to contamination from these land uses, and publicize the results to provide support for improved protection.

### What Is My System's Ranking?

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by Massachusetts DEP.

### Where Can I See the SWAP Report?

The complete SWAP report is available at the Chelmsford Water District, Chelmsford Board of Health, and online at <https://www.mass.gov/doc/northeast-region-source-water-assessment-protection-swap-program-reports/download>. For more information, call Environmental Compliance Manager Todd Melanson at (978) 256-2931.

## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet each month at the Chelmsford Water District, 20 Watershed Lane. Please check our website ([www.chelmsfordwater.com](http://www.chelmsfordwater.com)) for the day, official posting, and agenda.

## QUESTIONS?

For more information about this report, or any questions relating to your drinking water, please contact Todd Melanson, Environmental Compliance Manager, at (978) 256-2931 or visit our website at [www.chelmsfordwater.com](http://www.chelmsfordwater.com).



## Level 1 and 2 Assessment Update

Coliforms are bacteria that are naturally present in the environment and 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 an assessment to identify and correct any problems found.

During the past year, we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. We were not required to take any corrective action.

During the past year, one Level 2 assessment was required for our water system. One Level 2 assessment was completed. We were not required to take any corrective action.

## 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;

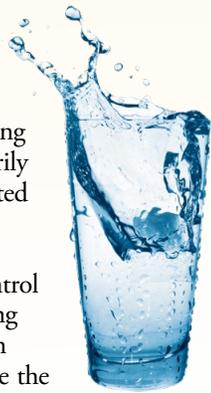
Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and which may also come from gas stations, urban stormwater runoff, and septic systems;

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.

## 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](http://www.epa.gov/safewater/lead).



## Groundwater Sampling Update

On January 5, June 15, July 16, November 2, and December 14, 2022, we were informed that at least one routine bacteria sample of our untreated source water that was collected on January 4, June 14, July 15, November 1, and December 13, 2022, respectively, was positive for fecal contamination (*E. coli*). Knowing that the district's untreated source water is vulnerable to this type of contamination and in compliance with the Ground Water Rule (GWR), Chelmsford Water District has ensured that its disinfected water is and remains safe by being 4-log certified by Massachusetts DEP as of February 24, 2010. The district maintains this certification on a day-to-day basis and reports this status to the state monthly. Because the district is in compliance with GWR with respect to this certification, no other steps are required. Reporting these positive results is for informational purposes only and is a regulatory requirement. At no time was the public's health at risk.

Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

## How Is My Water Treated and Purified?

The Crooked Spring Treatment Plant went online in spring 2007. Water from nine of the district's wells is processed through this plant, including the four gravel-packed wells from the wellfield at Meadowbrook #3 pumping station that went online in November 2007. Raw water goes through an aeration tower to remove any potential volatile organic compounds, then through a greensand filtration system to remove high levels of iron and manganese before it enters the distribution system. This plant recycles the backwash discharged water to a lagoon, where it reenters the earth and becomes part of the aquifer.

Raw water is drawn from the other nine wells in the eastern area of the district and sent through the greensand filtration system at the Riverneck Road Treatment Plant to remove elevated levels of iron and manganese. The prefiltration process also incorporates an aeration tower to remove any potential volatile organic compounds from the raw water. The backwash water generated from the treatment process is stored in an on-site 100,000-gallon underground storage facility that has the capability to pump all the backwash water to the nearby public sewer or recycle it at the treatment plant.

The Smith Street Treatment Plant and wells, after being unused since 1999, were reopened in fall 2012 with DEP approval. The district refurbished the two wells and retrofitted the treatment system. Raw water enters the Smith Street Treatment Plant and passes through an aeration and membrane filtration system to remove iron and manganese. This plant and its wells allow for system relief during times of withdrawal stress and emergency backup for both the Crooked Spring and Riverneck Road Treatment Plants.

Chelmsford Water District remains committed to providing treatment of per- and polyfluoroalkyl substances (PFAS) at all three of its facilities. Engineering has begun for development of a solution for removing PFAS from the finished water.

All of Chelmsford Water District's water receives state-of-the-art treatment that includes disinfection, groundwater certification, and pH control. Faced with deteriorating water quality and increasing peak demands for water during daytime hours, the Board of Water Commissioners made and continues to keep a commitment to our customers to provide treatment for all the district's wells.

## 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 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.



## 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
Barium (ppm)	2022	2	2	0.03	0.03–0.03	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2022	60	NA	6.8	ND–24	No	By-product of drinking water disinfection
Nitrate (ppm)	2022	10	10	0.98	0.80–1.2	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
PFAS6 (ppt)	2022	20	NA	15	9.7–21	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.
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2022	80	NA	47.8	13.0–60.9	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	0.165	0/60	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2022	15	0	2	0/60	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
Chloride (ppm)	2022	250	NA	158	117–185	No	Runoff/leaching from natural deposits
Sulfate (ppm)	2022	250	NA	12.5	10.3–18.8	No	Runoff/leaching from natural deposits; Industrial wastes
pH (units)	2022	6.5–8.5	NA	6.9	6.5–7.1	No	Naturally occurring

### UNREGULATED SUBSTANCES <sup>1</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2022	4.2	1–6.9	Chlorination by-product
Chloroform (ppb)	2021	5.1	3.85–7.7	Chlorination by-product
Dibromochloromethane (ppb)	2022	3.0	2.2–4.0	Chlorination by-product
Sodium (ppm)	2022	89.6	82.4–95.8	Naturally occurring

## OTHER UNREGULATED SUBSTANCES <sup>1</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Hardness (ppm)	2022	80.3	65–94	Naturally occurring minerals
Manganese (ppm)	2022	0.006	ND–0.01	Leaching from natural deposits
Perfluorobutane sulfonic acid [PFBS] (ppt)	2022	2.1	0.9–3.5	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.
Perfluorohexanoic acid [PFHxA] (ppt)	2022	2.5	1.8–3.3	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.

<sup>1</sup> 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.

**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.

**Level 2 Assessment:** A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

**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).

**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.