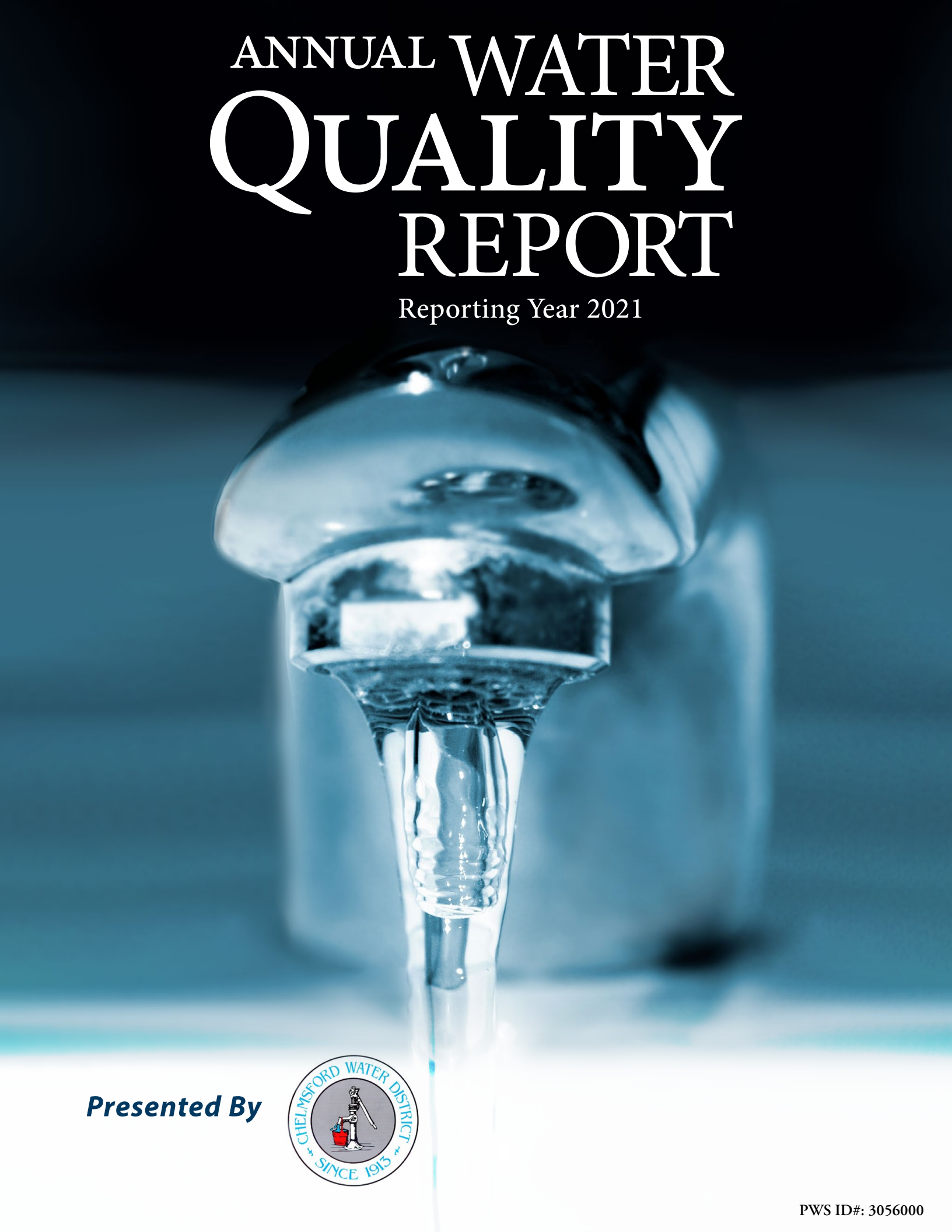
ANNUAL WATER QUALITY REPORT

Reporting Year 2021



Presented By

CHELMSFORD WATER DISTRICT
SINCE 1915

PWS ID#: 3056000

We've Come a Long Way

Once again, we are proud to present our annual water quality report covering the period between January 1 and December 31, 2021. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at all hours—to deliver the highest-quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

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.

Ground Water Sampling Update

On 6/08, 7/16, 8/17, 9/07, 10/05, 11/02, and 12/07 of 2021, we were informed that at least one of our routine bacteria samples of our untreated source water samples that were collected on 6/07, 7/12, 8/16, 9/06, 10/04, 11/02, and 12/07 of 2021 were positive for fecal contamination (E. coli). With the knowledge that the District's untreated source water is vulnerable to this type of contamination, and because of the enactment of the Ground Water Rule (GWR), the Chelmsford Water District has ensured that its treated water, through disinfection practices, is and remains safe by being 4-log certified by Mass 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 the GWR with respect to this certification, no other steps are required. The reporting of 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, and headaches. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

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.

Where Does My Water Come From?

The Chelmsford Water District customers are fortunate because we enjoy an adequate water supply from 20 sources. The 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 1 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 of treating up to 3 million gallons of water per day. The Crooked Spring Treatment Plant was placed in service in the spring of 2007 and has the capability of treating up to 4 million gallons a day. The Smith Street Treatment Plant was refurbished and put back into service in the fall of 2012. To learn more about our watershed visit the U.S. EPA website at www.epa.gov/waterdata/hows-my-waterway.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet each month with the day to be determined monthly and beginning at 1 p.m. at the Chelmsford Water District, 20 Watershed Lane, Chelmsford, MA. Please check our website (www.chelmsfordwater.com) for the day, official posting, and agenda.

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.

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 https://www.atsdr.cdc.gov/pfas/index.html.

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

What Is My Systems Ranking?

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

Where Can I See the SWAP Report?

The complete SWAP report is available at the Chelmsford Water District, at the Chelmsford Board of Health, and online at https://www.mass.gov/doc/chelmsford-water-district-swap-report/download. For more information, call the Environmental Compliance Manager, Todd Melanson, at (978) 256-2931.

How Is My Water Treated and Purified?

The Crooked Spring Treatment Plant went online in the Spring of 2007. Nine of the District's wells are processed through this plant, including the four gravel-packed wells from the wellfield at Meadowbrook #3 pumping station, which went on line in November of 2007. The raw water goes through an aeration tower, which removes any potential volatile organic compounds, and then goes through a greensand filtration system, which removes high levels of iron and manganese before the water enters the distribution system. This plant recycles the backwash discharged water to a lagoon. From there, it re-enters 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 is sent through the greensand filtration system at the Riverneck Road Treatment Plant to remove elevated levels of iron and manganese from these wells. The pre-filtration 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. The facility has the capability of pumping all of the backwash water to the nearby public sewer, or recycling the water to the treatment plant.

The Smith Street Treatment Plant and Wells, after being unused since 1999, was re-opened in the fall of 2012 with DEP approval. The District refurbished the two wells and retrofitted the treatment system. The raw water enters the Smith Street Treatment Plant, which is serviced by an aeration and membrane filtration system to remove iron and manganese. This plant and wells allow for system relief during times of withdrawal stress and emergency back up for both the Crooked Spring and Riverneck Road Treatment Plants.

All of Chelmsford Water District's water is processed and treated through state-of-the-art treatment that also includes disinfection, ground water certification, and pH control.

Faced with deteriorating water quality and increasing peak demands for water during daytime hours, the Board of Water Commissioners has made and kept the commitment to our customers to provide treatment for all the districts wells.

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)	2021	2	2	0.033	0.031–0.033	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2021	60	NA	22.7	0–50.6	No	By-product of drinking water disinfection
Nitrate (ppm)	2021	10	10	1.1	0.77–1.1	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2020	2	NA	0.48	0.13–0.48	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
PFAS6 (ppt)	2021	20	NA	21	12–25	Yes	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 fire-fighting foams
TTHMs [Total Trihalomethanes]–Stage 2[1] (ppb)	2021	80	NA	78.2	26.6–115	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)	2021	1.3	1.3	0.172	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2021	15	0	3	0/30	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)	2021	250	NA	179	147–179	No	Runoff/leaching from natural deposits
pH (Units)	2021	6.5-8.5	NA	7.7	7.2–7.7	No	Naturally occurring
Sulfate (ppm)	2021	250	NA	12.2	9.3–12.2	No	Runoff/leaching from natural deposits; Industrial wastes

UNREGULATED SUBSTANCES[2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2021	9.2	8.4–9.2	Chlorination by-product
Chlorodibromomethane (ppb)	2021	3.3	2.1–3.3	Chlorination by-product
Chloroform (ppb)	2021	24.8	0.8–24.8	Chlorination by-product
Nickel (ppb)	2018	3	0–3	Nickel is a natural element of the Earth's crust; therefore, small amounts are found in food, water, soil, and air
Sodium (ppm)	2021	102	69.6–102	Naturally occurring

OTHER UNREGULATED SUBSTANCES [2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromide[3] (ppb)	2018	91.3	0–91.3	By-product of drinking water disinfection
Hardness (ppm)	2021	84	53–84	Naturally-occurring minerals
Manganese (ppb)	2019	9.4	0–9.4	Leaching from natural deposits
Perfluorobutane sulfonic acid (PFBS) (ppt)	2021	3.4	0–3.4	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 fire-fighting foams
Perfluorohexanioc acid (PFHxA) (ppt)	2021	4.9	2.1–4.9	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 fire-fighting foams
Total Organic Carbon [TOC][3] (ppm)	2018	5.38	0–5.38	Naturally occurring

[1] 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.

[2] 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.

[3] UCMR4 Contaminant, Raw Water

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 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.

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

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.

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), 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.

About Our Violation

Our water system had a PFAS6 quarterly result that exceeded the MassDEP PFAS6 MCL drinking-water standard for the third quarter on 2021, from July to September, for the finished water from the Crooked Spring Water Treatment Plant. All other finished water of the District did not exceed the PFAS6 MCL. The finished water from the Crooked Spring plant returned to compliance for the fourth quarter of 2021, when it fell below the MCL and continues to remain below the MCL as of the date of this report. The Chelmsford Water District has committed to emplacing PFAS treatment at the Crooked Spring WTP as soon as possible, and has completed and submitted to MassDEP a pilot study to determine the best technology to do so. The District has submitted to MassDEP a short-term action plan should its finished water exceed the MCL again. More PFAS6 information is available on the District website (www.chelmsfordwater.com).

Some people who drink water containing these PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.