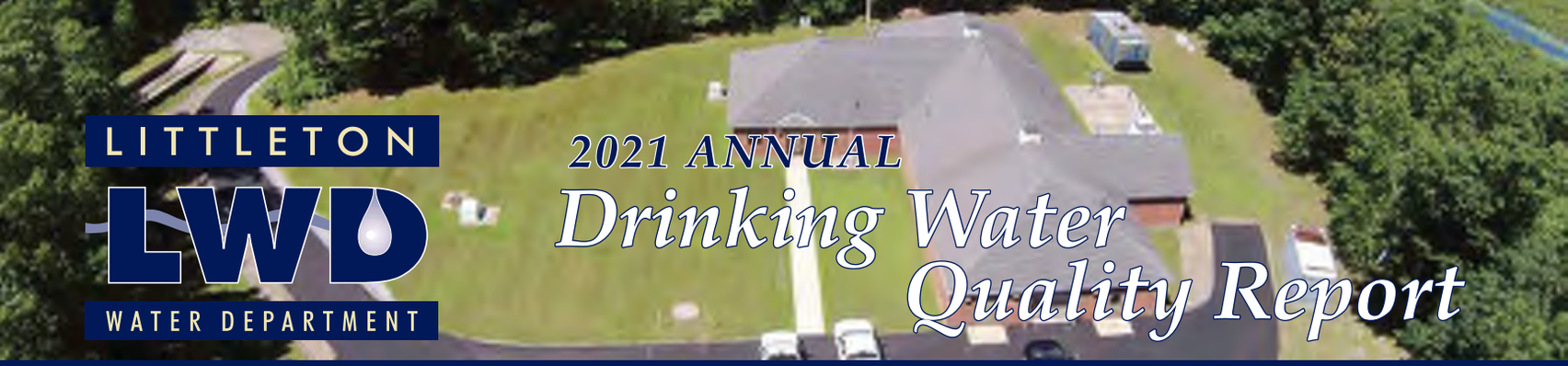


LITTLETON LWD WATER DEPARTMENT

2021 ANNUAL Drinking Water Quality Report

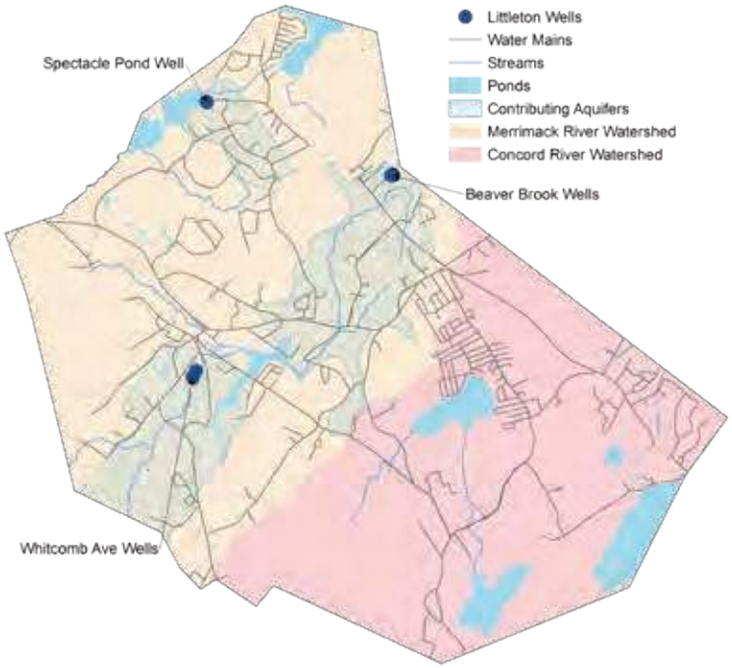
LITTLETON, MASSACHUSETTS | WWW.LELWD.COM | MASSDEP PWSID# 2158000

This report is a snapshot of the drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We are committed to keeping you informed about the quality of your drinking water.

Water System Improvements

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP). MassDEP inspects our system for its technical, financial, and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, your water system is operated by a Massachusetts certified operator who oversees the routine operations of our system. As part of our ongoing commitment to you, last year we initiated the following improvements to our system:

- Started construction of the Whitcomb Ave Water Treatment Plant, designed to remove iron, manganese, and Per- and PolyFluoroAlkyl Substances (PFAS), which will be completed in Spring 2023.
- Installed over 3 miles of water main to carry PFAS-contaminated water from the Spectacle Pond well to the new Whitcomb Ave Treatment Plant.
- Began construction of a new storage tank at Cedar Hill, to be completed Fall 2022.
- Implemented a system-wide Unidirectional Flushing Program (UDF) to remove iron and manganese buildup and sediment from water mains, while assessing infrastructure status and locating issues.



Your Drinking Water Source

Where Does My Drinking Water Come From?

Your water is provided by the following sources listed below:

SOURCE NAME	MASSDEP SOURCE ID#	SOURCE TYPE	LOCATION OF SOURCE
Spectacle Pond Well	2158000-04G	Groundwater	686 Great Road
Whitcomb Ave Wells	2158000-08G, 02G	Groundwater	76 Whitcomb Ave
Beaver Brook Wells	2158000-05G, 06G, 07G	Groundwater	519 Great Road

In case of emergency, LWD maintains interconnections with Westford, Ayer, and Acton water utilities.

Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend one of our monthly Commissioners' Meetings, held on the first Wednesday of each month in the LELWD Operations Center at 39 Ayer Road.

Public Water System Information

Address: 39 Ayer Road, Littleton, MA, 01460
Contact Person: Matt Silverman, Environmental Analyst, 978-540-2260 | www.lelwd.com

Source Water Protection

The Town of Littleton integrates land-use planning, environmental audits, and groundwater monitoring in an aggressive and comprehensive aquifer and watershed protection program. Begun in 1981, much of the success of the program is due to a cooperative relationship between community planners and industrial and commercial developments.

One important factor in the program's success has been the water department's effort to foster a cooperative partnership with the business community. Through communication, assistance, and non-adversarial monitoring, the program has become a close environmental partner and consultant to local industries and businesses.

Because of its effectiveness, the program has been recognized as a model for the development of wellhead protection strategies in many New England communities. As part of this program, more than 100 groundwater-monitoring stations are located at over 30 properties within the community, and are maintained and sampled by the water department. All compliance - monitoring costs are borne by the regulated bodies.

In addition, LWD environmental personnel conduct environmental audits of regulated facilities to ensure compliance with Littleton's Aquifer and Water Resource Protection Bylaws and other state and federal regulations. This typically consists of a walk through inspection to assess the environmental liability of products at the site, with recommendations offered for safe storage and handling procedures.

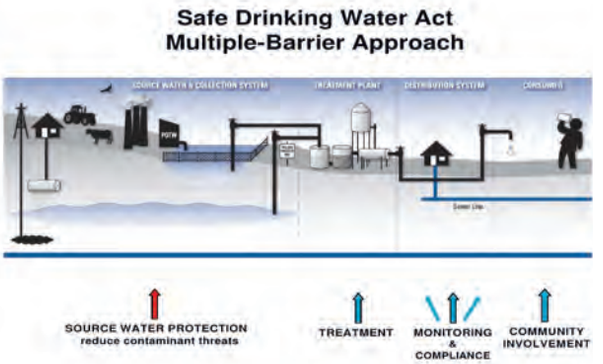
Residents can assist in protecting the groundwater by practicing good septic system maintenance, such as pumping out their septic tank every two years, and not using the septic system to dispose of solvents and paints. Limiting the use of pesticides, herbicides and fertilizers on the lawns will also help. Participating in hazardous waste collection will also help reduce the potential improper disposal of hazardous materials.

Is My Water Treated?

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- We add a disinfectant to protect you against microbial contaminants.
- We filter the water to remove small particles and organisms such as sediment, algae and bacteria.
- We chemically treat the water to reduce lead and copper concentrations.
- We chemically treat the water to reduce levels of iron and manganese.

The water quality of our system is constantly monitored by us and MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.



The use of chlorine in drinking water treatment has saved millions of American lives since it was first introduced in 1908 to combat waterborne diseases like cholera, typhoid fever, and dysentery. Today, the vast majority of public water systems in the United States use chlorine to ensure that their customers are protected from these and other waterborne diseases. Here in Littleton, we add low doses of chlorine to the water at all of our well sites to ensure that the water delivered to your tap is free from bacteria and other potential disease - causing organisms.

In addition to its disinfection abilities, chlorine also oxidizes many contaminants from their dissolved to particulate, or solid, forms, making removal easier. For example, at our Beaver Brook Treatment Facility, we use chlorine to convert dissolved iron and manganese to their particulate forms, which can then be removed through a filtration process to further purify your water.

As part of a multi-barrier approach to ensuring safe drinking water, chlorine treatment is the critical second line of defense after our award-winning source water protection program that minimizes the potential for contamination of our wells from surrounding land uses.

How Are These Sources Protected?

MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply sources serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

What is My System's Ranking?

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by MassDEP. Susceptibility is a measure of water supply's potential to become contaminated due to land uses and activities within its recharge area. The growth of industrial, commercial and residential development in Littleton is the main cause for this ranking. As stated in the sidebar, we have a comprehensive source water protection program and are continuously monitoring contaminant levels, disinfecting, filtering, or treating water to ensure LWD water sources meet safe drinking water standards.

Where Can I See The SWAP Report?

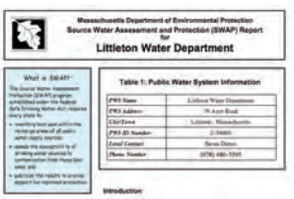

Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for
Littleton Water Department

Table 1: Public Water System Information

The complete SWAP report is available at the Littleton Water Department and online at:
mass.gov/doc/littleton-water-department-swap-report/download
For more information, call Matt Silverman at 978-540-2260.

Important Definitions

Maximum Contaminant Level (MCL) - 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.

Maximum Contaminant Level Goal (MCLG) - 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.

Maximum Residual Disinfectant Level (MRDL) - 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.

Maximum Residual Disinfectant Level Goal (MRDLG) - 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 contamination.

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Modified Reporting Limit (MRL) – The final reporting limit that applies to the sample once all sample preparation and/or dilution factor has been applied.

90TH Percentile - 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.

ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
ppt = parts per trillion, or nanograms per liter (ng/l)
pCi/l = picocuries per liter (a measure of radioactivity)
N/A = Not Applicable
mrem/year = millirems per year (a measure of radiation absorbed by the body)

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

Substances Found in Tap Water

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.

Contaminants 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, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U. S. Environmental Protection Agency (EPA) and MassDEP prescribe regulations that limit 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 that 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 contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

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. LWD is responsible for providing high quality drinking water, but 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 or at http://www.epa.gov/safewater/lead.

Important Definitions
(continued)

Health Advisory (HA) - Health advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable and non-regulatory and provide technical information to states agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination.

Office of Research and Standards Guideline (ORSG) – This is the concentration of a chemical in drinking water at or below which adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

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 system.

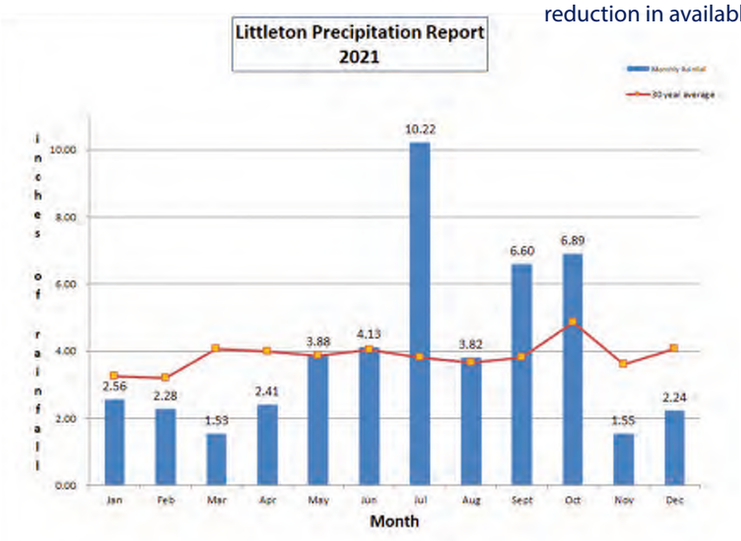
What Is a Cross Connection? What Can I Do about It?

A cross connection is an actual or potential connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, a lawn fertilizer sprayer connected to a hose can cause fertilizer to be pulled into the home's water pipes and into the water system if the pressure suddenly drops, which could happen with the use of a fire hydrant. Using a backflow prevention device can prevent this problem.

LWD recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. They are available at hardware or plumbing supply stores. This is a great way for you to help protect the water in your home as well as the drinking water system in your town.

For additional information on cross connections and on the status of your water system's cross connection program, please contact Matt Silverman at 978-540-2260.

Water Conservation



As of June 25, 2020, all non-essential outdoor watering was prohibited to conserve water due to a reduction in available supply from the Spectacle Pond well site and a Level 1 Drought declaration by the state. This ban will continue through 2022 until the new Whitcomb Ave water treatment plant is completed due to the potential threat of drought and the Spectacle Pond supply reduction. Please visit www.lelwd.com/water-ban-in-effect/ to view further details related to the outdoor watering ban, and enroll in our Community Notification System at https://public.coderedweb.com/CNE/en-US/458D14D27696 to ensure you receive the latest information on water use restrictions, water main breaks, power outages, and other emergency situations.

We also ask that all residents limit allowable outdoor water use on Mondays in order for the system to recover from higher weekend water usage, and apply sound conservation practices throughout the season to help us meet the 65 gallon per person per day residential consumption requirement imposed by MassDEP. If this level is exceeded, the state will require a 6 day per week watering ban next summer.

Please do your part by following outdoor water conservation tips:

- **Lawn care** – Allow your grass to grow taller in hot, dry weather. Longer grass means less evaporation and will encourage roots to grow deeper leaving your lawn more drought-tolerant.
- **Lawn watering –** Daytime watering is costly and wasteful. Water in the early morning or evening when evaporation rates are lowest. One inch of water per week is all that is generally necessary to maintain your lawn. Avoid over-watering by using a rain gauge or coffee can to measure the volume of water being applied. As a general rule, lawns only need watering every five to seven days in the summer. A hearty rain eliminates the need for watering for as long as two weeks.
- **Car washing** – Use a bucket to wash. Keep a nozzle on your hose. Do not let water run when not in use.
- **Pool** – Use a pool cover to keep water clean and reduce evaporation.
- **General Maintenance** – Use a broom instead of a water hose to clear debris from patios, driveways, and sidewalks.
- **Landscaping** – Plant trees to provide shade; decrease lawn area; use drought-resistant shrubs; increase areas of ground cover; spread mulch.
- **Valves and hoses** – Check outdoor pipes, hoses, and faucets for leaks.

What Does This Data Represent?

The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the tables. MassDEP has reduced the monitoring requirements for asbestos, inorganic contaminants, synthetic organic contaminants, nitrite, and radionuclides because the source is not at risk of contamination. Only the detected contaminants are shown.

Water Quality Testing Results

	Date(s) Collected	90TH Percentile	Action Level	MCLG	# of Sites Sampled	# of Sites Above Action Level	Possible Source of Contamination
Lead (ppb)	2021	3	15	0	40	0	Corrosion of household plumbing systems
Copper (ppm)	2021	0.502	1.3	1.3	40	0	Corrosion of household plumbing systems

Regulated Contaminant	Date(s) Collected	Highest Result or Running AVG Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Barium (ppm)	2021	0.035	N/A	2	2	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Nitrate (ppm)	2021	1.59	0.59 - 1.59	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Perchlorate (ppb)	2021	0.063	N/A	2	N/A	N	Rocket propellants, fireworks, munitions, flares, blasting agents
Radioactive Contaminants							
Gross Alpha (pCi/l)	2021	3.3	ND - 3.3	15	0	N	Erosion of natural deposits
Radium 226 & 228 (pCi/L) (combined values)	2021	0.8	ND - 0.8	5	0	N	Erosion of natural deposits
Disinfectants and Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb)	2021	15.6	N/A	80	----	N	Byproduct of drinking water chlorination
Chlorine (ppm) (free)*	Monthly in 2021	0.11**	0.00 - 0.71	4	4	N	Water additive used to control microbes
Per- and Polyfluoroalkyl Substances							
PFAS6 (ppt)***	2021	17.8**	2.7 - 25.8 [1]	20	----	N	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.

* Chlorine: Part of these may be unregulated, part regulated.

** Highest Running Annual Average (RAA) = highest running annual average of four consecutive quarters of data.

***PFAS6 (ppt): This value represents the sum of the six PFAS compounds included in the Massachusetts Maximum Contaminant Level of 20 ppt. The MMCL includes Perfluorooctane Sulfonic Acid (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonic Acid (PFHxS), Perfluorononanoic Acid (PFNA), Perfluoroheptanoic Acid (PFHpA), and Perfluorodecanoic Acid (PFDA).

[1] Only values that exceed MRL (Modified Reporting Limit) are included in detection result and range. This does not include values with "j" qualifier from lab report, as these values are estimated.

ND: Non-Detect

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

Unregulated and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source(s) of Contamination
Inorganic Contaminants						
Sodium (ppm)	2021	52.2	N/A	----	10	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Other Organic Contaminants - When detected at treatment plant as VOC residuals, not TTHM compliance						
Bromodichloromethane (ppb)	2021	ND - 0.81	N/A	----	----	Trihalomethane; by-product of drinking water chlorination
Bromoform (ppb)	2021	ND - 0.89	0.82	----	----	Trihalomethane; by-product of drinking water chlorination
Chlorodibromomethane (ppb)	2021	ND - 1.48	1.02	----	----	Trihalomethane; by-product of drinking water chlorination
Chloroform (ppb)	2021	2.2	N/A	----	70	Trihalomethane; by-product of drinking water chlorination
Secondary Contaminants						
Iron (ppb)	2021	ND - 140	72.5	300	----	Naturally occurring
Manganese**** (ppb)	2021	ND - 61	42.3	50	Health Advisory of 300 ppb	Erosion of natural deposits
Radioactive Contaminants						
Radon (pCi/l)	2018[2]	975	N/A	----	10,000	Natural Sources

[2] Most of the data in this table is from testing done between January 1 - December 31, 2021. We monitor some contaminants less than once per year. because the concentrations for those contaminants are not expected to vary significantly from year to year. As a result, some of our data, though representative, is more than a year old. For those contaminants, the date of the last sample is shown in the table.

**** Drinking water may naturally have manganese and, when concentrations are greater than 50 ppb, the water may be discolored and taste bad. Over a lifetime, EPA recommends that people drink water with manganese levels less than 300 ppb and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ppb, primarily due to concerns about possible neurological effects. Children younger than one year old should not be given water with manganese concentrations over 300 ppb, nor should formula for infants be made with that water for more than a total of ten days throughout the year.

Unregulated and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source(s) of Contamination
Per- and polyfluoroalkyl substances						
Perfluorobutancesulfonic Acid (PFBS) (375-73-5)	2021	ND - 2.8	2.5	----	◊	----
Perfluorohexanoic Acid (PFHxA) (307-24-4)	2021	ND - 6.5	3.1	----	◊	

◊ There is no ORS guideline.

PFAS Contaminants

On October 2, 2020, MassDEP officially published its PFAS public drinking water standard, called a Massachusetts Maximum Contaminant Level (MMCL), of 20 ppt. Since becoming aware of levels exceeding 20 ppt in our Spectacle Pond well in the Fall of 2019, our system has removed this well from service, began blending with the Beaver Brook wells to maintain PFAS levels well below the 20 ppt drinking water standard, and have continuously monitored PFAS levels in our water sources to ensure compliance. The Spectacle Pond well water, along with our Whitcomb Ave wells, will be treated at the new Whitcomb Ave Treatment Plant to remove PFAS so our system can supply its full-capacity once again. For a consumer factsheet on PFAS see **https://www.mass.gov/doc/massdep-fact-sheet-pfas-in-drinking-water-questions-and-answers-for-consumers/download**

Coliform Bacteria Level 1 Assessment

In August of 2021, the Littleton Water Department (PWSID 2158000) was required to conduct two Level 1 assessments to examine issues that contributed to multiple total coliform bacteria detections at Cedar Hill Tank and 80 Central Street in Boxborough. E. Coli bacteria was not detected in the distribution system.

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 any problems that were found during these assessments.

During the past year, we were required to conduct two Level 1 assessments. Two Level 1 assessments were completed. In addition, we were required to take zero corrective actions and we completed zero of these actions. Multiple actions were undertaken on LWD's own authority, as described below.

The first Level 1 assessment was triggered on August 6, 2021 as a result of consecutive total coliform bacteria detections at Cedar Hill Tank. This likely occurred as a result of insufficient chlorination at Cedar Hill Tank, along with historical issues with tank design that prevent thorough mixing and water turnover. The issue was corrected by ensuring proper chlorination on a routine basis to maintain a high residual, and the construction of a new storage tank should prevent future issues.

The second Level 1 assessment was triggered on August 27, 2021 as a result of multiple total coliform detections at 80 Central Street in Boxborough, as well as upstream and downstream sites. This likely occurred as a result of insufficient chlorination at Newtown Tank, as well as stagnant water occurring in this section of our system due to a reduced number of water users in the office buildings because of the COVID-19 pandemic. The issue was corrected by performing consistent tank chlorination, as well as extensive flushing in this area to prevent stagnant water that could encourage bacterial growth.

Do I Need To Be Concerned About Certain Contaminants Detected?

Sodium sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled.

New Whitcomb Ave Treatment Plant Construction

The new Whitcomb Ave Water Treatment Plant was designed and permitted in 2020, and construction began in June 2021. To remove iron and manganese, two inorganic contaminants naturally found in New England groundwater, we will be utilizing biological filtration processes. Conditions inside of pressurized tanks will promote the growth of microorganisms, which oxidize dissolved metals into solid particles, thus allowing them to become trapped in the filters and removed. We will also be implementing granular activated carbon filters to remove PFAS from our drinking water. The activated carbon, which typically consists of charcoal, adsorbs organic and metal contaminants from pollution sources, ultimately reducing undesirable tastes and odors and improving water quality. This will allow us to pump all of our wells to their permitted capacities while ensuring PFAS levels stay well below state guidelines. Construction is anticipated to be completed by Spring 2023.

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LWD
WATER DEPARTMENT
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