

2021 DRINKING WATER QUALITY REPORT

LYNNFIELD CENTER WATER DISTRICT, LYNNFIELD, MASSACHUSETTS

PWS ID# 3164000



Important Drinking Water Information

All sources of drinking water (both tap and bottled water), including rivers, lakes, streams, ponds, reservoirs, springs, and wells, contain some naturally occurring contaminants or substances. 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.

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 the water poses a health risk.

More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA's) Safe Drinking Water Hotline at 1-800-426-4791. In order to ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. This report provides you with information about the contaminants found naturally in your drinking water, the levels at which they were found, and the likely source of each contaminant.

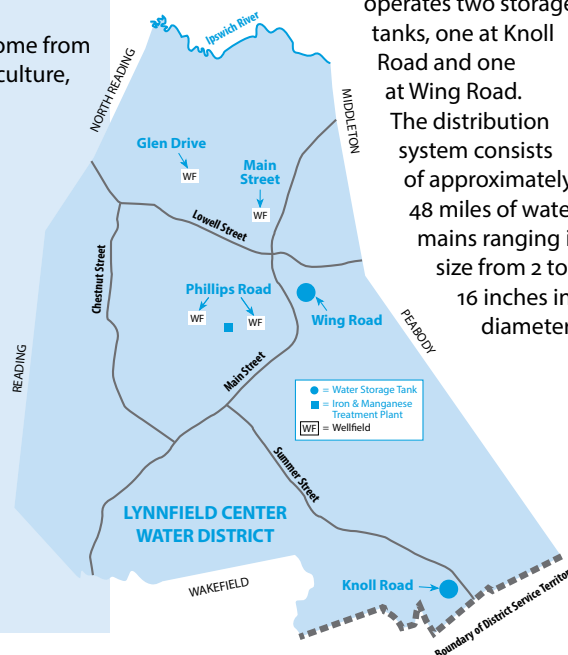
Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming.
- Pesticides and herbicides may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants include synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants can be naturally occurring or be the result of oil and gas production and mining activities.

Where does my water come from?

The Lynnfield Center Water District (LCWD) obtains its drinking water from four ground-water wellfields, as shown on the map below. The Glen Drive wellfield contains four bedrock wells. The Main Street wellfield contains a single gravel packed well. There are two wellfields in the Phillips Road area: a tubular wellfield with 60 wells and a wellfield with five wells, four of which are bedrock wells and one gravel packed well; all of which are treated at the Phillips Road greensand facility.

In addition to the wellfields, the LCWD operates two storage tanks, one at Knoll Road and one at Wing Road. The distribution system consists of approximately 48 miles of water mains ranging in size from 2 to 16 inches in diameter.



How the LCWD Treats Your Water

For All of Our Well Sources: Sodium hypochlorite (chlorine) is added in the treatment process and as a disinfectant to kill any germs that may be in the water and to ensure that the water in the distribution system remains safe to drink. **Fluoride** is added to the water to reduce the incidence of dental cavities, particularly in children.

Potassium hydroxide (KOH) is mixed uniformly through the water to adjust pH and provide control corrosion of lead and copper household plumbing fixtures.

For Our Phillips Road Bedrock Wells:

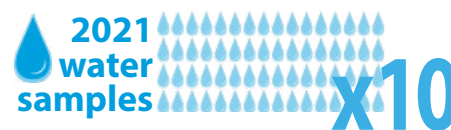
Greensand filters remove iron and manganese from the water.

Customer Views Welcome

To learn more about the water supply system, water quality, and other related information, please call the LCWD at 781-334-3901. The LCWD's Board of Commissioners typically meet at least twice per month on Mondays starting at 7:00 PM in the Maney Room, Town Hall. Meetings are posted, and the agenda and minutes can be found on the website. This, along with additional information regarding daily operations, budgets and rates, projects, and other customer service-related items can be found on the website by visiting www.LCWD.us or by contacting the office by email at LCWD@LCWD.us.

Compliance with Safety and Health Standards

The LCWD's water meets and exceeds all state and federal standards. We test our water regularly through a certified laboratory. During 2021, we collected more than 1,000 water samples in the system that were then tested for compliance with state and federal health standards. State and federal regulators routinely monitor our compliance and testing protocols to assure that we deliver safe drinking water to our customers.



2021 Water Quality Data

Listed below are 30 substances detected in the LCWD's drinking water during 2021 (unless noted otherwise). The LCWD also does additional testing well beyond what is required by federal and state regulations. Not listed are more than 100 other substances for which we tested that were not detected during 2021.

Substance	Highest Detected Levels	Range of Detected Levels	Highest Level Allowed (MCL)	Goal (MCLG)	Source of Contamination
Regulated at the Water Supply Wells					
Barium	0.052 ppm	0.016 – 0.052 ppm	2 ppm	2 ppm	Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits
Fluoride ^[1]	0.6 ppm	0.2 – 0.6 ppm	4 ppm	4 ppm	Erosion of natural deposits; water additive that promotes strong teeth
Gross Alpha ^[2]	0.4 pCi/L	Single sample	15 pCi/L	0 pCi/L	Erosion of natural deposits
Nitrate as Nitrogen	9.6 ppm	0.17 – 9.6 ppm	10 ppm	10 ppm	Runoff from fertilizer use; leaching from septic systems; erosion of natural deposits
Perchlorate	0.4 ppb	ND – 0.4 ppb	2 ppb	NA	Rocket propellants, fireworks, munitions, flares, blasting agents
Radium (226 & 228 combined) ^[2]	0.7 pCi/L	Single sample	5 pCi/L	0 pCi/L	Erosion of natural deposits
Free, Total, or Combined Chlorine	0.66 ppm ^[3]	0.01 – 1.3 ppm ^[4]	2 ppb	NA	Rocket propellants, fireworks, munitions, flares, blasting agents
Total Trihalomethanes ^[5]	37.9 ppb	9.5 – 37.9 ppb	80 ppb	NA	Byproduct of drinking water chlorination
Total Haloacetic Acids ^[5]	8.21 ppb	7.54 – 8.21 ppb	60 ppb	NA	Byproduct of drinking water chlorination
PFAS6	32 ppt / 22 ppt ^[6]	ND – 32 ppt	20 ppt	NA	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.†
Regulated at the Customer's Tap ^[7]					
Lead	4 ppb	ND – 34 ppb 2 results > AL	15 ppb	0 ppb	Corrosion of household plumbing systems, erosion of natural deposits
Copper ^[8]	1.24 ppm	0.055 – 1.89 ppm 2 results > AL	1.3 ppm	1.3 ppm	Corrosion of household plumbing systems, erosion of natural deposits, leaching from wood preservatives

Substance	Average Detected Levels ^[7]	Range of Detected Levels	Highest Guidance Level (SMCL or ORSG)	Source of Contamination
Secondary/Guideline Contaminants				
Chloride	46.7 ppm	Single sample	250 ppm	Erosion of natural deposits
Copper ^[8]	0.1 ppm	Single sample	1 ppm	Erosion of natural deposits
Iron	0.01 ppm	Single sample	50 ppb	Naturally occurring minerals
Odor	3 TON	Single sample	3 TON	Naturally occurring organic materials that form ions when in water
Sodium ^[9]	13 ppm	Single sample	20 ppm	Erosion of natural deposits
Sulfate	17.5 ppm	Single sample	250 ppm	Erosion of natural deposits
Total Dissolved Solids (TDS)	216 ppm	Single sample	500 ppm	Naturally occurring minerals

Substance	Date Collected	Average Annual Results	Range of Detected Levels	Source of Contamination
Unregulated Contaminants ^[10]				
Alkalinity	8/23/21	95 ppm ^[11]	Single sample	Naturally occurring in the source water
Bromodichloromethane	7/27/21	0.78 ppb	ND – 1.4 ppb	Byproduct of drinking water disinfection
Bromoform	7/27/21	0.57 ppb	ND – 0.74 ppb	Byproduct of drinking water disinfection
Calcium	8/23/21	22.9 ppm ^[11]	Single sample	Erosion of natural deposits
Chlorodibromomethane	7/27/21	1.1 ppb	ND – 2.1 ppb	Byproduct of drinking water disinfection
Chloroform	7/27/21	0.68 ppb	ND – 0.86 ppb	Byproduct of drinking water disinfection
Hardness	8/23/21	139 ppm ^[11]	Single sample	Erosion of natural deposits
Magnesium	8/23/21	19.9 ppm ^[11]	Single sample	Erosion of natural deposits
Perfluorobutanesulfonic Acid (PFBS)	Various	3 ppt	ND – 9 ppt	Refer to ‡ above
Perfluorohexanoic Acid (PFHxA)	Various	5 ppt	ND – 11 ppt	Refer to ‡ above
Potassium	8/23/21	2.3 ppm ^[11]	Single sample	Erosion of natural deposits

TABLE FOOTNOTES

- [1] EPA's MCL for fluoride is 4 ppm. However, our state has set a lower MCL, 2 ppm, to better protect human health.
- [2] Results from most recent testing in 2020.
- [3] The highest level detected is based on the annual average of each month.
- [4] This range represents the individual results of all samples, rather than the averages.
- [5] Total trihalomethanes and five haloacetic acid levels are based on one sample taken in the third quarter of 2021.
- [6] MassDEP requires that the single highest quarterly average be reported and notes that PFAS6 is a site-specific parameter that would not be average across sites. The range of detected results include all individual values without averaging. Any PFAS6 MCL violations need to be reported

- separately. The 32-ppt result was from Station #1, which was subsequently taken offline and has remained offline. The 22-ppt result was from Station #2 and all other results were below the MCL. See the "Per- and Poly-fluoroalkyl Substances (PFAS)" section for more information.
- [7] Level shown indicates the 90th percentile, which is used to determine compliance with the Lead and Copper Rule and must be below the AL. Results based on 20 MassDEP-approved sample sites. The range represents all the individual results.
- [8] Copper is listed twice in this table. The first represents the results of 20 samples taken at the customer's tap, at locations approved by MassDEP. The second represents results found at an approved sample location.

- [9] The ORSG for sodium is 20 ppm (there is no applicable SMCL for sodium). 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.
- [10] Unregulated contaminants are those for which there are no established drinking water standards. The purpose of unregulated contaminant monitoring is to assist regulatory agencies in determining their occurrence in drinking water and whether future regulation is warranted.
- [11] Results are for a single sample and do not represent an average value of multiple samples.

LCWD's Source Water Assessment Program

How are these sources protected?

The MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply sources serving the LCWD. The SWAP report notes the key issues: residential land uses and activities, presence of oil or hazardous material contamination sites, and comprehensive wellhead protection planning in the water supply protection areas. The report commends the LCWD on its existing source protection measures, which include posting "Public Drinking Water" signs, regular inspections of protection areas, prohibition of non-water-supply-related activities within the protection area, development of an "Emergency Response Plan" to deal with spills or other emergencies; and regular inspections of commercial and industrial activities by the Board of Health.

Water System's Susceptibility

The wells for the LCWD are located within water supply protection areas. The primary recharge areas for the wells are predominantly forested and residential, with a small amount of recreational land use. The SWAP ranks susceptibility of wells by determining the presence of contamination threats within the

well recharge areas. The SWAP ranks the Glen Drive wellfield susceptibility as moderate since there is at least one moderate threat land use within the recharge area, and the Phillips Road and Main Street wells susceptibility as high since there is at least one high-threat land use within the recharge area. Sources of moderate threats in the Glen Drive recharge area include potential contamination sources such as overfertilization at golf courses, residential pesticide use/overapplication, aboveground storage tanks, water treatment sludge lagoons, improper residential fuel oil storage, and malfunctioning septic systems. Sources of high threats in the Phillips Road and Main Street recharge areas include potential contamination sources such as improper fluid and fuel handling at gas stations and improper handling of underground storage tanks.

Where can I see the SWAP Report?

The complete SWAP report is available at the LCWD and online at www.mass.gov/doc/lynnfield-center-water-district-swap-report/download.

For more information, call the LCWD at 781-334-3901.

Per- and Polyfluoroalkyl Substances (PFAS)

LCWD has been actively engaging with our customers and understands the emerging concerns about contaminants known as PFAS. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States, since the 1940s. PFAS are found in firefighting foams as well as in a wide range of consumer products that people use daily, such as cookware, pizza boxes, and stain repellents.

There is research that shows exposure to PFAS can lead to adverse health outcomes in humans. 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. While consumer products and food are the largest source of exposure to these chemicals for most people, drinking water can be an additional source of exposure in communities where these chemicals have contaminated water supplies.

In September 2021, we began proactively monitoring our four drinking water sources ahead of October 2021 when the MassDEP's standard went into effect for LCWD. The standard is 20 parts per trillion (ppt) for the sum of the following six PFAS (PFAS6) compounds: PFOS (perfluorooctanesulfonic acid), PFOA (perfluorooctanoic acid), PFNA (perfluorononanoic acid), PFHxS (perfluorohexanesulfonic acid), PFHpA (perfluoroheptanoic acid), and PFDA (perfluorodecanoic acid). A "part per trillion" is analogous to a drop of water in 20 Olympic-sized swimming pools.

For two of our four sources, LCWD detected PFAS6 greater than the 20-ppt standard (Stations 1 and 2). Station 1 was taken offline and will remain offline. Treatment for Station 2 is scheduled to be implemented summer of 2022. A bottled water rebate is in place for sensitive populations in the area served by Station 2. For more information on PFAS6 and LCWD, please visit www.lcwd.us/pfas/.

What can be done to improve protection?

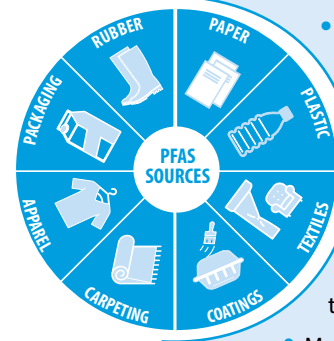
The LCWD implements the following recommendations on an ongoing basis.

Residents can help protect sources by:

- Practicing good septic system maintenance.
- Supporting water supply protection initiatives at Town meetings.
- Taking hazardous household chemicals to hazardous materials collection days.
- Contacting the water department or Board of Health to volunteer for monitoring or education outreach to schools.
- Limiting pesticide and fertilizer use.

The SWAP report recommends:

- Educating residents on proper disposal of hazardous materials.
- Providing residents with information on environmentally friendly household products.
- Educating residents on septic system care.



- Educating residents on environmentally sound lawn care.
- Providing residents with educational materials on proper storage of liquid petroleum products in aboveground storage tanks.
- Monitoring progress on ongoing remedial action conducted for known oil or hazardous material contamination sites.
- Developing a land acquisition plan.
- Coordinating efforts with local officials in North Reading and Peabody to compare existing controls.
- Developing and implementing an inspection program for facilities that generate, use, store, or dispose of hazardous/toxic materials.

DEFINITIONS

90th percentile – Out of every 10 homes sampled, 9 were at or below this level.

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

Massachusetts Office of Research and Standards Guideline (ORS6) – 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.

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 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 expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

ABBREVIATIONS

> – Greater than

NA – Not applicable

ND – Not detected

ppm (Part Per Million) – One part per million is the equivalent of \$1 in \$1,000,000.

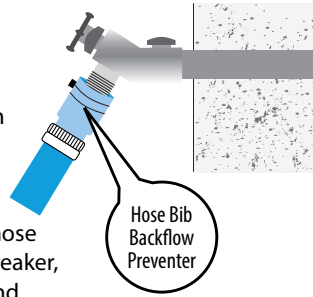
ppb (Part Per Billion) – One part per billion is the equivalent of \$1 in \$1,000,000,000.

TON – Threshold odor number

Cross-Connection Control Program

A cross-connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For example, to spray fertilizer on your lawn, you hook your hose up to the sprayer that contains the fertilizer. If the water pressure drops (say, because of the fire hydrant use in the town) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow-prevention device can prevent this problem.

The LCWD recommends the installation of backflow-prevention devices, such as a low-cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase them 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!



Vulnerability

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 infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care provider. 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 by calling:



**Safe Drinking Water
Hotline**
1-800-426-4791

Private Wells and Cross-Connection Control

Many residents in Lynnfield own their own private wells, which are used for irrigation, in addition to receiving drinking water from the LCWD. If a residence is connected to both a private well and the LCWD's public water supply, the piping carrying the private well water and public water cannot be connected anywhere. Otherwise, an illegal cross-connection is created, through which private well water may be siphoned into the public water mains. Therefore, residences served by private wells must physically disconnect from

the public water system, or the pipes carrying private well and public water must be kept completely separate by means of an air gap. The physical separation between the private well and the public water supply, referred to as an air gap, must be at least twice the diameter of the water supply outlet, but never less than one inch.

If you own and use a private well, please contact the office to set up an inspection and to make sure that it is properly registered in the LCWD database.

Important Health Information

Nitrate: Nitrate in drinking water at levels above 10 parts per million (ppm) is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.

Lead: 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. The LCWD is responsible for providing high-quality drinking water, but it 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 found online at www.epa.gov/safewater/lead.

Visit us at: www.LCWD.us

This publication is mandated by the federal public-right-to-know regulation requiring community water suppliers to provide specific treated water-quality information annually to their customers. Additional information beyond the minimum federal requirements is included that addresses typical questions our customers ask about LCWD's water system.

The 2021 Drinking Water report describes the Lynnfield Center Water District's (LCWD) drinking water sources and treated water quality for calendar year 2021, and the programs that protect the high quality of our water supply.

