



2023 Water Quality Report

*Town of Sterling, Massachusetts 01564
Sterling Department of Public Works
Water Department
Public Water Supply Identification No. 2282000
www.Sterling-ma.gov*

We are pleased to present you with this year's Annual Water Quality Report for the Calendar Year 2023. The intent of this report is to inform you about your drinking water and to provide you with information on where your water comes from, what is found in the water, and how it compares to state and federal standards. The United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) require the Town to provide this information on an annual basis. The Department takes pride in delivering high quality and safe drinking water to the community.

I. PUBLIC WATER SYSTEM INFORMATION

Address: 171 Worcester Road, Sterling, MA 01564

Contact Person: Michael Tomaiolo

Telephone No. (978) 422-6767

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Internet Address: <https://www.sterling-ma.gov/water-department>

Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend a Department of Public Works Board Meeting. Traditionally, the board meets the second Tuesday of each month, at 7:00PM at the DPW Facility.

II. YOUR DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

The Town's water supply comes from six (6) groundwater wells. Each water source and its associated DEP identification number is listed below:

Source Name	DEP Source ID #	Source Type	Location of Source
Redemption Rock Trail	2282000-03G 2282000-04G 2282000-05G	Three (3) Gravel Packed Wells	Redemption Rock Trail
Worcester Road	2282000-06G 2282000-07G 2282000-08G	Three (3) Gravel Packed Wells	Worcester Road

Is My Water Treated?

Water from our Town wells is treated with Potassium Hydroxide for pH adjustment/corrosion control and Ultraviolet Light (UV) for disinfection. The groundwater in Sterling has a naturally low pH, which means it is somewhat acidic and therefore corrosive. The Potassium Hydroxide raises the pH to above neutral (7.0) so that it is not acidic and corrosive. The UV treatment is in place to kill microorganisms and bacteria that are naturally occurring in the water. If the UV system fails, chlorine is used as a backup disinfection treatment. Chlorine is also added regularly in the summer months or when required by MADEP for an additional barrier of protection. The water quality of our system is constantly monitored by the Sterling Water Department and the DEP to determine the effectiveness of existing water treatment and to determine if additional treatment is required.

How Are These Sources Protected?

The Department of Environmental Protection has prepared a Source Water Assessment Program (SWAP) Report for the Town's water supply sources. The SWAP Report assesses the susceptibility of the supplies to contamination. A susceptibility ranking of high was assigned to the system using the information collected during the assessment by DEP. The complete SWAP report is available at the DPW office or online at <https://mass.gov/doc/central-region-source-water-assessment-protection-swap-program-reports-0/download>. For more information, please call the Water Department Office at (978) 422-6767.

III. SUBSTANCES FOUND IN DRINKING WATER

Sources of drinking water (for 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, and farming.

Pesticides and herbicides – which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Organic chemical contaminants – these include synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production. These contaminants 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, DEP 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 Massachusetts Department of Public Health (DPH) regulations also establish limits for contaminants in bottled water that must provide the same protection for public health. All 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 at (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 lowering the risk of

infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (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. The Water Department 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>.

IV. IMPORTANT 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.

Definition of Units-

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
pCi/l = picocuries per liter (a measure of radioactivity)
NTU = Nephelometric Turbidity Units
ND = Not Detected
N/A = Not Applicable
T.O.N = Threshold odor numbers (a measure of odor)
mrem/year = millirems per year (a measure of radiation absorbed by the body)

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.

Massachusetts 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.

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 (chlorine, chloramines, chlorine dioxide) 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 (chlorine, chloramines, chlorine dioxide) below which there is no known or expected risk to health. MRDLG's 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.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.

V. WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the table(s) 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 table(s).

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Barium (ppm)	6/26/2023	0.014	0.010-0.014	2	2	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Nitrate (ppm)	4/25/2023	1.50	.05-1.50	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Per- and polyfluoroalkyl Substances (PFAS)							
PFAS6 (ppt)	2/13/23 2/16/23 10/31/23	9.65	4.76-9.85	20	N/A	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.
Volatile Organic Contaminants							
Tetrachloroethylene (PCE) (ppb)	6/26/2023	0.42	ND-0.42	5	0	N	Leaching from PVC pipes; discharge from factories; dry cleaners

Radioactive Contaminants							
Gross Alpha (pCi/l)	12/7/23	2.8	2.8	15	0	N	Erosion of natural deposits
Radium 226 & 228 (pCi/L) (combined values)	5/10/22	0.5	0.5	5	0	N	Erosion of natural deposits
Disinfectants and Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb) ⁽¹⁾	9/8/2023	2.4	2.4	80	--	N	Byproduct of drinking water chlorination

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Chlorine (ppm)	Monthly 2023	0.86	0-2.6	4	4	N	Water additive used to control microbes

Haloacetic Acids and Trihalomethanes: The highest-level detected represents the highest running annual average for these contaminants. The range of levels found may have results in excess of the MCL but the running average of all sample locations is used to determine compliance.

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.

Unregulated and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Inorganic Contaminants						
Sodium (ppm)	6/26/2023	17-21	21	--	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Pentachlorophenol (ppb)	2/23/2022 9/13/2022 12/6/2022	ND-0.030	0.004	1	--	Discharge from wood preserving factories
Secondary Contaminants						
Iron (ppb)	4/25/2023	24-417	55	300	--	Naturally and industrial sources as well as aging and corroding distribution systems and household pipes
Manganese (ppb) ⁽²⁾	Quarterly 2023	ND-151	73	50	Health Advisory of 300 ppb	Natural sources as well as discharges from industrial uses
Alkalinity (ppm)	Bi-weekly 2023	30-86	60	-	--	
Aluminum (ppm)	9/30/2022	0.006 - 0.043	0.021	0.2	--	Residue from water treatment process, erosion of natural deposits
Chloride (ppm)	9/30/2022	25.9-256	83.42	250	--	Runoff and leaching from natural deposits; seawater influence
Copper (ppm)	2/14/2023-12/13/23	0.013-0.44	0.014	1	--	Internal corrosion of household plumbing; erosion of natural deposits
Odor (T.O.N)	9/30/2022	ND-1	0.2	3	--	Naturally occurring organic materials that form ions when in water; seawater influence
Sulfate (ppm)	9/30/2022	7.1-93.9	35.7	250	--	Runoff and leaching from natural deposits; industrial wastes
Total Dissolved Solids (ppm)	9/30/2022	82-616	245.2	500	--	Runoff or leaching from natural deposits; seawater influence

Unregulated and Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Zinc (ppm)	9/30/2022	0.007-.038	0.019	5	--	Corrosion of household plumbing; erosion of natural deposits
Per- and polyfluoroalkyl Substances (PFAS)						
Perfluorobutanesulfonic acid (PFBS) (ppt)	2/13/23 2/16/23 10/31/23	ND-0.689	0.338	--	--	
Perfluorohexanoic acid (PFHxA) (ppt)	2/13/23 2/16/23 10/31/23	0.915-1.78	1.33	--	--	

- 1) US EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure.

Bacteria

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 one Level 1 assessment (September 2023). One Level 1 assessment was completed which included the following corrective actions: reactivated seasonal chlorine at treatment facilities and disinfected all three storage tanks.

During the past year, two Level 2 assessments were required to be completed for our water system (October and December 2023). Two Level 2 assessment were completed which required 4 corrective actions, and we completed 3 of these actions. Our last corrective action is in the process of being completed and is scheduled for completion in 2024. The remaining corrective action is to disassemble, rehabilitate, and perform a camera inspection of Well 5.

Groundwater Source Fecal Indicator	Total # Positive for the year	MCL	MCLG	Violation (Y/N)	Possible Source of Contamination	
<i>E. coli</i>	1	TT	N/A	N	Human or animal fecal waste	
Initial Date of Source Fecal Indicator Detection	Date of Public Notification	Source Name/ID#		Source Fecal Indicator Repeats Positive (Y/N)	Date Addressed	
10/24/2023	10/26/2023	Redemption Rock Well #5		N	10/25/2023	
Health Effects:	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, and people with severely compromised immune systems.					

Corrective Actions:	<p>In October 2023, a source water sample collected prior to treatment at Redemption Rock Well 5 tested positive for <i>E. coli</i>, which is a fecal indicator. Fecal indicators are used to detect ground water sources that may be susceptible to fecal contamination which may contain harmful viruses or bacteria. When we learned of the fecal positive sample, the well was immediately taken offline.</p> <p>During normal operations, water from Well 5 is pumped from the ground and it is disinfected with ultraviolet light to kill viruses and bacteria, including <i>E. coli</i>. The disinfected water is delivered to you. Disinfected water samples from the water distribution system were also collected on October 24th, 2023. None of the disinfected samples tested positive for <i>E. coli</i>. Only the untreated sample from Well 5 tested positive. Even though none of the disinfected samples tested positive, our disinfection system has not been certified by MassDEP as 4-log compliant as required by the Ground Water Rule (GWR).</p> <p>Our system has consulted with MassDEP, and we have a state-approved plan to maintain the Redemption Rock Well #5 out of service until treatment improvements are completed.</p>
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Lead and Copper

Lead and copper are contaminants that have a very specific and unique set of rules for sampling and testing. Unlike other inorganics, which tend to contaminate a water supply at the source, lead and copper generally enter the water after it has flowed to the consumer's home. These metals typically dissolve from the water pipes within your house if the water is corrosive. Lead usually comes from the lead solder used prior to 1986 to connect the copper tubing in a house's water supply lines. The copper comes from the tubing itself. Ingesting large amounts of copper from drinking water can upset your stomach but there are no long-term health effects unless you suffer from Wilson's Disease. Lead, on the other hand, is known to cause learning impairments in young children and may cause delays in mental and physical development. Elevated lead ingestion may also cause kidney problems or high blood pressure in adults. Lead is therefore strictly regulated in drinking water. In past years, gasoline and paint were major sources of lead in the environment.

Since both lead and copper enter the water at the point of use (near the tap), sampling and testing for these metals must be performed at homes in the Town rather than at the entry point to the distribution system. Samples had to be collected after the water went unused in the home for at least six (6) hours. This permitted the maximum contact between water and the lead and copper. If the 90th percentile results exceed the action level, further sampling and possible treatment changes might be necessary.

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 Sterling Water Department 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>.

Contaminant	Date(s) Collected	90 th percentile	Action Level	MCLG	No. of sites sampled	No. of sites above Action Level	Possible Source of Contamination
Lead (ppb)	Quarter 2 2023	12	15	0	40	4	Corrosion of household plumbing systems; Erosion of natural deposits
	Quarter 4 2023	15			40	4	

Copper (ppm)	Quarter 2 2023	0.26	1.3	1.3	40	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
	Quarter 4 2023	0.22			40	0	

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards?

We are committed to providing you with the best water quality available. We are proud to report that last year all test results met all applicable health standards regulated by the state and federal government.

VII. CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION

What is a cross-connection?

A cross-connection occurs whenever the drinking water supply is or could be in contact with potential sources of pollution or contamination. Cross-connections exist in piping arrangements or equipment that allow the drinking water to come in contact with non-potable liquids, solids or gases (hazardous to humans) in event of a backflow.

What is a backflow?

Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of water can occur when the pressure created by equipment or system such as a boiler or air-conditioning is higher than the water pressure inside the water distribution line (backpressure), or when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (back siphonage). Backflow is a problem that many water consumers are unaware of, a problem that each and every water customer has a responsibility to help prevent.

What can I do to help prevent a cross-connection?

Without the proper protection, something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact, over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you as a drinking water user can take to prevent such hazards, they are:

- NEVER submerge a hose in soapy water buckets, pet watering containers, pools, tubs, sinks, drains or chemicals.
- NEVER attach a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bib vacuum breaker on any threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a backflow preventer
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections.

The Massachusetts Drinking Water Regulations, 310 CMR 22.00, requires all public water systems to have an approved and fully implemented Cross-Connection Control Program (CCCCP). The Sterling Water Department is working diligently to protect the public health of its drinking water customers from the hazards caused by unprotected cross-connections through the implementation of its cross-connection survey program, elimination or properly protection of all identified cross-connections, the registration of all cross-connections protected by a

reduced pressure backflow preventers (RPBPs) or a double check valve assemblies (DCVAs), and the implementation of a testing program for all RPBPs and DCVAs.

For more information on this program please call Water Department at (978) 422-6767.

VIII. WATER CONSERVATION

We ask that all customers cooperate to conserve water for the purpose of saving money, and importantly, to save our limited and valued natural resources. If you have an irrigation system and it operates on rainy days you should consider using a rain sensor, which when connected to your irrigation system, will not allow your irrigation system to operate if there has been recent precipitation. These devices are inexpensive and relatively easy to install.

In accordance with the requirements of the Water Management Act Final Permit issued to the Town of Sterling by DEP, the Town is required to enact a Water Use Restriction from May 1st until September 30th, between the hours of 9AM and 5PM. This ban restricts daily “nonessential” outdoor water use from public water sources within that timeframe. If drought conditions return, The Department will increase the water ban level as required. More information can be found on the Town’s website at www.sterling-ma.gov.