2024

Drinking Water Quality Report

Distributed June 2025

To Our Customers,

2024 was another tremendously successful year for the Salem and Beverly Water Supply Board (the Board) and its staff. The Board was awarded the best Large Water Utility of the Year in 2024 by the New England Water Works Association. We made great progress with our new multiphased 20-Year Capital Sustainability and Best Management Practices Program with execution of our first major construction contract – read all about it on the following pages!

Additionally, during 2024, the Board received a grant commitment from the Massachusetts Department of Environmental Protection to fund the preparation of the Board's next 20-Year Asset Management Master Plan. This plan will provide the Board and the communities it serves with a plan of sustainable actions, financial and legislative needs, and a timeline of milestones. These efforts will ensure the Board succeeds in its mission to deliver a high-quality, reliable, and resilient water supply to our customers now and for the generations that follow. This sustainability program will require careful and strategic planning along with significant public support, legislative actions, and funding.

This report describes the Board's raw water sources, drinking water treatment process, and water quality performance data for the year 2024.

As part of our ongoing commitment to increase public communication, awareness, and transparency, this report includes information beyond the minimum requirements related to your drinking water for the protection and sustainability of this most precious and valuable resource.

It has been a great pleasure, once again, to serve you all in 2024, and we look forward to a productive and successful 2025.

Sincerely,

Alan F. Taubert, Jr., PE, CEM,
Executive Director
Salem and Beverly Water Supply Board

For questions regarding your water distribution system, please contact the Water Department in your city.

Salem Water Department–
(978) 745-9595 ext. 5673

Beverly Water Department–
(978) 921-6000 ext. 2358

For questions regarding your water quality, please contact the Board at (978) 922-2600. Brad Perron, Deputy Director, and Alan Taubert, Executive Director

Salem and Beverly Water Supply Board: PWS ID 3030001
Salem Water Department: PWS ID 3258000 | Beverly Water Department: PWS ID 3030000

Important Information from EPA & MassDEP about Sources of Drinking Water and Drinking Water Contaminants

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, 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 the result of oil and gas production and mining activities.

To ensure tap water is safe to drink, MassDEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The FDA and the Massachusetts Department of Public Health 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 contamination. The presence of contaminants does not necessarily indicate that water poses a health risk.

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 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: 800-426-4791**.

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 Board is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact the Board. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *epa.gov/safewater/lead*.

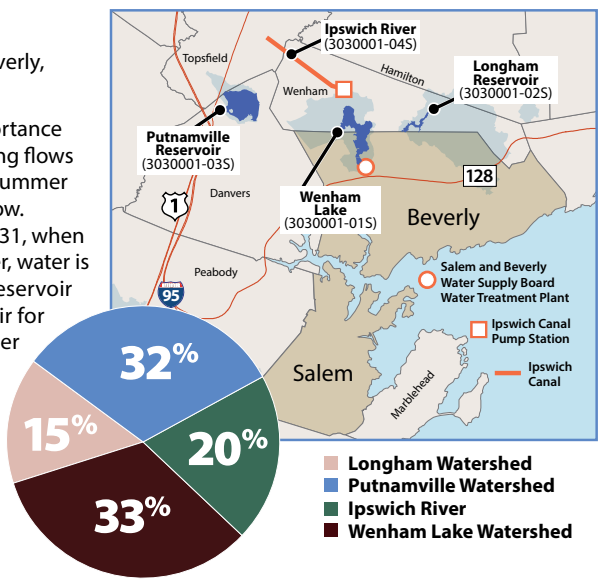
Where Does Your Water Come From?

The Board provides potable water to the cities of Salem and Beverly for drinking, sanitation, and fire protection. The Board maintains the source waters, treats the water at the Arlington Avenue water treatment plant located in North Beverly, and delivers water to the individual Salem and Beverly pumping stations. The pumping stations deliver drinking water to your home in pipes owned and maintained by each city's water department.

Salem and Beverly use over 3 billion gallons of drinking water each year. This water is drawn from the Ipswich River and three reservoirs: Wenham Lake, Putnamville, and Longham.

Beverly's water mains have interconnections with Salem, Wenham, Danvers, and Manchester-by-the-Sea. Salem's water mains have interconnections with Beverly, Marblehead, and Peabody.

The Board recognizes the importance of storing high winter and spring flows of the Ipswich River for use in summer when river flows are naturally low. Between December 1 and May 31, when there is excess water in the river, water is pumped to the Putnamville Reservoir and/or Wenham Lake Reservoir for storage and use during summer and fall each year. Water is not pumped from the Ipswich River from June 1 through November 30. Similarly, Longham Reservoir augments Wenham Lake Reservoir.



A Big Step Forward for Our 20-Year Capital Sustainability and Best Management Practices Program!

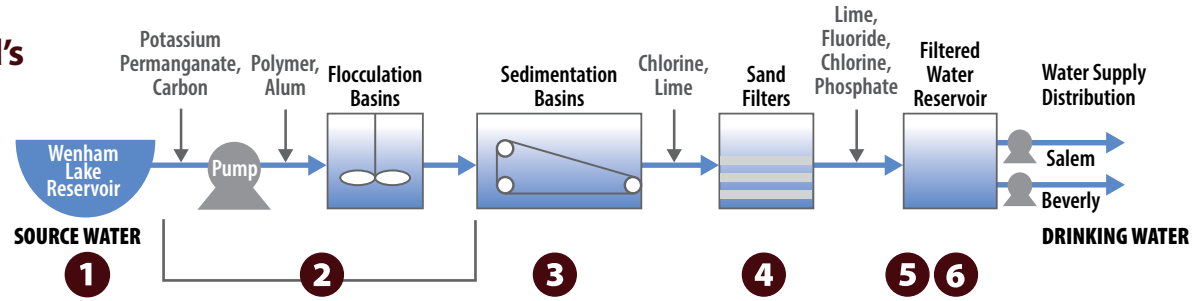
Our 20-Year Capital Sustainability and Best Management Practices Program has carefully laid out projects and allocated funding to ensure the Board succeeds in its mission to deliver a high-quality, reliable, and resilient water supply to our customers now and for the generations to follow.

During 2024, the Board passed a major mile-stone with the award of Contract 2022-1: Facilities Upgrades, valued at $8.68M. The scope of work involves critical improvements to our water filtration plant and reservoir facilities.

A summary of Contract 2022-1 Upgrades includes:

- Rehabilitation of the Longham Reservoir Bar Screen Intake and Modification to the Putnamville Reservoir Gatehouse.
- Sedimentation Basin Chain Replacement and Repairs.
- Filter-Media Replacement and Filtration Process Improvements.
- Replacement of Large-Diameter Piping and Valves.
- Improvement of Chemical Feed Systems.

The Board's Source Water & Process Flow Diagram



Water Purification Process

The source waters of the Board's reservoir system undergo extensive treatment at the water treatment plant on the shores of Wenham Lake Reservoir in Beverly before drinking water is delivered to your home or business. The water is treated to exceed all federal and state drinking water standards established by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP). The plant removes naturally occurring impurities from the source water as required by federal regulations and good public health practices.

To ensure the highest quality water, the Board continuously monitors the effectiveness of the treatment process and makes necessary adjustments to the treatment to maintain water quality.

1 SOURCE WATER: Raw water for the water treatment plant is drawn from Wenham Lake Reservoir.

2 and 3 PRETREATMENT: The first step in the treatment process combines preoxidation with potassium permanganate, adsorption with carbon and coagulation with alum and polymer, followed by gravity settling to remove manganese; natural color, taste and odor; and sediment and particles.

4 FILTRATION: The water passes through sand and anthracite media to remove organic compounds. Filtration also acts as a "polishing step" to remove additional particles, color, and bacteria.

5 DISINFECTION: Sodium hypochlorite is used to provide disinfection of the filtered water to kill bacteria and viruses and to maintain a protective residual throughout the distribution system.

6 POSTTREATMENT: Fluoride is added to prevent tooth decay/cavities. To maintain corrosion control in the distribution pipes, the Board adjusts the pH and uses a phosphate additive designed to optimize corrosion control throughout the distribution system and minimize dissolved lead in the pipes and household plumbing.

PHOTO COURTESY OF GOOGLE EARTH PRO ©2024

Protect Your Drinking Water at Home!

A "cross connection" is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, to spray fertilizer on your lawn, you hook your hose up to the sprayer that contains the fertilizer. If the water pressure drops (for example, because of fire hydrant use in the city) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Over half of cross-connection incidents involve unprotected garden hoses which can be prevented by a hose bib device.

For more information on cross connections and the status of our program, contact your city's water department:

Salem:
(978) 619-5673
ext. 5673

Beverly:
(978) 921-6000
ext. 2358

Nonpoint Source Pollution

The EPA Phase II Stormwater regulations require all communities with populations under 100,000 to implement control measures aimed at reducing water pollution caused by stormwater runoff. Stormwater runoff is a major component of nonpoint source (NPS) pollution. According to the EPA, NPS pollution constitutes the nation's largest source of water quality problems. NPS pollution occurs when runoff (rainwater or snowmelt) moves over the land picking up sediments and contaminants and then depositing them into lakes, rivers, and coastal waters. Overland flow picks up pollutants from driveways, crops, industrial sites, or malfunctioning septic systems before discharging into the river or storm drain.

NPS pollution can lead to beach closures, fish kills, habitat destruction, and unsafe drinking water. Unlike point sources (e.g., discharge pipes from facilities), NPS are diffuse, which makes them difficult to trace and control. The Board provides robust watershed protection (including limiting access to the public) to control NPS pollution and the source of drinking water for their customers.

Household contributors to NPS pollution include improperly disposed pet waste, lawn fertilizer, paints, and motor oil. Automobiles, factories, and wood stoves emit airborne contaminants that return to the earth in the form of rain or snow. The amount of these contaminants that reach water sources is increased by impermeable surfaces such as roofs and pavements, which keep the soils from naturally filtering stormwater.

The Cities of Salem and Beverly have implemented Stormwater Management Plans (SWMP) designed to reduce storm-water runoff pollution and protect your source and surface waters. Involving the public through education and participation are required control measures for the SWMP.

Massachusetts Source Water Assessment and Protection Program

The Source Water Assessment and Protection (SWAP) Program assesses the susceptibility of public water supplies to contamination from land uses and activities within the recharge area of Salem and Beverly's water supply. **The water supply for these cities consists of surface water from:**

- Wenham Lake (Source ID #3030001-01S)
- Longham Reservoir (Source ID #3030001-02S)
- Putnamville Reservoir (Source ID #3030001-03S)
- Ipswich River (Source ID #3030001-04S)

MassDEP assigned a susceptibility rating of "high" to this system using the information collected during their assessment. A high ranking is given to any water supply that has at least one high threat within the water supply protection area. Because there are 17 potential high-threat land uses within the protection area, the Salem and Beverly water supply must be assigned a high susceptibility ranking. The potential contaminant sources within the protection area are manure storage or spreading, pesticide storage or use, airports, body shops, gas stations, service stations/auto repair shops, bus and truck terminals, dry cleaners, photo processors, repair shops (e.g., engine, appliance), hazardous materials storage, machine/metalworking shops, hazardous waste facilities, large quantity hazardous waste generators, landfills and dumps, military facilities (past and present), and underground storage tanks. This ranking does not imply that the cities have poor water quality or will have poor water quality in the future. It only draws attention to various activities within the watershed that may be potential sources of contamination.

The SWAP then assesses what the water supplier is doing to prevent contamination and recommends other measures that can be taken to further protect the sources.

The Board has already implemented some source protection measures, including reviewing the development of plans in the city of Beverly and the towns of Wenham and Topsfield, conducting stream monitoring throughout the watersheds, and managing geese on Wenham Lake.

For more information, the complete SWAP report is available at the Board and online:

mass.gov/doc/salem-beverly-water-supply-bd-swap-report/download

You can also call the Board at **(978) 922-2600**.

REGULATED COMPOUNDS

Compound	Highest Level Found	Range of Detections (low – high)	Highest Level Allowed (MCL or MRDL)	Ideal Goal (MCLG or MRDLG)	Possible Source
Barium	0.02 ppm	Single Sample	2 ppm	2 ppm	Erosion of natural deposits
Chlorine	0.65 ppm [1]	ND – 1.84 ppm [2]	4 ppm	4 ppm	Water disinfectant
Copper [3]	Both: 0.16 ppm Salem: 0.16 ppm Beverly: 0.15 ppm	0.019 – 0.27 ppm [4] 0.019 – 0.22 ppm [4] 0.021 – 0.27 ppm [4]	AL = 1.3 ppm	0 ppm	Corrosion of household plumbing systems
Fluoride [5]	0.86 ppm	0.57 – 0.86 ppm	4 ppm [4]	4 ppm	Added to water to promote strong teeth
Lead [3, 6]	Both: 1.7 ppb Salem: 1.5 ppb Beverly: 1.8 ppb	ND – 3.4 ppb [4] ND – 3.4 ppb [4] ND – 2.7 ppb [4]	AL = 15 ppb	0 ppb	Corrosion of household plumbing systems
PFAS6 [7]	9 ppt	8 – 9 ppt	20 ppt	–	‡ 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.
Total Haloacetic Acids	52 ppb [1]	36 – 68 ppb [2]	60 ppb [8]	0 ppb	Byproduct of water disinfection
Total Trihalomethanes	63 ppb [1]	23 – 90 ppb [2]	80 ppb [8]	0 ppb	Byproduct of water disinfection
Turbidity	0.34 NTU	0.04 – 0.34 NTU	TT = 0.3 NTU [9]	N/A	Suspended matter from soil runoff

SECONDARY/GUIDELINE CONTAMINANTS

Compound	Highest Level Found	Range of Detections (low – high)	Highest Guidance Level (SMCL or ORSG)	Ideal Goal (MCLG or MRDLG)	Possible Source
Chloroform	23 ppb	Single Sample	70 ppb	–	Byproduct of water disinfection
Sodium [10]	43 ppm	Single Sample	20 ppm	–	Discharge from the use and improper storage of sodium-containing de-icing compounds or in water-softening agents
Manganese [11]	34 ppb	Single Sample	50 ppb	–	Naturally occurring mineral

UNREGULATED CONTAMINANTS	Compound	Average	Range of Detections (low – high)	Possible Source
	PFHxA	2.9 ppt	2.8 – 3.1 ppt	Refer to ‡ above
	PFBS	0.6 ppt	ND – 2.4 ppt	Refer to ‡ above

Notes

[1] Highest level detected is based on a running monthly or quarterly average of samples.

[2] Highest value in range is based on individual samples, rather than averages.

[3] The Action Level (AL) and the highest level found are based on the 90th percentile of the samples. The range represents all individual samples. Results shown are from the most recent sampling in 2023.

[4] Both Salem and Beverly systems had no houses that exceeded the AL for either lead or copper.

[5] Fluoride also has an SMCL of 2.0 ppm.

[6] Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

[7] PFAS6 comprise six compounds: perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorodecanoic acid (PFDA).

[8] Highest level allowed (MCL) for this substance is based on the average of four quarterly samples.

[9] All samples met the TT requirement. Turbidity is a measure of treatment performance and is regulated as a treatment technique. A total of 95% of our turbidity readings each month must be below 0.3 NTU.

[10] The MassDEP Office of Research and Standards has set a guideline concentration of 20 ppm for sodium. Sodium-sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart disease, should be aware of the sodium levels if exposures are being carefully controlled.

[11] EPA has established a lifetime health advisory (HA) of 300 ppb to protect against potential neurological effects, and 1-day and 10-day HA of 1.0 ppm for acute exposure. Manganese is naturally present in the environment.

Terms and Abbreviations

AL: Action Level – The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that 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 level of disinfectants required to control microbial contaminants.

N/A: Not Available – An ideal goal has not been established by EPA or MassDEP for this compound.

ND: Not Detected

NTU: Nephelometric Turbidity Unit – A measure of the turbidity (or clarity) of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

ORSG: (Massachusetts) Office of Research and Standards Guideline – Guidance values developed by MassDEP ORS in absence of any other federal standards or guidance.

ppb: Parts per Billion or Micrograms per Liter (µg/L) – One part per billion is the equivalent of $1 in $1,000,000,000.

ppm: Parts per Million or Milligrams per Liter (mg/L) – One part per million is the equivalent of $1 in $1,000,000.

ppt: Parts per Trillion or Nanograms per Liter – (ng/L) – One part per trillion is the equivalent of $1 in $1,000,000,000,000.

SMCL: Secondary Maximum Contaminant Level – Concentration limit for a contaminant that may have aesthetic effects such as taste, odor, or staining.

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

Unregulated Contaminants: 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.

90th Percentile: Nine out of every 10 homes were at or below this level.

Salem and Beverly Water Supply Board
50 Arlington Avenue
Beverly, MA 01915

ECRWSS
POSTAL PATRON

Manganese and Discolored Water

Manganese is a naturally occurring mineral in the environment, and at certain times of the year can be present at low levels in our drinking water. While an essential nutrient, at these low levels it can accumulate over time in the pipes that bring water to our customers. Flow changes from construction, use of hydrants, and water main breaks can stir up that material and contribute to these temporary events of discolored water.

If you are experiencing discolored water, run your cold water from the lowest point in your home, or your outdoor spigot, until it runs clear. If the water remains discolored, pause an hour and resume flushing after the system has settled.

Wait until your water is clearer to wash light-colored clothing. Darker clothing should not be affected. If you have had any staining issues with your light clothing, you can try using "Red-B-Gone" to potentially remove any staining.

The Salem and Beverly Water Supply Board's Mission:

To deliver a high-quality, reliable, and resilient water supply to our customers.

Water Service Line Inventory

The cities of Salem and Beverly, in conjunction with the Board, have conducted an inventory of their customer service pipe materials with the goal of identifying lead components of the drinking water system. While there have been no identified instances of lead exceedances, we are mandated to identify and address any potential source of lead that may exist.

See below to find out more on service line inventories in your community:

Salem – please visit:
www.salemma.gov/water-sewer/pages/lead-services
or reach out: (978) 619-5673

Beverly – contact Beverly Engineering:
(978) 605-2355

This report contains very important information about your drinking water. Please translate it or speak with someone who understands it.

Este informe contiene información muy importante acerca de su agua potable.

Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.