

Kingston Water Department

2022 Annual Water Quality Report



Water Department Information

The Board of Water Commissioners meet on the second and fourth Tuesday of each month. The meetings are held at the Water Department Office located at 22 Elm St, Kingston MA or remotely via on-line meeting platform. These meetings are posted publicly and the public is encouraged to attend. The office is open from 7:00 a.m. to 3:30 p.m. Monday – Friday. Our staff is prepared to answer questions pertaining to billing, metering, water service or any other business you may have pertaining to your water service. Our mailing address is: 26 Evergreen St., Kingston, MA 02364.

The Water Superintendent is Christopher Veracka. He can be reached at (781) 585-0504 or cveracka@kingstonma.gov



Our water system is comprised of over 100 miles of water mains, two pressure zones, three water storage tanks, one booster pump station, seven gravel packed wells and pump stations, three corrosion control facilities and two filtration facilities. We flush our water system routinely using a program designed by department consulting engineers as an important health maintenance activity. The Kingston Water Department is proud to be a participant in the Greenscapes Outreach Project sponsored by the North and South Rivers Watershed Association. For more information, please visit www.greenscapes.org.



Water Testing Performed in 2022

PWS ID# 4145000

Water Supply Commitment

We are pleased to present a summary of the quality of the water provided to you during the past year. The Safe Drinking Water Act (SDWA) requires that utilities issue an annual consumer confidence or water quality report to customers, in addition to other notices that may be required by law. This report details where our water comes from, what it contains, and the risks our water testing and treatment are designed to prevent. The Kingston Water Department is committed to providing you with a high quality and reliable water supply. Informed consumers are our best allies in maintaining our drinking water supply.

Where Does My Water Come from and How is it Treated?

The Kingston Water Department receives its water from seven gravel packed wells. In 2022 the Kingston Water Department pumped 583,262,500 gallons of water to its consumers, an increase of 11% from the previous year. The department requests customers take measures to conserve water.

Kingston's Wells:

- South Street Pumping Station, Millgate Pumping Station, Soule's Pond Pumping Station
 - Located off of South Street these wells were installed from the 1950s to 1970s.
 - Treated with hydrated lime to increase pH and alkalinity for corrosion control.
- Grassy Hole Pumping Station and 1-86 Well
 - Located near the Kingston Collection these wells were installed in 1981 and 2010.
 - Treated using filtration. Chlorine is added for oxidation of iron and manganese and as a precaution against any bacteria that may be present. Potassium hydroxide is added to increase the pH and alkalinity for corrosion control.
- Richard W. Loring Trackle Pond Pumping Station
 - Located south of Route 44 off of Route 80 this well was installed in 1997.
 - Treated using filtration. Chlorine is added for oxidation of iron and manganese and as a precaution against any bacteria that may be present. Potassium hydroxide is added to increase the pH and alkalinity for corrosion control.
- Winthrop Street Pumping Station - not in use at this time.

New Filtration Facility

We are happy to announce that construction of a water filtration facility to remove manganese from the Grassy Hole and 1-86 Wells was completed and activated during the summer of 2022. Project funding for the facility construction was obtained by the Water Department through the Drinking Water State Revolving Fund (DWSRF) Program administered by the Massachusetts Clean Water Trust (Trust). The Trust award the Town a Loan Principal Forgiveness in the amount of \$548,630. What does Principal Forgiveness mean? – Essentially this is a grant. At the end of construction when the loan was finalized and Town needed to start paying off the loan, the Trust deducted \$548,630 from the principal on our loan. We appreciate the work of all of those who contributed to making this project a success. We anticipate that it will take about a year for the old manganese deposited in the distribution pipes to flush out of the system.

Corrosion Control Through pH Adjustment

Many drinking water sources in New England are naturally corrosive (i.e. they have a pH of less than 7.0). So, the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes but can also add harmful metals, such as lead and copper, to the water. For this reason, it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is achieved by adding one or a combination of several approved chemicals. Depending on the source of supply, the Kingston Water Department adds hydrated lime or potassium hydroxide to its water. This adjusts the water to a non-corrosive pH. Testing through the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

Water Conservation

Protect Our Natural Resources! Your commitment to conserving our drinking water is greatly appreciated, especially during growing season. In accordance with MassDEP permit requirements, mandatory water restrictions are based on the Jones River streamflow. The permit requires a phased approach to outdoor water use restrictions during the months of May through September. We will post notices of when outdoor water use restrictions are in place. Please remember most lawns only require one inch of rain weekly; any watering should only occur after 5 pm or before 9 am.

Substances that Could be in the Water

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).

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, and farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and 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 Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (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 establish limits for contaminants in bottled water that must provide the same protection for public health.

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 (800-426-4791).

Water Quality Testing Results

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.

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

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.

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

Office of Research and Standard 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.

Unregulated Contaminant Monitoring Rule 3 (UCMR3) – Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Variations and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

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.

Level 2 Assessment – A Level 2 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.

Units of Measure:

ppm	= parts per million or milligrams per liter (mg/l)
ppb	= parts per billion or micrograms per liter (ug/l)
pCi/L	= pico curie per liter
ND	= Not Detected
NA	= Not Applicable

Water Quality Testing Results

The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. All results shown were from samples collected during the last calendar year unless otherwise noted in the tables. Only the detected contaminants are shown.

REGULATED SUBSTANCES

Substance (Unit of Measure)	Date(s) Collected	Highest Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation	Possible Sources
Nitrate (ppm)	5/5/22	1.99	0.11 – 1.99	10	10	NO	Runoff from septic tanks, sewage
Perchlorate (ppb)	7/12/22	0.17	0.059 – 0.17	2	NA	NO	Rocket propellants, fireworks, munitions, flares, blasting agents
Haloacetic Acids 5 (ppb)	8/11/22	0.81	ND – 0.81	60	0	NO	By-product of chlorination
Trihalomethanes (ppb)	8/11/22	4.8	ND – 4.8	80	0	NO	By-product of chlorination
Chlorine (ppm)	Monthly	0.15*	0 - 0.15	4	4	NO	Water additive used to control microbes
Antimony (ppb)	6/17/21	1	ND – 1	6	6	NO	Discharge from fire retardants, ceramics, electronics, solder
Barium (ppm)	6/17/21	0.013	ND – 0.013	2	2	NO	Discharge from drilling; Discharge from metal refineries; Erosion of natural deposits
Fluoride (ppm)	6/17/21	0.7	ND – 0.7	4	4	NO	Erosion of natural deposits, Discharge from fertilizer and aluminum factories
Radium (pCi/L)	12/14/21	0.86	ND– 0.86	5	5	NO	Erosion of natural deposits
Gross Alpha (pCi/L)	12/14/21	0.7	ND- 0.7	15	0	NO	Erosion of natural deposits

*Highest Running Annual Average (RAA) = highest running annual average of four consecutive quarters. This represent the highest concentration upon which our system's compliance is based, not necessarily the highest concentration detected.

**Test results for Per- and polyfluoroalkyl substances (PFAS) were non-detect in the water from our active supply wells.

LEAD AND COPPER

Substance (Unit of Measure)	Amount Detected (90th%tile)	Action Level	MCLG	# of Sites Sampled	# of Sites above Action Level	Possible Source
Lead (ppb)	3	15	0	30	1	Corrosion of household plumbing systems, Erosion of natural deposits
Copper (ppm)	0.192	1.3	1.3	30	1	Corrosion of household plumbing systems, Erosion of natural deposits, Leaching from wood preservatives

Tap water samples collected from sites throughout the community. Samples taken December 2022.

UNREGULATED AND SECONDARY 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.

Substance (Unit of Measure)	Date Collected	Result or Range Detected	Average Detected	SMCL	ORSG+ or Health Advisory	Possible Source
Manganese (ppb)	11/2/22	0 - 27	10	50	300*	Erosion of natural deposits
Iron (ppm)	11/2/22	0 – 0.16	0.03	0.3	NA	Erosion of natural deposits
Sodium (ppm)	6/17/21	13 - 34	21.7	NA	20**	Road run-off

+ The ORSG is **not** a health advisory, but is the minimum value detected during sampling that must be conveyed on this report.

*US EPA and MassDEP have established public health advisory levels for manganese to protect against concerns of potential neurological effects.

**MassDEP established a guideline of 20 ppm for sodium. If sodium is measured in drinking water at a level above 20 ppm, it is important for people who may be on a very low sodium or sodium restricted diet to know.

Important Information About Your Drinking Water

Total Coliform Bacteria/Revised Total Coliform Rule (RTCR) Monitoring/Reporting/Notification Requirements Not Met

PWS ID#: 4145000

PWS Name: Kingston Water Department

Enforcement #: 00015237

For the 2022 sampling, we violated monitoring and reporting requirements of the drinking water regulations. Even though this was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

For July 2022, we failed to conduct Groundwater Rule (GWR) Triggered Monitoring for all sources online the same day that one of our distribution samples tested positive for total coliform. This was a failure to monitor violation of the GWR. We initially collected a sample from one source for E. coli analysis (sample was absent) instead of sampling all sources for enterococci analysis as required. In July 2022, upon learning of this error, we re-sampled all sources for enterococci with absent results and we have returned to compliance for this monitoring violation.

For September 2022, we had a total coliform detect for which we failed to collect repeat samples within the required timeframe, resulting in a Revised Total Coliform Rule (RTCR) Treatment Technique Trigger (TTT). We failed to notify the Massachusetts Department of Environmental Protection (MassDEP) of the TTT, which was a reporting violation. Upon awareness of the detect, we collected two repeat samples, instead of the required three repeat samples. Both repeat samples collected were also total coliform positive. These detects constituted another RTCR TTT for total coliform greater than 5%. As such we were required to submit a RTCR Level 2 Assessment by October 19, 2022. We completed and submitted the required Assessment on October 18, 2022 and returned to compliance with the RTCR.

For November 2022, we had a total coliform detect for which we failed to collect repeat samples within the required timeframe, resulting in a Revised Total Coliform Rule (RTCR) Treatment Technique Trigger (TTT). We failed to notify MassDEP of the TTT, which was a reporting violation. Upon awareness of the detect, we collected one repeat sample, instead of the required three repeat samples. The repeat samples collected were also total coliform positive. These detects constituted another RTCR TTT for total coliform greater than 5%. As such we were required to submit a RTCR Level 2 Assessment by December 15, 2022. We completed and submitted the required Assessment on January 13, 2023 and returned to compliance with the RTCR.

We are required to monitor your drinking water for specific man-made and naturally occurring contaminants on a regular basis. Results of regular monitoring area an indicator of whether or not our drinking water meets health standards. During the monitoring periods of July, September, and November 2022 we did not complete some of our monitoring for total coliform bacteria and enterococci bacteria and therefore cannot be sure of the quality of our drinking water during that time.

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 pathways exists through with 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, two Level 2 Assessments (one for September and one for November 2022) were required to be completed for our water system. Two Level 2 Assessments were completed. However, we failed to conduct the Assessment for November within the required timeframe.

Based on the findings of the Level 2 Assessment for September, the Superintendent reviewed sample collection procedures with operators. Based on the findings of the Level 2 Assessment for November, we disassembled, removed and reconstructed the sampling tap at the Pembroke St. water tank on December 2, 2022. We were not required to take specific corrective actions; not significant deficiencies were identified. We submitted a Plan to Prevent Future Non-Compliance on January 13, 2023. We will make the appropriate notifications to MassDEP for detects and follow our RTCR Sample Plan for repeat sampling to ensure compliance with the RTCR.

We Failed to Notify MassDEP of the above monitoring and reporting violations and we failed to provide Public Notify within the required timeframe.

Please share this information with all people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

What This Means: There is nothing you need to do at this time. You do not need to boil your water or take other actions.

For more information or questions about this notice, please contact:

Water Department Superintendent Christopher Veracka at (781) 585-0504

Manganese

Manganese is a nutrient that is part of a healthy diet. 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, the 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 up to 1 year of age should not be given water with manganese over 300 ppb, nor should formula for infants be made with that water for longer than 10 days.

Cross Connection Prevention

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure in the drinking water line or when the pressure in the drinking water line drops due to fairly routine occurrences such as main breaks or heavy water demand.

Everyone must exercise care and be good stewards of our shared drinking water. Water contamination occurs easily. Houses should be protected by anti-siphon devices on their outside faucets, and backflow preventers on automatic in-ground sprinkler systems, especially those with chemical herbicide, pesticide, and fertilizer feed systems. Because of the danger or potential of accidentally polluting the public water supply, the Water Department strongly recommends against the use of automatic lawn care chemical feed systems. Other ways you can help:

- Install hose bibb vacuum breakers on your outside tap before the garden hose.
- Keep your garden hose off of the ground.
- Do not allow the garden hose to become submerged in a swimming pool.
- Do not connect fertilizer sprayers to your garden hose.

More information on our Cross Connection and Backflow Prevention Program can be found at <http://www.mass.gov/eea/docs/dep/water/compliance/ccctemp1.pdf>

Lead and Copper in Drinking Water

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 Kingston 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>

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

Sodium

Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure. The MassDEP has established a guideline of 20 ppm. If sodium is measured in drinking water at a level above 20 ppm, it is important for people who may be on a very low sodium or sodium restricted diet to know.

Source Water Assessment

The Department of Environmental Protection conducted assessments of our drinking water sources through the Source Water Assessment Program (SWAP). Our wells are located in an aquifer with a high vulnerability to contamination due to hydrogeologic formations and based on the presence of at least one high-threat land use within our protective area. The SWAP report may be viewed on-line at:

<https://www.mass.gov/lists/source-water-assessment-and-protection-swap-program-documents>