

ANNUAL WATER QUALITY REPORT

Reporting Year 2021



Presented By
**Town of Ipswich
Water Department**

Our Mission Continues

Once again, we are proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2021. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation and community outreach and education. Our exceptional staff continues to work hard every day investing in new treatment technologies, system upgrades, and training.

Please remember that we are always available should you ever have any questions or concerns about your water.

For more information about this report, or for any questions relating to your drinking water, please contact Victoria Halmen, W & WW Director, at (978) 356-6635, ext. 2108, or Joseph F. Ciccotelli, Water Superintendent, at (978) 356-6639.

Manganese Monitoring

Manganese is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The United States Environmental Protection Agency (EPA) and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 ug/L (microgram per liter), or 50 parts per billion (ppb). In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for manganese. Drinking water may naturally have manganese and, when concentrations are greater than 50 ug/L, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about the possible neurological effects. Children up to one year of age should not be given water with manganese concentrations over 300 ug/L, nor should formula for infants be made with that water for longer than 10 days. The ORSG differs from the EPA's health advisory because it expands the age group to which a lower manganese concentration applies from children less than six months of age to children up to one year of age to address concerns about children's susceptibility to manganese toxicity.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



Where Does My Water Come From?

The Town of Ipswich Water Treatment Plant draws water from Dow Reservoir and Bull Brook Reservoir, both located in the Parker River Watershed. To augment this supply, the Town also draws water from five groundwater sources: Mile Lane and Browns Wells (Parker River Watershed) and Essex Road, Fellows Road, and Winthrop Estate Wells (Ipswich River Watershed). The Town makes every effort to monitor pumping and minimize withdrawals from the wells in the Ipswich River Watershed because of its fragile ecosystem.

The Benefits of Fluoridation

Fluoride is a naturally occurring element in many water supplies in trace amounts. In our system, the fluoride level is adjusted to an optimal level averaging 0.7 parts per million (ppm) to improve oral health in children. At this level, it is safe, odorless, colorless, and tasteless.

Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we 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 at (800) 426-4791 or at www.epa.gov/safewater/lead.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water and water supply. Water Subcommittee meetings are held periodically during the year. Please contact Victoria Halmen, W & WW Director, at (978) 356-6635, ext. 2108, for dates and times of meetings. Water issues, including projects and upgrades, are also presented at Town Meetings in May and October each year.

Source Water Assessment

All of the sources in Ipswich have a “high” susceptibility to contamination due to the absence of hydrological barriers (i.e., a confining clay layer) that can prevent migration of contamination into the water system. A source’s susceptibility to contamination, however, does not imply poor water quality.

In brief, Zone II contains potential sources of contamination, which, if present, could migrate and reach our source water. In Ipswich, Zone II is primarily a mixture of forests, agriculture, and residential land.

The complete Source Water Assessment Program (SWAP) report is available at the Utilities Department or online at www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3144000.pdf.

About Our Violation

In March 2021, MassDEP issued a notice requiring the Town to sample Brown’s Well for PFAS once per month. The Town did not sample in March 2021 and therefore cannot be sure of the quality of your drinking water during that time, but the Town sampled Brown’s Well for PFAS on April 8, 2021 and continues to sample the well monthly. The Town received a monitoring violation notice from MassDEP in September 2021 that requires a Tier 3 public notice be posted in our 2021 Annual Water Quality Report.

Some people who drink water containing PFAS in excess of the maximum contaminant level (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.

PFAS test results conducted on Brown’s Well before March 2021 and after March 2021 never exceeded the MCL for PFAS of 20 parts per trillion. In May 2021 the Water Department decided that due to the presence of PFAS it would only use Brown’s well as necessary, and when used, to treat the water from Brown’s well at the Treatment Plant on High Street. Although no MCL violation occurred, the Town took this proactive step to protect its customers. Water users do not need to seek an alternative water supply or take any other action.

This notice in our 2021 Annual Water Quality Report provides public notification within one year of the issuance of the violation notice, as required by DEP public notice regulations.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the state Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and which may also come from gas stations, urban stormwater runoff, and septic systems;

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

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA’s Safe Drinking Water Hotline at (800) 426-4791.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. The information in the data tables below shows only those substances that were detected in our water. Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

| REGULATED SUBSTANCES | | | | | | | |
|---|--------------|------------------------------------|--------------|-----------------------------|-----------------------------|-----------|--|
| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | MCL [MRDL] | MCLG [MRDLG] | AMOUNT DETECTED | RANGE LOW-HIGH | VIOLATION | TYPICAL SOURCE |
| Arsenic (ppb) | 2021 | 10 | 0 | 0.004 | 0.004–0.004 | No | Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes |
| Barium (ppm) | 2021 | 2 | 2 | 0.020 | 0.010–0.038 | No | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Chlorine Dioxide (ppb) | 2021 | [800] | [800] | 270 | 190–380 | No | Water additive used to control microbes |
| Chlorine (ppm) | 2021 | [4] | [4] | 0.69 | 0.25–0.89 | No | Water additive used to control microbes |
| Chlorite (ppm) | 2021 | 1 | 0.8 | 0.27 | 0.08–0.52 | No | By-product of drinking water disinfection |
| Fluoride (ppm) | 2021 | 4 | 4 | 0.95 | 0.77–1.17 | No | Water additive that promotes strong teeth |
| Haloacetic Acids [HAAs]–Stage 2 (ppb) | 2021 | 60 | NA | 11.8 | 4.9–35.0 | No | By-product of drinking water disinfection |
| Nitrate (ppm) | 2021 | 10 | 10 | 1.00 | 0.13–3.40 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Nitrite (ppm) | 2020 | 1 | 1 | 0.07 | 0.06–0.07 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Perchlorate (ppb) | 2021 | 2 | NA | 0.14 | 0.067–0.270 | No | Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives |
| PFAS6 (ppt) | 2021 | 20 | NA | 8.28 | ND–23.3 | No | 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 |
| TTHMs [Total Trihalomethanes]–Stage 2 (ppb) | 2021 | 80 | NA | 42 | 20–81 | No | By-product of drinking water disinfection |
| Tetrachloroethylene (ppb) | 2021 | 5 | 0 | 2.60 | 1.3–3.90 | No | Discharge from factories and dry cleaners |
| Total Organic Carbon ¹ (ppm) | 2021 | TT | NA | 0.93 | 0.58–1.32 | No | Naturally present in the environment |
| Turbidity ² (NTU) | 2021 | TT | NA | 0.12 | 0.02–0.12 | No | Soil runoff |
| Turbidity (Lowest monthly percent of samples meeting limit) | 2021 | TT = 95% of samples meet the limit | NA | 100 | NA | No | Soil runoff |
| Tap water samples were collected for lead and copper analyses from sample sites throughout the community. | | | | | | | |
| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AL | MCLG | AMOUNT DETECTED (90TH %ILE) | SITES ABOVE AL/ TOTAL SITES | VIOLATION | TYPICAL SOURCE |
| Copper (ppm) | 2021 | 1.3 | 1.3 | 0.311 | 0/30 | No | Corrosion of household plumbing systems; Erosion of natural deposits |
| Lead (ppb) | 2021 | 15 | 0 | 14.7 | 3/30 | No | Lead services lines; Corrosion of household plumbing systems including fittings and fixtures; Erosion of natural deposits |

SECONDARY SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | SMCL | MCLG | AMOUNT DETECTED | RANGE LOW-HIGH | VIOLATION | TYPICAL SOURCE |
|------------------------------------|-----------------|---------|------|--------------------|-------------------|-----------|--|
| Chloride (ppm) | 2021 | 250 | NA | 81 | 35–170 | No | Runoff/leaching from natural deposits |
| Color (Units) | 2021 | 15 | NA | 3 | 1–10 | No | Naturally occurring organic materials |
| Iron (ppb) | 2021 | 300 | NA | 26 | 10–95 | No | Leaching from natural deposits; Industrial wastes |
| Manganese (ppb) | 2021 | 50 | NA | 34 | 8–613 | No | Leaching from natural deposits |
| pH (Units) | 2021 | 6.5–8.5 | NA | 7.48 | 6.89–8.16 | No | Naturally occurring |
| Sulfate (ppm) | 2021 | 250 | NA | 18 | 6.6–27 | No | Runoff/leaching from natural deposits; Industrial wastes |
| Total Dissolved Solids [TDS] (ppm) | 2021 | 500 | NA | 276 | 180–330 | No | Runoff/leaching from natural deposits |

UNREGULATED AND OTHER SUBSTANCES³

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AMOUNT DETECTED | RANGE LOW-HIGH | TYPICAL SOURCE |
|----------------------------------|-----------------|--------------------|-------------------|--|
| Bromide (ppb) | 2019 | 35 | 33–38 | NA |
| Bromochloroacetic Acid (ppb) | 2019 | 1.2 | 0.642–1.73 | By-product of drinking water disinfection |
| Bromodichloroacetic Acid (ppb) | 2019 | 1.3 | ND–2.56 | By-product of drinking water disinfection |
| Chlorodibromoacetic Acid (ppb) | 2019 | 1.1 | ND–1.89 | By-product of drinking water disinfection |
| Dibromoacetic Acid (ppb) | 2019 | 1.3 | 0.301–3.63 | By-product of drinking water disinfection |
| Dichloroacetic Acid (ppb) | 2019 | 2.3 | 0.533–5.36 | By-product of drinking water disinfection |
| HAA6Br (ppb) | 2019 | 3.2 | 3.2–3.2 | By-product of drinking water disinfection |
| HAA9 (ppb) | 2019 | 6.8 | 6.8–6.8 | By-product of drinking water disinfection. |
| Hardness (ppm) | 2021 | 118 | 33–249 | Normally present in the environment |
| Manganese (ppb) | 2019 | 76 | 13–213 | Leaching from natural deposits |
| Monobromoacetic Acid (ppb) | 2019 | 0.52 | 0.375–0.766 | By-product of drinking water disinfection |
| Monochloroacetic Acid (ppb) | 2019 | 3.4 | ND–4.63 | By-product of drinking water disinfection |
| Phosphate (ppm) | 2021 | 0.66 | 0.52–0.86 | Water additive used to control corrosion |
| Potassium (ppm) | 2021 | 2.3 | 1.2–3.6 | Naturally occurring |
| Sodium ⁴ (ppm) | 2021 | 40 | 19–68 | Naturally present in the environment |
| Total Organic Carbon [TOC] (ppb) | 2019 | 4,933 | 3,970–6,360 | Naturally present in the environment |
| Trichloroacetic Acid (ppb) | 2019 | 2.6 | ND–8.48 | By-product of drinking water disinfection |

¹The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed and the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

²Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

³Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

⁴The Massachusetts Department of Environmental Protection maintains a guideline level of 20 ppm for sodium.

Definitions

90th %ile: 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.

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 benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

ppt (parts per trillion): One part substance per trillion parts water (or nanograms per liter).

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

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