

2019 Annual Drinking Water Quality Report
For
HAMILTON DEPARTMENT OF PUBLIC WORKS
MASSDEP PUBLIC WATER SYSTEM IDENTIFICATION NUMBER 3119000

This report is a snapshot of drinking water quality that we provided to you last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We are committed to providing you with information because informed customers are our best allies

1. PUBLIC WATER SYSTEM INFORMATION

The public water supply for the Town of Hamilton is managed by the Department of Public Works located at: Town Hall, 2nd floor, 577 Bay Road, Hamilton, MA 01936. Phone number: (978) 626-5226, Fax number: (978) 468-5582, (Emergency only: (978) 468-1212). Office hours: Monday, Wednesday, Thursday 8:00 am to 4:30 pm, Tuesday 8:00am to 6:30 pm, and Friday 8:00 am to 12:30 pm. The Town's website is: www.hamiltonma.gov

Water System Improvements

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP). MassDEP inspects our system for technical, financial, and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, your water system is operated by a Massachusetts certified operator who oversees the routine operation of our system. In November 2018, DEP performed a Sanitary Survey on our system; no violations were found and we have addressed any issues that were noted.

Governing Body:

- Town Manager – Joseph J. Domelowicz, Jr.
- Board of Selectmen: Chairman – Jeff Hubbard, Darcy Dale, Shawn Farrell, Rosemary Kennedy, and Bill Olson.
- Director of Public Works & CCR Contact Person: Timothy J. Olson, 978-626-5226
- Personnel: Primary Treatment Plant Operator - David Dolan, Secondary Treatment Plant Operator – Brian Ruane, Distribution Foreman - Jeff Mazzetta, and Office Administrator - Gail Hannable.

Important Phone Numbers:

- Massachusetts Department of Public Health 617-292-5500 Department of Environmental Protection 24 Hours Emergency Line 1-888-304-1133

Town of Hamilton Website: <http://www.hamiltonma.gov/government/water-department>

2. YOUR DRINKING WATER SOURCES

Our drinking water sources include:

- **School St. Well (SSW)**, source number 3119000-02G, located behind the School St. Park. This is an active, year round source.
- **Gordon “Tiny” Thompson Water Filtration Plant (WTP)**, source number 3119000-10, located at the end of Pine Tree Drive. This source is an active, year round source and consists of Idlewood I Wells, Idlewood II Well, Caisson Satellite Well and Plateau Well. Iron and Manganese are filtered out of the water at this location.

How are these sources protected? In 2001 the Mass DEP prepared a Source Water Assessment Program (SWAP) report for the water supply sources serving the Town. The SWAP report assesses the susceptibility of contamination of a public water source. In the SWAP report, the DEP has given the town a susceptibility rating of “high” based upon the information collected during the assessment by the Mass DEP. Some of the key issues identified are: (1) Inappropriate activities in Zone I, (2) Residential land use, (3) Manure storage or spreading and (4) Storm water catch basins within the Zone II. The full SWAP report can be found online at <https://www.mass.gov/source-water-protection#7>

Although our Zone I and Zone II areas (the areas that contribute water to our wells) are fairly well protected by bylaws and regulations, we continue to monitor land use activities such as paddocks, farming and construction storage areas to assure that our groundwater is protected. We also encourage those living in these areas not to dispose of toxins, cleaners or chemicals down their plumbing drains and to minimize the use of pesticides and fertilizers. Even organic fertilizers have nitrates in them which can affect water quality. You should also monitor fuel and heating oil storage tanks carefully to assure they are not leaking.

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of water delivered to you all sources are treated with chlorine for disinfection, fluoride for dental health and hygiene, and phosphates as a metal sequestering agent to assure water quality leaving the stations. Our water is also chemically treated to remove iron and manganese. The water quality of our system is constantly monitored by the Town and MassDEP to determine the effectiveness of existing water quality and to determine if any additional treatment is required.

We also have interconnections with the Towns of Ipswich at Waldingfield Road, Essex at Essex Street, Wenham at Woodbury Street, and Highland Street in the event of an emergency situation.

3. EDUCATIONAL STATEMENTS

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 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.

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. The EPA and the 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 1-800-426-4791.

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.

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 Hamilton DPW 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>

4. IMPORTANT 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.

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

Unregulated Contaminants – 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.

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

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

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

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.

5. WATER QUALITY TESTING RESULTS

DEFINITIONS TABLE KEY

ppm = parts per million, or milligrams per liter (mg/L)

ND = Not Detected

ppb = parts per billion, or micrograms per liter (ug/L)

N/A = Not Applicable

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 tables. Only the detected contaminants are shown. The MassDEP only recommended annual testing for secondary contaminants.

MassDEP has reduced the monitoring requirements for inorganic contaminants at the School Street Well because the source is not at risk of contamination. The last sample collected for these contaminants was taken during the second quarter of calendar year 2015 and was found to meet all applicable US EPA and MassDEP standards.

Water Quality Summary: Listed below are contaminants detected in Hamilton’s drinking water in 2019. *The presence of contaminants does not necessarily indicate that the water poses a health risk.* Not listed are contaminants for which we tested but were not detected.

SAMPLES COLLECTED FROM HAMILTON’S WATER SYSTEM							
Substance	Units	Highest Level Detected	Range Detected	Highest Level Allowed MCL	Ideal Goals MCLG	Possible Source of Contamination	
INORGANIC CONTAMINANTS							
Nitrate	ppm	4.30	0-4.30	10	10	Erosion of natural deposits, septic systems, fertilizers	
Fluoride	ppm	2.2	0.3-2.2	4 (MRDL)	4	Water additive which promotes strong teeth	
Perchlorate	ppb	ND	ND	2	-	Fireworks, blasting agents	
VOLATILE ORGANIC CONTAMINANTS							
Tetrachloroethylene – PCE	ppb	0.73	0-0.73	5	0	Discharge from factories, dry cleaners, AC pipe	
UNREGULATED VOLATILE CONTAMINANTS							
Chloroform	ppb	26.3	0-26.3	N/A	70 (ORSG)	By-product of drinking water chlorination	
Bromodichloromethane	ppb	6.85	0-6.85	N/A	N/A	By-product of drinking water chlorination	
Chlorodibromomethane	ppb	1.09	0-1.09	N/A	N/A	By-product of drinking water chlorination	
Dichlorodifluoromethane	ppb	0.69	0-0.69	N/A	N/A	By-product of drinking water chlorination	
DISINFECTION BY-PRODUCTS							
Haloacetic Acids (HAA5)	ppb	46	0-46	60	N/A	By-product of drinking water disinfection	
Total Trihalomethane (TTHMs)	ppb	78.5	51.8-78.5	80	N/A	By-product of drinking water disinfection	
DISINFECTANTS							
Substance	Units	Highest Quarterly Average	Range Detected	MRDL	MRDLG	Possible Sources of Contaminant	
Free Chlorine	ppm	0.26	0.09-0.26	4	4	Water additive to inactivate harmful organisms	
UNREGULATED CONTAMINANTS							
Substance	Units	Dates Collected	Range Detected	Avg. Detected	Suggested MCL	Health Advisory	Possible Sources of Contaminant
Manganese	ppb	Daily	2-47	22	50	300	Erosion of natural deposits
Iron	ppb	Daily	0-170	18	300	-	Natural sources and corroding distribution and household pipes

SAMPLES COLLECTED FROM YOUR FAUCETS						
Substance	Units	Highest Level Detected	Range Detected	Highest Level Allowed MCL	Ideal Goals MCLG	Possible Sources of Contaminants
MICROBIOLOGY						
Total Coliform Bacteria (Highest Number Detected per Month)		0	-	0	0	Naturally present in the environment
Fecal Coliform or E.coli (Highest Number Detected per Month)		0	-	0	0	Human and animal fecal waste
LEAD AND COPPER						
Substance	Units	90th Percentile	Range Detected	Action Level MCL	Ideal Goals MCLG	Possible Sources of Contaminant
Copper	ppm	0.742	0.026-0.890	1.3	1.3	Corrosion of household plumbing systems; erosion of natural deposits
(0 samples exceeded action level)						
Lead	ppm	0.0014	0-0.017	0.015	0	Corrosion of household plumbing systems
(1 samples exceeded action level)						

Educational Information

- **Lead:** If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Town of Hamilton 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 at 800-426-4791. or at <http://www.epa.gov/safewater/lead>
- **Copper:** Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short period of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action levels for long periods of time could suffer liver or kidney damage. People with Wilson's Disease should consult their physician.
- **Sodium:** Is a naturally occurring common element found in soil and water. It is necessary for the normal functioning of regulating fluids in human systems. Some people, however, have difficulty regulating fluid volume as a result of several diseases, including congestive heart failure, kidney failure and hypertension. The guideline of 20 mg/L for sodium represents a level in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled. For additional information, contact your health care provider, your local board of health or the Massachusetts Department of Public Health, Bureau of Environmental Health Assessment at 617-624-5757.
- **Total Coliform:** Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present.
- **Fluoride:** Added daily to the treated water to help prevent tooth decay/cavities in young children. All sampling results have shown levels below the MCL of 4.0 ppm.
- **Manganese:** Manganese in drinking water is a naturally occurring mineral found in rocks, soil and 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 and an aesthetics-based Secondary Contaminant Level (SMCL) for manganese at 50 micrograms per Liter (ug/L), or 50 parts per billion (ppb), and health advisory levels. In addition, EPA and MassDEP have also established public health advisory levels. 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, EPA recommends that people drink water with manganese levels less than 300 ug/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about possible neurological effects. Children up to 1 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.

6. 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 met all applicable drinking water health standards regulated by the state and federal government with the exception of disinfection byproducts collectively known as Total Trihalomethanes (TTHMs). The EPA standard or maximum contaminant level (MCL) for TTHMs is 80 micrograms per liter, which is equivalent to 80 parts per billion (ppb). Compliance with this standard is calculated as a locational running annual average, or LRAA, over the last four quarters of sampling. One of the program sampling sites exceeded this drinking water standard in the 2019 1st quarter round of sampling. The MCL for this quarter was calculated to be 86.62 ppb, respectively.

The MCL violation that occurred in the 2019 1st quarter sampling was based on the LRAA for the last four quarters which included the TTHM violation that occurred back in November 2018. The actual TTHMs measured in the 1st quarter sampling month of February 2019 were 64 ppb. The Town had identified two operational issues at the plant which likely contributed to the November 2018 exceedance including faulty piping within the backwash tanks and the use of the Idlewood #2 well. This well was found to have elevated levels of Total Organic Carbons (TOCs). Water with elevated TOC levels can cause the formation of TTHMs when treated with chlorine for disinfection. The faulty piping was replaced as part of the plant upgrade project and the Idlewood #2 well was taken out of service. Since the November 2018 exceedance, we have been routinely flushing the distribution system to remove organic material from the water mains and to reduce water age to further minimize the formation of TTHMs and have increased our TTHM monitoring from quarterly to monthly to evaluate the effectiveness of these actions. The results of this monthly sampling have shown the corrective actions implemented have been effective in mitigating TTHM formation. From January through December 2019, TTHM levels at the affected site have ranged from 52 ppb to 78 ppb, consistently below the MCL. As of June 2019, the Town has been back in compliance with the EPA drinking water standard for TTHMs.

7. 2019 WATER SYSTEM PROJECTS.

Water Treatment Plant (WTP) GAC and Pre-Treatment Feasibility Studies

The Town of Hamilton Water Treatment Facility has had difficulty over the past several years to meet public water demands due to limitations with its filtration process which only allowed the plant to effectively operate at 50% capacity. Since completion of the WTP upgrades in September 2018, the plant has been effectively removing iron and manganese from the raw water wells as originally intended while producing finished water at the plant's normal rate of 650 gallons per minute. With the WTP capacity restored back to its rated design, the Town has been able to perform more aggressive flushing of the distribution system to improve water quality and meet the water consumption needs of its residents without having to excessively operate the WTP for extended periods as was required in the past.

Based on the results of the monthly sampling performed, the source of the TTHMs within the Town's system has been identified to be the elevated TOC levels within the Idlewood wells, primarily the Idlewood No. 2 and No. 1 wells. When raw water from these wells are oxidized with sodium hypochlorite, which is required for removing iron and manganese, TTHMs are being formed at the plant and carried through into the distribution system. As these two wells are large producers for the Town's water system, the future use of these wells will be necessary to meet system demands, particular during the higher peak periods in the summer. The most feasible approach to continue with the operation of the existing plant and Idlewood wellfield is to remove the TOCs within the raw water, thereby reducing the formation of TTHMs at the plant. This process is the primary source of TTHM formation at the plant, and addressing it directly makes the most sense. Also, reducing TOCs from the raw water has the added advantage of reducing overall disinfectant demand, thereby reducing chlorine dosages at the plant. The combination of reducing both TOCs and chlorine dosages will reduce the potential for forming TTHMs within the distribution system.

As the plant processes are not designed to remove TOCs from the raw water, the Town has commissioned an evaluation of alternative pre-treatment systems to remove/reduce TOCs within the source wells. Two treatment technologies have been identified as possible options for removing TOCs at the plant including:

- the MIEX system that uses ion exchange resin to remove TOCs from the water with no chemicals.
- GAC system which removes TOCs from the water through adsorption with no chemicals.

This study is on-going and is expected to be completed by June 2020. The results of this study will be submitted to MassDEP for their concurrence and approval to proceed with the design and construction of the recommended TOC removal system at the plant.

Water System Master Plan

The Town commissioned the completion of a Water System Master Plan which evaluated the adequacy of the existing water system to meet current and future demands over the next twenty years. A new hydraulic computerized model of the water distribution system was created as part of the work to assist in identifying where improvements were required to alleviate hydraulic limitations and increase available fire protection including the siting of a new water storage tank. This computerized model was also used to conduct water age system analyses to assist in addressing the TTHM issue that occurred back in November 2018, and to evaluate the Town's current Stage II DBP Rule monitoring plan in response to the Notice of Non-Compliance (NON) issued by MassDEP in November 2018.

A draft report of the plan was submitted to the Town for review in June 2019 which included a prioritized plan of recommended improvements for the Town to systematically implement over the next twenty years. The major recommendations included the construction of two smaller sized water storage tanks to replace the existing Browns Hill Reservoir, a new satellite production well to replace the Idlewood No.2 Well, and about 12,000 feet of new water main to improve the delivery of flows within the water system. The final report is expected to be completed by February 2020.

New Satellite Replacement Well – Idlewood #2

From the Water System Master Plan, it was recommended to replace the existing Idlewood #2 well with a new satellite well as a long-term solution to further minimize the potential of a future TTHM exceedance. The recommendation to replace the existing Idlewood #2 well is based on the fact that the performance of this well has dropped significantly and the raw water quality has become noticeably worse, particularly the color which is attributed to the elevated levels of TOCs. A new satellite well will improve the production capacity of the wellfield, and provide a higher quality water with less TOCs, which should improve the effectiveness of the pre-treatment system being evaluated for the plant. The Town has executed a contract for performing the test well exploration program for siting a new satellite replacement well which is scheduled to commence in March 2020. The results of this test well exploration program will be submitted to MassDEP upon its completion for review.

School Street Well Redevelopment

The Town of Hamilton engaged contractor services for the redevelopment of the School Street Well in 2019. This well has been suffering from heavy iron and manganese concentrations negatively affecting the pumping and withdrawal. Following the redevelopment the well operation returned to normal. Evidence showed that more frequent redevelopment of Hamilton wells may be necessary to maintain successful operation and optimum withdrawal.

Phase 4 Water Distribution Design

The Town of Hamilton has committed to replacing approximately 8,100 LF of water main and services throughout the Town of Hamilton as Phase 4 of the Water System Distribution Improvement Project. Roads planned to receive new water mains are: Forest Street, Village Lane, Beech Street, Woodbury Street, between Essex Street and the Hamilton/Wenham Town line, and Partridgeberry Lane. Design for this work is currently underway and construction is planned for Summer/Fall of 2020.

*** CONSERVATION INFORMATION ***

Water Ban

The Town of Hamilton Board of Selectmen enacted the required annual seasonal water ban on May 1, 2019, detailed below, however in August 2019 the Ipswich River flows dropped below the discharge rate of 52.5 cfs for three (3) consecutive days, which triggered additional restrictions on outdoor water use MassDEP **mandatory** water ban, eliminating the use of all outdoor irrigation systems which lasted through October 2019.

Annual Seasonal Conservation

The Hamilton Department of Public Works would like to remind residents that we have an Outdoor Water Use By-Law that does not allow mechanical watering of lawns between the hours of 8:00 a.m. and 8:00 p.m. from May 1st to September 30th of each year. The most wasteful act of water use is over watering your lawn at night or watering during the heat of the day. Up to 80% of the water used during the day is evaporated which means 80 cents on every dollar you spend watering is wasted along with the same outcome with over-watering at night.