Letter from the Mayor

Dear Valued Customer:

Once again I am happy to introduce our annual water quality report to you. This report covers testing that the Water Department performed between January 1 and December 31, 2013. Every year, the Water Department delivers this report to the customers to convey vital information regarding their drinking water. We strive to continue to provide Haverhill's residents with the highest quality water and the most reliable service at the lowest price in the region.

We would like to hear if you have any questions or concerns. You can contact my office at 978-374-2300 or if you have any specific questions regarding this report, please call Mary D'Aoust at 978-374-2385.

You can also find a copy of the report on the following website: http://tinyurl.com/2013CCR or on the Water Treatment Plant page of the city's website. For a hard copy, email wtp@cityofhaverhill.com or call the Water Treatment Plant at 978-374-2385.

Sincerely,

James Fiorentini
Mayor

Department Telephone Numbers

• Backflow/Cross Connection	978-374-2375
• Billing Office	978-374-2370
• Meter Division	978-373-8487
• Water Maintenance	978-374-2368
• Water Treatment	978-374-2385
• Deputy DPW Director Robert Ward	978-374-2382

New in this Report

In our efforts to provide our customers with the best information possible about their drinking water, we have made some changes to the results table this year. First, we have added sections on secondary contaminants and unregulated contaminants. You can find more information about each in the Table of Results.

Secondly, some of the units may be different than they have been in the past. From now on all our maximum contaminant levels (MCLs) will be given in whole numbers, so some of the units have changed from parts per million (ppm) to parts per billion (ppb).

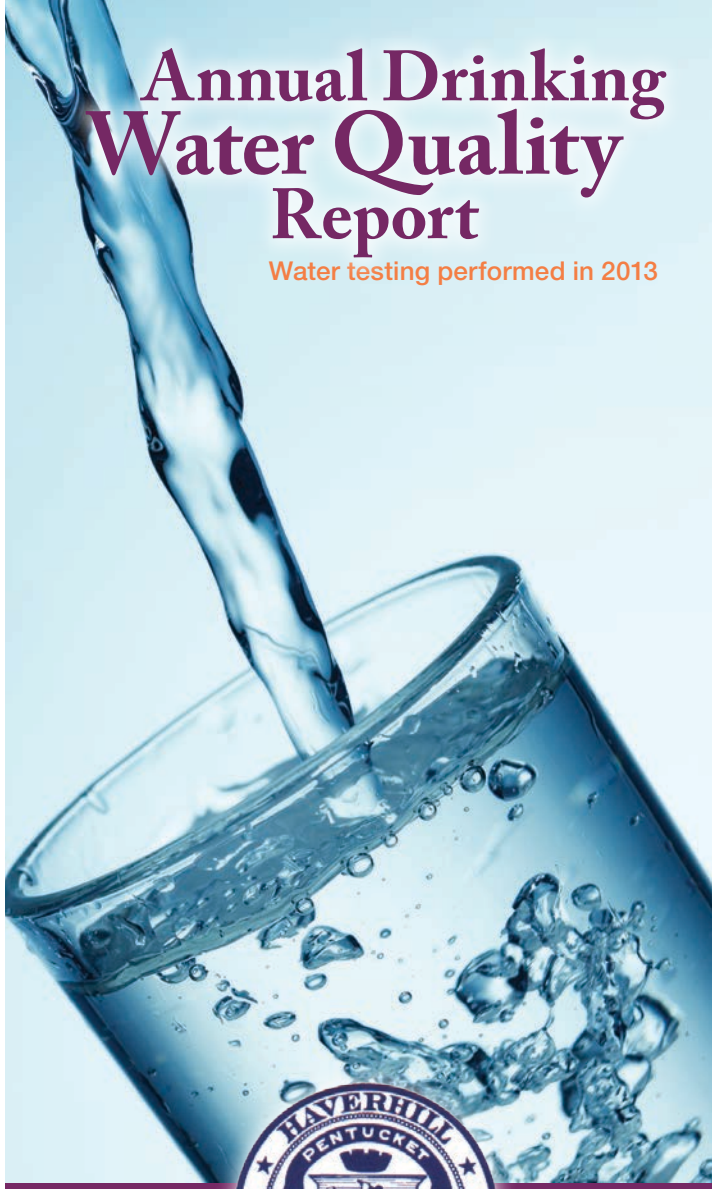
If you have any questions regarding these results, please direct them to Mary D'Aoust at 978-374-2385, or email her at mdaoust@haverhillwater.com.

Haverhill Water Department
131 Amesbury Rd.
Haverhill MA 01830

Este informe contiene información muy importunate sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Annual Drinking Water Quality Report

Water testing performed in 2013



Haverhill Water Department

PWS ID#: 3128000

Year in Review

The Haverhill Water Department has continued its phased plan of improvements at the water treatment plant that began in 2006. Pilot testing began on a new process to remove the residuals during treatment. The piloted process, called dissolved air flotation (DAF), would replace the current settling process. The warm water pilot testing was run in the Fall of 2013 and a cold weather test will be completed in the Winter of 2014.

The Water Treatment Plant replaced the carbon in the Granular Activated Carbon (GAC) filters in 2013. This is a process that occurs every 3 – 4 years.

The Haverhill Water Department's program of meter replacement continued through 2013 with 1074 radio read meters replaced by our contractor, Easton Winwater, and 1258 meters by the Meter Division. We would like to thank our customers for their cooperation during this continuing program. Approximately 75% of the meters have been replaced at this time. The newer meters will result in more meter readings which will eventually eliminate the need for estimated bills. All work will be completed by uniformed water department staff with clearly labeled vehicles. If you would like to verify authenticity, you may contact the Water Department's Meter Division at 978-373-8487.

In 2013, the water department initiated a unidirectional flushing program. Flushing began in the zone east of the water treatment plant and continued on to the Merrimac border and Rocks Village area. Flushing will continue in 2014. This program serves two purposes. It improves both water quality and maintenance of hydrants and gate valves.

Every five years, the EPA is required to issue a list of unregulated contaminants to be monitored by a public water system. In 2013, the Haverhill Water Department began monitoring for the third round of the Unregulated Contaminant Monitoring Rule (UCMR3). This monitoring provides a basis for future regulatory actions to protect public health. The results of three rounds of testing are included in the results section. The fourth required round will be completed in 2014.

Water Treatment Process

Our drinking water comes from combined water sources, all of which are surface water. Water is pumped from Millvale Reservoir and Crystal Lake into Kenoza Lake where the Water Treatment Plant is located. Round Pond and Winnekenni Basin overflow into Kenoza Lake.

The Water Treatment Plant is a conventional filtration plant, which includes coagulation, flocculation, and sedimentation. It then goes through a two stage filtration process before it is disinfected, and finally pumped into the distribution system. Haverhill's water is fluoridated. Fluoride is added to prevent tooth decay and cavities. Last year, the Water Treatment Plant processed 2.0 billion gallons of water.

The distribution system is made up of three storage tanks with a capacity of 17 million gallons, ten pumping stations, and approximately 300 miles of water main.

The Haverhill Water Department would like all residents to be mindful of their water use and conserve when possible. Low flow shower heads, faucet aerators and water conservation kits are available to all water customers at the Water/Wastewater Billing Office in Room 300 at City Hall.

Please help us better serve you by reporting any leaks or if you see anyone other than the water or fire department opening or drawing off a fire hydrant at 978-374-2368.

Information on Cross Connection

A cross connection is a physical connection between a possible source of contamination and the public drinking water system piping. This connection, if not properly protected, can lead to the contamination of the drinking water system through a backflow event.

Backflow is the reversal of water flow through a cross connection from a possible source of contamination into the public drinking water system. Backflow may be caused by either backpressure or backsiphonage. A loss of pressure in the public drinking water system may lead to backsiphonage through unprotected cross connections; backpressure may be created when the water pressure of a facility's internal water system is elevated above the supply pressure of the public drinking water system resulting in backflow through unprotected cross connections.

Preventing backflow situations in your home or business:

- Be aware of and eliminate and/or isolate cross connections.
- Maintain air gaps on sinks and when using hoses.
- Do not submerge hoses or place them where they could become submerged.
- Use hose bib vacuum breakers on fixtures (hose connections in the basement, laundry room, and on outside faucets/spigots).
- Install approved backflow prevention devices on lawn irrigation systems and on fire sprinkler system services.
- Do not create a connection between an auxiliary water system (well, cistern, body of water) and the water supply plumbing.

If you have any questions regarding backflow or cross connections, please call 978-374-2375.

Source Water Assessment

A Source Water Assessment Plan (SWAP) is now available at the water treatment plant. This plan is an assessment of the delineated area around our listed sources through which contaminants if present could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.

This report assesses activities on our watershed and identifies potential pollution hazards. These potential hazards, if handled properly, would not pose a threat to our water supplies. These hazards fall into the following categories: fertilizer storage, livestock operations, manure storage/spreading, nurseries, pesticide storage/use, auto repair and body shops, bus and truck terminals, cemeteries, golf courses, junk/salvage yards, nursing homes, repair shops, sand and gravel mining/washing, fuel oil storage, lawn care/gardening, septic systems, aquatic wildlife, combined sewer overflows, composting facilities, fishing / boating, land application of sewage sludge, school, colleges/ universities, snow dump, stormwater drains/retention basins, underground storage tanks. One or all of these hazards can be found on all of Haverhill's water sources. Water department personnel conduct monitoring of the watershed areas to evaluate any potential hazards. A water department employee checks these areas every week to identify any violations.

If you would like to view this report, please contact the Water Treatment Plant at 978-374-2385.

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. The Haverhill 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.

Manganese statement

The EPA has put out new health concerns for the levels of manganese in drinking water. Manganese has always been a secondary contaminant that the water treatment plant monitors daily in the untreated and treated water leaving the plant. The levels have always been below the new levels of concern that have been proposed. For more information, please see the Massachusetts Department of Environmental Protection factsheet on Manganese at this link http://www.mass.gov/eea/agencies/massdep/water/drinking/manganese-in-drinking-water.html

Sampling Results

This report is a summary of the quality of the water we provide our customers. We routinely monitor for constituents in your drinking water according to Federal and State laws. The analysis covers January 1 through December 31, 2013, and was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) required tests and is presented in the attached pages. We hope this information helps you become more knowledgeable about what's in your drinking water. 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 about drinking water from their health care providers. EPA/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 (1-800-426-4791).

Regulated Substances

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2013	2	2	0.011	NA	No	Erosion of natural deposits
Fluoride (ppm)	2013	4	4	1.2	0.78-1.37	No	Water additive which promotes strong teeth
HAA5 (ppm)	2013	60	NA	20.9	3.0-37.3	No	By-product of drinking water disinfection
TTHM (ppm)	2013	80	NA	50.2	4.4-71.7	No	By-product of drinking water disinfection
Chlorine (ppm)	2013	4	4	0.74	0.03-1.43	No	Water additive used to control microbes
Nitrate (ppm)	2013	10	10	0.08	NA	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Perchlorate (ppm)	2011	2	NA	0.11	NA	No	Rocket propellant, fireworks, munitions, flares, blasting agents
Sodium (ppm)	2013	NA	NA	30	NA	No	Runoff and leaching of natural deposits, residual of treatment process
Turbidity (NTU)	2013	TT	NA	0.12	0.02-0.20	No	Soil runoff
Turbidity (lowest monthly percentage of samples meeting limit)	2013	TT=95% of samples <0.3	NA	100%	NA	No	Soil runoff

Copper and Lead

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2011	1.3	1.3	0.04	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2011	15	0	7	0/32	No	

SUBSTANCE	YEAR SAMPLED	MCL	MCLG	HIGHEST AMOUNT DETECTED	LOWEST MONTHLY	VIOLATION	TYPICAL SOURCE
Total Coliform	2013	<5% of monthly samples	0	1.3% (December)	0	No	Human and animal fecal waste

SUBSTANCE	YEAR SAMPLED	MCL	MCLG	QUARTERLY RUNNING ANNUAL AVERAGE RATIO	RANGE OF RESULTS	VIOLATION	TYPICAL SOURCE
Total Organic Carbon	2013	TT	TT	1.61	1.23-2.22	No	Naturally present in the environment

Secondary Contaminants

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	AMOUNT DETECTED	VIOLATION	TYPICAL SOURCE
Alkalinity (ppm)	2013	NA	28	No	Measure of water's pH buffering capacity
Aluminum (ppb)	2013	200	130	No	Erosion of natural deposits, residual from treatment process
Calcium (ppm)	2013	NA	11.3	No	Runoff/leaching from natural deposits
Chloride (ppm)	2013	250	58	No	Runoff/leaching from natural deposits
Hardness (ppm)	2013	NA	36.8	No	Sum of cations present in water, usually calcuim and magnesium
Iron (ppb)	2013	300	220	No	Runoff/leaching from natural deposits

Secondary Contaminants (continued)					
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	AMOUNT DETECTED	VIOLATION	TYPICAL SOURCE
Magnesium (ppm)	2013	NA	2.08	No	Runoff/leaching from natural deposits
Manganese (ppb)	2013	50	24	No	Runoff/leaching from natural deposits
pH (SU)	2013	6.5-8.5	7.13	No	Measurement of hydrogen ion activity
Potassium (ppm)	2013	NA	1.94	No	Runoff/leaching from natural deposits
Sulfate (ppm)	2013	250	27.0	No	Runoff/leaching from natural deposits
Total Dissolved Solids (ppm)	2013	500	436	No	Runoff/leaching from natural deposits
Zinc (ppm)	2013	5	0.69	No	Residual from treatment process

The EPA established a list of Secondary Contaminants to serve as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.

Unregulated Contaminants				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	RANGE	ANNUAL AVERAGE	
Chlorate (ppb)	2013	89-260	185.3	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.
Chromium (ppb)	2013	0.10-0.46	0.23	
Hexavalent Chromium (ppb)	2013	0-0.18	0.11	
Strontium (ppb)	2013	58-67	60.83	
Vanadium (ppb)	2013	0.26-0.58	0.40	

Definitions

In the tables you might find terms and abbreviations you are not familiar with. To help you better understand these terms we've provided the following definitions:

- **Action Level (AL)** – the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Action Level Goal (ALG)** – the level of a contaminant in drinking water below which there is no known or expected risk to health. ALGs allow for a margin of safety.
- **Maximum Contaminant Level (MCL)** – the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (MCLG)** – the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **Maximum Residual Disinfectant Level (MRDL)** – the highest level of a disinfectant 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 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.
- **NTU** – Nephelometric Turbidity Units.
- **Parts per billion (ppb)** – micrograms per liter (µg/l) or one ounce in 7,350,000 gallons of water.
- **Parts per million (ppm)** – milligrams per liter (mg/l) or one ounce in 7,350 gallons of water.
- **90th Percentile** – 90% of samples are equal to or less than the number in the chart.
- **SU** – Standard Units.
- **Treatment Technique (TT)** – a required process intended to reduce the level of a contaminant in drinking water

Substances that can be in drinking water

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, 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 byproducts 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.

All drinking water may contain contaminants

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. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).