town of
HANOVER
Massachusetts

"honoring yesterday... as we build for tomorrow"

550 Hanover Street, Hanover MA July 2017

Hello Hanover! This newsletter is designed to inform, engage, and excite. We are pleased to share with you updates from our town departments and employees. There are many positive and interesting developments occurring every day here in Hanover, largely due to the leadership and strategic goal-setting of the Board of Selectmen.

This report is a snapshot of drinking water quality that we provided in 2016. 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 producing drinking water that meets all state and federal drinking water standards.

- Troy B. G. Clarkson, Town Manager

Hanover Town Hall
550 Hanover Street
Hanover, MA 02339

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2016 DRINKING WATER QUALITY REPORT
TOWN OF HANOVER DEPARTMENT OF PUBLIC WORKS
HANOVER, MASSACHUSETTS 02339
DEP PWSID # 4122000

PUBLIC WATER SYSTEM INFORMATION

Address: 40 Pond Street Hanover, MA 02339

Contact Person: Neal Merritt, Deputy Superintendent Water Operations

Telephone: 781-826-5000 X 1212 **Fax: 781-826-8915**

Website: http://www.hanoverdpw.org/

Opportunities for Public Participation:
Residents are encouraged to attend and participate in meetings of the Board of Public Works. The meetings are generally held once a month at the Water Treatment Plant located at 40 Pond Street. Please check our web site or contact the D.P.W. office at (781) 826-3189 to determine the next scheduled meeting.

YOUR DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

Source Name	DEP Source ID#	Source Type	Location of Source
Pond Street Wells #1, #2, and #3	4122000-01G, 05G, & 08G	Groundwater	Pond Street
Hanover Street Wells #1 and #2	4122000-03G & 04G	Groundwater	Hanover Street
Broadway Wells #1 and #2	4122000-06G & 07G	Groundwater	Broadway
Beal Wells #1 and #2	4122000-09G & 10G	Groundwater	Riverside Drive

Is My Water Treated? Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- We add a disinfectant to protect you against microbial contaminants.
- We chemically adjust the water to allow impurities to bond together to settle out of the water.
- We then filter the water to remove any remaining particles.
- We chemically treat the water to a non-corrosive pH to reduce lead and copper concentrations.

How Are These Sources Protected?
The Department of Environmental Protection (DEP) has prepared a Source Water Assessment Program (SWAP) report for the water supply sources serving this water system. The SWAP report assesses the susceptibility of these drinking water sources to contamination noting land uses, transportation corridors, hazardous materials storage and use, oil or hazardous material contamination sites, and comprehensive wellhead protection planning, in the water supply protection areas. The Hanover SWAP report is available at our main office at 40 Pond Street and can also be found on the DEP web site at *http://www.mass.gov/eea/agencies/massdep/water/drinking/source-water-protection-for-drinking-water-supplies.html*

What is My System's Ranking?
Hanover's wells are located in aquifers with high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. clay) that can prevent contaminant migration. As a result, Hanover's sources are considered **highly susceptible** to contamination from a variety of sources such as petroleum products, industrial solvents, fertilizers, and microbial contaminants. Susceptibility is a measure of a water supply's *potential* to become contaminated due to land uses and activities within its recharge area and does not imply poor water quality.

What Residents Can Do to Protect Their Drinking Water Supplies:

- Never dispose of household hazardous waste to your septic system
- Participate in household hazardous waste collection days for used oil, antifreeze, paints, and other chemicals
- Apply pesticides and fertilizers minimally and properly. More information on environmentally sound lawn care is available at http://www.mass.gov/eea/agencies/massdep/water/watersheds/lawns-and-landscapes-in-your-watershed.html

What Businesses Can Do to Protect Their Drinking Water Supplies:

- Use Best Management Practices (BMPs) for proper hazardous material handling, storage, and disposal

- Investigate where floor drains flow. If floor drains do not flow to a tight tank or municipal sewer, comply with MassDEP requirements. These regulations can be found at http://www.mass.gov/eea/agencies/massdep/water/drinking/underground-injection-control.html

WATER CONSERVATION TIPS

- Check faucets and toilets for leaks.
- Install low - flow aerators on bathroom and kitchen faucets.
- Run dishwasher and washing machine only when they are full.
- Water in the early morning or evening.
- Keep grass at least three inches high to shade roots and hold moisture.

SUBSTANCES FOUND IN TAP WATER

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 storm water 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 storm water 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 storm water 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, EPA and MassDEP prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. 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 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.)

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).

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 Hanover 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.

WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the following tables is from the most recent round of testing done in accordance with the regulations. Most of the data presented is from testing done between January 1 and December 31 2016. We monitor for some substances less than once per year, because their concentrations are not expected to vary significantly from year to year. As a result, some of our data, though representative, is more than a year old. For those substances, the date of the last sample is shown in the table.

REGULATED SUBSTANCES

Substances (Unit of Measure)	Year Collected	Highest Detected	Range Detected	MCL (MRDL)	MCLG (MRDLG)	Violation	Major Sources in Drinking Water
Gross Alpha (pCi/L)	2012	2.21	0.92–2.21	15	0	No	Erosion of natural deposits
Combined Radium (pCi/L)	2015	1.90	--	5	0	No	Erosion of natural deposits
Nitrate (ppm)	2016	1.09	ND–1.09	10	10	No	Runoff from fertilizer use; leaching from septic tanks, sewerage; erosion of natural deposits
Perchlorate (ppb)	2016	0.24	ND–0.24	2	NA	No	Rocket propellants, fireworks, munitions, flares, blasting agents
Tetrachloroethylene (ppb)	2016	1.0	ND-1.0	5	0	No	Discharge from factories and dry cleaners and asbestos cement lined pipes
Chlorine (ppm)	2016	0.26[1]	0.01–1.92	(4)	(4)	No	Water additive used to control microbes
Total Trihalomethanes (ppb)	2016	76[1]	9-84	80	NA	No	By-product of drinking water chlorination.
Haloacetic Acids (ppb)	2016	15[1]	ND-20	60	NA	No	By-product of drinking water chlorination.
LEAD AND COPPER RULE							
Substances (Unit of Measure)	**Year Collected**	**90th Percentile**	**Action Level**	**MCLG**	**# Sites Sampled**	**# Sites Above AL**	**Major Sources in Drinking Water**
Lead (ppb)	2014	3	15	0	30	0	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	2014	0.29	1.3	1.3	30	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

1. ***This test result is the highest running annual average for four consecutive quarters.***

UNREGULATED SUBSTANCES: Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Substance (Unit of Measure)	ORSG[1]	Year Sampled	Average	Range Hi-Low	Major Sources in Drinking Water
Sodium[2] (ppm)	20	2016	57	50-69	Discharge from the use and improper storage of sodium-containing de-icing compounds or in water softening agents
Radon (pCi/L)	10,000	2013	11.8	NA	Natural sources
Bromoform (ppb)	NA[3]	2016	8.3	ND-18.6	Trihalomethane; by-product of drinking water chlorination
Bromodichloromethane (ppb)	NA[3]	2016	13.4	0.5-32.6	Trihalomethane; by- product of drinking water chlorination
Chlorodibromomethane (ppb)	NA[3]	2016	15.7	0.6-32.0	Trihalomethane; by- product of drinking water chlorination
Chloroform (ppb)	70	2016	8.6	ND-27.5	Trihalomethane; by- product of drinking water chlorination

1. ***ORSG: The Mass DEP Office of Research and Standard drinking water guidelines have been established for some chemicals that do not have federal EPA standards.***
2. ***Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure.***
3. ***There is no ORS Guideline for this contaminant***

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.

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

Action Level (AL): The concentration of a contaminant that, 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.

ppm: parts per million, or milligrams per liter (mg/l)

ppb: parts per billion, or micrograms per liter (µg/l)

pCi/L: picocuries per liter (a measure of radioactivity)

ND: Not Detected

NA: Not Applicable

DISINFECTION BY-PRODUCT RULE (TOTAL TRIHALOMETHANES)

In June and September of 2015, we exceeded the drinking water standard for total trihalomethanes (TTHMs), a by-product of drinking water chlorination. As a result, the Hanover Water Department entered into an Administrative Consent Order with MassDEP, requiring us to correct this issue no later than July 2018. In consultation with our engineers (Weston & Sampson) we are addressing the elevated TTHM levels by converting the disinfection process at our three water treatment plants from chlorine to chloramines. Chloramines produce lower concentrations of TTHMs because they are less reactive than chlorine with natural organic matter. The chloramination process is widely used throughout the country with more than one in five Americans currently drinking water treated with chloramines. For additional information, please see the EPA website https://www.epa.gov/dwreginfo/chloramines-drinking-water .

We are pleased to report these improvements will be complete and operational by the July 2018 deadline. Furthermore, through the implementation of some immediate actions we have been able to reduce TTHMs levels below the regulatory limit of 80 ppb at all four of our sample locations since September of 2015. Please visit our web site at http://hanoverdpw.org/Disinfection_byproducts.shtml.to see the status of our efforts to date. If you want more information about TTHMs or the violation, please call Neal Merritt, Deputy Superintendent Water Operations at (781-826-5000 x 1212).

LEAD AND COPPER RULE

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 done by adding any one, or a combination of several, approved chemicals. The Hanover Water Department adds calcium hydroxide (lime) to the water at its Pond Street plant and potassium hydroxide to the water at the Broadway plant in order to maintain a non-corrosive pH level in the distribution system. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations. We will be testing our system for lead and copper in 2017 per MassDEP sampling requirements. As you can see in our Regulated Substances table lead and copper was lasted tested in 2014 and all tests were below the EPA Actions Levels.

EDUCATIONAL INFORMATON

Radon*:* Radon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the United States. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will be (in most cases) a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. You should pursue radon removal from your home if the level of radon is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your state radon program or call EPA's Radon Hotline, 800.SOS.RADON.

Sodium: The MassDEP, Drinking Water Program (DWP), has established a sodium guideline of 20 mg/L. This concentration is in line with the limit applied to bottled water by the United States Food and Drug Administration (USFDA) for low sodium water. The guideline represents a level of sodium in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled. Additional information on sodium in drinking water can be found at www.mass.gov/eea/agencies/massdep/water/drinking/lead-and-other-contaminants-in-drinking-water.html#22

CHEMICAL RELEASE 831 WASHINGTON STREET

In November of 2015, gasoline constituents were detected in the soil and groundwater at 831 Washington Street. The site is currently used as an automobile repair facility. However, it was at one time used as a gasoline filling station and it is likely that this contamination is due to the former on-site gasoline tanks and a dispenser which were removed from the property in 1985. This contamination is located approximately 1,500 feet south-southeast of Hanover Pond Street Well #1. We are pleased to report that the firm in charge of the clean-up (Irwin Engineers of Natick Massachusetts) has concluded that the downgradient extent toward the supply wells appears to be limited to the site and does not extend north of Rawson Road. In addition, we routinely monitor our finished water for volatile organic compounds and we have not detected any gasoline constituents in the Pond Street finished water.

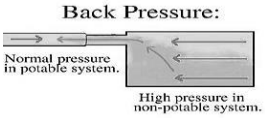
Irwin Engineers received approval from MassDEP to move forward with a Remedial Additives Plan on March 2, 2017. Installation of a Soil Vapor Extraction system is planned for May 2017 with additional monitoring to follow. This is an ongoing remediation and we will keep you informed if conditions change. If you wish to review the files at DEP, you can do so on-line by visiting the web site http://public.dep.state.ma.us/SearchableSites2/Search.aspx and search for Tracking Numbers 4-25884, 4-26409, and 4-26496. Please contact this office if you have additional questions.

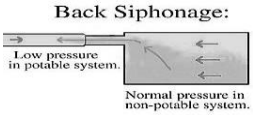
BACKFLOW PREVENTION

The Hanover Water Department makes every effort to ensure that the water delivered to your home and business is clean, safe, and free of contamination. But what happens when the water reaches your home or business? There is still a need to protect the water quality from contamination caused by a cross-connection.

What is a cross-connection?
A cross-connection occurs whenever the drinking water supply is or could be in contact with potential sources of pollution or contamination. Cross-connections exist in piping arrangements or equipments that allow the drinking water to come in contact with non-potable liquids, solids, or gases (hazardous to humans) in event of a backflow.

What is backflow?
Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of water can occur when the pressure created by equipment or a system, such as a boiler or air-conditioning, is higher than the water pressure inside the water distribution line (backpressure), or when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand causing the water to flow backward inside the water distribution system (backsiphonage). Backflow is a problem that many water consumers are unaware of. And every water customer has a responsibility to help prevent them.





What you can do to help prevent a cross-connection
Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact, over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you, as a drinking water user, can take to prevent such hazards:

- **Never** submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains, or chemicals.
- **Never** attached a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bib vacuum breaker on every threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a backflow preventer.
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections.

If you are the owner or manager of a property that is being used as a commercial, industrial, or institutional facility you must have your property's plumbing system surveyed for cross-connection. If your property has NOT been surveyed for cross-connection, contact this office at 781-826-3189 to schedule a cross-connection survey.

The Massachusetts Drinking Water Regulations, 310 CMR 22.00, requires all public water systems to have an approved and fully implemented Cross-Connection Control Program (CCCP). The Hanover Water Department is working diligently to protect the public health of its drinking water customers from the hazards caused by unprotected cross-connections. We are doing this through the implementation of our cross-connection survey program, elimination or proper protection of all identified cross-connections, the registration of all cross-connections protected by reduced pressure backflow preventers (RPBPs) or double check valve assemblies (DCVAs), and the implementation of a testing program for all RPBPs and DCVAs.