Town of Pepperell
DPW – Water Division
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Pepperell Water Division
DEP PWS ID # 2232000

2012 CONSUMER CONFIDENCE REPORT

This report is a snapshot of the drinking water quality that we provided 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 this information because informed customers are our best allies.

I. PUBLIC WATER SYSTEM INFORMATION

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Introduction:
The Pepperell Water Division is pleased to present our Annual Report on the quality of the water that was delivered to you in 2012. This report meets the federal Safe Drinking Water Act (SDWA) requirement for "Consumer Confidence Reports" and contains information on the source of our water, its constituents, and the health risks associated with any contaminants.

In 2012, the Pepperell Water Division was in full compliance with all state and federal drinking water standards and operating requirements. The Pepperell Water Division supplied 248 million gallons of water to our customers through 3,130 service connections. We tested approximately 375 samples for over 75 contaminants. Total coliform bacteria samples were taken every month at 19 locations.

Water System Improvements:
To ensure that we provide the highest quality of water available, your water system is operated by a staff of Massachusetts certified operators who oversee the routine operations of our system. As part of our ongoing commitment to you, we continue to test all backflow devices semi-annually as well as inspect for cross connections from potable to non-potable sources. We continue to upgrade and update our chemical feed and monitoring systems to improve water quality throughout the entire distribution system. We also continue to conduct our semi-annual town wide flushing program and leak detection surveys.

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP) for its technical, financial and managerial capacity to provide safe drinking water to you.

Opportunities for Public Participation:
If you would like to participate in discussions regarding your water quality, you may call the office of the Pepperell Water Division with any comments or questions that you may have. The Water Division falls under the authority of the Pepperell Department of Public Works. Please feel free to attend any of the DPW's regularly scheduled meetings, which are usually held on the 1st and 3rd Thursdays of each month. Please call ahead (978)433-0327 to confirm the meeting or to comment on the water system. You can also e-mail the Pepperell Water Division at water@town.pepperell.ma.us.

II. YOUR DRINKING WATER SOURCES

Where Does My Drinking Water Come From?

Your water sources consist of five municipal gravel packed wells at an average depth of 60 feet. The wells are separate from each other and are in three locations in town: The new Nashua Road Well is located off of Nashua Road. The Bemis Road wells are located on Bemis Rd. There are also two wells located on Jersey Street. MassDEP source ID# s and other pertinent information for our four wells are listed in the table below:

Source Name	DEP Source ID#	Source Type	Location of Source
Bemis Road Well #1	2232000-01G	Groundwater	Off Bemis Road
Bemis Road Well #2	2232000-04G	Groundwater	Off Bemis Road
Jersey Street Well #1	2232000-02G	Groundwater	Off Jersey St.
Jersey Street Well # 2	2232000-03G	Groundwater	Off Jersey St.
Nashua Road Well #1	2232000-05G	Groundwater	Off Emerson Road

How Is My Water Treated?

The water system staff makes every effort to provide you with safe and clean drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants. The water pumped from the two Bemis Road Wells is first treated by the addition of potassium hydroxide. This raises the pH making the water less corrosive thereby assisting in the control of lead and copper residuals. Polyphosphate is added to sequester iron and manganese and also assist in the control of lead and copper concentrations. Bemis Road finished water is then treated with sodium hypochlorite for disinfection against bacteria. The water pumped from the Nashua Road Well and the two Jersey Street Wells is directed through a staggered tray aeration tower to reduce carbon dioxide levels which aids in corrosion control, then potassium hydroxide is added to further adjust pH. The finished water is then treated with sodium hypochlorite to disinfect. Combined these wells are limited by MassDEP to pump no more than 1.3 million gallons per day. Finished water pumped into the distribution system is sent to one of three tanks. Pepperell Water has a storage capacity of 3 million gallons. Two booster pump stations send water from the Heald and Mason Street storage tanks to the Townsend Street storage tank. Townsend Street storage tank maintains the pressure we need to supply water to the town's higher elevations, and also provides ample storage for fire protection.

- We add sodium hypochlorite to protect you against microbial contaminants.
- We chemically treat the water with potassium hydroxide to increase pH.
- We aerate the water to remove carbon dioxide and increase pH.
- We add polyphosphate to sequester iron and manganese and control lead and copper levels.

The water quality of our system is constantly monitored by us and the MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

How Are These Sources Protected?

MassDEP has prepared a Source Water Assessment and Protection (SWAP) Report for the sources serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

Our SWAP Report notes the key issue of developing a wellhead protection plan. The Town of Pepperell has completed its Wellhead Protection Strategy Report. This report addresses strategies for protection to our water supplies. We have installed security fencing at all our facilities and will soon be completing the installation of security devices. We continue to monitor for illegal dumping and trespassing.

What is My System's Ranking?

A susceptibility ranking of ***moderate*** was assigned to this system using the information collected during the assessment by the MassDEP.

Residents Can Help Protect Sources By:

- Practicing good septic system maintenance
- Supporting water supply protection initiatives at the next town meeting
- Taking hazardous household chemicals to hazardous materials collection days
- Make sure horse owners are aware of our wells
- Limiting pesticide and fertilizer use, etc.
- Notify local authorities of any suspicious or illegal activity in or around our water facilities

Where Can I See The SWAP Report?
The complete SWAP report is available at the Water Division Office on Chestnut Street or the Town Engineer's Office located at the Town Hall. Contact either Trish DeLorey at (978)433-5591 or Kenneth Kalinowski at (978)433-0327 to make arrangements. The report is also online at: *www.*mass.gov/dep/water/drinking/2232000.pdf.

III. SUBSTANCES FOUND IN DRINKING 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, can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater, 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 the U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. 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. All 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 **(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 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**.

IV. 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.

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

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

Lead and Copper 90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.

ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
pCi/L = picocuries per liter (a measure of radioactivity)

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.

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

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.

V. WATER QUALITY TESTING RESULTS

What Does This Data Represent?
The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. Only the detected contaminants are shown.

Bacteria	Highest # Positive Samples in a Month	MCL	MCLG	Violation (Y/N)	Possible Source of Contamination
Total Coliform	0	1	0	N	Naturally present in the environment
E. Coli	0	*	0	N	Human and animal fecal waste

* Compliance with the E. coli MCL is determined upon additional repeat testing.

Contaminant	Date Collected	90TH percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Exceeds AL (Y/N)	Possible Source of Contamination
Lead (ppb)	7/30/10	6	15	0	23	1	N	Corrosion of plumbing; Erosion of natural deposits
Copper (ppm)	7/30/10	0.3	1.3	1.3	23	0	N	Corrosion of plumbing; Erosion of natural deposits

Regulated Contaminants	**Dates Collected**	**Highest Detect or Highest RAA***	**Range Detected**	**MCL or MRDL**	**MCLG or MRDLG**	**Violation (Y/N)**	**Possible Source(s) of Contamination**
Inorganic Contaminants							
Nitrate (ppm)	4/30/12	1.34	0 - 1.34	10	10	N	Runoff from fertilizers; septic tanks leachate; sewage; erosion of natural deposits
Radioactive Contaminants							
Gross Alpha (pCi/l)	2/7/12	0.740	0.0-0.74	15	0	N	Erosion of natural deposits
Radium-226 & -228 combined	2/7/12	2.49	0.0 – 2.49	5	5	N	Erosion of natural deposits
Uranium (ppb)	2/4/08	1.04	---	30	0	N	Erosion of natural deposits
Volatile Organic Contaminants							

Xylenes** (ppm)	2/7/12 5/10/12	ND	ND	10	10	N	Leaks & spills from fuel tanks; discharge from petroleum and / or chemical factories
Disinfectants and Disinfection Byproducts							
Chlorine (ppm)	Monthly in 2013	0.77	0.01 -0.77	4	4	N	Water additive used to control microbes
Haloacetic Acids (HAA5s) (ppb)	8/7/12	1.3	1.02 – 1.30	60	---	N	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	8/7/12	19.8	14.3 – 19.8	80	___	N	Byproduct of drinking water chlorination

* Highest RAA = highest running annual average of four consecutive quarters.

** Xylenes results are from tests during the new source approval process for the Nashua Road Well. Drinking tap water containing high amounts of xylenes over many years could result in damage to the nervous system.

Secondary and Unregulated Contaminants	Date(s) Collected	Highest Detection	Average Detected	SMCL	ORSG	Possible Source
Sulfate (ppm)	7/23/12	11.5	7.6	250	--	Natural sources
Sodium (ppm)	5/23/12	17	10.12	--	20	Natural sources; runoff from use of salt on roadways; by-product of treatment process
Manganese (ppb) *	7/23/12	210	70	50	--	Erosion of natural deposits
Iron (ppb)*	2/7/12	470	134	300	--	Naturally occurring; leaching of cast iron pipes

* The iron and manganese results reported in the table are for Bemis Road Well #1 (01G) which was sampled four times in 2012. The other wells were tested on 4/5 for iron and had no detections. The other wells were also tested for manganese on 4/5 and had no detections except at the Nashua Road Well (05G), which had a result of 91 ppb of manganese. When that well was retested on 6/7, no manganese was detected.

Information about Manganese

Manganese is a naturally occurring mineral found in rocks, soil and groundwater and surface water. The USEPA and MassDEP have set an aesthetics-based secondary maximum contaminant level (SMCL) for manganese of 0.05 mg/L (50 ug/L or 50 ppb). At levels greater than 0.05mg/L, the water may appear brown, taste unpleasant and leave black stains on bathroom fixtures and laundry. While manganese is part of a healthy diet, it can be harmful if consumed in large concentrations.

EPA has also set a health guideline for lifetime exposure to manganese in drinking water of 0.3 mg/L (300 ppb). EPA considers this level to be a protective limit for adults from potential neurological effects over a lifetime of exposure. For short-term 10-day exposures, EPA advises that levels in drinking water be below 1 mg/L (1000 ppb). Infants and children less than one year of age should not be given drinking water with manganese levels greater than 0.3 mg/L (300 ppb) for more than 10 days. This recommendation is based on concerns about manganese effects to the nervous system that are more likely to occur in younger children, and because formula-fed infants/children already receive adequate manganese as an added essential nutrient in their formula. Formula- fed infants/children may consume more manganese than the rest of the family if the manganese-fortified formula is prepared with water that also contains manganese. In addition, young children appear to absorb more but excrete less manganese than older children. For more information, please refer to: www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_magnese_dwreport.pdf

Monitoring Waivers

For the 2011-2013 monitoring period, MassDEP has issued waivers to the Pepperell Water Division that reduce monitoring requirements for the following contaminants: perchlorate for all wells, SOCs for Bemis Road Well #1 (01G), VOCs for Bemis Road Wells #1 & #2 (01G & 04G); and IOCs for all wells except Bemis Road Well #2 (04G). These waivers were granted for some of our sources because they met specific land use criteria and were determined not to be at risk of contamination. The last samples collected for these contaminants were found to meet all applicable EPA and MassDEP standards.

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

For the seventh year in a row, the Pepperell Water Division has been in full compliance with all state and federal drinking water standards and regulations. We are committed to providing you with the best water quality available.

Lead and Copper

MassDEP granted a reduction in the monitoring requirements for lead and copper sampling to less often than once per year because of our system's continued compliance with the lead and copper action levels.

In July 2010, 23 lead and copper samples were collected at taps throughout town according to our lead and copper sampling plan. For the fifth consecutive sampling period we were in full compliance with EPA's Lead and Copper Rule. Our next scheduled testing for lead and copper will be in 2013.

Bacteria Testing

We are committed to providing you with the best water quality available. During the last calendar year, 228 coliform bacteria samples were collected throughout town according to our total coliform sampling plan. During the entire year bacteria was detected in only one sample, and this we believe was due to sampling error. The Water Division immediately responded by checking chlorine levels in the area and retesting the samples at and around the original site. All subsequent testing was absent of any bacteria. During the summer of 2012, we will continue to monitor our chlorine levels in the distribution system in an effort to insure that chlorine residual is maintained.

VII. EDUCATIONAL INFORMATION

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 done by adding any one, or a combination of several, approved chemicals. The Pepperell Water Division adds potassium hydroxide and polyphosphate to its water. This adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

All chemicals used for coagulation are approved for water treatment by one of the following organizations: National Sanitation Foundation (now known as NSF International) or UL, both accredited by the American National Standards Institute (ANSI). Chemicals must also meet performance standards established by the American Water Works Association.

Minimize the Potential of Lead Exposure

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 Pepperell Water Division 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.

Sequestration for Iron and Manganese

Iron and manganese are often present in groundwater at levels that can discolor the water, or cause it to take on unpleasant odors or tastes. Even though the water may still be safe to drink, treatment is often desirable. The Pepperell Water Division adds polyphosphates to its water. This results in a chemical reaction, known as sequestration, which prevents the iron and manganese from forming nuisance particles. All chemicals used for sequestration are approved for water treatment by one of the following organizations: National Sanitation Foundation (now known as NSF International) or UL, both accredited by the American National Standards Institute (ANSI). Chemicals must also meet performance standards established by the American Water Works Association.

Primary Disinfection with Chlorine (without filtration)

All reservoirs and some ground water sources contain numerous microorganisms some of which can cause people to be sick. To eliminate disease carrying organisms it is necessary to disinfect the water.
Disinfection does not sterilize the water, but it does destroy harmful organisms. Sterilization kills all microorganisms, even though most are not harmful, and is too costly to use on a routine basis. The Pepperell Water Division uses sodium hypochlorite as its primary disinfectant. Chlorine destroys organisms by penetrating cell walls and reacting with enzymes. Disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Cross Connection Control Program

A cross connection is a connection between a potable water source and a polluted source. The Pepperell Water Division implements a cross connection control program for all industrial, commercial, municipal and institutional facilities. All surveying and testing is performed in accordance with the cross connection section (310 CMR 22.22) of the Commonwealth of Massachusetts Drinking Water Regulations.

Residents should be aware that pollution can come from their own homes. For instance, you are going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops (say because of a fire hydrant use in town) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow-prevention device can prevent this problem.

The Pepperell Water Division recommends that homeowners install backflow prevention devices, such as low cost hose bib vacuum breakers, for all inside and outside hose connections. You can purchase them at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in our town!

All residential sprinkler systems must be installed with approved backflow prevention devices. The Pepperell Water Division recommends annual testing of these devices. Homeowners wishing to schedule a backflow prevention device test may do so by contacting the Pepperell Water Division.

Cross connections between the Pepperell water supply and a private well or individual water source are prohibited. If as a result of a survey of the premises, the Pepperell Water Division determines that a cross connection exists, the homeowner must contact a licensed plumber to disconnect the source of the cross connection. The private well may be used for outside purposes but must not be connected to the town source. Failure, refusal or inability to comply within the specified time shall constitute grounds for shutting off water to the premises until such repairs/disconnections have been properly installed.

Please visit our website at www.town.pepperell.ma.us for further information regarding the Rules and Regulations of the Pepperell Water Division; or please contact Laurie A. Stevens, Superintendent at 978-433-5591, if you have any questions regarding the status of our Cross Connection Control Program.

VIII. ADDITIONAL INFORMATION

Water Conservation Regulation

In order to assure adequate supply of water for domestic and fire protection purposes, the Pepperell Water Division has adopted the following regulation: Effective May 1st through October 31st of every year, outdoor watering of any kind is restricted to even numbered days of the month with an even address and odd numbered days for homes with an odd number address. Should conditions require, this conservation measure will become a full-mandatory ban as declared by the Board of Public Works. Violations will be subject to a fine. This essential outside water conservation program should be effective enough so as to make a full-mandatory ban unnecessary except under extreme circumstances. All water customers are strongly encouraged to comply with the program to help avoid more extreme measures of water conservation.

Conclusion

The Pepperell Water Division is committed to providing consumers with water that meets or surpasses standards established by the state and EPA. We also want our customers to be informed of changes in water quality when they occur. If you have any questions, comments or complaints, please call the Pepperell Water Division at **(978) 433-5591 or (978) 433-5528.**

Contact Information

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