

**TOWN OF GROVELAND
2006
Annual Water Quality Report**

This report will not be mailed out unless requested this year
Copies of this report as well as a complete list of all of the tests performed throughout the year are available upon request from:

Groveland Water Department
PWS ID# 3116000
183 MAIN STREET, Town Hall
Groveland MA 01834
(978) 372- 4144
E-mail: fgjordano@grovelandma.com

Commissioners..... Bruce W. Adams, Chairman
John G. Willett and James M. Sheehan
Office Manager..... Patricia Rogers
Superintendent..... Frank Giordano
Operators..... Dick Ferrick, Joe Sciacca,
David Cash

Regular Public Meetings are held by the Commission
Time and Date are posted at Town Hall

DEFINITIONS

DEP - Massachusetts Department of Environmental Protection
DPH – Massachusetts Department of Health
EPA - United States Environmental Protection Agency
FDA – Food and Drug administration
C/100ml - Colonies per 100 milliliters
1 mg/L = 1 milligram per Liter =1 part per million (ppm)
1 ug/L = 1 microgram per Liter =1 part per billion (ppb)
Microbial Contaminates – Coliform Bacteria, cryptosporidium, Giardia and other microbial bacteria or viruses associated with surface water s may enter into the system during construction, repairs or the close proximity of groundwater sources to surface water areas from livestock or wildlife. They can also come from improperly operating sewerage treatment plants, septic systems or agricultural livestock operations.
Pesticides and Herbicides - can come from storm water runoff, agricultural and residential use (and misuse)
Inorganics - Salts and metals that can occur naturally or result from runoff, industrial or domestic wastewater discharges, oil and gas production or minimal activities.
Radioactivity – can occur naturally or from oil and gas production or minimal activities.
MCL - Maximum Contaminant Level set by the Department of Environmental Protection (DEP)
MCLG - MCL Goal - Level of a contaminant below which there is no known or expected health risk. MCLGs allow for a margin of safety
AL - Action Limit, The concentration level at which action must be taken to control a contaminant
N/A - Not Applicable
BDL - Below Detectable Level
IOC - Inorganic Compounds
SOC - Synthetic Organic Compounds
VOC - Volatile Organic Compounds
Unregulated Compounds - compounds tested for and reported that have no MCL values

WATER SOURCES and PRECAUTIONS

The sources of all drinking water, tap or bottled, are either surface water, (rivers, lakes, streams, ponds and reservoirs), or groundwater, (springs and wells). As water travels over the surface of the land or through the ground, it dissolves naturally occurring materials and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

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 the water poses a health risk.

Some people may be more vulnerable to contaminants in the water than the general population. Immune-compromised persons such as those with cancer undergoing chemotherapy, people that 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 provider. More information about the risks and effects of microbial and other contaminants can be obtained from EPA/Centers for Disease Control at www.epa.cdc or from the Safe Drinking Water Hotline at (800-426-4791)

Water for Groveland’s groundwater supply consists of three gravel packed wells. Well #1 at 462 Main Street, Well #3 behind the Pines Recreation Area and Well #4 further down the river. At Wells #1 and #3 the vertical turbine pumps are down 50 feet with long shafts to the drive motors which are housed in the building above the wells. Well #4 uses a submersible well pump with a sealed motor mounted under water with the pump 35 feet down in the well. Each of the wells can run independently of each other. Groveland’s water is distributed through a network of water mains approximately 22 miles long and ranging in size from 4 to 12 inches in diameter. There are currently 1820 active services connected to our system.

Water is a valuable resource that people often take for granted. As a Public Service Department we are continually working to provide Groveland with a continuous supply of clean, safe drinking water for the consumer.

WATER CONSERVATION

The total volume of water pumped from these wells in 2006 was 138,951,000 gallons. This was down from 143,980,000 gallons pumped in 2005. This was likely due to a very wet spring. We continually check for leaks and repair them when found to minimize the amount of water wasted.

YOU TOO CAN HELP SAVE WATER

Keep water in the refrigerator to chill it instead of letting the faucet run fro a glass of water. Water your lawn wisely. Water deeply in the morning. Do not over water, keep your mower sharp and don’t cut too short. A healthy lawn needs less water to look good. Repair leaks. (Your water meter has a red diamond on it to help you catch small leaks. If it turns when everything is off, you have a leak, probably a toilet.)

CONDITION	GALLONS WASTED
Leaky toilet or faucet	50-100/day
Brushing teeth with water on	5-10 / day
Wrong washer setting	15-20/load
Running the shower extra	3-7/ minute

MAINTAINING THE WATER QUALITY

In order to ensure that tap water is safe to drink, the EPA and DEP prescribe regulations that limit the amount of certain contaminates in the water provided by

public water systems. FDA and DPH regulations establish limits for contaminates in bottled water that must provide the same protection for public health. It takes a network of communication and a lot of sampling by the water department and by other laboratory personnel

Well #1 and two aquifer monitoring wells are tested quarterly for VOCs. And twice a year for nitrogen compounds. The monitoring wells are tested to give us ample warning of any contamination migrating toward the water supply well through the groundwater. Wells #3 and #4 are tested annually for VOCs;

Wells #1, 3 and #4 are tested for secondary contaminants, daily for chlorine and fluoride and continuously for pH.

WHAT IS IN THE WATER

Parameters tested annually					
Parameter	Units	MCL	Well #1	Well#3	Well#4
Hardness	mg/L (25-150)	58	186	64.4	
Chloride	mg/L	250	21	170	46
Nitrate	mg/L	10	0.34	0.01	0.05
Silver	mg/L	0.05	BDL	BDL	BDL
Aluminum	mg/L	*	0.01	0.02	0.01
Calcium	mg/L	*	17.1	56.1	17.1
Copper	mg/L	1.3	0.008	0.012	0.008
Iron	mg/L (0.3)	0.337	0.086	0.012	
Potassium	mg/L	*	1.51	5.49	1.39
Magnesium	mg/L	*	3.72	11.2	5.3
Manganese	mg/L (0.05)	0.076	0.162	0.011	
Zinc	mg/L	5	0.019	0.007	0.010
Color	Units	15	BDL	BDL	BDL
Odor	T.O.N.	3	BDL	BDL	BDL
pH	Units	6.5-8.6	6.63	6.41	6.65
Turbidity	NTU	1	1.69	0.14	0.10
Alkalinity	mg CaCO3	*	38	55	36
Total Dissolved Solids	mg/L	500	120	500	160

Add Lead and Copper Results
* Unregulated Compounds () Desired limits

Microbiological Results

Regular sampling for Coliform bacteria is done at seven locations in the distribution system and at the wells, on a monthly basis. There were no Coliform presence detected.

Total Coliform Bacteria are common in the environment, they can come from the intestines of warm –blooded animals, and they can also be found in soil, on plants, and other places. Though not harmful themselves they may indicate the presence of other potentially harmful organisms. Symptoms of bacterial infections can include diarrhea, cramps, nausea, jaundice, headaches, or fatigue.

We continue to chlorinate as a precaution in the interest of public health, in case any bacterial contamination enters the system from repairs to the system or new construction.

WHAT IS ADDED TO THE WATER ? WHY ?

Potassiumhydroxide to reduce corrosion
SodiumFluoride to reduce dental cavities
Calciumhypochlorite to prevent bacterial growth
Potassium Hydroxide is added to make the water less corrosive by raising the pH. Corrosive water can dissolve Lead and Copper out of water services and household plumbing. We raise the system pH to an average near 7.0. This is high enough to keep the Lead and Copper from dissolving very much and still keep most of the Iron and Manganese in solution.

Fluoride is added to the water as Sodium Fluoride to fight dental cavities. Both Sodium and Fluoride occur naturally in small amounts in the ground water in this area. Natural Fluoride occurs at about 0.05 to 0.1 mg/L. The fluoride is added to the water at about 1.0 mg/l to help build stronger, more cavity resistant teeth for all those who DRINK the water in their developmental years.

WHY IS MY WATER BROWN?

Some of the water mains in Groveland are very old cast iron which tends to form rust deposits inside. The other cause is the iron and manganese that settle in the water mains. These occur naturally in the well water and cause the Brown (Iron) to Black (Manganese) water that sometimes occurs, especially when there is an increased water flow during fire hydrant use or a water main break. The major reason for our spring and fall hydrant flushing is to dislodge and remove some of this buildup.

2006 LEAD & COPPER TEST RESULTS

Type	Mg/L	LEAD	Copper
Residential		BDL-0.099	BDL-0.38
Bagnall Kitchen		0.0055	0.058
Bagnall Bubblier		0.0017	0.067
Middle School Kit.		0.012	0.17
Middle School Bub.		0.017**	0.38
90th percentile		0.005	0.27
*Action Level		0.015	1.3
MCLG		0.0	1.3

Concentrations above the *Action Level require flushing of the fixtures prior to consumption. Large buildings often show elevated concentrations in first water of the day samples that when flushed every morning return to normal system levels around **0.002mg/L.

How does lead and copper get into the tap water?

Lead and copper get into tap water from the corrosion of home service piping and lead solder used in plumbing. Even though the use of lead solder was banned everywhere in the United States in 1986, it still might be present in older homes

Exposure to elevated concentrations of LEAD (Pb) typically affects infants and young children more than teenagers and adults. You should use only cold water for cooking or drinking. If you are concerned that you may have elevated LEAD levels in your house, simply run the water for a few minutes before using it. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

Groveland has been granted Reduced Monitoring status for Lead & Copper because the concentrations of these contaminants do not change frequently. We will need to sample every third summer from now on. Samples were taken from 22 different locations in November of 2006. The next round of sampling will be in 2009.

WHAT IS NEW

The Water Department has completely rehabilitated Well # 3 with a process called Aqua Freed®; The formation is saturated with carbon dioxide gas which produces a highly abrasive carbonic acid solution. Then, liquid carbon dioxide is injected, which freezes the water within the aquifer, achieving disinfection and dislodging of mineral incrustation. This process has been known to produce markedly superior results compared to those using traditional chemical and physical methods, especially where iron bacteria is present. Because only pure, inert gases are used, water quality is not affected and it eliminates the concerns involved with the handling, transportation and disposal of hazardous acids and chemicals. The well will now produce what it was originally designed for (400gpm). We have also installed a new well pump and a premium efficient motor to save on electrical costs.

Where to go for additional information

- Massachusetts Department of Public Health (DPH) 617-624-6000
- Massachusetts Department of Environmental Protection (DEP) 800-462-0444
- EPA- Safe drinking Water Hotline 800-426-4791

