

# ANNUAL WATER QUALITY REPORT

*Water testing performed in 2007*



*Presented By:*

CHELMSFORD WATER DISTRICT

PWS ID#: 3056000

## Meeting the Challenge

We are once again proud to present to you our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2007. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies.

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

## Where Does My Water Come From?

The Chelmsford Water District customers are fortunate because we enjoy an abundant water supply from 19 sources. The Chelmsford Water District draws water from the Merrimack and Concord river basins. Our reservoirs hold one of the state's largest capacities - 15 million gallons of water. Combined, our facilities provide roughly 1.1 billion gallons of clean drinking water each year. The Riverneck Road Treatment Plant was placed in service at the end of 2004 and treats 3 million gallons of water per day. The Crooked Spring Treatment Plant was placed in service in the spring of 2007 and treats 4 million gallons a day. To learn more about our watershed visit the U.S. EPA Web site at [www.epa.gov/surf](http://www.epa.gov/surf).

## Source Water Assessment

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of public water supplies to potential contamination due to land uses and activity within the recharge areas. Established under the federal Safe Drinking Water Act, the program requires every state to inventory land uses within the recharge areas of all public water supply sources, to assess the susceptibility of drinking water sources to contamination from these land uses, and to publicize the results to provide support for improved protection.

### *What Is My System's Ranking?*

A susceptibility ranking of high was assigned to this system using the information collected during the assessment by the Massachusetts Department of Environmental Protection (DEP).

### *Where Can I See the SWAP Report?*

The complete SWAP report is available at the Chelmsford Water District, at the Chelmsford Board of Health, and online at [www.mass.gov/dep/water/drinking/3056000.pdf](http://www.mass.gov/dep/water/drinking/3056000.pdf). For more information, call Superintendent Delaney at (978) 256-2931.

## Water Conservation

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity;
- Turn off the tap when brushing your teeth;
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year;
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year;
- Use your water meter to detect hidden leaks. Simply turn off all taps and water using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

## Community Participation



You are invited to participate in our public forum and voice your concerns about your drinking water. We meet on the second Wednesday of each month at 4 p.m. at the Chelmsford Water District, 20 Watershed Lane, Chelmsford, MA.

## Questions?

For more information about this report, or any questions relating to your drinking water, please contact us at (978) 256-2381 or visit our Web site at [www.chelmsfordwater.com](http://www.chelmsfordwater.com).

## Substances That Might Be in Drinking Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribes regulations limiting 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, which 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 these contaminants does not necessarily indicate that the water poses a health risk.

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. Substances 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, or wildlife;

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may 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 by-products of industrial processes and petroleum production, and which may also come from gas stations, urban stormwater runoff, and septic systems;

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## How Is My Water Treated and Purified?

The Crooked Spring Treatment Plant went online in the Spring of 2007. Nine of the District's wells are processed through this plant.

This plant recycles the backwash discharged water to a lagoon which then re-enters the earth and becomes part of the aquifer.

Raw water is drawn from the other eight wells in the eastern area of the district and is sent through the greensand filtration system at the Riverneck Road Treatment Plant to remove elevated levels of iron and manganese from these wells. In addition, the treatment plant treats the two wells on Canal Street that were out of service for many years because of poor water quality. The filtration process also incorporates an aeration tower to remove low levels of volatile organic compounds from the raw water. The backwash water generated from the treatment process is stored in an on-site 100,000-gallon underground storage facility. The facility has the capability of pumping all of the water to the nearby public sewer, or recycling the water to the treatment plant.

All of Chelmsford Water District's water is now processed and treated through state of the art treatment.

Faced with deteriorating water quality and increasing peak demands for water during daytime hours, the Board of Water Commissioners has made a commitment to our customers to provide treatment for all the districts wells.

## Lead and Drinking Water

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. Chelmsford Water District 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 [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Contamination from Cross-Connections

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, review the Cross-Connection Control Manual from the U.S. EPA's Web site at [www.epa.gov/safewater/crossconnection.html](http://www.epa.gov/safewater/crossconnection.html). You can also call the Safe Drinking Water Hotline at (800) 426-4791.



## Tap vs. Bottled

Thanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resource Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25% of bottled water is actually just bottled tap water (40% according to government estimates).

The Food and Drug Administration is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about 70% of all bottled water sold in the United States.

People spend 10,000 times more per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to \$1,400 annually. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their Web site at [www.nrdc.org/water/drinking/bw/exesum.asp](http://www.nrdc.org/water/drinking/bw/exesum.asp).



## Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us: in our food; on our skin; in our bodies; and, in the air, soil and water. Some are harmful to us and some are not. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern because it indicates that the water may be contaminated with other organisms that can cause disease. Throughout the year, we tested more than 480 samples (more than 40 samples every month) for coliform bacteria. In that time, none of the samples came back positive for total coliform bacteria. Fecal coliforms are present only in human and animal waste. Because these bacteria can cause illness, it is unacceptable for fecal coliforms to be present in water at any concentration.

## Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. Although all of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Haloacetic Acids [HAA] (ppb)	2007	60	NA	27.2	ND–27.2	No	By-product of drinking water disinfection
Nitrate (ppm)	2007	10	10	1.7	ND–1.7	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2007	80	NA	68	6–68	No	By-product of drinking water chlorination
Trichloroethylene (ppb)	2007	5	0	2	ND–2	No	Discharge from metal degreasing sites and other factories
Tap water samples were collected from sample sites throughout the community							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	ACTION LEVEL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2005	1.3	1.3	0.51	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2005	15	0	5	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES <sup>1</sup>				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppm)	2007	8	2–8	By-product of drinking water disinfection
Bromoform (ppm)	2007	1	ND–1	By-product of drinking water disinfection
Chlorodibromomethane (ppm)	2007	3	2–3	By-product of drinking water disinfection
Chloroform (ppm)	2007	13	0.7–13	By-product of drinking water disinfection
MBTE (ppb)	2007	2	ND–2	Gasoline additive
Sodium (ppm)	2007	46	42–49	Naturally occurring

<sup>1</sup> Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

### Definitions

- 90th Percentile:** Out of every ten homes sampled, nine were at or below this level.
- AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- MCL (Maximum Contaminant Level):** 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.
- MCLG (Maximum Contaminant Level Goal):** 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.
- MRDL (Maximum Residual Disinfectant Level):** 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.
- MRDLG (Maximum Residual Disinfectant Level Goal):** 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
- ND (Not detected):** Indicates that the substance was not found by laboratory analysis.
- ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).
- ppm (parts per million):** One part substance per million parts water (or milligrams per liter).