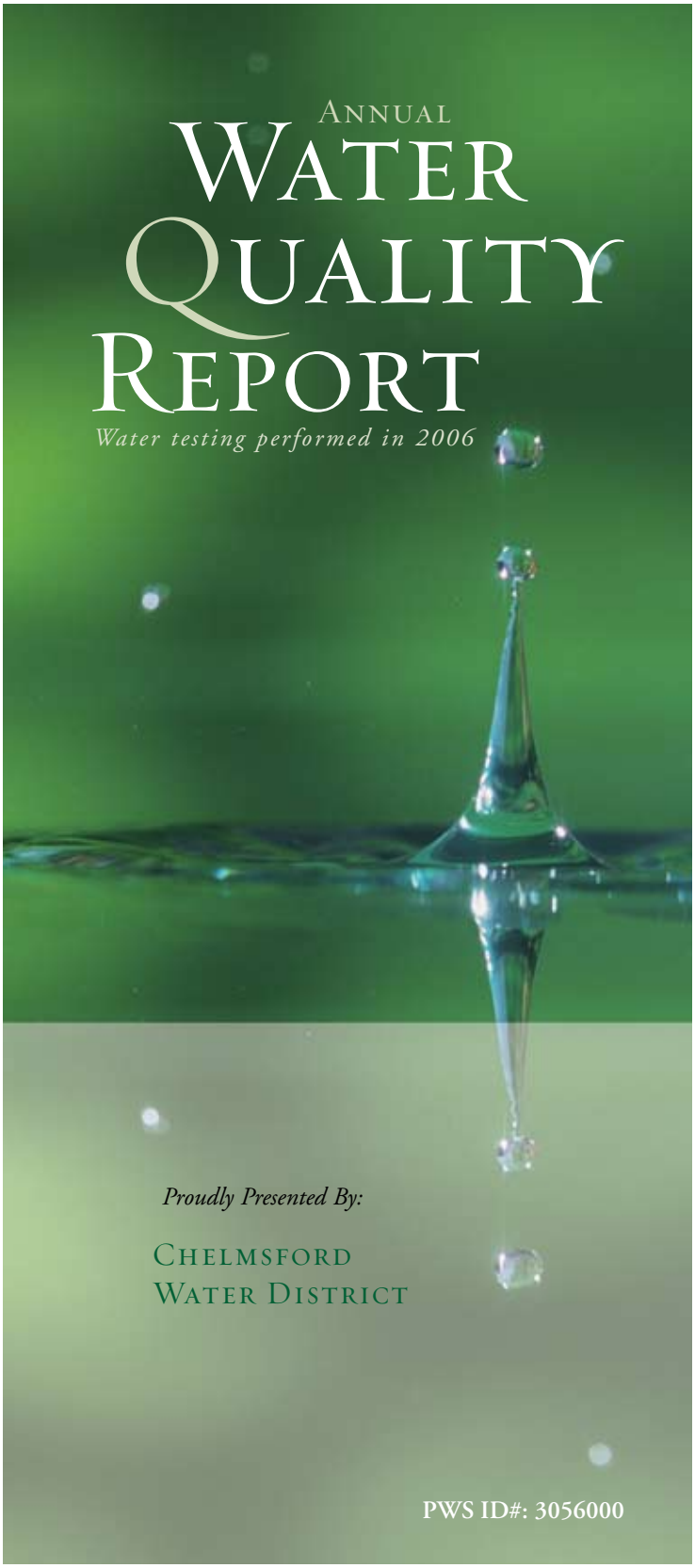
Annual

Water Quality Report

Water testing performed in 2006



Proudly Presented By:

Chelmsford
Water District

PWS ID#: 3056000

Water Conservation Tips

Water conservation measures are an important first step in protecting our water supply. Such measures not only save the supply of our source water, but can also save you money by reducing your water bill. Here are a few suggestions:

Conservation measures you can use inside your home:

- Fix leaking faucets, pipes, toilets, etc.
- Replace old fixtures; install water-saving devices in faucets, toilets and appliances.
- Wash only full loads of laundry.
- Do not use the toilet for trash disposal.
- Take shorter showers.

You can conserve outdoors as well:

- Water the lawn and garden in the early morning or evening.
- Use mulch around plants and shrubs.
- Repair leaks in faucets and hoses.

Information on other ways that you can help conserve water can be found at www.epa.gov/safewater/publicoutreach/index.html.

Information on the Internet

The U.S. EPA Office of Water (www.epa.gov/watrhome) and the Centers for Disease Control and Prevention (www.cdc.gov) Web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health. Also, the DEP has a Web site (www.mass.gov/dep) that provides complete and current information on water issues in Massachusetts, including valuable information about our watershed.

Continuing Our Commitment

Once again we proudly present our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2006. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

For more information about this report, or any questions relating to your drinking water, please contact us at (978) 256-2381.

Community Participation

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

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.

How Is My Water Treated and Purified?

Seven of the district's 15 gravel-packed wells are filtered naturally from the earth. The water is then tested to meet DEP regulations for quality. Chlorine is added for disinfection, at the lowest quantity necessary, as a precaution against any bacteria that may be present. Potassium hydroxide (45% solution) is added to adjust the pH and as a corrosion inhibitor (used to protect distribution systems pipes). These chemicals are added before the water is pumped to water towers and into your home or business.

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.

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 district's wells.

Where Does My Water Come From?

The Chelmsford Water District's customers are fortunate because we enjoy an abundant water supply from 15 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, which began service at the end of 2004, treats 3 million gallons of water per day. To learn more about our watershed visit the U.S. EPA's Surf Your Watershed Web site at 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. For more information, call Superintendent Delaney at (978) 256-2931.

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, two of the samples came back positive for total coliform bacteria. Follow up testing in these two instances came back negative for total coliform bacteria. Federal regulations now require that public water testing positive for coliform bacteria must be further analyzed for fecal 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.

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) prescribe 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.

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 continually 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. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

Notice of Noncompliance

In November 2005 the Chelmsford Water District's (CWD's) consultant submitted a letter requesting the Department of Environmental Protection (DEP) to approve a request to activate a new pipeline connecting the Mill Road Wells to the Riverneck Water Treatment Plant (RNWTP). A Massachusetts DEP review of the RNWTP construction approval letter found that the approval did not include the construction of the pipeline.

In January 2006 the DEP approved the CWD's request to connect Mill Road Wells to the RNWTP. CWD violated the Massachusetts Drinking Water Regulations under 310 CMR 22.04(1). "Any person proposing to construct a new public water system, operate a public water system or substantially modify an existing public water system shall obtain the prior written approval of the Department."

During construction of the RNWTP the CWD incorporated changes into the facility that would allow for the future addition of alum. A review of the December 13, 2004, Drinking Water Regulations final approval found that alum addition was not part of the original approval. During a sanitary survey conducted by DEP on June 7, inspection of chemical feed systems revealed that anti-siphon protection was not in place when CWD upgraded some chemical feed piping for the sodium hypochlorite and potassium hydroxide feed systems. Missing anti-siphon valves were reinstalled the next day. On June 23, 2006, CWD received DEP approval to add alum. Based on the facts, CWD violated the Massachusetts Drinking Water Regulations under 310 CMR 22.04(1) for failure to obtain approval from the DEP for a substantial system modification to its public water system constructed at RNWTP.

These noncompliance incidents did not adversely affect the public.

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 allows 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)	2006	60	NA	37.6	ND–37.6	No	By-product of drinking water disinfection
Nitrate (ppm)	2006	10	10	2.2	0.73–2.2	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]	2006	80	NA	68	3.5–68	No	By-product of drinking water chlorination
Total Coliform Bacteria[1] (% positive samples)	2006	5% of monthly samples are positive	0	4.3%	NA	No	Naturally present in the environment
Trichloroethylene (ppb)	2006	5	0	1	0.7–1	No	Discharge from metal degreasing sites and other factories

Tap water samples were collected from 30 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; Leaching from wood preservatives
Lead (ppb)	2005	15	0	5	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES[2]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppm)	2006	10	6 - 10	By-product of drinking water disinfection
Chlorodibromomethane (ppm)	2006	3	2 - 3	By-product of drinking water disinfection
Chloroform (ppm)	2006	21	6 - 21	By-product of drinking water disinfection
MTBE (ppb)	2006	1	ND - 1	Gasoline additive
Sodium (ppm)	2006	51	49 - 54	Naturally occurring

[1] Follow up test samples came back negative in both cases.

[2] 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.

Table Definitions

90th Percentile: Out of every 10 homes sampled, 9 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.

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).