This report was prepared by:
Manchester Water Works
281 Lincoln Street
Manchester, NH 03103

Cé rapport contient des information importantes concernant votre eau potable. Veuillez traduire, ou parlez avec quelqu' un qui peut le comprendre.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Maintaining High Standards

Once again we are proud to present our annual water quality report. This report, which is required of all public water systems, covers testing performed between January 1, 2009, and December 31, 2009.

Events such as climate change, the down turn in the economy, and the high cost of energy have presented us with challenges we could not have imagined. Yet, in spite of this we have maintained our high standards in an effort to continue delivering the best quality drinking water possible. In 2009 Manchester Water Works received recognition for maintaining the distinguished "Directors Award" from the Partnership for Safe Water for 5 continuous years. This award acknowledges our continued commitment to provide drinking water to our customers that consistently exceeds the standards set by the U.S. EPA.

We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions, we are always available to assist you.

Thomas M Bowen, Director

For more information about this report, or for any questions relating to your drinking water, please call our laboratory at (603) 624-6482 and ask for David Paris, our Water Supply Administrator. For more information about the Manchester Water Works, check our Web site at www.manchesternh.gov/wtr.

Community Participation

You are invited to attend our Water Board meetings to participate in discussions about your drinking water. Meetings are held beginning at 4:30 p.m. on the fourth Thursday of the month at our office located at 281 Lincoln Street in Manchester, NH. Please call our office at (603) 624-6494 to confirm, should you wish to attend.

Where Does My Water Come From?

Lake Massabesic, located in east Manchester and Auburn, is the sole source of your tap water. It was chosen as the city's water supply in 1872 and has been the only supply for our customers ever since. Approximately 2,500 acres in size, it has a full capacity of nearly 15 billion gallons.

Protection of this water supply is one of our first and foremost challenges. We take this responsibility seriously and recognize that environmental stewardship is part of our business. We do this by maintaining ownership of over 8,000 acres of forested buffer and wetlands surrounding the lake and its drainage area.

While MWW property is restricted from development, passive recreation on watershed land is allowed, with exception for posted areas close to our treatment and pumping facilities. On a typical summer day, it is not unusual for many bicyclists, hikers, and area residents to use these areas for a pleasant walk in the woods.

The use of Lake Massabesic is regulated by NHDES with regulations intended to protect the lake from pollution and overuse. As a relatively shallow lake with a deep silt bottom, Massabesic is susceptible to propeller turbulence and invasive species such as milfoil. We ask all those who would use the lake to kindly act in a responsible and environmentally conscious manner by cleaning off their boat and trailer before launch and by staying out of designated milfoil infestation areas.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration 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 can acquire naturally occurring minerals, in some cases radioactive material, and 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 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.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

News and Notes from Your Water Supplier

Elementary School Science Fair: Last year was the best year yet for Manchester Water Works' 3rd grade poster contest and 4th grade science fair! We estimate that over 2,000 students in Manchester's public schools participated in these programs designed to broaden their understanding of water and the environment. We appreciate their participation and the support of their parents, teachers and the Manchester School District in making this program a huge success.

Manganese: To the majority of our customers, manganese was an unknown element until last summer when their tap water became discolored due to its presence. Manganese is normally a solid that resides within the bottom sediments of lake Massabesic, but through an unusual sequence of heavy rainfall and a rise in water temperature, became dissolved in the lake water. While this element is not regulated as a health hazard, it did result in a large number of our customers experiencing discolored water.

We have made treatment adjustments and engaged the services of a consultant to advise us regarding additional steps we might take to avoid a repeat of this unusual event.

We thank our customers for their patience and understanding and assure you of our resolve to deal more effectively with this problem in the future.

Pay Online: Have a question about your account balance or want to pay online? Visit our new online Account Access feature or our Direct Pay FAQ from our home page at www.manchesternh.gov/wtr for more information.

Source Water Assessment

In compliance with a federal mandate, the NH Department of Environmental Services performed a Source Water Assessment on Lake Massabesic in September of 2002. This assessment looked at the drainage area for the lake and ranked its vulnerability to contamination. Lake Massabesic received four high and four medium vulnerability ratings while it ranked at low vulnerability for five additional categories. Concern was raised over the detection of MTBE, now prohibited, which came from reformulated gasoline. Concern was also raised over Potential Contamination Sources (PCSs) on the watershed, such as highways. Overall the report presents a positive picture of Manchester's source and its condition. While Manchester Water Works has done its best to protect Lake Massabesic, we understand more than ever that we rely heavily upon the standards and practices of each citizen and each community on the watershed for their continued efforts to preserve this precious resource.

The complete Assessment Report is available for review at our Web site or at the NHDES Drinking Water Source Water Assessment page at http://des.nh.gov/organization/divisions/water/dwgb/dwspp/reports/documents/manchester.pdf.

Water Conservation

You can play a role in conserving water and save 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 a 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. 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.

What's Your Water Footprint?

You may have some understanding about your carbon footprint, but how much do you know about your water footprint? The water footprint of an individual, community, or business is defined as the total volume of fresh water that is used to produce the goods and services that are consumed by the individual or community or produced by the business. For example, 11 gallons of water are needed to irrigate and wash the fruit in one half-gallon container of orange juice. Thirty-seven gallons of water are used to grow, produce, package, and ship the beans in that morning cup of coffee. Two hundred and sixty-four gallons of water are required to produce one quart of milk, and 4,200 gallons of water are required to produce two pounds of beef.

In total, the U.S. EPA estimates the average American uses about 100 gallons of water daily. In fact, in the developed world, one flush of a toilet uses as much water as the average person in the developing world allocates for an entire day's cooking, washing, cleaning, and drinking. The annual American per capita water footprint is about 60,000 gallons; twice the global per capita average. With water use increasing six-fold in the past century, our demands for fresh water are straining the sustainable capacity of our resources.

To check out your own water footprint, go to www.h2oconserve.org, or visit www.waterfootprint.org to see how the water footprints of other nations compare.

What Causes the Pink Stain on Bathroom Fixtures?

The reddish-pink color frequently noted in bathroom shower stalls, tubs, tile, toilets, sinks, toothbrush holders and on pets' water bowls is caused by the growth of the bacterium *Serratia marcesens*. Serratia is commonly isolated from soil, water, plants, insects, and vertebrates (including man). The bacteria can be introduced into the house through any of the above mentioned sources. The bathroom provides a perfect environment (moist and warm) for bacteria to thrive.

The best solution to this problem is to continually clean and dry the involved surfaces to keep them free from bacteria. Chlorine-based compounds work best, but keep in mind that abrasive cleaners may scratch fixtures, making them more susceptible to bacterial growth. Chlorine bleach can be used periodically to disinfect the toilet and help to eliminate the occurrence of the pink residue. Keeping bathtubs and sinks wiped down using a solution that contains chlorine will also help to minimize its occurrence.

Serratia will not survive in chlorinated drinking water.

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 or www.epa.gov/safewater/hotline.

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. We are 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 www.epa.gov/safewater/lead.

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 New Hampshire Department of Environmental Services has a Web site (www.des.state.nh.us/waterdiv.htm) that provides complete and current information on water issues in New Hampshire, including valuable information about our watershed.

Sampling Results

During the past year we have taken thousands 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. 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.

In addition to this basic data table, Manchester Water Works has a complete summary of your tap water quality on our Web site. There you will find the results of literally thousands of additional water tests performed each year.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2009	2	2	0.013	0.011–0.017	No	Discharge of drilling wastes; Erosion of natural deposits
Chloramines (ppm)	2009	[4]	[4]	2.125	1.68–2.61	No	Water additive used to control microbes
Combined Radium (pCi/L)	2009	5	0	0.1	0.1–0.1	No	Erosion of natural deposits
Fluoride (ppm)	2009	4	4	1.03	0.94–1.1	No	Erosion of natural deposits; Water additive which promotes strong teeth
Haloacetic Acids [HAA] (ppb)	2009	60	NA	5.8	1.8–12.7	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2009	80	NA	1.8	ND–3.8	No	By-product of drinking water disinfection
Di(2-ethylhexyl) Phthalate (ppb)	2009	6	0	1.2	ND–1.2	No	Discharge from rubber and chemical factories; May leach from certain plastic bottles and tubing
Total Coliform Bacteria (% positive samples)	2009	5% of monthly samples are positive	0	2	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2009	TT	NA	1.7	1.4–2.1	No	Naturally present in the environment
Turbidity[1] (NTU)	2009	TT	NA	0.17	0.03–0.17	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2009	TT	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2007	1.3	1.3	0.032	0/50	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2007	15	0	3	1/50	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
NDMA (ppt)	2009	2.4	ND–3.5	By-product of drinking water disinfection

[1] Turbidity is a measure of the cloudiness of the water. It is monitored by surface water systems because it is a good indicator of water quality and thus helps measure the effectiveness of the treatment process. High turbidity can hinder the effectiveness of disinfectants.

Definitions

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.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

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).

ppt (parts per trillion): One part substance per trillion parts water (or nanograms per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.