



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

To Our Customers:

Once again we are proud to present our annual water quality report covering testing performed between January 1 and December 31, 2010. Manchester Water Works conducts testing far beyond the minimum requirements of the Safe Drinking Water Act, and this report will show the presence of any regulated contaminant that was detected, even when that level was below the standard. Our mission is to deliver the best-quality drinking water at the lowest possible rates. In fact, Manchester Water Works water was judged to have the “best tasting” municipal tap water in New England at a competition held last September. We remain dedicated to meeting the challenges of new regulations, to protecting your source of supply at Lake Massabesic, and to investing in our infrastructure while keeping your water rates nearly the lowest in the state. Thank you for allowing us to continue to provide you and your family with quality drinking water.

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

Thomas Bowen, Director

For any questions relating to this report or your drinking water, please call our laboratory at 603-624-6482; ask for David Paris, our Water Supply Administrator. Additional information about the Manchester Water Works is available from our website at www.manchesternh.gov/wtr.

Community Participation

You are invited to attend our Water Board meetings to participate in discussions about your drinking water. A schedule of the meeting dates and times is posted on our website at www.manchesternh.gov/wtr. 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 your source for tap water. It was chosen as the city's water supply in 1872 because of its high quality and abundance of supply. At 2,500 acres in area, it has a full capacity of 15 billion gallons.

Protecting this water supply is a major challenge. We take this responsibility seriously and recognize that environmental stewardship is part of our business. The department owns over 8,000 acres of forested buffer and wetlands surrounding the lake to isolate and protect it from point and non-point source pollution.

While MWW property is restricted from development, passive recreation on the lake and watershed is allowed, with the exception of posted areas in proximity to treatment facilities. On a typical summer day, it is not unusual for bicyclists, hikers, boaters, and fishermen to get away and enjoy this pristine environment.

The use of Lake Massabesic and the watershed land, however, is regulated to protect against 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 use the lake to kindly act in a responsible and environmentally conscious manner by cleaning milfoil off their boat, motor, and trailer before launch, and by not entering designated milfoil infestation areas.

Please visit our website (www.manchesternh.gov/wtr) for maps and information regarding our properties, Lake Massabesic, and rules governing their use.

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 <http://water.epa.gov/drink/>.

Water Treatment Process

The Manchester Water Works operates a 50-million-gallon-per-day (MGD) water treatment facility utilizing rapid mixing, coagulation, flocculation, sedimentation, ozone disinfection, deep-bed anthracite and granular activated carbon filtration, and residual disinfection processes. The treatment facility was initially built in 1974 and was significantly upgraded in 2006.

Coagulation/flocculation/sedimentation

When water enters the treatment process, it contains dissolved natural impurities that form solid particles when reacted with aluminum sulfate. These particles are later collected in sedimentation tanks. These processes are called coagulation, flocculation, and sedimentation and rely on an extended mixing process followed by a settling period.

Ozonation

Settled water flows into the intermediate pump station and is then lifted into the ozone contact chambers. Ozone is a powerful disinfectant that removes tastes and odors, along with killing or inactivating harmful biological organisms in the water. A combination of three ozone generators produces enough ozone to treat the maximum hydraulic capacity of the treatment plant.

Filtration

Following ozonation, the water passes through either anthracite or activated carbon (GAC) filters. Each filter contains six feet of media which collect any remaining particles and contaminants. The filters are the final clarification step in the treatment process.

Final treatment

Just before your tap water leaves the treatment plant, it is fluoridated and disinfected once again, and we then adjust its chemistry to make sure that it is not corrosive to the piping materials it will encounter on its way to your faucet. The water is then delivered to your home by pumps totaling over 3,000 horsepower and a network of nearly 500 miles of water main buried below the city streets.

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.

Information on the Internet

The U.S. EPA Office of Water (www.epa.gov/watrhme) 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.

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 water 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 website or at the NH DES Drinking Water Source Water Assessment page at <http://des.nh.gov/organization/divisions/water/dwgb/dwspp/reports/documents/manchester.pdf>.

Elementary School Outreach

Every spring for the past 18 years, Manchester Water Works has sponsored a fourth grade science fair for Manchester's school children. More recently, we have extended the school program to include a poster contest for third graders. These programs start with our staff going out to the schools, speaking to teachers and children, and getting them excited about the theme of water and the environment.

Thanks to the cooperation of Manchester's outstanding third and fourth grade teachers, many schools then participate in either a science fair or poster contest where Manchester Water Works awards trophies and prizes. Judging for the events is provided by our staff as well as other interested municipal officials.

We value this as an opportunity to encourage and support the city's education system and as a way to encourage students interested in protecting our water and environmental resources.

For more information on our elementary school outreach program, contact us at 603-624-6482.

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.



Why do I get this report each year?

Community water system operators are required by Federal law to provide their customers an annual water quality report. The report helps people make informed choices about the water they drink. It lets people know what contaminants, if any, are in their drinking water and how these contaminants may affect their health. It also gives the system operators a chance to tell customers what it takes to deliver safe drinking water.

Why does my water sometimes look “milky”?

The “milky” look is caused by tiny air bubbles in the water. The water in the pipes coming into your home or business might be under a bit of pressure, and gasses (the air) are dissolved and trapped in the pressurized water as it flows into your glass. As the air bubbles rise in the glass, they break free at the surface, thus clearing up the water. Although the milky appearance might be disconcerting, the air bubbles won't affect the quality or taste of the water.

How can I keep my pet's water bowl germ free?

Veterinarians generally recommend that water bowls be washed daily with warm, soapy water — normally when you change the water. Scour the corners, nooks, and crannies of the water dish using a small scrub brush. In addition, once a week put water bowls into the dishwasher to sanitize them with hot water. In most situations, disinfectants like bleach are not needed; warm, soapy water is all you need to keep your pet's water clean and safe.

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 shows only those contaminants that were detected in the water. The NH Department of Environmental Services permits monitoring 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
Alpha Emitters (pCi/L)	2010	15	0	1.7	1.7–1.7	No	Erosion of natural deposits
Barium (ppm)	2010	2	2	0.009	0.007–0.01	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Bromate (ppb)	2010	10	0	1.1	ND–1.1	No	By-product of drinking water disinfection
Chloramines (ppm)	2010	[4]	[4]	1.03	0.01–2.2	No	Water additive used to control microbes
Fluoride (ppm)	2010	4	4	1.1	0.65–1.5	No	Erosion of natural deposits; Water additive which promotes strong teeth
Haloacetic Acids [HAA] (ppb)	2010	60	NA	3.6	2.5–6.3	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2010	80	NA	1.9	0.9–3.3	No	By-product of drinking water disinfection
Total Coliform Bacteria (% positive samples)	2010	5% of monthly samples are positive	0	2	NA	No	Naturally present in the environment
Total Organic Carbon (ppm)	2010	TT	NA	2.0	1.7–2.2	No	Naturally present in the environment
Turbidity ¹ (NTU)	2010	TT	NA	0.09	0.04–0.09	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2010	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)	2010	1.3	1.3	0.051	0/54	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2010	15	0	ND	0/54	No	Corrosion of household plumbing systems; Erosion of natural deposits

¹Turbidity 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).

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