

## Our Commitment to You

How often do you think about what comes out of your tap? Probably not much, yet, at a fraction of a penny per gallon, your tap water provides water not just for drinking but for public health needs, fire protection and economic growth along with giving quality and convenience to our lives.

The North Andover Water Department is committed to providing safe drinking water to our community. This water quality report, which covers testing performed during the calendar year 2012, is an annual notification to all our consumers about our drinking water, its quality and its source, proving that our drinking water meets and exceeds all state and federal standards.

We would also like to invite you to participate in issues concerning your drinking water and source by attending Town Meetings, along with Board of Selectmen, Board of Health and Planning Board meetings. Times, dates and locations are continuously posted on the Town's website at: [www.townofnorthandover.com](http://www.townofnorthandover.com).

Also, please be vigilant while enjoying the lake and report any suspicious activity immediately to the Police Department at (978) 688-9574.

Finally, in our efforts to become more "green" all future water quality reports will no longer be sent out by mail. The reports will be available on the Town's website for review and a paper copy will be sent to anyone requesting one. This should save the Town the expense of printing and mailing over 11,000 copies of the reports. If you would like a printed copy or if you have any questions or comments regarding our report, please email Julie Giglio, Lab Director, at [jgiglio@townofnorthandover.com](mailto:jgiglio@townofnorthandover.com) or call her at (978) 688-9574.

Linda Hmurciak, Superintendent  
North Andover Water Treatment Plant

North Andover  
Water Department  
420 Great Pond Road  
North Andover, MA 01845



### Doggie Notes

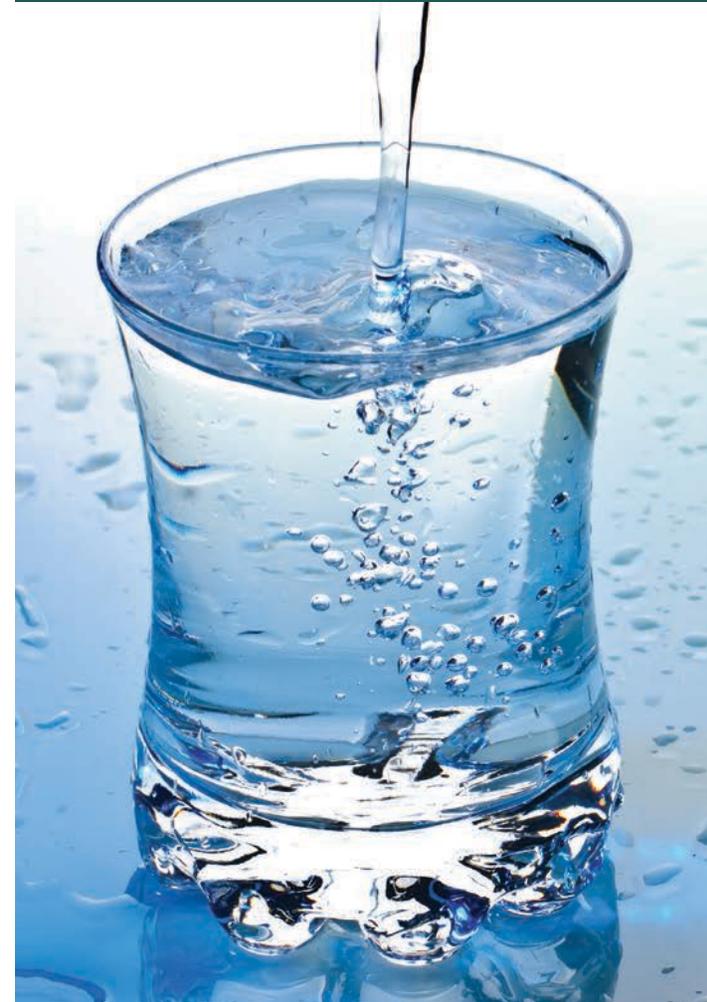
When walking your dog, always carry a pooper scooper and plastic bag to pick up your pet's waste and properly dispose of by flushing it down the toilet or placing it in the trash. Abandoned pet waste is a watershed nuisance that can carry dangerous diseases into our drinking water along with contributing to problematic algae blooms.

*Printed on recycled & recyclable paper.*



North Andover  
WATER DEPARTMENT

PWS ID #3210000



2012  
Annual Drinking  
Water Quality  
Report

# 2012 Annual Drinking Water Quality Report

## Our Source, Lake Cochichewick

Except for a few private wells “out country”, Lake Cochichewick is the Town’s only drinking water source. It is considered a “surface” source and it has a capacity to hold approximately 43 billion gallons of water. The lake is fed by tributaries and underground springs that rely on the amount of rainfall we receive each year to replenish it.

The Town has been supplying drinking water to its residents from the Lake since the late 1800’s when the first pump station was built on the site of the present day Water Treatment Plant (WTP) which went online in May 1991. The WTP removes roughly 1.1 billion gallons of water every year from the lake to be processed for drinking water and fire protection. In 2012 we pumped on average 3.1 million gallons per day (MGD) with our highest days in the summer months of 6.4 MGD. This dramatic increase is due to non-essential water use such as irrigation.

To help with our conservation efforts during the hot summer months only water your lawns and gardens before 8 AM and after 6 PM, check your sprinkler heads for leaks and make sure that you have rain sensors installed to shut down the sprinklers during a rainy day, and Mulch! By using organic mulch around plants could save you hundreds of gallons per year by reducing evaporation.

To continue to be in the top 10% best water suppliers in the state we need to consider three “barriers” of protection. Our “**first barrier**” of protection would be to protect our source so that it remains a safe source from bacterial, chemical pollution and non-invasive species such as Zebra Mussels that are brought in mostly on boats and trailers from other bodies of water. The Town has been very successful in protecting the lake by having several bylaws and regulations in place pertaining to the protection of our source along with several large protected parcels surrounding the lake.

## Substances that Could Be in Our Source 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. 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.

## Source Water Assessment Plan

In 2004, the Department of Environmental Protection (DEP) completed an assessment of all the water supplies in Massachusetts. Out of this assessment, they created a plan for each community called a Source Water Assessment Plan (SWAP). The purpose of this SWAP was to determine the susceptibility of each drinking water source to potential sources of contamination.

According to the SWAP, our water system had a susceptibility rating of high, due to reasons such as commercial businesses, residential septic systems, underground fuel storage tanks, a golf course and farm activity, all within our watershed, to name a few. It is important to understand that these susceptibility ratings do not imply poor water quality but rather the supply’s potential to become contaminated by activities within the watershed. Protecting our watershed is our first line of defense in protecting our drinking water. The complete SWAP report is available online at [www.townofnorthandover.com/water](http://www.townofnorthandover.com/water) – “Lake & Watershed Information.” For more information, please contact Linda Hmurciak at (978) 688 9574.

## The Treatment Process

The treatment of our water from the lake is our “**second barrier**” of defense from pollution. The treatment process consists of a series of physical and chemical steps, beginning with the untreated water being drawn from the lake and then sent to a tank where ozone gas is added.

**Ozone**, which is generated on-site, is a strong oxidant, breaking down organic matter making the water easier to filter. It also helps remove tastes, odors and color and is also a powerful disinfectant.

The water then goes to a mixing chamber where a chemical called **poly-aluminum chloride**, a coagulant, is added that aids in making the particles in the water stick together so that they become so large

their own weight causes them to settle out. These processes are called **Coagulation, Flocculation and Sedimentation**.

The water that is now clearer of the removed particles then flows into the **Carbon Filters**. North Andover has eight carbon filters of virgin granular activated carbon along with sand to remove and absorb any remaining impurities. This filtered water is now sent to a holding tank called a **Clearwell**.

In the Clearwell several chemicals are added such as **Chlorine** as a precaution against any bacteria that may still be present and **Sodium Hydroxide** is also added for pH control adjustment.

**Fluoride**, which is a naturally occurring element in trace amounts, is added to our water to adjust the level to improve and maintain oral health in children. We have been adjusting the fluoride level to a safe 1.0 parts per million since 1975 which at this level, is odorless, colorless and tasteless.

As a final step, **Zinc Orthophosphate**, a corrosion inhibitor, is added as the water leaves the plant to protect the linings of the distribution system pipes.

The water is then pumped through the distribution system to two sanitized 2.2 million gallon in-ground storage tanks and into a one million gallon stand pipe and into your homes and businesses.

## 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/hotline>.

## Lead in Home Plumbing

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](http://www.epa.gov/safewater/lead).

# 2012 Sampling Results

## Water Quality Data

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. 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	Major Source
Chlorine (ppm)	2012	[4]	[4]	1.0	0.8-1.26	No	Water additive used to control microbes
Fluoride (ppm)	2012	4	4	1.0	0.85-1.26	No	Water additive which promotes strong teeth
Haloacetic Acids [HAA5] (ppb)	2012	60	N/A	5.8	2.5-9.1	No	Byproduct of drinking water disinfection
Total Trihalomethanes [TTHM] (ppb)	2012	80	N/A	26.1	12.2-43.1	No	Byproduct of drinking water disinfection
Nitrate (ppm)	2012	10	10	0.15	N/A	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Total Organic Carbon (% removal)	2012	TT	N/A	50	41-61	No	Naturally present in the environment
Turbidity <sup>1</sup> (NTU)	2012	TT	N/A	0.16	0.06-0.16	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2012	TT	N/A	100%	N/A	No	Soil runoff

<sup>1</sup> Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

Substance (Unit of Measure)	Year Sampled	AL	MCLG	Amount Detected (90th percentile)	Sites above AL/ Total Sites	Violation	Major Source
Copper <sup>2</sup> (ppm)	2011	1.3	1.3	0.077	0/30	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead <sup>2</sup> (ppm)	2011	15	0	1.7	0/30	No	

<sup>2</sup> The town is only required to test for lead and copper every three years due to the non-existent and extremely low levels found at our taps. Tap water samples were collected for lead and copper analysis from sample sites throughout the community. Samples are scheduled to be collected again in the summer of 2014.

## Averages of Common Parameters

pH: 7.4	Manganese: 0.01 ppm
Sodium: 26 ppm	Bacteria: Negative
Iron: 0.00 ppm	Hardness: 31 ppm or 1.8 grains per gallon (soft water)

## What are PPCPs?

When cleaning out your medicine cabinet, what do you do with your expired pills? Many people flush them down the toilet or toss them into the trash. Although this seems convenient, these actions could threaten our water supply.

Recent studies are generating a growing concern over pharmaceuticals and personal care products (PPCPs) entering water supplies. PPCPs include human and veterinary drugs (prescription or over-the-counter) and consumer products, such as cosmetics, fragrances, lotions, sunscreens and house cleaning products. Many of these drugs and personal care products do not biodegrade and may persist in the environment for years.

The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. Never flush unused medications down the toilet or sink. For disposal of non-liquid medications, bring them to the new Police Station on Rt. 125, or call your local pharmacy where you bought them. You can contact the Health Department at (978) 688 9540 for further information or you can go on the web at [www.Earth911.com](http://www.Earth911.com).

## 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.
- 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.
- NA:** Not available
- 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.
- 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.





## 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 Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25 percent of bottled water is actually just bottled tap water (40 percent 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 percent 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).

## What is a cross-connection?

A comprehensive cross connection program is the "third barrier" of protection of our water supply. 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

## 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:

- 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 by putting in a few drops of food coloring in the tank. If you have a leak the color will show up in the bowl after a few minutes. 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.



## Stormwater = NPDES

Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating "point sources" that discharge pollutants into waters of the United States.

Point sources are often discrete conveyances such as pipes or man-made ditches or drains (catch basins) that direct "stormwater" to a surface source. Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces (paved streets, parking lots, and building rooftops), and does not percolate into the ground. As the runoff flows over the land and impervious surfaces it accumulates debris, chemicals, sediment or other pollutants that

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 preven-

tion 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.

Federal and state laws and regulations require municipalities with a storm drain system to manage and control all stormwater discharges in their towns and they, along with everyone who wants to discharge any type of water with pollutants, must first obtain an NPDES permit to do so.

If you see a suspicious discharge to a body of water or storm drain (catch basin, slotted manhole, etc), please contact North Andover's Conservation Commission at (978) 688-9530.

## Stormwater tips:

1. Don't dump anything into storm drains. Dispose of hazardous waste through North Andover's ongoing waste oil collection program and bi-annual hazardous waste collection days.
2. When watering your lawn, don't over water. Water that runs off sidewalks and roadways carries contaminants (oil, grease, and metals) into our storm drain system.
3. Divert runoff from pavement to grassy, planted, or wooded areas of your property.
4. Reduce fertilizer and pesticide use.
5. Sweep up salt and sand on your walkways after snowmelt. Don't hose down driveways or sidewalks.
6. Inspect your vehicles and equipment for leaking and damaged parts.

## Information on the Internet

The U.S. EPA Office of Water ([www.epa.gov/watrhome](http://www.epa.gov/watrhome)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://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](http://www.mass.gov/dep)) that provides complete and current information on water issues in Massachusetts, including valuable information about our watershed.

For more information, review the Cross-connection Control Manual from the U.S. EPA's Web site at <http://water.epa.gov/infrastructure/drinkingwater/pws/crossconnectioncontrol/index.cfm>. You can also call the Safe Drinking Water Hotline at (800) 426-4791.