

# WATER TREATMENT PLANT



## Concord Water Water Quality Report 2008

Soda: \$1.50  
Energy Drink: \$3.00  
Drinking Water:  
**PRICELESS**

### About the Cover Photo

The cover photo introduces some of the many City of Concord General Services Department employees who work daily to bring drinking water to the city. Our goals of providing a steady supply of safe, clean drinking water at a reasonable price cannot be met without the combined efforts of: the water treatment staff; the distribution crew—who maintains the delivery system of mains, valves and hydrants; the meter crew—who installs and maintains the water meters; the folks in the billing/metering office—who provide customer service for metering or billing issues; and the front office staff—who have the overall knowledge of our organization necessary to route your calls to the appropriate people. We see this photograph as a reflection of the teamwork needed to bring the water to you and of the pride needed to do it right.

### Where does Concord get its water? And how is it treated?

Penacook Lake in West Concord has been the city's primary water supply for well over 100 years. The City supplements this supply by using its pumping station on the Contoocook River. Concord also has a ground water supply along the Soucook River, which is managed as an emergency or back-up supply.

Water drawn from Penacook Lake and the Contoocook River passes through the Concord Water Treatment Plant where it is cleaned, filtered, and disinfected in a process known as Conventional Treatment. Fluoride is added, pH and alkalinity adjustments are made and the chlorine disinfectant is converted to longer-lasting monochloramine before the water goes out to customers. When the wells are activated, the water is disinfected, the pH and alkalinity are adjusted, and fluoride is added.

### NHDES Source Assessment Report

The NH Department of Environmental Services-Source Water Protection Division has analyzed community water sources throughout the state and rated them for 14 risk factors that could affect water quality. Examples of these risk factors include; proximity of highways, proximity of known sources of contamination, high percentage of urban land cover. The assessment for Concord's sources, completed in 2002, is summarized as follows:

Risk Factor Rating	Penacook Lake # of factors	Contoocook River # of factors	Well Field # of factors
High	0	2	2
Medium	1	6	2
Low	11	3	8

The complete Source Assessment Report is available for review at the Concord Water Treatment Plant, 53 Hutchins Street in Concord. For more information, call Dave Brennan (603) 225-8696 or visit the NH DES Drinking Water & Groundwater Bureau web site at [www.des.nh.gov/dwgb](http://www.des.nh.gov/dwgb).

## National Drinking Water Standards

The 1974 Safe Drinking Water Act established national standards for drinking water quality. Those standards require every public water system to test for a long list (currently more than 80) of potential drinking water contaminants on a regular schedule. The tables below indicate those contaminants that were found in Concord's water. Table 1 describes water from Penacook Lake which is treated at the Hutchins Street Plant. Table 2 shows results from the city's wells. Not all tests are required every year. The tables contain the most recent results up to December 31, 2007.

Substance (Date Tested)	Level Measured	MCL	MCLG	Meets Limits?	Likely Source
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**Table #1 – Penacook Lake**

Barium (2007)	Highest measurement	0.006 mg/L	2 mg/L	2 mg/L	yes	Erosion of natural earth deposits.
Chlorine (2007)	Average Range of measurements	2.1 mg/L 1.6 – 2.5	MRDL=4 mg/L	MRDLG=4 mg/L	yes	Water additive used to control microbes.
Copper (2005)	90th percentile # above the AL	0.038 mg/L 0 sites	AL=1.3 mg/L	1.3 mg/L	yes	Corrosion of household plumbing.
Fluoride (2007)	Average Range of measurements	1 mg/L 0.9 – 1.1	4.0 mg/L	4.0 mg/L	yes	Water additive which promotes strong teeth. Erosion of natural earth deposits.
Lead (2005)	90th percentile # above the AL	5 µg/L 0 sites	AL=15 µg/L	0 µg/L	yes	Corrosion of household plumbing.
Total THMs (2007)	Highest annual average Range of measurements	46.0 µg/L 26 – 60	80 µg/L as the Running Annual Average	n/a	yes	By-product of drinking water disinfection with chlorine.
Total HAA5s (2007)	Highest annual average Range of measurements	24.5 µg/L 14 – 23	60 µg/L as the Running Annual Average	n/a	yes	By-product of drinking water disinfection with chlorine.
TOC (2007)	Highest annual average Range of % removal Average % removal	2.55 mg/L 33% – 56% 40.6%	TT requires a minimum 26% removal or must meet alternate criteria	n/a	yes	Naturally present in the environment.
Turbidity (2007)	Highest measurement Percent OK	0.18 NTU 100%	TT=1 NTU 95% ≤ 0.3 NTU	n/a	yes	Soil runoff.

**Table #2 – Sanders Station Wells**

Arsenic (2006)	Level detected	1 µg/L	10 µg/L	0 µg/L	yes	Erosion of natural earth deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium (2005 & 2006)	Average Range of measurements	0.004 mg/L 0.004 – 0.005	2mg/L	2 mg/L	yes	Erosion of natural earth deposits.
Chromium (2005 & 2006)	Average Range of measurements	< 2 µg/L ND – 2 µg/L	100 µg/L	100 µg/L	yes	Erosion of natural earth deposits.
Combined Radium (2006 & 2007)	Average Range of measurements	< 1 pCi/L ND – 1 pCi/L	5 pCi/L	0 pCi/L	yes	Erosion of natural earth deposits.

Gross Alpha, Compliance (2006 & 2007)	Average Range of measurements	< 1.1 pCi/L ND-1.1 pCi/L	15 pCi/L	0 pCi/L	yes	Erosion of natural earth deposits.
Radon (2003)	Average Range of measurements	1,342 pCi/L 380-6,800	No MCL set	No MCL set	None set	A gas released from natural earth deposits.
TTHMs (2007)	Average Range of measurements	< 0.8 µg/L ND-0.8 µg/L	80 µg/L	n/a	yes	By-product of drinking water disinfection with chlorine.

## What is Turbidity and Why Do We Measure it?

Turbidity may be an unfamiliar term but it simply refers to the cloudiness of a water sample. Cloudiness is due to tiny particles in the water which are so small they do not settle quickly but remain suspended and carried along with the water. Natural water bodies, such as Penacook Lake, have some normal level of turbidity which can increase after heavy rain events, wind, or other disturbances. Turbidity is undesirable in drinking water because it interferes with disinfection, it increases wear and tear on pumps and other water treatment equipment, and is aesthetically unpleasant. Our treatment process is designed to remove turbidity by improving particle settling and by filtration. Staff at the water treatment plant measure lake water turbidity so that treatment can be optimized. Turbidity is also measured after filtration to ensure our treated water meets turbidity standards and to gauge the condition of our filters.

Turbidity is measured in units known as Nephelometric Turbidity Units or NTUs. The name comes from the Greek word nephos, meaning cloud.

## Radon

As shown above in Table #2, the City's well water contains a detectable level of the naturally occurring radioactive gas, radon. Radon gas that is inhaled has been linked to lung cancer; however, it is not entirely clear at what level radon in drinking water contributes to this. The U.S. Environmental Protection Agency is currently in the process of reviewing a proposed standard of 300 pCi/L for radon in drinking water.

*In addition to the required tests, there are other water quality characteristics that we monitor. The chart below summarizes these 2007 test results.*

Substance	Average
Alkalinity (as CaCO <sub>3</sub> )	31 mg/L
Aluminum	< 0.05 mg/L
Calcium	3.7 mg/L
Hardness	13 mg/L-Very Soft (less than 1ppg)
Iron	< 0.05 mg/L
Manganese	< 0.005 mg/L
pH	9.5 units
Sodium	28 mg/L

## Table Definitions

**MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.

**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 best available treatment technology.

**AL (Action Level):** The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.

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

**mg/L: M** illigrams per liter. A unit of concentration also described as Parts per Million.

**µg/L: M**icrograms per liter. A smaller unit of concentration also described as Parts per Billion.

**MRDLG: Maximum Residual Disinfectant Level Goal.** The level of a drinking water disinfectant below which there is no known risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial growth.

**MRDL: Maximum Residual Disinfectant Level,** the highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.

**NTU: Nephelometric Turbidity Units.** A measurement of the cloudiness of water.

**pCi/L: Pico curies per liter,** a measurement of radioactivity.

**THM: Trihalomethanes.**

**HAA5: Haloacetic Acids**

**TOC: Total Organic Carbon**

< Less than

≤ Less than or equal to

n/a: Not applicable

ND: Not Detected

## What You Should Know About Drinking Water

The sources of drinking water (both tap water and bottled water) include lakes, rivers, springs and wells. Water by its very nature tends to dissolve and erode the materials in its path as it travels over land or through the ground. As a result, naturally occurring substances as well as contaminants resulting from human activity may be present in our source waters. These contaminants may include:

- Microbes, such as bacteria, protozoa, and viruses, which may come from sewage treatment plants, septic systems, livestock, and wildlife (examples: E. coli, Giardia, Cryptosporidium, Hepatitis A).
- Inorganic chemicals, such as salts and metals, which can be naturally occurring or may result from stormwater runoff, industrial or domestic wastewater, and farming (examples: arsenic, phosphates).
- Volatile Organic Compounds and Synthetic Organic Compounds which originate from industrial discharges, agriculture, gas stations, stormwater runoff, residential uses and septic systems (examples: MtBE, pesticides, herbicides).
- Radioactive contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities (example: radon).

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The United States Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for the public. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

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

**The City of Concord welcomes public input on the programs and activities of all of the city departments. We encourage residents to contact their City Councilor, the General Services Director, or the Water Plant Superintendent to express concerns or interest in the operation of the City's water utility.**

Concord's water supply is managed by the City's General Services Department.

Administrative offices are located at 311 North State Street, (603) 228-2737

Normal business hours: Monday – Friday 8:00 a.m. to 4:00 p.m.

Chip Chesley, Director General Services Department: (603) 228-2737

Dave Brennan, Water Treatment Plant Superintendent: (603) 230-3951

Tours of the Water Plant: (603) 225-8696

Billing or metering/New water service: (603) 225-8693

No or low water pressure/Rusty water: (603) 228-2737

Water quality questions, complaints or testing: (603) 225-8696

Service after business hours: (603) 225-8696

City website: <http://www.onconcord.com>

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