



WATER QUALITY ANNUAL REPORT

CONCORD PUBLIC WORKS - 2002

To Our Customers,

Concord Public Works is pleased to provide you with our *Annual Water Quality Report* featuring water quality and related capital improvement projects for calendar year 2001. Once again, water quality measured within our system consistently met or surpassed State and Federal standards.

The drought and need to conserve: Drought conditions observed across New England have drawn attention to the sustainability of public water supplies. Concerns have prompted the Massachusetts Drought Management Task Force to extend a regional drought watch.

Concord Public Works remains committed to promoting wise water use regardless of seasonal uncertainties. Now more than ever, we ask for your support and adherence to our voluntary conservation program. First and foremost, we strongly recommend using drinking water for outdoor watering purposes only when needed—one inch of rainfall per week should sustain a properly established lawn. If you must water your lawn, please continue to follow the Odd-Even watering schedule. **Beginning this year, we ask all of our customers to refrain from outdoor watering on Mondays.** With your support, Concord will continue to have safe, reliable and high quality drinking water, regardless of seasonal influences.

As always, we appreciate your feedback and input, particularly with respect to helping prioritize system needs and improvement opportunities. Please feel free to visit our Web site at www.concordnet.org for additional information with respect to our municipal water supply system and services.

Respectfully,

Alan H. Cathcart
Superintendent, Water/Sewer Division
Concord Public Works

- ◆ **Hugh Cargill Well** was reactivated during the summer of 2001, resulting in a 10% increase in available high quality drinking water to our overall supply.
- ◆ Concord was selected to participate in an American Water Works Research Foundation **UV treatment research** initiative in collaboration with MWRA, Southern Nevada Water Authority, and EPA. The study will help identify the benefits of UV treatment for optimized disinfection.
- ◆ Our **water quality monitoring program** was **enhanced** in accordance with the Stage 1 Disinfection Byproduct Rule (DBPR) and the Unregulated Contaminant Monitoring Rule (UCMR).
- ◆ The Town's **Groundwater Conservancy District Bylaw**, initially adopted in 1982 for the protection of our drinking water supplies, was amended to include revised protection overlays and improved land-use control language.
- ◆ Over **1,300 ft. of water main** was replaced along Estabrook Road and an additional **1,100 ft of new water main** was installed along Barnes Hill Road. The installation of the new water main will directly improve water quality and fire protection.
- ◆ A state-of-the-art pump station **instrumentation and control system** was designed to allow for improved treatment system monitoring, operation, and control.
- ◆ A third step was added to our **peak-demand water rate** structure to further **encourage conservation**.

Water Supply

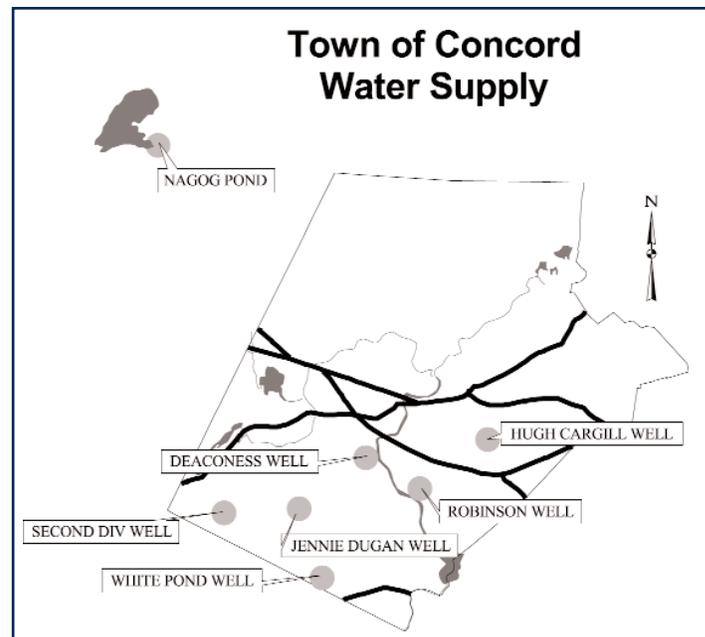
Concord's water system consists of six groundwater supply wells and one surface water supply, pumping stations, two storage reservoirs with a 7.5 million gallon capacity, and approximately 121 miles of water main. Depending

In 2001, the Town purchased land located off of Ball's Hill Road as a reserve for future drinking water and fire protection.

on the season, all available production facilities may be called upon to satisfy system demands which fluctuate between 2 million gallons per day (MGD) during the winter months to over 5 MGD in the summer. Concord's public water system is interconnected with those of Acton and Bedford for emergency backup, if ever needed.

Water Treatment

In accordance with state and federal drinking water requirements, Concord water is treated before it gets to your tap. Treatment includes: corrosion control—via the addition of potassium hydroxide to raise the natural pH of the water and reduce its corrosiveness to household plumbing; disinfection—via the addition of chlorine at all



water supplies and ozone at the Nagog Pond water supply; fluoridation—via the addition of sodium fluoride to help in the prevention of tooth decay; and iron sequestration—performed by adding polyphosphate or sodium silicate to reduce the frequency of discoloration events.

SOURCE TREATMENT							
	Nagog Pond Acton, MA	Second Division Well	Deaconess Well	Robinson Well	Jennie Dugan Well	White Pond Well	Hugh Cargill Well
pH Adjustment for Corrosion Control	•	•	•	•	•	•	•
Chlorine for Disinfection	•	•	•	•	•	•	•
Ozone for Disinfection	•						
Fluoride to Promote Strong Teeth	•	•	•	•	•	•	•
Polyphosphate for Iron & Manganese Treatment	•	•	•	•	•	•	•
Sodium Silicate for Iron & Manganese Treatment & Corrosion Control			•				

Potential Sources of Contaminants

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 human activity.

Contaminants that might be expected in untreated water include: biological contaminants such as viruses and bacteria; inorganic contaminants, such as metals and salts; pesticides and herbicides; organic chemicals from

industrial or petroleum use; and radioactive materials.

Drinking water, including bottled water, may reasonably be expected to contain at least some small amounts of certain substances which the EPA calls "contaminants." The presence of these substances does not necessarily indicate that the water poses a health risk. For example, naturally occurring dissolved minerals are commonly found in well water.

More information about the substances found in drinking water and their potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791.

Quality Control

To ensure that tap water is safe to drink, the EPA enforces regulations that require stringent monitoring of specific contaminants within public water supply systems. Within Concord's system, over 500 tests are run each year to assess 145 potential contaminants.

We are proud to report that Concord's water quality testing program not only meets EPA's requirements for drinking water but goes above and beyond those requirements to satisfy the higher standards we have set for ourselves.

WATER QUALITY SUMMARY

Listed below are the substances detected in Concord's drinking water during 2001 that are required for reporting. The presence of these substances does not necessarily indicate that the water poses a health risk.

These substances are divided into 3 categories: Primary, Secondary, and Lead & Copper Parameters. Primary parameters protect drinking water quality by limiting the levels of contaminants that can adversely affect public health and are known or anticipated to occur

in public water systems. Secondary parameters are set for aesthetic purposes and are designed to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted. A complete listing of secondary parameters is available on request from CPW. Not listed are over 130 substances we tested for but did not detect.

All substances listed below are in units of ppm (parts per million) unless otherwise noted.

PRIMARY PARAMETERS

Substance	Highest Level Detected	Range of Levels Found	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Major Sources in Drinking Water
Chlorine	2.6	0.1-2.6	4	No Standard	Water treatment for disinfection
Fluoride*	1.4	0.4-1.4	4	4	Water treatment for tooth decay prevention
Nitrate	1.3	ND-1.3	10	10	Runoff from fertilizer use; Erosion of natural deposits
Radionuclides (pCi/L)	1.2	ND-1.2	15	0	Erosion of natural deposits
Trihalomethanes (ppb)	17	7-17	80	0	By-product of drinking water disinfection
Turbidity**	1.1	ND-1.1	5	No Standard	Soil runoff

SECONDARY PARAMETERS

Chloroform (ppb)	1	one detection	No Standard	No Standard	By-product of drinking water disinfection
Hardness***	60	15-60	No Standard	No Standard	Erosion of natural deposits
Iron***	1.3	ND-1.3	0.3	No Standard	Erosion of natural deposits
Manganese***	0.27	ND-0.27	0.05	No Standard	Erosion of natural deposits
Sodium	53	10-53	No Standard	No Standard	By-product of water treatment; Naturally present in the environment

LEAD & COPPER PARAMETERS[†]

Substance	90th Percentile Level Detected	Range of Levels Found	90th Percentile Action Level (EPA's MCL)	Ideal Goal (EPA's MCLG)	Major Sources in Drinking Water
Lead (ppb)	7	ND-12	15	0	Household plumbing, see statement below
Copper	0.35	0.006-0.41	1.3	1.3	Household plumbing, see statement below

Terms and Abbreviations:

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.

ppb: parts per billion or micrograms per liter

ppm: parts per million or milligrams per liter

pCi/L: picocuries per liter

ND: none detected

NTU: nephelometric turbidity units

* **Fluoride:** The Department of Public Health's ideal goal for fluoride is 1 ppm

** **Turbidity:** Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality and the effectiveness of disinfectants.

*** Additional parameters of interest not required for reporting. For a complete list contact CPW.

† **Lead and Copper:** In accordance with EPA regulations, CPW performed lead and copper testing in 1999 and is scheduled to test again in

2002. EPA requires that at least 90% of the samples have lead levels below 15 ppb (Action Level).

Important Information from EPA about Lead:

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

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Bulk Rate

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Drinking Water and People with Weakened Immune Systems

Some people may be more vulnerable to contaminants in drinking water than the general population. People with weakened immune systems 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 EPA's Safe Drinking Water Hotline at 800-426-4791.

Questions?

For more information about Concord's drinking water and its supply system or if you would like a large-print version of this document, contact Gregory Clark, Environmental Analyst at 978-318-3250 or visit our Web site at www.concordnet.org.

For information on State and Federal drinking water regulations call the EPA's Safe Drinking Water Hotline at 800-426-4791 or the Massachusetts Safe Drinking Water Hotline at 617-292-5770.