Drinking Water Quality Report 2004

Bolton Point-Municipal Water System City of Ithaca Water System Cornell University Water System

Introduction

In the spirit of municipal cooperation, the Bolton Point, City of Ithaca, and Cornell University water systems are pleased to provide this *Drinking Water Quality Report* describing the quality of your drinking water. These three interconnected water supply systems are the largest in Tompkins County. The purpose of this report is to provide information on the quality of your drinking water and raise awareness of the need to protect our drinking water sources.

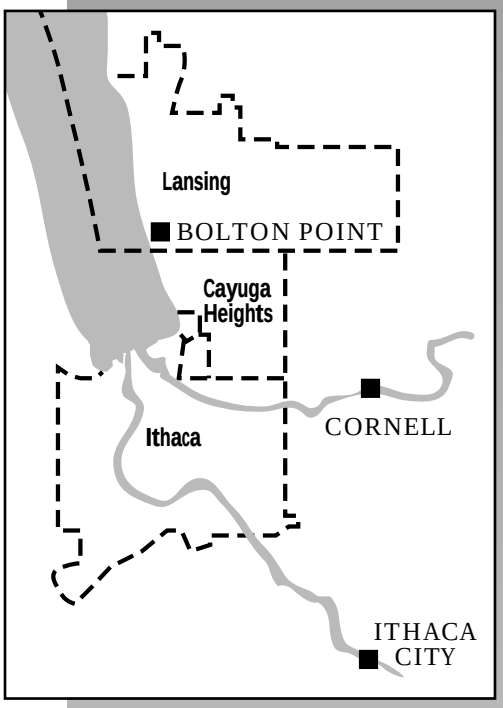
In 2003, the three water systems tested for more than 165 contaminants. The Bolton Point Water System detected nine contaminants, and none were detected at a level higher than the State allows. The City of Ithaca detected 13 contaminants, and the Cornell University system detected eight. In both the City and Cornell systems, one group of contaminants, haloacetic acids, was detected at a level higher than the State allows. Both systems implemented improvements to lower the levels of haloacetic acids. Cornell returned to meeting all standards in the second quarter of 2003 and the City in the third quarter.

This report provides an overview of water quality in 2003. Included are details about where your water comes from, what it contains, and how it compares to State standards. If you have any questions concerning this report or your drinking water, please contact the appropriate contact person listed to the right. We want you to be informed about your drinking water. If you want to learn more, please attend any of our regularly scheduled public meetings.

Location and Description of Water Sources

Bolton Point Municipal Water System (Bolton Point or BP-MWS)

Cayuga Lake is the source of water for the BP-MWS. The water intake is approximately three miles north of Stewart Park, 400 feet out from the eastern shore of Cayuga Lake and 65 feet below the surface of the lake. During 2003, the Bolton Point system did not experience any restriction of its water source. Bolton Point serves residents of the Towns of Dryden, Ithaca, Lansing, and Ulysses and the Villages of Cayuga Heights and Lansing. Bolton Point provides water to the City and Cornell during emergencies and planned maintenance periods. Meetings of the Bolton Point Water Commission are held on the first Thursday after the first Tuesday of each month at 4:00 p.m. at the Village of Lansing Offices, 2405 North Triphammer Road, Ithaca, NY 14850. Questions regarding the Bolton Point information contained in this report can be directed to Ken Butler, Production Manager at 277-0660. Additional information on the BP-MWS can be found at www.boltonpoint.org.



City of Ithaca Water System (City or CIWS)

Six Mile Creek is the source of water for the CIWS. Water is drawn from a reservoir in the creek and flows by gravity to the water plant. The forested watershed is 46.4 square miles in size. During 2003, the City system did not experience any restriction of its water source. The City system serves residents of the City of Ithaca and supplies water to Bolton Point-Town of Ithaca customers on West Hill and Town of Ulysses customers in Jacksonville and along East Shore Drive. The City water treatment plant is located at 202 Water Street, Ithaca, New York 14850. The Board of Public Works Committee of the Whole meets the first and third Wednesday of the month. An additional voting meeting is held the second Wednesday of the month. These meetings begin at 4:30 p.m. Common Council meets the first Wednesday of the month at 7:00 p.m. All meetings are held in council chambers on the third floor of City Hall, 108 East Green Street, Ithaca, NY 14850. Questions regarding the City information contained in this report can be directed to Chuck Baker, Chief Operator, at 273-4680.

Cornell University Water System (Cornell or CUWS)

Fall Creek is the source of water for the CUWS. The water intake is on Forest Home Drive near the Cornell Plantations Arboretum entrance. Fall Creek originates in Lake Como northeast of Ithaca and flows through a 125 square mile watershed. During 2003, the Cornell system did not experience any restriction of its water source. The Cornell system serves residents of the University's campus and supplies water to City customers in the Cornell Heights area and to Bolton Point-Town of Ithaca customers on the south side of Fall Creek in the Forest Home area. The Cornell water treatment plant is located at 101 Caldwell Road, Ithaca, NY 14853. Questions regarding the Cornell information contained in this report can be directed to Henry Van Ness, Water Filter Plant Manager, at 255-3381.

Table of Contents

Common Water Quality Definitions

ALKALINITY: Alkalinity is a measure of the capability of water to neutralize acids. Bicarbonates, carbonates, and hydroxides are the most common forms of alkalinity

HARDNESS: Hardness is a measure of the calcium and magnesium content of natural waters. The harder the water, the greater the tendency to precipitate soap and to form mineral deposits. Alkalinity and hardness occur naturally due to the contact of water with minerals in the earth's crust.

pH: The pH indicates how acidic or alkaline a water sample is. A reading of 7 is neutral, 0-6 is acidic, and 8-14 is alkaline.

TOTAL ORGANIC CARBON (TOC): TOC is a measure of the organic content of a water. A high concentration of TOC in water may lead to high levels of disinfection byproducts.

TURBIDITY: Turbidity is a measure of the cloudiness of water. It is an indication of the effectiveness of water treatment. NYS regulations require that treated water turbidity always be below 1 NTU (nephelometric turbidity unit). For filtered systems, 95% of the composite effluent samples must be below 0.3 NTU.

A Water Treatment Processes

The three water systems use the following conventional treatment process.

PRE-TREATMENT: Chlorine and coagulating agents such as alum or polymers are added to the water to destroy microorganisms, remove impurities, and control taste and odor.

MIXING: The water is rapidly mixed to distribute the treatment chemicals evenly.

COAGULATION AND FLOCCULATION: The water flows into large basins where the coagulants react with impurities in the water (coagulation) causing them to form larger, heavier particles called floc (flocculation).

SEDIMENTATION: Flocculated water flows into basins where the floc particles settle to the bottom, thereby removing impurities and chemicals from the water.

FILTRATION: Following the settling process, water flows through layers of anthracite coal, sand, and gravel where further removal of particulate impurities occurs.

POST-TREATMENT: Chlorine is added to inhibit bacterial growth in the distribution system, and the pH is adjusted to inhibit the corrosion of metal pipes and fixtures.

B Health Effects and Individuals At-Risk

All 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.

Some people may be more vulnerable to disease causing microorganisms or pathogens 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 from their health care provider about their drinking water.

Environmental Protection Agency/Center for Disease Control (EPA/CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium, giardia, and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791). No trace of either cryptosporidium or giardia has been detected in previous testing of the treated water of Bolton Point, the City, or Cornell. Individuals who think they may have one of these illnesses should contact their health care provider immediately. For additional information please contact the Tompkins County Health Department, 401 Harris B. Dates Drive, Ithaca, NY 14850 or by phone at 274-6688.

C Security Concerns

Until recently, security threats to the three water systems have been primarily minor vandalism and property damage. Recent events have changed the security focus to a much less likely, but more serious threat of intentional contamination of the water supply. All three water systems have performed security assessments of their entire systems and modified their Emergency Response Plans to cover the possibility of terrorism. Weaknesses in procedures have been corrected, and improvements to increase the security of the infrastructure have been undertaken. For instance, a security camera system has been installed at the Bolton Point water treatment plant. Local police are aware of the security requirements of the water systems and have increased their patrolling of the facilities. The awareness of customers to report suspicious activity throughout the systems is appreciated.

D General Water Information

Table 1: General Water Data — 2003

Water System Public Water Supply ID#	BP-MWS 5404423	CIWS 0066600	CUWS 5417680
Water source	Cayuga Lake	Six Mile Creek	Fall Creek
Approximate population served	30,000	35,000	27,000
Number of service connections	6,300	5,400	216
Total production in 2003 (MG)	870	1,411	501
Average daily withdrawal (MGD[1])	2.44	3.87	1.40
Average daily delivered (MGD)	2.38	2.91	1.22[2]
Average daily lost (MGD)[3]	0.06	0.96	0.18
Annual charge per 1000 gal.	$2.69	$3.38	$3.46

[1] MGD = million gallons per day [2] Flow to Cornell Heights area is estimated
[3] The average daily lost includes water used to flush mains, fight fires and leakage.

Table 2: General Water Quality Data — 2003

Analyte	Units	BP-MWS Annual Average	CIWS Annual Average	CUWS Annual Average
pH (EP)		8.3	7.78	6.8
Turbidity (EP)	NTU	0.03	0.08	0.06
Total Hardness	mg/l	150	104	135
Total Alkalinity	mg/l	106	89	97
Total Dissolved Solids	mg/l	NR	200	NR
Iron (soluble)	mg/l	NR	0.03	NR
Chlorine Residual (EP)	mg/l	1.41	1.14	1.4
Chlorine Residual (POU)	mg/l	0.70	0.69	0.61
Turbidity (POU)	NTU	0.09	0.27	0.12
Total Organic Carbon (EP)	mg/l	2.0	2.3	2.38
Dissolved Organic Carbon (EP)	mg/l	2.0	2.3	2.23

NR = Not Required; EP = Entry Point; POU = Point of Use;
Definitions of NTU and mg/l follow Table 3

E Source Water Protection

The New York State Health Department is in the process of developing a Source Water Assessment Report for every surface drinking water source in the State. When the reports for our three sources are completed, the systems will review them and provide a summary. It is anticipated that these reports will be available in 2004, in which case, a summary will be provided in next year's Annual Water Quality Report.

F Water Quality Data

INTRODUCTION

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 activities. Contaminants that may be present in source water include: microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

In order to ensure that tap water is safe to drink, the State and the EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. State Health Department and Federal Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

In accordance with State regulations, the three water systems routinely monitor your drinking water for numerous contaminants. These contaminants include: coliform bacteria, turbidity, inorganic compounds, nitrate, lead and copper, volatile organic compounds, disinfection byproducts, synthetic organic contaminants and pesticides, sodium, principal organic contaminants and vinyl chloride, and radiological contaminants.

Tables 3-5 show the analytical test results for contaminants that were detected in your water. The test results are compared to the applicable State guideline or maximum contaminate level (MCL). Table 6 shows the contaminants that were not detected in your water.

The State allows water systems to test for some contaminants less than once per year, since the concentrations of these contaminants do not change frequently. Therefore, some of the data, though representative, are more than one year old.

LEAD

While the three water systems had no violations of State standards, it should be noted that the action level for lead was exceeded in two of the thirty samples collected for Bolton Point and the City of Ithaca in 2002. Based on these occurrences, the following information on lead in drinking water is required to be presented.

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 at 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. You can also flush your tap for 30 seconds to two minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (1-800-426-4791).

SODIUM

People who are on severely restricted sodium diets should not drink water containing more than 20 mg/l of sodium. Since the level of sodium in Bolton Point water was 27 mg/l in 2003, customers on severely restricted sodium diets may wish to consult their health care providers. People who are on moderately restricted sodium diets should not drink water containing more than 270 mg/l of sodium. The sodium levels of the water from all three systems are well below this level..

HALOACETIC ACIDS

Some people who drink water containing haloacetic acids in excess of the maximum contaminant (MCL) level over many years may have an increased risk of getting cancer. Tables 4 and 5 show that the City of Ithaca and Cornell University systems exceeded the MCL for haloacetic acids. The violations were detected in the fourth quarter of 2002, and since haloacetic acids are regulated in terms of a running annual average, it took until the third quarter of 2003 for the City of Ithaca to bring the annual average below the MCL and the second quarter of 2003 for Cornell University.

The City and Cornell water systems moved the point of initial chlorination to after the settling process to decrease the concentration of total organic carbon by sedimentation before the application of chlorine. The City also installed baffles in their clearwells to increase the retention time after filtration to maintain microbiologically safe water.

G Tables of Detected Contaminants

Table 3: Detected Contaminants: Bolton Point Municipal Water System

Contaminant	Units	Violation Yes/No	Date of Sample	Maximum Level Detected (Range)	Regulatory Limit	MCLG	Likely Source of Contamination
Microbiological contaminants							
Turbidity	NTU	No	9/6/03	0.05	TT=<1 NTU	N/A	Soil runoff.
Turbidity samples	%	No	Daily	100%	TT=95% of samples<.3NTU	N/A	Soil runoff.
Disinfection by-products							
Total THMs	ug/l	No	2003	70 (33-115)	MCL = 80	N/A	By-product of drinking water chlorination.
Total HAA5	ug/l	No	2003	24 (2-50)	MCL = 60	N/A	By-product of drinking water chlorination.
Chlorine residual	mg/l	No	2003	1.75 (0-1.75)	MRDL=4	N/A	By-product of drinking water chlorination.
Inorganics							
Barium	mg/l	No	11/20/03	0.030	MCL=2	2	Drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chloride	mg/l	No	2000	45	MCL=250	N/A	Naturally occurring or road salt.
Copper	mg/l	No	2002	0 .078 (ND-0.954)	AL=1.3	1.3	Household plumbing corrosion; erosion of natural deposits; wood preservatives.
Fluoride	mg/l	No	11/20/03	0.22	MCL=2.2	N/A	Erosion of natural deposits; fertilizers.
Lead	ug/l	No	2002	8.8 (ND-16.9)	AL=15	0	Corrosion of household plumbing; erosion of natural deposits.
Nickel	mg/l	No	11/20/03	0.0054	N/A	N/A	Discharge from steel and pulp mills; erosion of natural deposits.
Nitrate	mg/l	No	11/20/03	1.3	MCL=10	10	Fertilizer runoff; septic tank leaching; sewage; erosion of natural deposits.
Oxamyl Vydate	ug/l	No	12/9/02	1.8	MCL=50	N/A	Runoff/leaching from insecticide used on apples. potatoes, and tomatoes.
Sodium	mg/l	No	11/20/03	27	See Water Quality, Section F	N/A	Naturally occurring; road salt; animal waste; water softeners; water treatment chemicals.
Sulfate	mg/l	No	12/13/01	29.1	MCL=250	N/A	Naturally occurring.
Radioactive							
Gross alpha	pCi/l	No	12/13/01	<2	MCL=15	0	Erosion of natural deposits.
Gross beta	pCi/l	No	12/13/01	<2	MCL=15	0	Erosion of natural deposits.

Notes and Definitions for Tables 3-5:

AL: (action level) - the concentration of a contaminant that, if exceeded, triggers additional treatment or other requirements that a water system must follow.

HAA5: (haloacetic acids) - mono-, di- and trichloroacetic acids, mono- and di-bromoacetic acids. These compounds are byproducts of the disinfection of water. The maximum level detected of HAA5 is the highest of the four quarterly running annual averages calculated during the year and is the basis of the MCL for these compounds.

Lead and Copper: the maximum level values reported for lead and copper represent the 90th percentile of the samples taken. This means that 90 percent of the individual samples tested for lead and copper were at or below the action level (AL) set by the state. Testing for lead and copper is only required every three years. The three water systems last collected samples for lead and copper in 2002. If four or more of these samples had been above the action level, a water quality violation would have occurred and additional treatment or other action would have been required.

Maximum Level Detected: The highest measurement detected for the contaminant during the year. For total THMs and HAA5, the maximum level detected is the highest of the four quarterly running annual averages during the year.

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.

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.

mg/l: (milligrams per liter) - corresponds to one part in one million parts of liquid (parts per million, ppm).

MRDL: (maximum residual disinfection 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 contamination.

N/A: (not applicable)

ND: (not detected) - Laboratory analysis indicates that the contaminant is not present.

NTU: (nephelometric turbidity unit) - a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable by the average person.

pCi/l: (picocuries per liter) - a measure of radioactivity in water.

Range: the range of lowest to highest measurements detected for contaminants measured during the year.

THM: Trihalomethanes - bromodichloromethane, bromoform, chloroform, dibromochloromethane. These compounds result from the disinfection of water. The maximum level detected of THMs is the highest of the four quarterly running annual averages calculated during the year and is the basis of the MCL for these compounds.

TT: (treatment technique) - a required process intended to reduce the level of a contaminant in drinking water.

ug/l: (micrograms per liter) - corresponds to one part in one billion parts of liquid (parts per billion, ppb).

H Table 6: Non-Detected Contaminates: All Systems

CONTAMINANT	BP-MWS	CIWS	CUWS
Microbiological			
Total Coliform	X	X	X
E. Coli	X	X	X
Inorganics			
Antimony	X	X	X
Arsenic	X	D	X
Asbestos	NR	X	X
Beryillium	X	X	X
Cadmium	X	X	X
Chromium	X	X	X
Color	NR	X	X
Cyanide	X	X	X
Mercury	X	X	X
Nitrite	NR	X	X
Odor	NR	X	X
Selenium	X	X	X
Silver	NR	X	X
Thallium	X	X	X
Synthetic Organics & Pesticides; Groups 1 & 2 (2002)			
Alachlor	X	X	X
Aldicarb	X	X	X
Aldicarb sulfoxide	X	X	X
Aldicarb sulfone	X	X	X
Atrazine	X	X	X
Carbofuran	X	X	X
Chlordane	X	X	X
Dibromochloropropane	X	X	X
2,4-D	X	X	X
Endrin	X	X	X
Ethylene dibromide	NR	X	X
gamma-BHC	NR	NR	X
gamma-Chlordane	NR	NR	X
Heptachlor	X	X	X
Heptachlor epoxide	X	X	X
Lindane	X	X	X
Methoxychlor	X	X	X
PCB - aroclor 1016	X	X	X
PCB - aroclor 1221	X	X	X
PCB - aroclor 1232	X	X	X
PCB - aroclor 1242	X	X	X
PCB - aroclor 1248	X	X	X
PCB - aroclor 1254	X	X	X
PCB - aroclor 1260	X	X	X
Pentachlorophenol	X	X	X
Toxaphene	X	X	X
2,4,5-TP (silvex)	X	X	X
Aldrin	X	X	X
Benzo(a)pyrene	X	X	X
Butachlor	X	X	X
Carbaryl	X	X	X
Dalapon	X	X	X
Di(2-ethylhexyl) adipate	X	X	X
Di(2-ethylhexyl) phthalate	X	X	X
Dicamba	X	X	X
Dieldrin	X	X	X
Dinoseb	X	X	X
Glyphosphate	NR	X	NR
Hexachlorobenzene	X	X	X
Hexachlorooxyclopentadiene	X	X	X
3-Hydroxycarbofuran	X	X	X
Methomyl	X	X	X
Metolachlor	X	X	X
Metribuzin	X	X	X
Oxamyl vydate	D	X	X
Picloram	X	X	X
Propachlor	X	X	X
Simazine	X	X	X
Principal Organics			
Benzene	X	X	X
Bromobenzene	X	X	X
Bromochloromethane	X	X	X
Bromomethane	X	X	X
N-Butylbenzene	X	X	X
sec-Butylbenzene	X	X	X
tert-Butylbenzene	X	X	X
Carbon tetrachloride	X	X	X
Chlorobenzene	X	X	X
Chloroethane	X	X	X
Chloromethane	X	X	X

CONTAMINANT	BP-MWS	CIWS	CUWS
2-Chlorotoluene	X	X	X
4-Chlorotoluene	X	X	X
1,2-Dibromo-3-chloropropane	X	NR	NR
1,2-Dibromoethane	X	NR	NR
Dibromomethane	X	X	X
1,2-Dichlorobenzene	X	X	X
1,3-Dichlorobenzene	X	X	X
1,4-Dichlorobenzene	X	X	X
Dichlorodifluoromethane	X	X	X
1,1-Dichloroethane	X	X	X
1,2-Dichloroethane	X	X	X
1,1-Dichloroethene	X	X	X
cis-1,2-Dichloroethene	X	X	X
trans-1,2-Dichloroethene	X	X	X
1,2-Dichloropropane	X	X	X
1,3-Dichloropropane	X	X	X
2,2-Dichloropropane	X	X	X
1,1-Dichloropropene	X	X	X
cis-1,3-Dichloropropene	X	X	X
trans-1,3-Dichloropropene	X	X	X
Ethylbenzene	X	X	X
Hexachlorobutadiene	X	X	X
Isopropylbenzene	X	X	X
p-Isopropyltoluene	X	X	X
Methylene chloride	X	X	X
Naphthalene	X	NR	NR
n-Propylbenzene	X	X	X
Styrene	X	X	X
1,1,1,2-Tetrachloroethane	X	X	X
1,1,2,2-Tetrachloroethane	X	X	X
Tetrachloroethene	X	X	X
Toluene	X	X	X
1,2,3-Trichlorobenzene	X	X	X
1,2,4-Trichlorobenzene	X	X	X
1,1,1-Trichloroethane	X	X	X
1,1,2-Trichloroethane	X	X	X
Trichloroethene	X	X	X
Trichlorofluoromethane	X	X	X
1,2,3-Trichloropropane	X	X	X
1,2,4-Trimethylbenzene	X	X	X
1,3,5-Trimethylbenzene	X	X	X
m-Xylene	X	X	X
o-Xylene	X	X	X
p-Xylene	X	X	X
Vinyl chloride	X	X	X
MBTE	X	X	X
UCMR List 1			
2,4-Dinitrotoluene	X	X	X
2,6-Dinitrotoluene	X	X	X
Acetochlor	X	X	X
DCPA mono-acid degradate	X	X	X
DCPA di-acid degradate	X	X	X
4,4'-DDE	X	X	X
EPTC	X	X	X
Molinate	X	X	X
Nitrobenzene	X	X	X
Perchlorate	X	X	X
Terbacil	X	X	X
UCMR List 2			
1,2-Diphenylbrazine	NR	X	X
Diazinon	NR	X	X
Disulfoton	NR	X	X
Fonofos	NR	X	X
Nitrobenzine	NR	X	X
Prometon	NR	X	X
Terbufos	NR	X	X
2-Methylphenol	NR	X	X
2,4-Dichlorophenol	NR	X	X
2,4-Dinitrophenol	NR	X	X
2,4,6-Trichlorophenol	NR	X	X
Diuron	NR	X	X
Linuron	NR	X	X
Other			
Giardia	NR	NR	X
Cryptosporidium	NR	NR	X

X = Monitored, but not detected D = Refer to detected list
NR = Not required and not monitored in the past five years
UMCR = Unregulated Contaminant Monitoring Requirements

I Major Modifications Completed in 2003

Bolton Point (BP-MWS):

The Town of Ithaca extended the Bolton Point water supply infrastructure from South Hill to West Hill. More than a mile of new main was installed; a new pump station was constructed on Coy Glenn Road, and new tanks were built on Bostwick Road and West Hill. Bolton Point customers in Inlet Valley were served by these improvements in 2003. Customers on West Hill will receive Bolton Point water in 2004.

There were a number of smaller improvements during the year. For example:

- New sludge scraper fiberglass flights and plastic chain and sprockets were installed in the south sedimentation basin.
- Work continued on the Supervisory Control and Data Acquisition (SCADA) system including the installation of a new programmable logic controller (PLC), extensive rewiring, and the writing of the computer program for the monitoring and control of the treatment plant and raw water pump station.
- A new radio based telemetry system to control and monitor remote locations was designed. Installation of this system will occur in 2004 and 2005.
- A security camera system was installed to monitor the treatment plant.
- The effluent valve of filter #2 was replaced.
- An upgrade of the high voltage electrical system was performed to increase safety and reliability. The transformers, large breakers and high voltage cables were tested; grounding was improved; and new fuses and fuse holders were installed at the substations.

City (CIWS):

- The main electrical service for the treatment plant and pump station was upgraded and a generator connection was installed to allow emergency operation of the plant.
- The filter air scour lines and valves were replaced.
- The point of initial chlorination was moved to after the sedimentation process to decrease the production of haloacetic acids.
- Baffles were installed in the clearwells.

- New media were added to 9 filters.
- The sodium hypochlorite bulk tanks were cleaned and relined.
- New coagulant pumps were installed.
- The vent and overflow of the Coddington Road tank were modified, and perimeter fencing was installed.
- A fiberglass building was installed over the valve pit, the electrical system was improved, and the altitude valve was modified at the Elm Street tank.
- 3800 feet of new water mains were installed.
- The Town and City water systems south of the City were isolated in conjunction with the Town's project to supply Bolton Point water to Inlet Valley and West Hill.

Cornell (CUWS):

- 600 feet of water mains were replaced.
- The point of initial chlorination was moved to after the sedimentation process to decrease the production of haloacetic acids.

J Future Capital Improvements (Planned for 2004)

Bolton Point (BP-MWS)

- Construction of a building addition and refurbishing of existing offices to upgrade and expand working space.
- Replacement of the 8 inch main between the Pearsall pump station and the Danby Road tank system with a 12 inch main.
- Construction of a 1.5 million gallon storage tank on East Hill.
- Installation of a municipal electric service to the Hungerford Hill tank.
- Completion of phase II of the SCADA system for the monitoring and control of the treatment plant and raw water pump station.
- Installation of a radio telemetry system to monitor and control remote tanks and pump stations.
- Replacement of one filter effluent valve and one backwash valve.
- Acquisition of a high voltage transformer as part of the electrical backup system for the treatment plant and raw water pump station.
- Acquisition of two trailer mounted generators as electrical backup for remote pump stations.
- Replacement of trip units in all primary circuit breakers at the treatment plant and the raw water pump station.
- Installation of a motorized gate operator at the treatment plant. (Completed February 2003)
- Replacement of the zebra mussel control system sodium hypochlorite bulk storage tank.
- Installation of fiberglass flights and plastic chain and sprockets in the north sedimentation basin.
- Replacement of the sludge withdraw valves in the north sedimentation basin.
- Installation of new underwater diffuser assemblies for the zebra mussel control system.
- Upgrading of the cathodic protection systems at several municipal tanks with the installation of new rectifiers and anodes.

City (CIWS):

- Installation of new dry chemical feeders.
- Upgrading of several electrical subpanels.
- Installation of new rapid mix controls.
- Installation of an emergency power connection for the control room panel.
- Provision of additional monitoring within the plant.
- Upgrading of telemetry for the Oakwood Lane and Cliff Park Road tanks.
- Continued monitoring of Cayuga Lake and tributaries.
- Completion of the repairs to the Elm Street tank roof.
- Installation of fiberglass buildings at two tanks sites.
- Resurfacing of the 60 foot dam and clean screens and intake.
- Performance of routine maintenance at the other two dams.
- Upgrading of the cathodic protection of one tank in conjunction with painting of the tank.
- Beginning of work on the automated meter reading system.
- Proposal for new water mains for Taughannock Boulevard, Thurston Avenue, Spencer Road and a redundant loop back to the gravity system.

Cornell (CUWS)

- Installation of baffles in the rapid mix chamber.
- Rebuilding of the filter pipe header with automatically controlled rate valves and new meters.
- Installation of a new raw water meter and piping between the grit chamber and the rapid mix chamber.
- Beginning work on a SCADA system to control and monitor the treatment plant.
- Replacement of the vacuum pump used to prime the main service pumps and install new chemical feed pumps.
- Continuation of main replacement and distribution metering and backflow prevention.

K Water Conservation

You can play a role in conserving water 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. The following are some ideas that can be directly applied to your individual homes.

- Never put water down the drain when there may be another use for it, such as watering a plant or garden, or cleaning.
- By doing laundry only when you have a full load, we can save 26.25 million gallons of water a day or 787 million gallons per month.
- Conserving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.
- If every American home installed low-flow faucet aerators, the United States would save 250 million gallons of water a day.
- Put 10 drops of food coloring in your toilet tank. If the color shows up in the bowl, you have a leak to repair. It is common to lose up to 100 gallons a day from a toilet leak. Fix it and you save more than 30,000 gallons a year.
- By reducing shower time by one minute, we could save 12.5 million gallons of water per day, or 375 million gallons per month.
- Use your water meter to detect hidden leaks. Turn off all taps and water using appliances, then record the meter reading, and check the meter reading after 15 minutes. If it changed, you have a leak.
- A layer of mulch in the flowerbeds and garden is not only aesthetically pleasing but will help retain moisture.

Saving water can lower your power bills by reducing your demand for hot or pumped water. These few simple steps will preserve the resource for future generations and also save up to 30% on your bill.

Table 4: Detected Contaminants: City Of Ithaca Water System

Contaminant	Units	Violation Yes/No	Date of Sample	Maximum Level Detected (Range)	Regulatory Limit	MCLG	Likely Source of Contamination
Microbiological contaminants							
Turbidity	NTU	No	10/31/03	0.16	TT=<1 NTU	N/A	Soil runoff.
Turbidity samples	%	No	Daily	100%	TT=95% of samples<.3NTU	N/A	Soil runoff.
Disinfection by-products							
Total THMs	ug/l	No	2003	72 (37-99)	MCL = 80	N/A	By-product of drinking water chlorination.
Total HAA5	**ug/l**	**Yes**	**2003**	**77** (37-120)	**MCL = 60**	**N/A**	By-product of drinking water chlorination.
Chlorine residual	mg/l	No	2003	1.8 (0.6-1.8)	MRDL=4	N/A	By-product of drinking water chlorination.
Inorganics							
Arsenic	ug/l	No	7/10/03	1.4	MCL=10	N/A	Erosion from natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium	mg/l	No	7/10/03	0.045	MCL=2	2	Drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chloride	mg/l	No	7/10/03	27	MCL=250	N/A	Naturally occurring or road salt.
Copper	mg/l	No	2002	0.97 (0.08-1.2)	AL=1.3	1.3	Corrosion of household plumbing; erosion of natural deposits; wood preservatives.
Flouride	mg/l	No	7/10/03	0.18	MCL=2.2	N/A	Erosion of natural deposits: discharge from fertilizer.
Iron	ug/l	No	7/12/01	136	MCL=300	N/A	Naturally occurring.
Lead	ug/l	No	2002	10 (1.0-15)	AL=15	0	Household plumbing corrosion; erosion of natural deposits.
Nickel	mg/l	No	7/10/03	0.003	N/A	N/A	Discharge from steel and pulp mills; erosion of natural deposits.
Nitrate	mg/l	No	7/10/03	0.3	MCL=10	10	Fertilizer runoff; septic tank leaching; sewage; erosion of natural deposits.
Selenium	mg/l	No	7/10/03	1.7	MCL=50	50	Discharge from petrolwum & metal refineries; erosion of natural deposits; discharge from mines.
Sodium	mg/l	No	7/10/03	17 (14-16)	See Water Quality, Section F	N/A	Naturally occurring; road salt; animal waste; water softeners; water treatment chemicals.
Sulfate	mg/l	No	7/10/03	11	MCL=250	N/A	Naturally occurring.
Radioactive							
Gross alpha	pCi/l	No	6/19/02	0.61	MCL=15	0	Erosion of natural deposits.

Table 5: Detected Contaminants: Cornell University Water System

Contaminant	Units	Violation Yes/No	Date of Sample	Maximum Level Detected (Range)	Regulatory Limit	MCLG	Likely Source of Contamination
Microbiological contaminants							
Turbidity	NTU	No	7/24/2003	0.33	TT=<1 NTU	N/A	Soil runoff.
Turbidity samples	%	No	Daily	99.9%	TT=95% of samples<.3NTU	N/A	Soil runoff.
Disinfection by-products							
Total THMs	ug/l	No	2003	74 (30-100.6)	MCL = 80	N/A	By-product of drinking water chlorination.
Total HAA5	**ug/l**	**Yes**	**2003**	**63** (15-58)	**MCL = 60**	**N/A**	By-product of drinking water chlorination.
Chlorine residual	mg/l	No	2003	2.5 (0.7-2.5)	MRDL=4	N/A	By-product of drinking water chlorination.
Inorganics							
Barium	mg/l	No	2/20/03	0.021	MCL=2	2	Drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chloride	mg/l	No	9/22/00	24	MCL=250	N/A	Naturally occurring or road salt.
Copper	mg/l	No	2002	0.18 (0.006-1.2)	AL=1.3	1.3	Corrosion of household plumbing; erosion of natural deposits; wood preserves.
Flouride	mg/l	No	2/20/03	0.29	MCL=2.2	N/A	Erosion of natural deposits; discharge from fertilizer.
Iron	ug/l	No	1/29/01	100	MCL=300	N/A	Naturally occuring.
Lead	ug/l	No	2002	1.3 (ND-7.3)	AL=15	0	Corrosion of household plumbing; erosion of natural deposits.
Manganese	ug/l	No	1/29/01	12	MCL=300	N/A	Naturally occuring; lamdfill contamination.
Nickel	mg/l	No	2/20/03	0.0017	N/A	N/A	Discharge from steel and pulp mills; erosion of natural deposits.
Nitrate	mg/l	No	2/20/03	2	MCL=10	10	Fertilizer runoff; septic tank leaching; sewage; erosion of natural deposits.
Sodium	mg/l	No	1/29/01	15	See Water Quality, Section F	N/A	Naturally occurring; road salt; animal waste; water softeners; water treatment chemicals.
Sulfate	mg/l	No	9/22/00	16	MCL=250	N/A	Naturally occurring.
Zinc	mg/l	No	1/29/01	0.0031	MCL=5	N/A	Naturally occurring; mining waste.
Radioactive							
Gross alpha	pCi/l	No	2/2/02	0.174	MCL=15	0	Erosion of natural deposits.

Water Trivia

- The manufacture of a new car, including tires, requires more than 39,000 gallons of water.
- Many reports indicate that a person should consume two and a half quarts of water from all sources (i.e. water and food) per day to maintain health.
- The first water pipes in the US were made from fired charred bored logs.
- Of all the earth's water, 97% is in oceans or seas, 2% is ice, and only 1% is suitable for drinking.
- The bathroom accounts for 75% of the water used inside the home.
- It takes more than 28,000 gallons of water to process one ton of cane sugar to make processed sugar.
- A cornfield of one acre gives off 4,000 gallons of water per day in evaporation.
- Community public water supply systems in the US process 39 billion gallons of water a day.
- One gallon of water weighs 8.34 pounds.
- When it rains one inch, you get 27,000 gallons of water per acre.

High Quality Drinking Water for Tompkins County Residents

PRSRT. STD
US Postage
PAID
Ithaca, NY
Permit #34

Current Resident