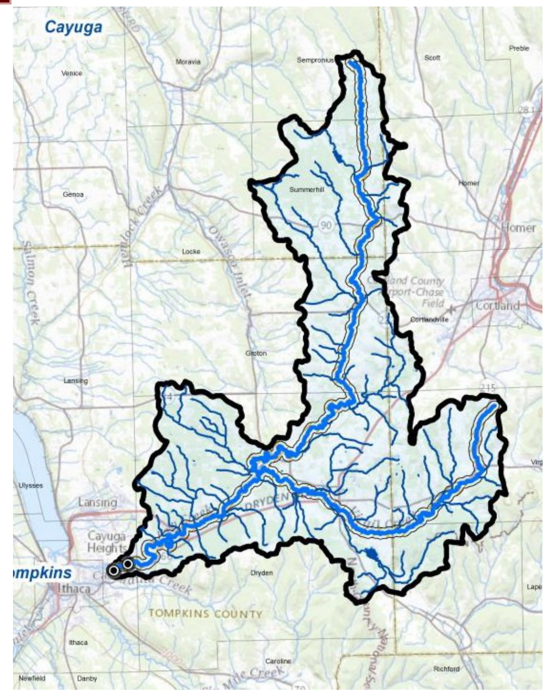
Cornell University

2025 Drinking Water Quality Report (for Calendar Year 2024)



Cornell University is providing this Drinking Water Quality Report because we want you to be fully informed about our water quality and the need to protect its source. This overview of last calendar year's water quality includes details about where your water comes from, what it contains, and how it compares to New York State standards. The staff of Cornell's Water System are dedicated to providing the highest quality water and to serve the community's needs.

If you have any questions about this report or your drinking water, please contact:

Andrew Murphy, Water Filtration Plant Manager
607-255-1408 or water@cornell.edu

Cornell University Source Water

Fall Creek is the source of water for the Cornell University Water System (CUWS). The water intake is on Forest Home Drive near the Cornell Botanic Gardens Arboretum entrance. Fall Creek originates in Lake Como northeast of Ithaca and flows through a 126 square mile watershed, within the black boundary on the figure above and to the right. Flow in Fall Creek for most of 2024 was more than adequate with an average of 187 cubic feet per second (cfs). We experienced a minimum creek flow of 21.8 cfs in September and a maximum of 2330 cfs in January. For reference, Cornell withdraws a maximum of 5.5 cfs! CUWS serves Cornell University's campus and City of Ithaca 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 Water Filtration Plant is located at 310 Caldwell Road, Ithaca, NY 14850.

Table of Contents

A. Water Treatment Process

Pre-Treatment: Screens are used to prevent leaves and debris from entering the treatment process. A dose of coagulant (polyaluminum chloride) is added to remove impurities.

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

Coagulation and Flocculation: The water flows into chambers where the coagulant reacts with impurities in the water (coagulation) causing them to form larger, heavier particles called floc (flocculation).

Sedimentation: Flocculated water flows into large 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 a corrosion inhibitor is added to prevent the potential leaching of lead and copper into the water from plumbing systems.

"Eighty percent of the Earth's surface is covered by water, but only one percent of the Earth's water is suitable for drinking."

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 the 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 those with cancer undergoing chemotherapy, those who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. Please seek advice from your health care provider about your drinking water if you are, or are a caregiver for, an individual in one of those categories.

The Environmental Protection Agency/Center for Disease Control (EPA/CDC) provides guidelines on appropriate means to lessen the risk of infection by cryptosporidium, giardia, and other microbial pathogens. These guidelines are available from the Safe Drinking Water Hotline (800-426-4791). Cornell's water system has not detected these pathogens in previous testing of the treated water. For additional information please contact Tompkins County Whole Health at 607-274-6688.

C. Water Quality Data

INTRODUCTION: The sources of drinking water (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. It also 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. To ensure that tap water is safe to drink, the EPA and the New York State Department of Health (NYSDOH) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. NYSDOH and Federal Drug Administration regulations also establish limits for contaminants in bottled water, which must provide the same protection for public health.

In accordance with New York State regulations, CUWS routinely monitors your drinking water for numerous contaminants. Table 3a, page 5, shows the analytical test results for contaminants that were detected. These results are compared to the applicable state guideline or maximum contaminant level (MCL). Table 4, page 7, shows the contaminants that were monitored but not detected in your water.

C. Water Quality Data (cont.)

TOTAL COLIFORMS: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Total coliforms are tested on a weekly basis.

LEAD AND COPPER: The Cornell water system was not required to sample for lead and copper in 2024. The last lead and copper sampling occurred in 2023 and there were no violations of standards. NYSDOH allows testing less frequently than once per year for certain contaminants such as lead and copper since the concentrations of these contaminants do not change frequently. In accordance with the federal Lead and Copper Rule Revisions (LCRR), our system has prepared a lead service line inventory. This inventory is available at:
https://fcs.cornell.edu/sites/default/files/2024-10/NY5417686_LSLIforWebsite.pdf

SODIUM: People who are on severely restricted sodium diets should not drink water containing more than 20 mg/l of sodium. **Since the 2024 level of sodium in Cornell water was 25.6 mg/l,** customers on severely restricted sodium diets might 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.

EXCHANGES: During the course of the year, for maintenance, or for emergency help, potable water is exchanged among the three Ithaca area water systems. If you wish to know if this occurred, the time periods, and the water volumes, please call the Cornell Water System.

UCMR: Required testing by the EPA for the Unregulated Contaminant Monitoring Rule #5 (UCMR5) was conducted in 2024 on a quarterly basis. Results are provided in Table 4.

D. General Water Information

Table 1: General Water Data - 2024

Water System Public Water Supply ID	Cornell University 5417680
Water Source	Fall Creek
Approx Population Served	33,000
Number of Service Connections	263
Total Production in 2024 (MG)	358
Average Daily Withdrawal (MGD)	2.074
Average Daily Delivered (MGD)	0.95
Average Daily Lost (MGD)	0.065
Average Annual Charge per 1000 gallons	$14.00

MG=Million Gallons, MGD=Million Gallons per Day

Table 2: General Water Quality Data - 2024

Water System Public Water Supply ID	Units	Cornell University 5417680
Chlorine Residual (EP)	mg/L	1.1
Turbidity (EP)	NTU	0.057
Total Alkalinity	mg/L	136
Chlorine Residual (POU)	mg/L	0.34
Turbidity (POU)	NTU	0.108
Total Organic Carbon (EP)	mg/L	2.2
Dissolved Organic Carbon (EP)	mg/L	1.9

NR=Not Required, EP=Entry Point, POU=Point of Use

Definitions of NTU and mg/L found in Section E.

COMMON WATER QUALITY DEFINITIONS

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

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

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

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.

Interesting Water Facts

There are over 58,900 community water systems in the United States processing more than 34 billion gallons per day.

The average residence in the United States uses 107,000 gallons of water a year.

It takes 62,600 gallons of water to produce one ton of steel.

It takes 101 gallons of water to make one pound of wool or cotton.

Water acts as a natural buffer against extreme or rapid changes in the earth's temperature.

It would take 219 million gallons of water to cover one square mile with one foot of water.

One gallon of water weighs 8.34 pounds.

When the weather is very cold outside, let the cold water drip from the faucet served by exposed pipes. Running water through the pipe (even at a trickle) helps prevent pipes from freezing.

Water is the second most common molecule in the universe. The most common is hydrogen gas, H_2.

There is ice on the poles of the moon, and on the poles of Mars and Mercury.

E. Detected Contaminants

Notes and Definitions for Tables 3-4:

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

Lead and Copper: The maximum level values reported for lead and copper represent the 90th percentile of the samples taken. Testing for these metals is only required every three years.

HAA5 (haloacetic acids): These are a group of chemicals that are formed when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The regulated haloacetic acids, known as HAA5, are monochloroacetic, dichloroacetic, trichloroacetic, monobromoacetic, and dibromoacetic acids. 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.

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 MCLG as possible.

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 constituent is not present.

NTU (nephelometric turbidity unit): A measure of the clarity of water. A turbidity in excess of 5 NTU is just noticeable to 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 (trihalomethane): These are a group of chemicals that are formed when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The regulated trihalomethanes are bromodichloromethane, bromoform, chloroform, and dibromochloromethane. These compounds result from the disinfection of water with chlorine. 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.

µg/L (micrograms per liter): Corresponds to one part in one billion parts of liquid (parts per billion, ppb).

PFOA/PFOS/1,4-Dioxane: Beginning in the Fall of 2020, NYS required sampling and analysis for Perfluoroctanic Acid, Perfluorooctane Sulfonate and 1,4-Dioxane. These are released into the environment from widespread use in commercial and industrial applications. None were detected in 2024.

E. Detected Contaminants (cont.)

Table 3a							
Contaminant	**Units**	**Violation Y/N**	**Date of Sample**	**Maximum Level Detected (Range)**	**Regulatory Limit**	**MCLG**	**Likely Source of Contamination**
Microbiological contaminants							
Turbidity	NTU	No	2024	0.057 (0.022-0.367)	TT=<1 NTU	N/A	Soil runoff.
Turbidity samples	% below MCL	No	daily	99.2% <0.3NTU	TT=95% of samples <0.3NTU	N/A	Soil runoff.
Disinfection By-Products							
Total THMs Site 1 Site 2 Site 3 Site 4	µg/l	No	2024	 56.2 (30.5-71.8) 55.6 (25.2-78.3) 55.8 (25.9-74.3) 55.2 (25.6-75.5)	MCL = 80 Running Annual Average	N/A	By-product of drinking water chlorination.
Total HAA5 Site 1 Site 2 Site 3 Site 4	µg/l	No	2024	 29.5 (17.2-35.7) 27.8 (19.3-34.8) 27.1 (21.7-30.1) 28.3 (20.2-34.6)	MCL = 60 Running Annual Average	N/A	By-product of drinking water chlorination.
Chlorine Residual	mg/l	No	2024	1.1 (0.7-1.6)	MRDL=4	N/A	Due to drinking water chlorination.
Inorganics							
Barium	mg/l	No	12/2/24	0.0232	MCL=2	2	Drilling wastes; discharge from metal refineries; erosion of natural deposits.
Copper	mg/l	No	2023	0.68 (0.012-30)	AL=1.3	1.3	Household plumbing corrosion; erosion of natural deposits; wood preservatives.
Lead	µg/l	No	2023	2.4 (ND-33)	AL=15.0	0	Household plumbing corrosion; erosion of natural deposits.
Nickel	mg/l	No	12/2/24	0.0005	N/A	N/A	Discharge from steel and pulp mills, erosion of natural deposits.
Nitrate	mg/l	No	12/2/24	1.02	MCL=10	10	Fertilizer runoff; septic tank leaching; sewage; erosion of natural deposits.
Sodium	mg/l	No	12/2/24	25.6	N/A, see "Water Quality", Section C	N/A	Naturally occurring; road salt; animal waste; water softeners; water treatment chemicals.

E. Detected Contaminants (cont.)

Table 3b **Detected Unregulated Contaminants , UCMR4**							
Contaminant	**Units**	**Violation Y/N**	**Date of Sample**	**Maximum Level Detected (Range)**	**Regulatory Limit**	**MCLG**	**Likely Source of Contamination**
Total Haloacetic Acids (HAA5)	µg/L	No	2019	23.7 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Total Haloacetic Acids (HAA6Br)	µg/L	No	2019	3.76 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Total Haloacetic Acids (HAA9)	µg/l	No	2019	27.5 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Dichloroacetic Acid [2C]	µg/L	No	2019	9.16 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Trichloroacetic Acid	µg/L	No	2019	14.6 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Bromochloroacetic Acid [2C]	µg/L	No	2019	1.87 avg	Unregulated	N/A	Byproduct of the drinking water disinfection process
Bromodichloroacetic Acid	µg/L	No	2019	1.81	Unregulated	N/A	Byproduct of the drinking water disinfection process
Chlorodibromoacetic Acid	µg/L	No	2019	0.31	Unregulated	N/A	Byproduct of the drinking water disinfection process
Manganese	µg/L	No	2019	9.25	Secondary Stand-ard	50	Runoff of natural sediment

F. Non-Detected Contaminants

Table 4.

CONTAMINANT	
Microbiological: 2024	
Total Coliform	X
E. Coli	X
Inorganics: 2024	
Antimony	X
Arsenic	X
Beryllium	X
Cadmium	X
Chromium	X
Cyanide	X
Fluoride	X
Mercury	X
Selenium	X
Thallium	X
Synthetic Organics & Pesticides: 2024	
Alachlor	X
Aldicarb	X
Aldicarb sulfoxide	X
Aldicarb sulfone	X
Atrazine	X
Carbofuran	X
Chlordane	X
Dibromochloropropane	X
2,4-D	X
Endrin	X
Ethylene dibromide	X
Heptachlor	X
Heptachlor epoxide	X
Lindane	X
Methoxychlor	X
Polychlorinated biphenyls	X
Pentachlorophenol	X
Toxaphene	X
2,4,5-TP (Silvex)	X
Benzo(a)pyrene	X
Butachlor	X
Carbaryl	X
Dalapon	X
Bis (2-ethylhexyl) adipate	X
Bis (2-ethylhexyl) phthalate	X
Dicamba	X
Dinoseb	X
Hexachlorobenzene	X
3-Hydroxycarbofuran	X
Methomyl	X
Metolachlor	X
Metribuzin	X
Oxamyl (Vydate)	X
Picloram	X
Propachlor	X
Simazine	X
PFOS	X
PFOA	X
1,4-Dioxane	X
Radiological: 2023	
Gross alpha	X
Gross beta	X
Radium	X

CONTAMINANT	
Principal Organics: 2024	
Benzene	X
Bromobenzene	X
Bromochloromethane	X
Bromomethane	X
N-Butylbenzene	X
sec-Butylbenzene	X
tert-Butylbenzene	X
Carbon tetrachloride	X
Chlorobenzene	X
Chloroethane	X
Chloromethane	X
2-Chlorotoluene	X
4-Chlorotoluene	X
Dibromomethane	X
1,2-Dichlorobenzene	X
1,3-Dichlorobenzene	X
1,4-Dichlorobenzene	X
Dichlorodifluoromethane	X
1,1-Dichloroethane	X
1,2-Dichloroethane	X
1,1-Dichloroethene	X
cis-1,2-Dichloroethene	X
trans-1,2-Dichloroethene	X
1,2-Dichloropropane	X
1,3-Dichloropropane	X
2,2-Dichloropropane	X
1,1-Dichloropropene	X
cis-1,3-Dichloropropene	X
trans-1,3-Dichloropropene	X
Ethylbenzene	X
Hexachlorobutadiene	X
Isopropylbenzene	X
p-Isopropyltoluene	X
Methylene chloride	X
Methyl-tert-butyl-ether (MTBE)	X
n-Propylbenzene	X
Styrene	X
1,1,1,2-Tetrachloroethane	X
1,1,2,2-Tetrachloroethane	X
Tetrachloroethene	X
Toluene	X
1,2,3-Trichlorobenzene	X
1,2,4-Trichlorobenzene	X
1,1,1-Trichloroethane	X
1,1,2-Trichloroethane	X
Trichloroethene	X
Trichlorofluoromethane	X
1,2,3-Trichloropropane	X
1,2,4-Trimethylbenzene	X
1,3,5-Trimethylbenzene	X
Xylenes (Total)	X
Vinyl chloride	X
Acetone	X
2-Butanone	X
2-Hexanone	X
4-Methyl-2-pentanone	X

CONTAMINANT	
UCMR 4: 2018-2020	
Monochloroacetic Acid	X
Monobromoacetic Acid	X
Dibromoacetic Acid	X
Tribromoacetic Acid	X
Germanium	X
BHA	X
O-Toluidine	X
Quinoline	X
1-Butanol	X
2-Methoxyethanol	X
2-Propen-1-ol	X
Alpha-BHC	X
Chlorpyrifos	X
Dimethipin	X
Ethoprop	X
Oxyfluoren	X
Profenofos	X
Tebuconazole	X
Permethrin (total)	X
Tribufos	X
Anatoxins	X
Cylindrospermopsin	X
Total Microcystin	X
UCMR 5: 2024	
Lithium	X
Perfluorotridcanoic acid (PFTrDA)	X
Perfluorotetradecanoic acid (PFTDA)	X
N-E perfluorooctanesuflonamidoacetic acid (NEtFOSAA)	X
N-M perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	X
Perfluoroctanoic acid (PFOA)	X
Perfluorooctanesulfonic acid (PFOS)	X
Perfluorohexanoic acid (PFHxA)	X
Perfluoroheptanoic acid (PFHpA)	X
Perfluorononoic acid (PFNA)	X
Perfluorodecanoic acid (PFDA)	X
Perfluoroundecanoic acid (PFUnA)	X
Perfluorododecanoic acid (PFDoA)	X
Perfluorobutanesulfonic acid (PFBS)	X
Perfluorohexanesulfonic acid (PFHxS)	X
Perfluoropropylene oxide dimer acid (HFPO-DA)	X
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	X
Perfluorobutanoic acid (PFBA)	X
Perfluoroheptanesulfonic acid (PFHpS)	X
Perfluoropentanoic acid (PFPeA)	X

X = Monitored, but not detected

G. Major Modifications Completed 2024

- Improvements to the rapid mix and emergency power systems
- Replacement of components in the distribution system at the end of their useful life, including approximately 900 linear feet of water piping.

H. Future Projects and Capital Improvements 2025

- Upgrades to filter flow control valve actuators
- Water storage tank safety improvements
- Design and planning for source water intake upgrade
- Design and planning for a controls system upgrade
- Additional replacement of distribution system components

I. Water Conservation

Fortunately, in 2024 we experienced an abundance of water in the Fall Creek watershed. However, water conservation is very important to protecting our natural resource. You can play a role in conserving water at work and at home by becoming conscious of the amount of water you are 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 you can apply directly in your own facility or home:

- 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 after 15 minutes. If it registers usage, you have a leak.
- The bathroom accounts for 75 percent of the water used inside the home.
- Put 10 drops of food coloring in your toilet tank. If the color shows up in the bowl without flushing, 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.
- If every American home installed low-flow faucet aerators, the United States would save 250 million gallons of water a day.
- Do not hose down your driveway or sidewalk. Use a broom to clean leaves and other debris from these areas. Using a hose to clean a driveway can waste hundreds of gallons of water.
- Water your lawn only when it needs it. If you step on the grass and it springs back up when you move, it doesn't need water. If it stays flat, it does.
- Fix leaks as soon as they are found. A dripping faucet with a 1/16 inch stream wastes 100 gallons of water per day. Please contact your facility manager if you notice leaking water.
- 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.

J. Security

Generally, security threats to the local water systems have consisted primarily of minor vandalism and property damage. However, our security efforts focus to a high degree on the much less likely, but more serious, threat of intentional contamination of the water supply and cyber attacks. We have performed security assessments of the entire system and updated our Emergency Response Plans and Vulnerability Assessments to cover the possibility of terrorism and attacks, including cyber attacks. Weaknesses in procedures have been corrected and improvements to increase the security of the infrastructure have been undertaken. Local police are aware of the security needs of the water system and have maintained increased patrolling of our facilities. Your awareness and reporting of suspicious activity throughout the system is appreciated.

K. Source Water Protection

The New York State Department of Health is in the process of developing a Source Water Protection Program for Cornell's surface drinking water source. Additional details will be provided once finalized.