



# WELCOME TO MADISON

## Water & Wastewater Board of the City of Madison 2021 Drinking Water Quality Report

We are pleased to present our annual Drinking Water Quality Report. We designed this report to inform you about the quality of your drinking water. Our goal is to deliver water that meets or exceeds regulatory standards and your expectations for safety, quality, and reliability. If you have questions about the report, please contact Jason Leggett at 256-772-0253 ext. 119 between the hours of 8:00 a.m.—4:00 p.m. Monday through Friday. Our Board meetings are on the first and third Monday (unless otherwise posted) of each month at 5:30 p.m. in the conference room of Madison Utilities at 101 Ray Sanderson Drive.

### Health Information about Water

The sources of drinking 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 radioactive material, and it can pick up substances resulting from the presence of animals or from human activity. To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) establishes limits for contaminants in bottled water. Some people may be more vulnerable to contaminants in drinking water than the general population. People who are immunocompromised, such as cancer patients undergoing chemotherapy, organ transplant recipients, HIV/AIDS positive or other immune system disorders, some elderly, and infants can be particularly at risk from infections. People at risk 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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

All surface water systems are required to test untreated, raw source water for *Cryptosporidium*. *Cryptosporidia* are microscopic organisms found in surface water throughout the world. These pathogens are common in surface water because of vulnerability to sewage discharges and runoff. Ingesting *cryptosporidium* can cause gastrointestinal illness with potential increased risk of infection for immunocompromised persons such as individuals with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, the elderly, and infants. For people who may be immunocompromised, a guidance document developed jointly by the Environmental Protection Agency and the Center for Disease Control is available online at [www.epa.gov/safewater/crypto.html](http://www.epa.gov/safewater/crypto.html) or from the Safe Drinking Water Hotline at 800-426-4791. *Cryptosporidium* was *not* detected in our finished water.

Consumers should be aware that all drinking water, including bottled water, might 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. 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).

**LEAD:** Elevated levels of lead can cause serious health problems, especially for pregnant women, infants, and young children. NEVER make baby formula with warm or hot tap water. *Lead is rarely found in source water.* If lead is present in tap water, it is primarily from corrosion of materials that were

used in older plumbing, solder that connects pipes, or from pipes connecting a house to the main water pipe in the street. Lead is no longer used in manufacturing these products, but plumbing components containing lead may still remain in some older homes and buildings. When water sits for several hours in pipes containing these older materials, lead can leach into the water. Your water system is responsible for providing high quality drinking water but cannot control the variety of materials that were used in household plumbing.

The EPA and the CDC make the following recommendations:

- Before using any tap water for drinking or cooking, flush your water system by running the kitchen tap (or any other tap you take drinking or cooking water from) on COLD for 1–2 minutes. Flushing can minimize the potential for lead exposure, especially if the water has been sitting undisturbed for several hours, as in overnight.
- In all situations, especially for making baby formula, drink or cook only with water that comes out of the cold tap. Warm or hot tap water is more likely to cause lead to leach from plumbing materials. Boiling this water will NOT reduce the amount of lead in your water.
- Also, periodically remove the aerator on the tip of the faucet and wash out any debris such as metal particles.

If you are still concerned about lead in your water after following the recommendations above, 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 at 800-426-4791 and from CDC at <http://www.cdc.gov/nceh/lead/tips/water.htm>.

**SOURCE WATER PROTECTION:** Madison Utilities developed a Source Water Assessment plan that assist in protecting our water sources. This plan provides lists of potential sources of contamination, as well as a susceptibility analysis, which classifies potential contaminants as high, moderate, or non-susceptible to contaminating the water source. A copy of the plan is available in our office for review during normal business hours. Madison Utilities utilizes a Bacteriological Monitoring Plan to monitor for potential contamination from locations throughout the distribution system. Chlorine residual is routinely tested and bacteriological tests are run to ensure adequate disinfection is available to protect the drinking water. Results show that the required minimum free chlorine residual level of 0.2 mg/L is maintained in the distribution system.

Please help us make these efforts worthwhile by protecting our source water. Carefully follow instructions on pesticides and herbicides you use for your lawn and garden, and properly dispose of household chemicals, paints and waste oil.

## Routine Monitoring

Madison Utilities routinely monitors for contaminants in your drinking water in accordance with Federal and State regulations. The EPA or ADEM requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. The ADEM provides us with a regulatory monitoring schedule each year.

Based on a study conducted by the ADEM with approval of the EPA, a statewide waiver for monitoring asbestos and dioxin was issued. Thus, monitoring for any of these contaminants was not required.

This report contains results from our most recent monitoring which was performed in accordance with the regulatory schedule.

Contaminant Groups Monitored	Regulatory Schedule
Inorganic Contaminants	2021
Lead/Copper	2019
Microbiological Contaminants	current
Nitrates	2021
Radioactive Contaminants	2019
Synthetic Organic Contaminants	2020
Volatile Organic Contaminants	2021
Disinfection By-products (DBPs)	2021
Cryptosporidium	2021
UCMR4 Contaminants	2019
Distribution System Evaluation (DSE) DBPs	2019
PFAS Contaminants	2020

## Primary Drinking Water Contaminants

Contaminant	Units	MCL	MD	Contaminant	Units	MCL	MD
<b>Bacteriological Contaminants</b>				<b>Organic Contaminants (cont.)</b>			
Total Coliform Bacteria		<5%	3	Chlorobenzene	ppb	100	ND
Turbidity	NTU	TT	0.13	2,4-D	ppb	70	ND
Fecal coliform and <i>E. coli</i>		0	0	Dalapon	ppb	200	ND
Fecal Indicators (enterococci or coliphage)		TT	0	Dibromochloropropane	ppt	200	ND
<b>Radiological Contaminants</b>				1,2-Dichloroethane	ppb	5	ND
Alpha emitters	pCi/L	15	ND	1,2-Dichloropropane	ppb	5	ND
Combined Radium	pCi/L	5	ND	Dinoseb	ppb	7	ND
<b>Disinfections and Disinfection Byproducts</b>				Diquat	ppb	20	ND
Chlorine	ppm	MRDL=4	2.72	Endothall	ppb	100	ND
TTHM (Total Trihalomethanes)	ppb	80	62.9 <sup>1</sup>	Endrin	ppb	2	ND
Haloacetic Acids (HAA5)	ppb	60	44.8 <sup>1</sup>	Ethylbenzene	ppb	700	ND
<b>Inorganic Contaminants</b>				Ethylene Dibromide	ppt	50	ND
Antimony	ppb	6	ND	Glyphosate	ppb	700	ND
Arsenic	ppb	10	ND	Heptachlor	ppt	400	ND
Barium	ppm	2	0.02	Heptachlor Epoxide	ppt	200	ND
Beryllium	ppb	4	ND	Hexachlorobenzene	ppb	1	ND
Cadmium	ppb	5	ND	Hexachlorocyclopentadiene	ppb	50	ND
Chromium	ppb	100	ND	Lindane	ppt	200	ND
Copper, 90th percentile	ppm	AL=1.3	0.054	Methoxychlor	ppb	40	ND
Cyanide	ppb	200	ND	Oxamyl (Vydate)	ppb	200	ND
Fluoride	ppm	4	ND	Pentachlorophenol	ppb	1	ND
Lead, 90th percentile	ppm	AL=0.015	0.001	Polychlorinated Biphenyls (PCBs)	ppt	500	ND
Mercury	ppb	2	ND	Picloram	ppb	500	ND
Nitrate	ppm	10	0.48	Simazine	ppb	4	0.53
Nitrite	ppm	1	ND	Styrene	ppb	100	ND
Nitrate-Nitrite (Total)	ppm	10	0.48	Toluene	ppb	1000	ND
Selenium	ppb	50	ND	TOC (Total Organic Carbon)	ppm	TT	1.24
Thallium	ppb	2	ND	Toxaphene	ppb	3	ND
<b>Organic Contaminants</b>				2,4,5-TP (Silvex)	ppb	50	ND
Alachlor	ppb	2	ND	1,2,4-Trichlorobenzene	ppb	70	ND
Atrazine	ppb	3	ND	Trichloroethylene (Trichloroethene)	ppb	5	ND
Benzene	ppb	5	ND	1,1,1-Trichloroethane	ppb	200	ND
Benzo(a)pyrene (PAHs)	ppt	200	ND	1,1,2-Trichloroethane	ppb	5	ND
Carbofuran	ppb	40	ND	Vinyl chloride	ppb	2	ND
Carbon tetrachloride	ppb	5	ND	Xylenes, Total	ppb	10000	ND
Chlordane	ppb	2	ND				

## Secondary Contaminants

Contaminant	Units	MCL	MD	Contaminant	Units	MCL	MD	Contaminant	Units	MCL	MD	Contaminant	Units	MCL	MD
Alkalinity, Total	ppm	N/A	59.6	Copper	ppm	1.0	ND	Odor	odor #	3	2	Sulfate	ppm	250	8.71
Aluminum	ppm	0.2	ND	Hardness	ppm	N/A	71.3	Nickel	ppm	N/A	ND	Total Dissolved Solids	ppm	500	102
Calcium	ppm	N/A	21.3	Iron	ppm	0.30	ND	pH	S.U.	6.5-8.5	7.6	Zinc	ppm	5	ND
Carbon Dioxide	ppm	N/A	ND	Magnesium	ppm	N/A	4.41	Silver	ppm	0.10	ND				
Chloride	ppm	250	12.6	Manganese	ppm	0.05	ND	Sodium	ppm	N/A	7.75				
Color	pcu	15	1	MBAS	ppm	0.5	ND	Specific Conductance	µs/cm	N/A	176				

## UCMR4 Monitoring

Every five years the EPA requires some water systems to monitor for a new list of unregulated contaminants. In the fourth Unregulated Contaminants Monitoring Rule (UCMR4), PWSs serving more than 10,000 people were required to monitor for 30 unregulated contaminants over a three year span. The adjacent table shows the UCMR4 contaminants we monitored and the results from that monitoring.

UCMR 4 Contaminants					
Contaminant	Units	MD	Contaminant	Units	MD
Germanium	ppb	ND	Tebuconazole	ppb	ND
Manganese	ppb	ND	Total permethrin (cis-&trans-)	ppb	ND
Alpha-hexachlorocyclohexane	ppb	ND	Tribufos	ppb	ND
Chlorpyrifos	ppb	ND	1-butanol	ppb	ND
Dimethipin	ppb	ND	2-methoxyethanol	ppb	ND
Ethoprop	ppb	ND	2-propen-1-ol	ppb	ND
Oxyfluorfen	ppb	ND	Butylated hydroxyanisole	ppb	ND
Profenofos	ppb	ND	O-toluidine	ppb	ND
			Quinoline	ppb	ND
			Total organic carbon	ppb	1820
			Bromide	ppb	24.7
			HAA5	ppb	32.7
			HAA6Br	ppb	20.8
			HAA9	ppb	36.2

<sup>1</sup> Figure shown is the highest Locational Running Annual Average (LRAA). The range of detections (maximum and minimum) are reported in the "Table of Detected Contaminants" in this report.

Unregulated Contaminants								
Contaminant	Units	MD	Contaminant	Units	MD	Contaminant	Units	MD
Aldicarb	ppb	ND	Chloromethane	ppb	ND	Isopropylbenzene	ppb	ND
Aldicarb Sulfone	ppb	ND	2-Chlorotoluene	ppb	ND	p-Isopropyltoluene	ppb	ND
Aldicarb Sulfoxide	ppb	ND	4-Chlorotoluene	ppb	ND	Methomyl	ppb	ND
Aldrin	ppb	ND	Dibromoacetic Acid	ppb	ND	Methyl tert-butyl ether	ppb	ND
Bis(2-ethylhexyl)adipate	ppb	ND	Dibromomethane	ppb	ND	Methylene chloride	ppb	ND
Bis(2-ethylhexyl)phthalate	ppb	ND	Dicamba	ppb	ND	Metolachlor	ppb	ND
Bromoacetic Acid	ppb	ND	Dichloroacetic Acid	ppb	ND	Metribuzin	ppb	ND
Bromobenzene	ppb	ND	1,2-Dichlorobenzene	ppb	ND	Naphthalene	ppb	ND
Bromochloromethane	ppb	ND	1,3-Dichlorobenzene	ppb	ND	1-Naphthol	ppm	ND
Bromodichloromethane	ppb	4.66	1,4-Dichlorobenzene	ppb	ND	Paraquat	ppm	ND
4-Bromofluorobenzene	% Rec	ND	1,2-Dichlorobenzene-d4	% Rec	ND	Propachlor	ppb	ND
Bromoform	ppb	ND	Dichlorodifluoromethane	ppb	ND	n-Propylbenzene	ppb	ND
Bromomethane	ppb	ND	1,1-Dichloroethane	ppb	ND	1,1,1,2-Tetrachloroethane	ppb	ND
Butachlor	ppb	ND	1,1-Dichloroethene	ppb	ND	1,1,2,2-Tetrachloroethane	ppb	ND
n-Butylbenzene	ppb	ND	cis-1,2-Dichloroethene	ppb	ND	Tetrachloroethene	ppb	ND
sec-Butylbenzene	ppb	ND	trans-1,2-Dichloroethene	ppb	ND	Trichloroacetic Acid	ppb	ND
tert-Butylbenzene	ppb	ND	1,3-Dichloropropane	ppb	ND	1,2,3-Trichlorobenzene	ppb	ND
Carbaryl	ppb	ND	2,2-Dichloropropane	ppb	ND	Trichloroethene	ppb	ND
Free Carbon Dioxide	ppm	ND	1,1-Dichloropropene	ppb	ND	Trichlorofluoromethane	ppb	ND
Chloroacetic Acid	ppb	ND	1,3-Dichloropropene	ppb	ND	1,2,3-Trichloropropane	ppb	ND
Chlorodibromomethane	ppb	1.37	Dieldrin	ppb	ND	1,2,4-Trimethylbenzene	ppb	ND
Chloroethane	ppb	ND	Hexachloro-1,3-butadiene	ppb	ND			
Chloroform	ppb	7.23	3-Hydroxycarbofuran	ppb	ND			

## DETECTED CONTAMINANTS

The presence of contaminants does not necessarily indicate that water poses a health risk. MCL's, defined in the "Key to Tables" in this report, are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Table of Detected Contaminants									
Primary Contaminants	Units	Violation	MCLG	MCL	Max	Min	Major Sources		
Total coliform bacteria	Present /Absent	No	0	5%	3 <sup>1</sup>	ND	Naturally present in the environment; used as an indicator that other bacteria may be present		
Barium	ppm	No	2	2	0.020	0.020	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits		
Chlorine	ppm	No	MRDLG=4	MRDL=4	2.72	1.45	Water additive used to control microbes		
Copper, 90th percentile	ppm	No	1.3	AL=1.3	0.054	N/A	Corrosion of household plumbing systems		
Lead, 90th percentile	ppm	No	0	AL=0.015	0.001	N/A	Corrosion of household plumbing systems		
Nitrate	ppm	No	10	10	2.02	0.44	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits		
TOC (Total Organic Carbon)	ppm	No	N/A	TT	1.24	0.79	Naturally present in the environment		
Total Haloacetic Acids (HAA5)	ppb	No	0	60	67.3	11.3	By-product of drinking water disinfection		
Total Trihalomethanes (TTHM)	ppb	No	0	80	104	15.3	By-product of drinking water chlorination		
Turbidity	NTU	No	N/A	5	0.14	N/A	Soil runoff		
DSE <sup>2</sup> Disinfection Byproducts									
Total Haloacetic Acids (HAA5)	ppb	N/A	N/A	N/A	58.5	20.4	By-product of drinking water disinfection		
Total Trihalomethanes (TTHM)	ppb	N/A	N/A	N/A	48.0	14.2	By-product of drinking water chlorination		
Alkalinity, Total		ppm	N/A	59.6	Sodium		ppm	N/A	7.75
Calcium		ppm	N/A	21.3	Specific Conductance		umhos/cm	N/A	184
Chloride		ppm	250	12.6	Sulfate		ppm	250	8.71
Color		ppm	15	1	Total Dissolved Solids		ppm	500	102
Hardness, Total (ppm as CaCO3)		ppm	N/A	71.3	Unregulated Contaminants				
Magnesium		ppm	N/A	4.41	Bromodichloromethane		ppb	N/A	4.66
Odor		T.O.N.	3	2	Chlorodibromomethane		ppb	N/A	1.37
pH (On Site)		su	6.5-8.5	2.46	Chloroform		ppb	N/A	7.23

## PFAS CONTAMINANTS

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that were used in manufacturing and in other industrial and consumer applications. The EPA has not established primary drinking water regulations for PFAS substances. The lifetime health advisory level for PFOA and PFOS is a combined 0.070 parts per billion (ppb). Below is a list of PFAS contaminants for which our system monitored in 2020 and the results of that monitoring.

PFAS Contaminants (in ppb)	MD	PFAS Contaminants (in ppb)	MD	PFAS Contaminants (in ppb)	MD
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	ND	Perfluorodecanoic acid	ND	Perfluorooctanoic acid	ND-0.001
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	ND	Perfluorohexanoic acid	ND-0.003	Perfluorotetradecanoic acid	ND
4,8-dioxa-3H-perfluorononanoic acid	ND	Perfluorodecanoic acid	ND	Perfluorotridecanoic acid	ND
Hexafluoropropylene oxide dimer acid	ND-.0003	Perfluoroheptanoic acid	ND	Perfluoroundecanoic acid	ND
N-ethylperfluorooctanesulfonamidoacetic acid	ND	Perfluorohexanesulfonic acid	ND	Perfluorobutanoic acid	ND-0.005
N-methylperfluorooctanesulfonamidoacetic acid	ND	Perfluorononanoic acid	ND	Perfluoropentanoic acid	ND-0.002
Perfluorobutanesulfonic acid	ND-0.003	Perfluorooctanesulfonic acid	ND-0.002	Total PFAS	ND-0.01

<sup>1</sup> One positive sample occurred in August 2021. All repeat samples were negative. One positive sample occurred in September, one repeat sample was also positive, and all other repeat samples were negative.






<sup>2</sup> A Distribution System Evaluation (DSE) is a 4-quarter monitoring study to identify distribution system locations with higher concentrations of THMs and HAA5s.

## WATER SOURCE AND TREATMENT

In March of 2018, Madison Utilities (MU) began pumping water from our new source, the Terris Tatum Tennessee River Intake Facility, which is treated at the Quarry Water Treatment Plant (QWTP) using aeration, coagulation, filtration, disinfection and the addition of fluoride. The river intake serves as the primary source, with additional water occasionally supplied from the Drake Well and treated at the QWTP during high demand in summer months. We have several other groundwater wells that can be treated and utilized as back-up sources if needed. Our Keene water treatment plant is not in operation currently but is maintained so that it can be put into use if necessary. Interconnections are maintained with Huntsville Utilities and with Harvest Monrovia Water System. Our distribution system utilizes four water storage facilities with a total capacity of 14,000,000 gallons and water mains to serve approximately 18,300 customers.

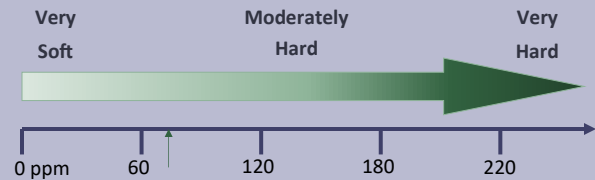
### YOUR WATER UTILITY BY THE NUMBERS

Your water utility is comprised of many working parts that are maintained to protect water quality and ensure water is available every time you turn on your faucet. From the pumps that pull water from the Tennessee River to the valves that isolate sections of the system to help limit service interruptions during line maintenance and repairs, your water utility is a sophisticated mix of hardware and dedicated employees who keep your water clean, reliable, and affordable.

-  Employees: 55
-  Water Sources: 7
-  Water Reservoirs: 4
-  Waterlines: 350 mi
-  Water Valves: 4,882
-  Fire Hydrants: 2,780

### HOW HARD IS YOUR WATER?

If substantial amounts of Calcium or Magnesium are present in drinking water, the water is said to be hard. Water containing little Calcium or Magnesium is called soft water. The water in Madison was previously moderately hard due to limestone rock formations in this area. Now that the river intake is the primary water source, the water in Madison is relatively soft.



## WHY FIXING LEAKS AROUND YOUR HOME IS IMPORTANT

*Even small leaks can have a large impact on your wallet!*

- ◆ A dripping faucet can lose hundreds of gallons a month
- ◆ A running toilet can use anywhere from 10,000 to 100,000 gallons of water in 30 days. Customers are often shocked to see their bill increase by hundreds of dollars simply because of a leaky toilet.

*Be proactive and try these leak tests!*

- ◆ Add coloring to a toilet's tank and wait 15 minutes. If color appears in the bowl, there's a leak. We offer free blue tablets to all customers!
- ◆ Turn off all water-using appliances around your home, read the number on your meter, and check back in 30 minutes. If there is a change, you may have a leak.

### SAVE MONEY BY SAVING WATER!

For water conservation tips visit [www.madisonutilities.org/customer-service/water-conservation](http://www.madisonutilities.org/customer-service/water-conservation)

### KEY TO TABLES

**AL** (Action Level) - concentration of a contaminant that triggers treatment/other action by a water system.

**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.

**MD** - Maximum Detected

**MRDL** (Maximum Residual Disinfectant Level) - the highest level of a disinfectant allowed in drinking water.

**MRDLG** (Maximum Residual Disinfectant Level Goal) - The level of a disinfectant below which there is no known or expected risk to health.

**N/A** - not applicable

**ND** - Not Detected

**pcu** - color units

**pCi/l** - picocuries per liter

**PFAS** (Per- and polyfluoroalkyl substances) - a group of man-made chemicals for which the EPA has not established primary drinking water regulations

**ppm** - parts per million

**ppb** - parts per billion

**ppt** - parts per trillion

**NTU** - nephelometric turbidity unit

**s.u.** (standard unit) - pH is measured on a logarithmic scale, ranging from 0 to 14 s.u., with 7 s.u. being neutral.

**TON** - threshold odor number

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



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Este informe contiene información importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

If you would like more information, please visit our web site at [www.madisonutilities.org](http://www.madisonutilities.org).