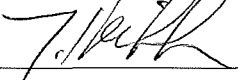


Internal Monitoring Report

Policy #: O-2B Water Quality

Date: April 28, 2015

I certify that the following information is true.

Signed  General Manager

Policy Language:

Madison Water Utility consumers will receive high quality water that meets or is better than all primary and secondary drinking water standards, including their public notification requirements, and complies with board-adopted water quality goals, incorporated by attachment.

The Madison Water Utility recognizes that drinking water standards are subject to revision and that new compounds of concern will be determined. This dynamic is a result of health studies being conducted by health organizations and government agencies on the state, national and international level. The technology to quantify compounds at increasingly minute levels is constantly improving.

The Madison Water Utility shall maintain and promulgate a Watch List of compounds of concern by unit well of compounds that are increasing and may approach the primary and secondary drinking water standards. The Watch List shall identify which wells require action.

General Manager's interpretation and its justification:

Few things are more vital to a community than the availability of high quality drinking water. It promotes public health, public safety, and the economic interests of our community. To that end, the water utility will consistently deliver water that meets the primary, health-based drinking water standards, the secondary (aesthetic) standards, and the additional policy goals established by the Board.

Water Utility Board Procedural Guideline GUIDE 8 - Executive Summary of Water Quality Treatment Policies - establishes monitoring requirements and the utility's approach for responding to increasing contaminant levels. Generally, the policy establishes two thresholds - one when a contaminant exceeds 50% of a maximum contaminant level (MCL), secondary MCL, or other numerical guideline, and two when it surpasses 80% of this mark. The first triggers increased monitoring and an investigation into treatment alternatives, operational changes, or other actions to reduce contaminant levels while the second leads to implementation of a mitigation strategy.

The policy applies to any contaminant, regulated or not, that is capable of impairing the health, safety, or aesthetic quality of drinking water. Utility staff will remain vigilant in following developments related to currently unregulated and emerging contaminants like pharmaceuticals, endocrine disruptors, and chromium-6 that may pose problems in the future.

The utility will use multiple communication methods to adequately inform consumers of the safety and quality of their drinking water including the federally-required Consumer Confidence Report (CCR), the water utility website, e-mail distribution lists,

neighborhood listservs, citizen meetings, and through staff contact in the field and office.

Data directly addressing the General Manager’s interpretation:

Contaminants with a primary MCL or Enforcement Standard

Between January and March, 856 samples were collected from routine monitoring points in the distribution system including the entry point at the well houses (175 samples). None of the samples showed the presence of coliform bacteria. Twenty raw water samples were collected during this monitoring period. Four resulted from an unconfirmed coliform positive sample in the Village of Maple Bluff which triggered source water testing. All raw water samples were free of coliform bacteria.

All sixteen active wells were monitored for volatile organic compounds in the period between January and March. Five wells showed the presence of at least one VOC, with tetrachloroethylene [PCE] being most common. Detections, including disinfection by-products, are summarized in Table 1. Quarterly VOC monitoring occurs at wells where PCE exceeds 0.5 µg/L; otherwise, annual samples are collected at each well.

In accordance with GUIDE 8, four wells (19, 24, 27, & 30) were tested for radium because combined radium (radium 226 + 228) exceeded 2.5 pCi/L in previous testing. Results from February samples are tabulated below; water from Wells 19 and 27 exceeded the MCL (5 pCi/L) and confirmation samples have been collected. Testing at these four wells, and three others wells which are currently out of service, will occur on a quarterly basis.

Combined Radium (226+228), pCi/L

	February	April	May	August	November
Well #7	Inactive				
Well #8	Inactive				
Well #19	5.3				
Well #24	3.3				
Well #27	5.7				
Well #28	Inactive				
Well #30	3.7				

Contaminants with a secondary MCL

Iron and Manganese

Monthly samples are collected at wells with elevated iron and manganese. Test results are shown below.

	Manganese, µg/L			Iron, mg/L		
	Jan	Feb	Mar	Jan	Feb	Mar
Well 11	n/s	n/s	6.0	n/s	n/s	<0.01
Well 13	n/s	n/s	3.8	n/s	n/s	0.02
Well 15	n/s	n/s	4.0	n/s	n/s	<0.01
Well 19	43	46	79	0.17	0.17	0.31
Well 24	29	29	31	0.21	0.21	0.21
Well 25	n/s	n/s	3.1	n/s	n/s	0.04
Well 26	0.7	1.3	18	0.03	0.02	0.03
Well 27	n/s	27	30	n/s	0.15	0.17
Well 29	4.2	3.4	0.3	0.01	0.01	<0.01
Well 30	14	14	15	0.19	0.20	0.20
SMCL	50			0.3		

Iron and manganese monitoring also occurs in the distribution system at all coliform sample locations. Test results are summarized below.

Manganese, µg/L

	Jan - Mar	2014
Policy Goal	50	50
Median	2.0	2.2
Average	4.8	3.6
95th	20	15
Maximum	55	46
Count	84	342
>50	2	0

Iron, mg/L

	Jan - Mar	2014
Policy Goal	0.3	0.3
Median	<0.01	<0.01
Average	0.04	0.03
95th	0.11	0.11
Maximum	1.08	0.94
Count	84	342
>0.3	2	5

Chloride

Regular chloride monitoring continues at Well 14. Since last November, weekly chloride tests have been conducted. The average chloride level is 119 mg/L with twenty results ranging from 110 to 126 mg/L. The SMCL for chloride is 250 mg/L.

Unregulated and Emerging Contaminants:

The first round of the Unregulated Contaminants Monitoring Regulation, Cycle 3 (UCMR3) sampling occurred in March. All sixteen active wells were sampled for 28

chemical contaminants while seven distribution sites were sampled for a subset of these contaminants including five metals.

The Unregulated Contaminants Monitoring Regulation is a federal rule that requires water utilities to monitor up to 30 contaminants that are not currently regulated under the Safe Drinking Water Act. The US EPA uses these occurrence data in its assessment of whether to establish an MCL that it believes will provide a meaningful public health risk reduction.

None of the perfluorinated compounds (6) or hormones (7) were detected at the sub-part per billion and sub-part per trillion levels, respectively, and a single volatile organic compound, 1,1-dichloroethane, was detected. Test results were similar to voluntary sampling conducted in recent years.

Detections are summarized in the table below.

Contaminant	Detection Limit (µg/L)	Detections	Minimum	Maximum
chlorate	20	1	<20	21
chromium, hexavalent	0.03	12	<0.03	2
chromium, total	0.2	11	<0.2	1.8
cobalt	1	1	<1	1.6
strontium	0.3	16	50	100
vanadium	0.2	3	<0.2	0.3
1,1-dichloroethane	0.03	1	<0.03	0.06
1,4-dioxane	0.07	5	<0.07	0.43

Sodium

In accordance with GUIDE 8, monthly testing of sodium at Well 14 is on-going. Five samples have been collected year-to-date with all measuring 42 mg/L. If sustained, this level of sodium will require an investigation into alternative strategies that can reduce the sodium level.

Water Quality Watch List

The Water Quality Watch List has been updated to incorporate 2015 test results for organic, radiological, and unregulated contaminants.

Water Quality Technical Advisory Committee

The Technical Advisory Committee met in January and April. Pesticides and wellhead protection were the primary focus of the January meeting while a groundwater expert's review of the Madison Kipp contamination, monitoring, modeling, and remediation was the emphasis of the April meeting. Some observations regarding the investigation and remediation at Madison Kipp were made including, absent a clear definition of impact, uncertainty remains about the likelihood of the contaminant plume having an impact on Well 8 water quality if the facility is reconstructed and the utility opts to use the well year round. Some recommendations included the following:

- Installation of additional down gradient monitoring wells, at multiple depths, to better characterize the contaminant plume;
- More long-term monitoring to better evaluate contaminant trends over time at existing monitoring wells;
- A sensitivity analysis performed on the modeling output to better characterize the range of predicted contaminant migration;
- Model the pump and treat extraction well to determine the zone of influence and the well's impact on down gradient contaminant migration, if any.

Annual Consumer Confidence Report

The annual Consumer Confidence Report (CCR) has been produced in both English and Spanish versions. Postcard notification and electronic delivery are planned for May.

I report compliance.

Attachments:

Table 1 - for Report O-2B
Water Quality Watch List

Notes from the November 11, 2014 and January 20, 2015 Technical Advisory Committee meetings

Final draft of the Consumer Confidence Report

Table 1. VOC detections for the period January to March.

Volatile Organic Compound	Units	MCL	9	11	14	15	18	18	19	20	24	26	27	29	30
			2/23	2/23	2/23	2/23	1/20	3/10	2/23	2/23	2/23	2/23	1/20	2/23	2/23
Bromodichloromethane*	µg/L	80	0.72	<0.14	<0.14	<0.14	<0.14	<0.19	2.4	0.29	1.5	0.47	0.16	0.62	0.19
Bromoform*	µg/L	80	0.56	<0.15	<0.15	0.48	<0.15	<0.20	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chloroform*	µg/L	80	0.33	<0.17	<0.17	<0.17	<0.17	<0.23	3.4	0.24	0.94	0.23	<0.17	0.67	<0.17
Dibromochloromethane*	µg/L	80	1.1	0.24	0.25	0.39	<0.14	<0.23	1.1	0.30	1.5	0.61	<0.14	0.44	<0.14
1,2-Dichloroethylene (cis)	µg/L	70	<0.16	0.54	<0.16	<0.16	<0.16	<0.19	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
Tetrachloroethylene	µg/L	5	1.8	0.68	0.63	<0.13	1.4	1.8	<0.13	<0.13	<0.13	<0.13	0.23	<0.13	<0.13
Trichloroethylene	µg/L	5	<0.19	0.35	0.28	<0.19	0.26	0.26	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
Trichlorofluoromethane	µg/L	--	<0.26	0.77	<0.26	<0.26	<0.26	<0.18	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26

* Disinfection By-Product

**MADISON WATER UTILITY
WATER QUALITY WATCH LIST**

Organics - Regulated

Contaminant	Maximum*	Units	MCLG	PAL	MCL	Detects Below PAL%	Watch List	Action Plan	Reference
1,2-Dichloroethane	0.20	µg/L	zero	0.5	5	#17	none		NR 809.24
1,2-Dichloroethylene (cis)	0.42	µg/L	70	7	70	#8, #11	none		NR 809.24
Ethylbenzene	0.14	µg/L	700	140	700	#225	none		NR 809.24
Tetrachloroethylene [PCE]	3.9	µg/L	zero	0.5	5	#27	#6, #9, #11, #14, #18	Quarterly Monitoring	NR 809.24
1,1,1-Trichloroethane	0.26	µg/L	200	40	200	#9, #18	none		NR 809.24
Trichloroethylene [TCE]	0.43	µg/L	zero	0.5	5	#11, #14, #18, #27	none		NR 809.24
Xylene, Total	1.5	µg/L	10000	400	10000	#225	none		NR 809.24

* Maximum detection observed at any Madison well from 2011 through 2015

% Detected in at least one sample collected from 2011 through 2015

Organics - Unregulated

Contaminant	Maximum*	Units	MCLG	PAL	ES	Detects Below PAL%	Watch List	Action Plan	Reference
Dichlorodifluoromethane	0.20	µg/L	n/a	200	1000	#14	none		NR 140.10
1,1-Dichloroethane	0.08	µg/L	n/a	85	850	#9	none		NR 140.10
1,4-Dioxane	0.63	µg/L	n/a	0.3	3	#9, #14, #15, #18	#11	Monitor	NR 140.10
Trichlorofluoromethane	1.2	µg/L	n/a	698	3490	#11	none		NR 140.10

* Maximum detection observed at any Madison well from 2011 through 2015

% Detected in at least one sample collected from 2011 through 2015

Radionuclides

Contaminant	Maximum	Units	MCLG	Watch	MCL	Wells with Detects	Watch List	Action Plan	Reference
Gross alpha	11.2	pCi/L	zero	5	15	All Except #14	#19, #24, #27, #30	Monitor	NR 809.50
Gross beta	8.8	pCi/L	zero	10	50	All Except #14	none		NR 809.50
Combined Radium	5.7	pCi/L	zero	2.5	5	All Wells	#7, #8, #19, #24 #27, #28, #30	Quarterly Monitoring	NR 809.50
Uranium	2.0	µg/L	zero	3	30	All Wells	none		NR 809.50

ES - Enforcement Standard (NR 140 - Groundwater Quality)

MCL - Maximum Contaminant Level Legal Limit

MCLG - MCL Goal (Public Health Goal)

PAL - Preventive Action Limit (NR 140 - Groundwater Quality)

**MADISON WATER UTILITY
WATER QUALITY WATCH LIST**

Inorganics - Regulated

Substance	Maximum *	Units	MCLG	PAL	MCL	Detects Below PAL	Watch List	Action Plan	Reference
Arsenic	0.7	µg/l	zero	1	10	All Except #13, #15, #20, #25, #29	none		NR 809.11
Barium	57	µg/l	2000	400	2000	All Wells	none		NR 809.11
Chromium	2.3	µg/l	100	10	100	All Except #7, #8, #17 #19, #24, #28, #30	none		NR 809.11
Copper	61	µg/l	1300	130	1300	All Wells	none		NR 809.11
Lead	1.0	µg/l	zero	1.5	15	All Except #8, #17, #19, #26, #27, #29, #30	none		NR 809.11
Nickel	5.4	µg/l	100	20	100	All Wells	none		NR 809.11
Nitrogen-Nitrate	4.4	mg/l	10	2	10	#9, #12, #18, #20, #25, #26, #27, #29	#6, #11, #13, #14, #15, #16, #23	Monitor	NR 809.11
Selenium	1.2	µg/l	50	10	50	#6, #9, #11, #13, #14, #15, #16, #23, #25, #27, #29	none		NR 809.11
Thallium	0.2	µg/l	0.5	0.4	2	#11, #13, #15, #17, #19, #23, #27, #28	none		NR 809.11

* Based on 2014 annual test data

Inorganics - Unregulated

Substance	Maximum *	Units	MCLG	Watch	SMCL	Wells with Detects	Watch List	Action Plan	Reference
Aluminum	2.5	µg/l	n/a	50	200	All Wells	none		NR 809.70
Chloride	120	mg/l	n/a	125	250	All Wells	none		NR 809.70
Iron	0.56	mg/l	n/a	0.15	0.3	All Except #6, #9, #12, #14, #15, #16, #20	#8, #19, #24, #28, #30	#8 - Install Filtration (2017) #19 - Install Filtration (2016) #30 - Install Filtration (2020)	NR 809.70
Manganese	50	µg/l	n/a	25	50	All Wells	#8, #17, #19, #23, #24, #27	#8 - Install Filtration (2017) #19 - Install Filtration (2016)	NR 809.70
Sodium	40	mg/l	n/a	20	n/a	All Wells	#14, #15, #16, #23	Monitor	EPA DWEL
Sulfate	40	mg/l	n/a	125	250	All Wells	none		NR 809.70
Zinc	44	µg/l	n/a	2500	5000	All Wells	none		NR 809.70

* Based on 2014 annual test data

MCL - Maximum Contaminant Level (Legal Limit)

MCLG - MCL Goal Public Health Goal

PAL - Preventive Action Limit (NR 140 - Groundwater Quality)

SMCL - Secondary MCL (Aesthetic Guideline)

DWEL - Drinking Water Equivalency Level

Water Quality Technical Advisory Committee

Meeting Notes

Olin Avenue Conference Room

November 11, 2014 – 1:00 p.m.

Attending: Janet Battista, Greg Harrington, Jocelyn Hemming, Sharon Long, Ken Bradbury, Amy Barrilleaux, Al Larson, Joseph Grande

Absent: Ariana Mankerian, Joe DeMorett, Tom Heikkinen

Agenda:

1. **Agenda Repair/Announcements**
2. **Review of Meeting Notes**
3. **Meeting Dates - 2015**
4. **Water Quality Monitoring Results**
5. **Chloride & Sodium Discussion**
6. **Wellhead Protection Planning**
7. **Future Potential Agenda Items**
 - **Madison Kipp Update**

1. Agenda Repair/Announcements

Members requested a copy of the final draft of the Water Quality Treatment Policy which was submitted to the Water Utility Board for consideration.

The US EPA National Drinking Water Advisory Council Lead & Copper Work Group reached out to the utility to learn from our experience with a full lead service line replacement program. Madison, WI and Lansing, MI were asked to participate in a webinar with the NDWAC group. Lansing owns the entire water service (from main to meter) and has been voluntarily replacing the entire service lateral at no cost to the property owner.

In October, the Water Utility Board conducted a 5-year review of the utility's fluoridation policy. After two hours of public testimony, both in support and opposition to continued fluoridation, the Board affirmed the continued practice of fluoridating the water supply. Changes to the policy included lowering the target level to 0.7 ppm; referencing the CDC recommendations; and revising the timeframe for review from every 5 years to 10 years.

2. Review of Meeting Notes

No changes were proposed.

3. Meeting Dates – 2015

The proposed 2015 meeting dates include:

January 13; possibly January 20
March 10; possibly March 17
April 14
May 12

June 16
September 8
October 13
November 10

All meetings are scheduled to be held in the Olin Avenue conference rooms from 1 p.m. to 2:30 p.m.

4. Water Quality Monitoring Results

Wells were sampled twice for hexavalent chromium in 2014. The analysis was conducted by Eaton Analytical, formerly Underwriters Laboratory. Test results were comparable to previous samples with the exception of some observed increases in total chromium. These changes likely reflect analytical accuracy rather than a significant change in water quality. Negligible differences were noted between raw water and entry point (treated) samples when tested. The chromium level at Well 31 was below detection.

Unregulated Contaminant Monitoring Rule 3 (UCMR3) is scheduled to be conducted in March and September. Sampling will be completed at all wells and seven distribution sites. Hexavalent chromium will be one of 28 contaminants included in the required monitoring.

Tetrachloroethylene (PCE) results at four wells were reported: Well 6 and Well 9 were stable at 1.0 ug/L and 1.7 ug/L, respectively; Well 15 raw water remains around 3.0-3.5 ug/L; and Well 18 has ranged from 1.3-2.0 ug/L.

5. Chloride & Sodium Discussion

Development of an outreach campaign to reduce road salt use in Dane County continues. Numerous agencies including UW-Madison, PHMDC, Dane County, MWU, MMSD, and City Engineering – Storm Water Utility, are participants. Target audiences include motorists, homeowners, salt applicators, municipalities and EMS. Roll out of the campaign is planned for late November or early December. The website will be www.wisaltwise.com. Training for public and private applicators was held in mid-November.

A handout showing wells with the highest levels of sodium and chloride was distributed. Summary includes:

- Well 14 is likely to exceed ½ SMCL for chloride (125 mg/L) within the next year.
- If Wells 6, 16, and 23 continue on their current trajectory, each well will likely exceed ½ SMCL for chloride in the next 12 to 20 years.
- Well 13 has shown a sudden increase in chloride. This change may be related to failure of a monitoring well previously located near Well 13 or the installation of retention ponds near Well 13.

All wells are monitored annually for sodium and chloride. Well 14 is monitored more frequently and was recently transitioned to weekly monitoring until April 2015 due to elevated and increasing levels.

The draft Treatment Policy recommends investigating treatment alternatives when the contaminant exceeds ½ SMCL. One possible option is to extend the casing at the wellhead. The committee suggested continuously monitoring conductivity throughout the year to develop a relationship between chloride and conductivity.

6. Wellhead Protection Planning

Wellhead Protection Plans (WHPP) for all 22 wells are now complete. The WHPP for Well 17 was recently submitted to WDNR. Staff members are working on the WHPP for Well 31; this plan must be approved before Well 31 can deliver water to the distribution system.

The next tasks include (1) updating the capture zones utilizing the updated groundwater model and (2) updating the Contaminant Source Inventory (CSI) for each well. Many of these plans were completed over 10 years ago with a CSI update recommended every 5 years.

The current plans include four pumping scenarios: 50% pumpage; 100% pumpage; 2030 projected pumpage; and maximum year pumpage in the previous 5 years. The committee discussed using 100% pumping capacity for the 5 year capture zone and using the average pumping for seasonal wells only during the months the well typically operates. The flexibility built into the new model allows for more pumping variables to be modeled.

7. Potential Future Agenda Items

- UCMR 3 – Pharmaceutical and hormone testing
- Distribution system master plan; 5-10 year water supply planning horizon
- Iron & manganese and air stripper technologies and performance update
- Viruses, artificial sweeteners as indicators of leaky sewers, susceptibility of groundwater
- Madison Kipp Update

The next meeting will be Tuesday January 20 at 1 pm in the Olin Avenue Main Conference Room

Water Quality Technical Advisory Committee

Meeting Notes

Olin Avenue Conference Room

January 20, 2015 – 1:00 p.m.

Attending: Janet Battista, Ken Bradbury, Jocelyn Hemming, Ariana Mankerian, Joseph Grande
Absent: Amy Barrilleaux, Joe DeMorett, Greg Harrington, Tom Heikkinen, Al Larson, Sharon Long
Guest: Jeff Postle, Groundwater Specialist (DATCP)

Items:

1. Agenda Repair/Announcements

No announcements beyond absences of committee and staff members

2. Review of Meeting Notes

No changes were proposed.

3. Pesticides & Groundwater Contamination

Jeff Postle presented information regarding commonly used herbicides/pesticides in Wisconsin; groundwater monitoring results from monitoring wells, private wells and community/municipal wells throughout Wisconsin; and recommendations for the water utility relating to potential monitoring. Talk discussed environmental fate and transport of pesticides (and their metabolites) with an emphasis on the physical/chemical properties that impact groundwater contamination potential – solubility, adsorption, degradation, and volatility. Metabolites often are more mobile and resist degradation. Commented on infiltration basins in residential areas and the potential for groundwater contamination by herbicides. Lawn care herbicides have low leaching potential.

DATCP laboratory, now housed at the State Laboratory of Hygiene, offers testing for range of pesticides (50) and metabolites (10) with limits of detection in the 10-50 parts per trillion range [“universal” method].

4. Water Quality Monitoring Results

Reviewed 2014 operator fluoride results – 5256 tests with 93% within normal operating range of 0.5-0.9 mg/L. Internal goal is to have >95% within this range. Presented raw and summarized VOC data for 2014; nine wells showed a detection of at least one VOC. PCE is detected at seven wells, TCE at five wells. Well 18 is being more closely monitored due to erratic and sometimes high [3.5 µg/L] PCE level. The MCL is 5. Finally, the 2014 radionuclide results were reviewed. Additional testing will occur now that the Water Quality Treatment Policies have been adopted by the Water Utility Board.

5. Future Agenda Items

- Madison Kipp Update
- MWU Master Plan

The next meeting, scheduled for Tuesday, March 17, has been canceled. Future meetings – April 14, May 12, and June 16.



MADISON WATER UTILITY

2014 Water Quality Report

PARA ESPAÑOL HAGA CLIC AQUÍ

This annual report complies with federal and state drinking water regulations, which require us to provide water quality information to our customers each year. Unless otherwise noted, results are based on testing conducted in 2014. We are pleased to report that we continue to supply high quality water that meets or exceeds all federal and state standards for health and safety. Test results are summarized on page 3. Visit our website, madisonwater.org, to learn about water utility programs and projects.

Mission Statement

We are entrusted by the people of Madison to supply high quality water for consumption and fire protection, at a reasonable cost, while conserving and protecting our ground water resources for present and future generations.

WHICH WELL SERVES MY ADDRESS?

The Madison water system consists of 22 wells and over 840 miles of interconnected pipes. Most locations receive water from one to three wells. Our website has an application that can tell you which wells supply water to your home or business. There are links to detailed reports with the latest water quality test results. For more information, call the Water Utility or go to madisonwater.org/myWells.

Quality & Reliability since 1882

WHAT IS THE SOURCE OF MADISON TAP WATER?

Madison drinking water comes from a deep sandstone aquifer, an underground rock formation where water is stored in small spaces between and within rock. Groundwater in the Madison area originates as rain or snow that falls in Dane County, soaks into the ground, and is filtered through layers of soil and rock before replenishing the aquifer. Natural filtration produces high-quality water for us to enjoy.

WHAT KEEPS OUR WATER SAFE?

The high quality aquifer supplying our drinking water requires little treatment. Madison Water Utility disinfects the water with chlorine to reduce the risk of microbial contamination. A small amount of chlorine kills bacteria and viruses that can be present in groundwater. Chlorine also travels with the water and is ready to kill microbes that it might encounter in the system. Our goal is to maintain a chlorine residual above 0.1 milligrams per liter (mg/L) at all points in the distribution system. Typical concentrations range from 0.2 to 0.4 mg/L.

HOW ELSE IS THE WATER TREATED?

Fluoride is added to Madison drinking water to improve dental health and reduce tooth decay. The US Centers for Disease Control and Prevention (CDC) and Wisconsin Department of Health Services recommend maintaining an average fluoride level of 0.7 mg/L. Water from each well is tested daily to achieve this target level. In 2014, the system-wide average of 5,256 tests was 0.71 mg/L.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those 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 Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

Cryptosporidium and *Giardia*, two organisms commonly linked to water-borne illness, are found primarily in surface waters such as lakes and rivers. Because Madison's drinking water comes from a deep groundwater aquifer, these organisms do not pose a significant health risk in Madison tap water.

Do Your Part To Protect Groundwater

- » Properly dispose of household hazardous chemicals through Clean Sweep, danecountycleansweep.com
- » Use non-toxic or biodegradable cleaning products
- » Promote healthy lawns and gardens without the use of harmful chemicals, clean-water.uwex.edu/pubs
- » Limit use of winter salt on sidewalks and driveways

POTENTIAL CONTAMINANTS IN DRINKING WATER AND THEIR LIKELY SOURCES

Sources of drinking water, both tap water and bottled water, include rivers, lakes, springs, and wells. As water travels over the surface of the land and 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 activity. Types of potential contaminants and their likely sources include:

- **Microbial contaminants**, such as viruses and bacteria, may come from leaky sewer pipes, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, including metals, minerals, nutrients, and salts, can occur naturally or they may result from urban stormwater runoff, industrial wastewater discharges, mining, or farming activities.
- **Organic contaminants**, including synthetic and volatile organic compounds, are by-products of industrial processes that can come from chemical spills, gas stations, urban stormwater runoff, and septic systems.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, urban stormwater runoff, and residential use.
- **Radioactive substances** may occur naturally in rock formations and groundwater.

In order to ensure that tap water is safe, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Routine monitoring helps to ensure that drinking water concentrations of any substance remain at safe levels.

MICROBIOLOGICAL TESTING

Bacteria – To ensure drinking water safety, routine bacteriological tests are conducted. Over 200 distribution samples are collected each month from representative locations. Samples are tested for coliform bacteria, indicators of potential contamination. In 2014, the Water Utility collected 2,816 distribution samples with a single sample testing positive for coliform bacteria. The low number of coliform positive samples reflects good source water quality and adequate disinfection maintained in the distribution system.

THE EPA ON DRINKING WATER CONTAMINANTS

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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline, 800-426-4791.

On the Web

- » **Inside MWU** – News about your water and the people who keep it running.
- » **Rebuilding & Renewing** – Learn about our plan to replace Madison's aging water mains.
- » **Toilet Rebate Program** – Find out how to get \$100 just for buying a water-efficient toilet!
- » **Project News** – In 2015, MWU will oversee a variety of construction and engineering projects totaling about \$35 million. Learn how you can get involved.
- » **Sustainability** – See what we're doing to protect Madison's water for future generations, and find out how you can help.

How to Read the Water Quality Data Table

The EPA and Wisconsin Department of Natural Resources (WDNR) establish the safe drinking water regulations that limit the amount of contaminants allowed in drinking water. The table shows the concentrations of detected substances in comparison to the regulatory limits. Substances not detected are not included in the table.

Maximum Contaminant Level (MCL)

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 technology.

Maximum Contaminant Level Goal (MCLG)

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.

Action Level (AL)

The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a public water system shall follow.

Units in the Table

- One milligram per liter (mg/L) equals one part per million (ppm)
- One microgram per liter ($\mu\text{g/L}$) equals one part per billion (ppb)
- One milligram per liter equals 1,000 micrograms per liter
- One ppb is analogous to one second in 32 years
- Picocurie per liter (pCi/L) is a measure of radioactivity
- nd = non-detect

IMPORTANT NOTE ABOUT THE TABLE: The table reports the maximum and minimum concentrations for each substance found in at least one well. Several substances are found only in a few wells. Contaminant levels reported in the table may not be representative of the water quality at your home. Visit madisonwater.org or call 608-266-4654 to get more information about water quality for the well that serves your home or business.

Water Quality Table

Substance Detected (units)	Ideal Goal (MCLG)	Highest Level Allowed (MCL)	Median Level Found	Range of Results	Violation (Yes/No)	Wells with Detections	Typical Source of Substance
Regulated Substances							
Arsenic (ppb)	zero	10	0.3	nd - 0.7	No	Seventeen wells	Erosion of natural deposits; Glass and electronics production
Barium (ppb)	2000	2000	19	8.4 - 57	No	All wells	Erosion of natural deposits; Discharge from metal refineries
Chromium, Total (ppb)	100	100	0.9	nd - 2.3	No	Fifteen wells	Erosion of natural deposits; Discharge from steel and pulp mills
1,2-Dichloroethane (ppb)	zero	5	non-detect	nd - 0.20	No	Well 17	Discharge from industrial chemical factories
1,2-Dichloroethylene, cis (ppb)	70	70	non-detect	nd - 0.42	No	Well 8 & Well 11	Discharge from industrial chemical factories; Biodegradation of PCE and TCE
Fluoride (ppm)	4	4	0.8	0.7 - 1.0	No	All wells	Erosion of natural deposits; Added to promote strong teeth
Nickel (ppb)	n/a	100	1.1	0.5 - 5.4	No	All wells	Occurs naturally in soil and water; Used in electroplating, stainless steel & alloy products
Nitrate (ppm)	10	10	0.9	nd - 4.4	No	Fifteen wells	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Selenium (ppb)	50	50	0.5	nd - 1.2	No	Eleven wells	Erosion of natural deposits; Petroleum and metal refineries
Tetrachloroethylene (PCE) (ppb)	zero	5	non-detect	nd - 3.5	No	6, 9, 11, 14, 15, 18, 27	Discharge from factories, dry cleaners, and auto shops
Thallium (ppb)	0.5	2	non-detect	nd - 0.2	No	11, 13, 15, 17, 19, 23, 27, 28	Ore processing sites; Electronics, glass, and drug factories
1,1,1-Trichloroethane (ppb)	200	200	non-detect	nd - 0.26	No	Well 18	Discharge from metal degreasing sites and other factories
Trichloroethylene (TCE) (ppb)	zero	5	non-detect	nd - 0.40	No	11, 14, 15, 18, 27	Discharge from metal degreasing sites and other factories
Radionuclides							
Gross Alpha (pCi/L)	zero	15	3.2	nd - 9.6	No	All except Well 14	Erosion of natural deposits
Gross Beta (pCi/L)	zero	50	3.1	nd - 8.8	No	All except Well 14	Decay of natural and man-made deposits
Radium, 226+228 (pCi/L)	zero	5	1.7	0.5 - 4.5	No	All wells	Erosion of natural deposits
Disinfection By-Products (Distribution)							
Haloacetic Acids [HAA5] (ppb)	60	60	0.8	nd - 3.4	No	n/a	By-product of drinking water chlorination
Total Trihalomethanes [TTHM] (ppb)	zero	80	4.1	0.6 - 11	No	n/a	By-product of drinking water chlorination
Unregulated Substances							
Bromodichloromethane (ppb)	n/a	n/a	non-detect	nd - 2.1	No	Thirteen wells	By-product of drinking water chlorination
Bromoform (ppb)	n/a	n/a	non-detect	nd - 0.6	No	Ten wells	By-product of drinking water chlorination
Chloroform (ppb)	n/a	n/a	non-detect	nd - 2.9	No	Ten wells	By-product of drinking water chlorination
Chromium, Hexavalent (ppb)	n/a	n/a	0.5	nd - 1.9	No	Fourteen wells	Erosion of natural deposits; Chrome plating, leather tanning, wood preservation
Dibromochloromethane (ppb)	n/a	n/a	0.3	nd - 1.8	No	Eighteen wells	By-product of drinking water chlorination
1,1-Dichloroethane (ppb)	n/a	n/a	non-detect	nd - 0.08	No	Well 9	Discharge from industrial chemical factories
1,4-Dioxane (ppb)	n/a	n/a	0.17	0.08 - 0.37	No	9, 11, 14, 15	Discharge from chemical factories; Cosmetics and detergents
Strontium (ppb)	n/a	n/a	76	48 - 101	No	All wells	Erosion of natural deposits
Trichlorofluoromethane (ppb)	n/a	n/a	non-detect	nd - 0.9	No	Well 11	Discharge from industrial chemical factories; Degreaser, propellant, refrigerant
Other Substances							
	Aesthetic Goal						
Chloride (ppm)	250		22	2.4 - 120	No	All wells	Erosion of natural deposits; Road salt application
Iron (ppm)	0.3		0.04	nd - 0.56	No	Fifteen wells	Erosion of natural deposits
Manganese (ppb)	50		8.5	0.4 - 50	No	All wells	Erosion of natural deposits
Sodium (ppm)	n/a		9.3	2.0 - 40	No	All wells	Erosion of natural deposits; Road salt application
Sulfate (ppm)	250		19	7.1 - 40	No	All wells	Erosion of natural deposits

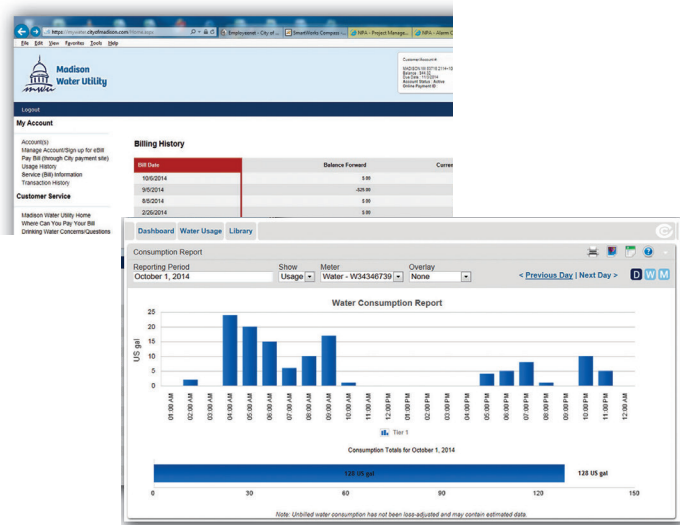
Lead and Copper

The lead service line replacement program ended in 2012. This initiative successfully reduced lead exposure from Madison tap water. Water quality tests conducted in 2014 (see table) show that lead and copper corrosion have been minimized.

	Ideal Goal (MCLG)	Action Level (AL)	90th Percentile	Range	Samples Above AL
Lead (ppb)	zero	15	3.5	nd - 10	0 of 52
Copper (ppb)	1300	1300	185	35 - 292	0 of 52

Track Your Water Use Online

How much water do you use doing laundry? How about watering your garden? Now there's an easy way to find out. Join the thousands of Madison Water Utility customers who are tracking their weekly, daily, even hourly water use online. The Utility's online conservation tool lets you see exactly when you're using water and how much you're using. You can set up email alerts so you'll be notified when your usage surpasses a certain number of gallons. All you need to track your water use is a computer or smart phone.



HOW TO SIGN UP

Visit madisonwater.org and click "View Water Usage." You'll need the Customer Number and Account Number from your Municipal Services Bill. Can't find your bill? Call our customer service department at 608-266-4641. From our new Customer Care page you can also view current and past bills and go paperless by signing up for e-billing.

The Sustainable Choice

Did you know that 17 million barrels of crude oil are used every year to produce plastic water bottles? Not only does Madison tap water cost thousands of times less than bottled water, it's thoroughly tested every single day for quality and safety. We're committed to providing safe, clean water to every home, business, school and hospital in Madison and preserving our city's precious water supply for generations to come.

Information You Can Use

Madison Water Utility
119 E. Olin Avenue
Madison, WI 53713
608-266-4651

Water Utility General Manager: Tom Heikkinen
Water Utility Board President: Madeline Gotkowitz

Water Quality Dept. or questions about this report . . . 608-266-4654

Certified Drinking Water Laboratories in Madison, WI:
Public Health Madison & Dane County 608-266-4821
Wisconsin State Laboratory of Hygiene 608-224-6202

GET THE LATEST MADISON WATER NEWS ONLINE

- Visit our website: madisonwater.org
- Find us on Facebook: [facebook.com/madisonwater](https://www.facebook.com/madisonwater)
- Follow us on Twitter: twitter.com/MadWaterUtility
- Get updates on drinking water quality or water main flushing: sign-up at my.cityofmadison.com

LANGUAGE SERVICES

- Usted tiene derecho a recibir servicio gratuito de intérprete. Por favor llame al teléfono 608-266-4651 para mayor información.
- Koj muaj tvoj cai tau kev pab txhais lus pub dawb. Thov hu rau 608-266-4651.
- You have the right to free language services. Please call 608-266-4651 for more information.

GET INVOLVED

- Visit our [Project News](http://ProjectNews) website to learn about Madison Water Utility public works projects and provide input.
- Water Utility Board: Monthly meetings held at 119 E. Olin Avenue, starting at 4:30 p.m.

2015 dates:*

April 28	August 25
May 26	September 29
June 23	October 27
July 28	November 24

*Meeting dates are subject to change; check the calendar at madison.legistar.com/Calendar.aspx



drink local