

Internal Monitoring Report

Policy #: O-2B Water Quality

Date: October 27, 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 April and September, 1883 samples were collected from routine monitoring points in the distribution system including the entry point at the well houses (425 samples). Four well samples showed the presence of coliform bacteria; however, none of these positive results were confirmed upon re-sampling. Fifty-two raw water samples were collected during this monitoring period. Eight resulted from an unconfirmed coliform positive sample in the City of Fitchburg which triggered source water testing. All raw water samples were free of coliform bacteria.

All twenty-two wells were monitored for a suite of thirty-one potential inorganic contaminants including the regulated chemicals found in the summary table below. All fifteen chemicals tested well below the MCL at each well. Elevated levels of manganese, lead, and thallium (results not shown) from an initial sample from Well 9 were attributed to an unclean sample tap that caused noticeable turbidity. Results from resamples were consistently lower than the initial results and were comparable to previous years’ results at the well.

Summary statistics for regulated inorganic contaminants:

PARAMETER	Detects	Units	Minimum	Median	Maximum	MCL
Antimony	0	µg/L	<0.2	<0.2	<0.2	6
Arsenic	12	µg/L	<0.2	0.2	0.9	10
Barium	22	µg/L	7.6	20	57	2000
Beryllium	0	µg/L	<0.2	<0.2	<0.2	4
Cadmium	0	µg/L	<0.1	<0.1	<0.1	5
Chromium	15	µg/L	<0.4	0.7	2.8	100
Copper	22	µg/L	1.8	5.3	76	1300
Fluoride	22	mg/L	0.5	0.8	0.9	4
Lead	18	µg/L	<0.1	0.3	3.2	15
Mercury	1	µg/L	<0.02	<0.02	0.02	2
Nickel	22	µg/L	0.4	1.1	3.1	100
Nitrate	15	mg/L	<0.12	0.8	4.2	10

Nitrite	3	mg/L	<0.04	<0.04	0.1	1
Selenium	10	µg/L	<0.4	<0.4	1.3	50
Thallium	9	µg/L	<0.1	<0.1	0.2	2

Twelve wells were monitored for volatile organic compounds (VOC) during the monitoring period from April to September: six seasonal wells and six wells that are sampled quarterly because of previous detections.

Maximum detection (in µg/L) for each well and VOC.

	Samples	DCE, cis	TCE	PCE	TCFM
Well 6	2	<0.19	<0.20	0.88	<0.18
Well 7	1	<0.19	<0.20	<0.19	<0.18
Well 8	1	0.20	<0.20	<0.19	<0.18
Well 9	2	<0.19	<0.20	1.4	<0.26
Well 11	2	0.45	0.32	0.73	0.94
Well 14	2	<0.19	<0.20	0.56	<0.26
Well 15	2	<0.19	<0.20	<0.19	<0.26
Well 17	1	<0.16	<0.19	<0.13	<0.26
Well 18	2	<0.16	0.21	1.7	<0.26
Well 23	1	<0.19	<0.20	<0.19	<0.18
Well 27	1	<0.16	<0.19	0.25	<0.26
Well 28	1	<0.16	<0.19	<0.13	<0.26
TCFM = Trichlorofluoromethane					

Quarterly monitoring occurs at any well in which PCE exceeds 0.5 µg/L; otherwise, annual samples are collected at each well. The above table does not include results for disinfection by-products such as trihalomethanes.

In accordance with GUIDE 8, seven wells were tested quarterly for radium between January and September because combined radium (radium 226 + 228) exceeded 2.5 pCi/L, or one half the MCL, in previous testing. Radium results above the MCL at Well 19 and Well 27 led to more frequent testing at those two wells.

Combined Radium (226+228), pCi/L

	February	April	May	July	August	September
Well 7	Inactive	Inactive	1.6	No sample	2.8	No sample
Well 8	Inactive	Inactive	Inactive	2.5	No sample	0.81
Well 19	5.3	4.1	4.8	3.9	4.7	No sample
Well 24	3.3	No sample	3.2	2.6	No sample	No sample
Well 27	5.7	4.0	6.2	3.3	4.3	Result pending
Well 28	Inactive	Inactive	3.1	No sample	4.9	No sample

Well 30	3.7	No sample	3.7	No sample	No sample	2.6
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Contaminants with a secondary MCL

Iron and Manganese

Monthly samples are collected at wells with elevated iron and manganese. Samples collected at Well 8 and Well 19 exceeded the secondary MCL – 0.3 mg/L and 50 µg/L respectively – for iron and/or manganese. Test results are shown below.

Iron, mg/L	Apr	May	Jun	Jul	Aug	Sep
Well 7	n/s	n/s	<0.01	<0.01	<0.01	0.00
Well 8	n/s	n/s	n/s	0.56	0.76	0.56
Well 17	n/s	0.10	0.10	0.13	0.12	0.13
Well 19	0.16	0.23	0.17	0.22	0.18	0.18
Well 23	n/s	n/s	n/s	0.07	n/s	0.18
Well 24	0.21	n/s	0.22	0.22	n/s	0.21
Well 26	0.01	0.15	<0.01	0.05	0.02	n/s
Well 27	n/s	0.18	0.14	0.16	n/s	0.18
Well 28	n/s	0.15	0.13	n/s	0.18	0.18
Well 29	<0.01	<0.01	0.00	0.01	0.01	0.01
Well 30	0.22	0.22	0.24	0.20	0.21	n/s

Manganese, µg/L	Apr	May	Jun	Jul	Aug	Sep
Well 7	n/s	n/s	1.6	<0.2	<0.2	0.5
Well 8	n/s	n/s	n/s	48	54	49
Well 17	n/s	31	34	32	30	28
Well 19	44	55	47	73	41	41
Well 23	n/s	n/s	n/s	27	n/s	27
Well 24	30	n/s	34	26	n/s	22
Well 26	1.0	15	14	11	1.3	n/s
Well 27	n/s	36	32	28	n/s	34
Well 28	n/s	21	23	n/s	22	21
Well 29	0.3	0.3	1.9	1.8	2.1	1.0
Well 30	15	15	18	14	15	n/s

Iron and manganese monitoring also occurs in the distribution system at all coliform sample locations. Test results, summarized in the table below, show iron and manganese infrequently exceed the established benchmarks and over 95% of the samples are below one half the policy goals.

Manganese, µg/L

	Apr - Sep	2015
Policy Goal	50	50
Median	1.9	2.0
Average	4.9	4.9
95th Percentile	18	18
Maximum	106	106
Count	160	244
>50	2	4

Iron, mg/L

	Apr - Sep	2015
Policy Goal	0.3	0.3
Median	<0.01	<0.01
Average	0.03	0.03
95th Percentile	0.14	0.13
Maximum	0.50	1.08
Count	160	244
>0.3	2	4

Chloride

Regular chloride monitoring continues at Well 14. A total of seventy-five samples have been collected since October 2013. In that time, the average chloride level has been 119 mg/L with a maximum of 126 mg/L. Chloride is increasing at a rate of 2.7 mg/L per year at Well 14 which is about half the rate of increase observed in the previous five years.

Unregulated and Emerging Contaminants:

The second round of Unregulated Contaminants Monitoring Regulation, Cycle 3 (UCMR3) sampling occurred in September when all wells except Well 16 were sampled for 28 chemical contaminants. In addition, seven distribution system sites were sampled for a subset of these contaminants including five metals.

None of the perfluorinated compounds (6) or hormones (7) were detected at the sub-part per billion and sub-part per trillion levels, respectively. The test results were similar to samples collected earlier this year. In addition, none of the results were above the reference concentration - a level where, based on publicly available health information, there may be some impact to human health. Detections are summarized in the table below.

Unregulated Contaminant	Detections	Minimum	Maximum	Wells
chlorate	3	<20	29	#6, #13, MDS
chromium, hexavalent	14	<0.03	3.3	Multi-aquifer

chromium, total	12	<0.2	1.9	Multi-aquifer
cobalt	1	<1	1.4	#19
strontium	21	47	95	All wells
vanadium	3	<0.2	0.4	#9, #14, #23
1,1-dichloroethane	1	<0.03	0.08	#9
1,4-dioxane	4	<0.07	0.33	#9, #11, #14, #15,

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.

Sodium

In accordance with GUIDE 8, monthly testing of sodium at Well 14 is on-going. Thirty samples have been collected since February 2014 with most samples measuring between 38 and 42 mg/L. Sodium is increasing at a rate of 1.5 mg/L per year which is comparable to the rate of increase over the previous five years. If sustained, this level of sodium will require an investigation into alternative strategies to reduce the sodium level.

Water Quality Watch List

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

Water Quality Technical Advisory Committee

Two outcomes of the most recent meeting follow. Additional details can be found in the meeting notes which are an attachment.

- The committee decided to reduce the meeting frequency to once a quarter but will be available for more meetings if an issue emerges and requires immediate consideration.
- The committee recommended against additional monitoring for contaminants monitored as part of UCMR3 unless board policies mandate further testing. The

completed monitoring provides sufficient baseline information to assist the utility with evaluating its risk should drinking water regulations be established in the future. In addition, the detections were all below the reference concentrations – levels at which impacts to human health might be observed.

Wellhead Protection Activities – Road Salt

Modified winter maintenance practices will be implemented in the Spring Harbor watershed this winter. Changes include anti-icing on University Avenue by County Highway staff and additional anti-icing on City salt routes in the watershed. Studies show that anti-icing, the application of liquid brine before a snow event, can significantly reduce overall salt use.

The utility is a founding member of the Wisconsin Salt Wise Partnership, and has been promoting the website (wisaltwise.com) to encourage the wise use of salt by municipalities, private applicators, and homeowners. In addition, the utility provided funding for Winter Maintenance training for municipal and private applicators. The training took place in October.

Finally, signs are being designed and should be installed near Well 14 by the end of October to announce entry into the Wellhead Protection Area. The objective is to raise awareness and gain community support to help protect Madison drinking water.

I report compliance.

Attachments:

Water Quality Watch List

Wellhead Protection Sign

Water Quality Technical Advisory Committee Meeting Notes

**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	0.29	µg/L	zero	0.5	5	#17	none		NR 809.24
1,2-Dichloroethylene (cis)	0.54	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
Toluene	0.12	µg/L	1000	160	1000	#25	none		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, #17, #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	24.3	pCi/L	zero	5	15	All Except Well#14	#8, #19, #24, #27, #30	Monitor	NR 809.50
Gross beta	8.8	pCi/L	zero	10	50	All Except Well#14	none		NR 809.50
Combined Radium	6.2	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	0.9	µg/l	zero	1	10	#6, #8, #9, #14, #17, #19 #23, #24, #25, #27, #28, #30	none		NR 809.11
Barium	57	µg/l	2000	400	2000	All Wells	none		NR 809.11
Chromium	2.8	µg/l	100	10	100	All Except #7, #17, #19, #24, #27, #28, #30	none		NR 809.11
Copper	80	µg/l	1300	130	1300	All Wells	none		NR 809.11
Lead	3.2	µg/l	zero	1.5	15	All Except #7, #17, #27, #29	none		NR 809.11
Mercury	0.02	µg/l	2	0.2	2	#9	none		NR 809.11
Nickel	3.1	µg/l	100	20	100	All Wells	none		NR 809.11
Nitrogen-Nitrate	4.2	mg/l	10	2	10	#9, #12, #18, #20, #25, #26, #27, #29	#6, #11, #13, #14, #15, #16, #23	Monitor	NR 809.11
Nitrogen-Nitrite	0.09	mg/l	1	0.2	1	#12, #20, #28	none		NR 809.11
Selenium	1.3	µg/l	50	10	50	#6, #9, #11, #13, #14, #15, #16, #23, #25, #29	none		NR 809.11
Thallium	0.2	µg/l	0.5	0.4	2	#6, #9, #11, #12, #15, #17, #19, #23, #27	none		NR 809.11

* Based on 2015 annual test data

Inorganics - Unregulated

Substance	Maximum*	Units	MCLG	Watch	SMCL	Wells with Detects	Watch List	Action Plan	Reference
Aluminum	7.8	µg/l	n/a	50	200	All Wells	none		NR 809.70
Chloride	118	mg/l	n/a	125	250	All Wells	none		NR 809.70
Iron	0.62	mg/l	n/a	0.15	0.3	All Except #7, #12, #14, #15, #16, #18, #20, #26	#8, #19, #24, #30	#8 - Install Filtration (2021) #19 - Install Filtration (2016) #30 - Install Filtration (2023)	NR 809.70
Manganese	53	µg/l	n/a	25	50	All Except Well#16	#8, #17, #19, #23, #24, #27	#8 - Install Filtration (2021) #19 - Install Filtration (2016)	NR 809.70
Sodium	42	mg/l	n/a	20	n/a	All Wells	#11, #14, #15, #16, #23	Monitor	EPA DWEL
Sulfate	89	mg/l	n/a	125	250	All Wells	none		NR 809.70
Zinc	31	µg/l	n/a	2500	5000	All Wells	none		NR 809.70

* Based on 2015 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

ENTERING

**Wellhead
Protection
Area**

**PROTECT MADISON
DRINKING WATER**

MadisonWater.org

30"x30"

Water Quality Technical Advisory Committee - **DRAFT**

Meeting Notes
Olin Avenue Conference Room
July 9, 2015 – 11:00 a.m.

Attending: Janet Battista, Greg Harrington, Jocelyn Hemming, Ken Bradbury, Amy Barrilleaux, Al Larson, Joseph Grande, Ariana Mankerian, Joe DeMorett

Absent: Sharon Long, Tom Heikkinen

Guests: Allina Walcek, Madison Kipp Environmental Group and 2 members of the public

Agenda:

1. **Agenda Repair / Announcements**
2. **Review of Meeting Notes**
3. **Madison Kipp / Well 8 Discussion**
4. **Water Quality Monitoring Results & Discussion**
 - **Water Quality Treatment Policies Overview**
 - i. **Radium**
 - ii. **Volatile Organic Compounds**
 - iii. **Sodium / Chloride**
 - **Well 7 Filter Start-Up**
 - **Annual Water Quality Monitoring Report**
5. **Future Agenda Items**
 - **MWU Master Plan & Capital Improvement Plan**
6. **Adjournment**

1. **Agenda Repair/Announcements** - No changes were proposed.

2. **Review of Meeting Notes** - No changes were proposed.

3. **Madison Kipp / Well 8 Discussion**

Well 8 is being prepped for seasonal operation. Once on-line, water will be pumped into the distribution system from mid July to September. Based on projected demand, the well will pump approximately 4 hours per day, supplying ½ million gallons per day. The long term plans include reconstruction to upgrade the site and add filtration. Due to financial constraints, the project has been delayed to 2021. In the interim, operation of the well will focus on minimizing the impact of iron and manganese in the distribution system along with continuing to monitor for any potential impact from Madison Kipp.

A handout of *Jessie's Options for Future Work* was distributed. Jessie agrees with the study's findings that the MKC plume appears to be stable. MWU has budgeted \$50K in 2016 for an additional study. Joe DeMorett solicited input from the TAC members for additional items (short and long term) they would like Eric Oelkers, BT Square, to consider including in the scope of the study. Two potential items mentioned include a sentinel well system (early warning) and additional wells, both horizontally and vertically, between Well 8 and MKC.

Allina Walcek, MKC Environmental Group, affirmed the extraction well is on target to start pumping on July 14, 2015. The pump test underway has the well pumping 40 gallons per minute, 24 hours per day. The well is screened to 170' and is located on the north end of the property, in the area with the highest PCE concentration. The air stripper has provided 99% removal; treated water is being discharged to the storm sewer.

Groundwater sampling at MW25 showed no detections in the deep well and some detections in the shallow level (PCE of 0.17 ppb). Sampling is done bi-annually at the perimeter wells and quarterly at other monitoring wells, including MW25. The transducers are operating. MKC does not plan to add additional monitoring wells.

4. **Water Quality Monitoring Results & Discussion**

Water Quality Treatment Policies Overview

i. Radium: Wells 19 & 27 were re-sampled for radium in early April. Following is a summary of the results:

Well 19: 5.3 pCi/L (February)
4.1 pCi/L (April, resample, investigative)
4.8 pCi/L (May, Q2 compliance sample)

Pumpage at Well 19, a year round well, has been 2/3 of capacity due to pump maintenance.

Well 27: 5.7 pCi/L (February)
4.0 pCi/L (April, resample, investigative)
6.2 pCi/L (May, routine monitoring)

Well 27 is a seasonal well that remained on-line last year. Plans include sampling the well monthly until it goes off line this fall. Once the well is out of service, the pump will likely be pulled and the well logged to try to identify defined intervals from which the radium is being drawn.

The utility is currently monitoring Wells 19 & 27 quarterly. While some results were above the MCL, none have constituted a violation of the standard. Radium analysis has an uncertainty of 1 pCi/L to 2 pCi/L; the detection limit is 1 pCi/L.

A TAC member noted that a drop in pumpage can indicate water is being pulled from a different area in the aquifer. The discussion regarding how radium is tested and counted was very helpful in understanding the uncertainty and variability in radium results.

Several suggestions were made including contacting Waukesha on what they've learned; data mining the SCADA data to see if there is a relationship between pumping (how long they'd been pumping and the time the samples were collected) and radium; and support for continued sampling to gather more data points.

ii. VOC: The level of VOCs has been stable and consistent with previous results. There are no emerging issues at this time.

iii. Sodium / Chloride: The level of chloride at four wells (+/- 60 mg/L) has been roughly half of the preventative action level (PAL, 125 mg/L) and one-quarter of the secondary or enforcement standard (250 mg/L). The respective level of sodium at these same wells has been +/- 20 mg/L. Public education of road salt application has been the primary outreach channel to date. Given the linear increase in the levels, the utility has a probable idea when the PAL and the secondary standard will be exceeded.

Well 7 Filter Start-Up

The filter has been running for several months and the start up went well. Iron in the finished water is below detection and the level of manganese is between 1 and 2 µg/L. An open house will be held in August. The neighbors are pleased with the reconstruction of the well site and the quality of the water.

Annual Water Quality Monitoring Report

The *2014 Annual Report on Water Quality Monitoring* was presented to the group. The report includes detailed water quality results from the source water and the distribution system. A question was posed regarding the chlorine residual within the distribution system in relation to water age and water conservation. Additional information of chlorine residuals in the distribution system will be presented in the next report.

5. Future Agenda Items

- Impact of conservation and water patterns on water quality.
- Relationship between location of detention basins and possible impact on water quality. Should location of detention basins be restricted within a wellhead protection area?

6. Adjournment

Next meeting: Tuesday, September 8, 2015 at 1 p.m. in the Olin Avenue Conference Room - this meeting was canceled due to a lack of quorum.

Water Quality Technical Advisory Committee - **DRAFT**

Meeting Notes

Olin Avenue Conference Room

October 13, 2015 – 1:00 p.m.

Attending: Janet Battista, Greg Harrington, Jocelyn Hemming, Sharon Long, Amy Barrilleaux, John Hausbeck, Joseph Grande

Absent: Al Larson, Joe DeMorett, Tom Heikkinen

Agenda:

1. **Agenda Repair / Announcements**
2. **Review of Meeting Notes**
3. **Water Quality Monitoring Results & Discussion**
 - a. **Unregulated Contaminants Monitoring**
 - b. **Radium Results**
 - c. **Other Water Quality Data**
4. **Chloride Monitoring/Reduction Discussion**
5. **Proposed 2016 Meeting Dates**
6. **Future Agenda Items**
 - **MWU Master Plan & capital Improvement Plan**
 - **Program Update – Private Well Surveys in Wellhead Protection Areas**
7. **Adjournment**

1. Agenda Repair/Announcements

No changes to the agenda.

Ken Bradbury was recently named Director and State Geologist of the Wisconsin Geological & Natural History Survey and is no longer able to serve on the TAC. The committee expressed their appreciation to Ken for his invaluable input and service to the utility and the State. The group recommended filling the vacancy with a hydrogeologist familiar with groundwater modeling.

2. **Review of Meeting Notes** - No changes to the July 9, 2015 notes were proposed.

3. Water Quality Monitoring Results & Discussion

a. Unregulated Contaminants Monitoring (Handout)

UCMR3 monitoring for sampling event #2 was completed in September. Eight of twenty-eight contaminants showed at least one detection. Strontium was present at all wells; chromium was present in the multi-aquifer wells; cobalt was present at a single well; vanadium was present, just above the detection limit, at three wells; and 1,4-dioxane was present at four wells including those with previous detections of chlorinated solvents. Results were similar to sampling event #1 conducted early this year.

Nationwide, chlorate, strontium, and 1,4-dioxane were the most frequently detected contaminants. Chlorate used to be regulated but is not currently. None of the results suggest a threat to public health based on the current health information and reference concentrations. Strontium may likely be regulated in the future; the amount present in Madison water is not significant. A committee member mentioned that their health care provider recommends taking strontium to strengthen bones. The highest concentration of dioxane was below the NR140 groundwater standard (ES).

The committee recommended against conducting additional monitoring for UCMR3 contaminants beyond those required by Water Utility Board (WUB) policies.

b. Radium Results (Handout)

WUB policies require quarterly monitoring for radium at Wells 7, 8, 19, 24, 27, 28, and 30. The annual average of quarterly samples at Wells 19 and 27 are below the standard.

In July, gross alpha measured 24.3 pCi/L at Well 8; this result was uncharacteristic and appears to be an anomaly. A confirmation sample was collected before the well went off-line for the winter. The result was 3.5 pCi/L – comparable to previous Well 8 results. A suggestion was made to review the laboratory's QAQC for the July 21 sample; one possibility is mineral slough may have coated the filters and skewed the data. Well 8 was operated very conservatively again this year; water was pumped into the distribution system for 4 hours per day, for about 45 days.

c. Other Water Quality Data (Handout)

Cellular ATP tests were performed for wells with higher levels of iron and manganese, a possible indicator of potential bio-film. The sampling technique followed Andy Jacques' methods which collected timed samples from the casing area; different elevations within the borehole; and from the aquifer. Additional parameters, including ORP, pH and mineral level (iron and manganese), were also collected. The ability to monitor ORP was found to be a little challenging due to the stabilization process of the probes and the short time intervals between sampling.

4. Chloride Monitoring/Reduction Discussion (Handout)

Samples from Well 14 continue to be collected for chloride (twice per month) and sodium (once per month). A slightly positive overall slope for both contaminants continues. The slight reduction currently being seen may be attributed to the decreased use of road salt in the 1970's. The recent addition of curb and gutter coupled with increased public awareness of road salt application will hopefully help stabilize this trend over the long term.

The WI Salt Wise partnership will be holding road salt application training later this week. The City has purchased two additional anti-icing trucks and plans to use these trucks in the Spring Harbor watershed. A recommendation was made to monitor chloride and sodium in the local detention basin. Public Health plans to continue monitoring spring parking lot run off at both East and West Towne malls.

5. Proposed 2016 Meeting Dates

Given the resolution of many of the previous water quality challenges faced by the utility, the committee recommended meeting quarterly in 2016. If an emerging situation arises, additional meetings can be scheduled. The 2016 meeting dates are January 12, April 12, July 12 and October 11. Meetings are scheduled for 1 p.m. in the Olin Avenue conference room.

6. Future Agenda Items

- **MWU Master Plan & capital Improvement Plan**
- **Program Update – Private Well Surveys in Wellhead Protection Areas**

7. Adjournment

Next meeting: Tuesday, January 12, 2016 at 1 p.m. in the Olin Avenue Conference Room.