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Low Pressure Expected in Pressure Zone 2 on Wednesday October 22

Due to construction at Well 29, water pressure in Pressure Zone 2 will be significantly reduced from 10:00 a.m. to 2:00 p.m. on Wednesday, October 22nd. The Water Utility will temporarily shut down a pump located on the property in order to relocate a water pipe. While the pump is out of service, the pressure will drop by about 30 psi. Water pressure in the area is expected to be in the range of 30-40 psi.

Pressure Zone 2 serves approximately 800 residential customers in an area bounded by Lien Road to the north, I-90/94 on the east, Highway 30 to the south, and N. Thompson Drive on the west. The low pressure will also impact the Autumnwood development located on Lien Road. All customers located in Pressure Zone 2 have been notified of the expected low-pressure event by first class mail.

For a two-story house, 40 psi is usually adequate for running the dishwasher, washing machine, and toilets. At lower pressure, these appliances will all work but they will just take longer to fill. The biggest impact would be to a toilet or urinal with a flush valve, i.e. without a tank on it. The device may not be set up or adjusted for the lower pressure. However, flush valve toilets are not common in a residence and this area is primarily residential. The other big impact would be the shower, especially one on the second floor, or while attempting to wash a car. It may be more of a low stream out of the shower or hose rather than a spray making it difficult to rinse the soap.

If you have any questions please call the Water Utility at 266-4665.

Virus Study Report Now Available on WGNHS Website

Researchers from the Marshfield Clinic (Marshfield, WI), Wisconsin Geological and Natural History Survey (WGNHS), and United States Geological Survey (USGS) are conducting an on-going investigation into the presence of human viruses in the lower sandstone aquifer from which Madison draws its drinking water. Initially, eleven wells were tested for the presence of six types of viruses: adenovirus, enterovirus, hepatitis A, norovirus (Genogroup I & II), and rotavirus.

Test results showed that in September 2007 six wells tested positive for adenovirus and one was positive for enterovirus. In October 2007, four wells had evidence of adenovirus and enterovirus while a fifth was positive for enterovirus only.

Although viruses were detected, the researchers have informed the utility that **there is no public health threat** since chlorine disinfection is effective and sufficient to deactivate the viruses if they are viable. All samples were taken from groundwater wells prior to chlorination. Madison Water Utility utilizes chlorine to kill viruses and bacteria that may be present in groundwater and to protect against waterborne illness. To provide a margin of safety and also to meet future federal groundwater rules, the Water Board approved an increase in the chlorine level at all Madison wells on June 19, 2007.

Following the initial results, the researchers selected six wells for monthly monitoring. Three wells (UW 7, UW 19, UW 30) are cased into the lower, confined aquifer while the other wells (UW 11, UW 12, UW 13) are not cased through the Eau Claire shale and are referred to as multi-aquifer wells. The Eau Claire shale is a layer of sedimentary rock that separates the upper from the lower aquifer. Newer municipal wells are cased through the shale layer and draw water essentially exclusively from the lower aquifer. When present, the Eau Claire shale is thought to protect the lower aquifer from surface activities that can contaminate groundwater.

Test results for the six wells investigated can be found in the table below. A negative result means that none of the six virus types was detected.

	Confined Aquifer Wells			Multi-Aquifer Wells		
	UW 7	UW 19	UW 30	UW 11	UW 12	UW 13
2007						
September	A	A	Negative	A	A	A, E
October	A, E	Negative	Negative	Negative	A, E	Negative
November	ns	A	Negative	E	A	Negative
December	E	A	Negative	ns	A	Negative
2008						
January	A, E	Negative	A	Negative	Negative	A
February	Negative	Negative	Negative		Negative	Negative
March	Negative	Negative	Negative	A	Negative	Negative
April	Negative	E	Negative	Negative	Negative	Negative
May	Negative	Negative	Negative	Negative	Negative	Negative
June	A, E	E	Negative	A, E	E	E
July	A, E	A	A		E	A, E

A = adenovirus, E = enterovirus, H = hepatitis A, N-I = norovirus, genogroup I, N-II = norovirus, genogroup II, R = rotavirus

ns – no sample was collected

The next phase of the study has already begun with sampling expected to

continue at six wells. Samples will be collected twice monthly. Future updates will be posted to this listserv as data become available.

Wisconsin Department of Natural Resources (WDNR) provided funding for this project in 2008. The project was submitted as a proposal to the Wisconsin Groundwater Research and Monitoring Program facilitated by the Groundwater Coordinating Council. More information can be found at <http://www.dnr.state.wi.us/org/water/dwg/gw/research.htm>.

The final report, *Assessment of virus presence and potential virus pathways in deep municipal wells*, is available on the WGNHS website, <http://www.uwex.edu/wgnhs/news.htm>.

Radionuclide Monitoring Update – Results for UW 10 & UW 29

The Water Utility previously reported that grab samples would be collected from seven wells and tested for radionuclides (gross alpha, radium-226, radium-228, and uranium) while composite samples would be collected at the remaining wells. A composite sample involves collecting a sample during each of four consecutive quarters (each three-month period) and combining the four sub-samples prior to submitting the composite sample for analysis.

Test results for grab samples collected at five wells (UW 7, UW 19, UW 23, UW 27, & UW 28) were previously reported. Wells 10 and 29 were sampled in early September and the results are in the table below. Collection of the third portion of the composite samples is nearly complete for the remaining sixteen wells; an additional portion will be collected in early 2009 prior to submission of the composite samples to the laboratory for analysis.

RADIONUCLIDE	UNITS	MCL	UW 10	UW 29
Gross Alpha	pCi/L	15	2.1 ± 0.9	2.2 ± 0.9
Gross Beta	pCi/L	50	1.9 ± 1.2	2.6 ± 1.2
Radium-226	pCi/L	5	0.57 ± 0.44	1.1 ± 0.6
Radium-228	pCi/L	5	0.78 ± 0.46	0.87 ± 0.50
Uranium Total	ug/L	30	0.35 ± 0.16	0.29 ± 0.16

MCL = highest level of a contaminant allowed in drinking water

± = (test result) ± (margin of error)

ug/L = micrograms/Liter or parts per billion (ppb)

pCi/L = picoCuries/Liter

Unregulated Contaminants Monitoring – UCMR2 Results

The Water Utility recently received the laboratory results for the first round of sampling in support of the Unregulated Contaminants Monitoring Regulation, Cycle 2 ([UCMR2](#)). The first round of sampling was conducted in mid-August and none of the 25 contaminants were found at any well or at any representative distribution sample locations. A second round of monitoring is scheduled for late February or early March 2009.

The Safe Drinking Water Act (SDWA) requires that the U.S. Environmental Protection Agency establish criterion for a program to monitor unregulated contaminants and to publish a list of contaminants to be monitored every five year. Unregulated contaminants are substances for which a maximum contaminant level (MCL) has yet to be established. Monitoring for these substances provides occurrence and exposure data that help the regulatory agency determine whether the contaminants should be regulated.

Monitoring for UCMR2 will occur during 2008-2010. All community water systems serving more than 10,000 people are required to monitor. Madison is required to monitor 25 potential contaminants using five analytical methods. The contaminants identified for monitoring include pesticides, pesticide degradates, flame retardants, explosives, and nitrosamines.

More information on the regulation and contaminants can be found on the UCMR2 home page of the U.S. Environmental Protection Agency website,

- <http://www.epa.gov/safewater/ucmr/ucmr2/index.html>

Although none of the pesticides or pesticide degradates were detected above the reporting limits used in support of the UCMR2 regulation, one pesticide degradate (alachlor ESA) was previously found at six Madison wells. Between November 2006 and September 2007, Madison Water Utility had previously tested all wells for nine contaminants on the UCMR2 contaminant list including three herbicides (alachlor, acetochlor, and metolachlor) and their ethane sulfonic acid (ESA) and oxanilic acid (OA) degradation compounds. At that time,alachlor ESA was detected at a level of 0.1-0.4 ug/L at Wells 11, 13, 14, 15, 16, and 26. Detection limits for this earlier testing (0.1-0.25 ug/L) were much lower than the UCMR2 reporting limits (1-2 ug/L). None of the other pesticides nor their degradates were detected, even at the lower detection levels, at any Madison well.

Water Quality Test Results – September 2008

MICROBIOLOGY – In September, the Water Utility collected 394 water samples from Water Utility facilities and representative sample locations in the water distribution system. Samples were tested for coliform bacteria – indicators of potential water contamination. None of the samples collected in September tested positive for coliform bacteria.

IRON & MANGANESE – The utility also collected samples from twelve wells and tested the water for iron and manganese. At elevated levels, these minerals can cause yellow, orange, or brown colored water. Monthly water samples are collected from operating wells that exceed 0.15 ppm iron or 25 ppb manganese. The September test results are shown in the table below.

	Mn (ppb)	Iron (ppm)
UW 7	26	0.344
UW 8	48	0.523
UW 11	13	0.020
UW 17	27	0.117
UW 19	40	0.191
UW 23	28	0.063

	Mn (ppb)	Iron (ppm)
UW 24	30	0.197
UW 26	7.5	0.002
UW 27	30	0.095
UW 28	20	0.169
UW 29	84	0.262
UW 30	13	0.176

ANNUAL INORGANICS, WELL 10 – The utility annually collects samples from all wells and tests them for a suite of 32 inorganic substances including iron, manganese, nitrate, arsenic, lead, sodium, and chloride. Sampling at Well 10 was conducted in early September when the well was briefly operated to collect a required radionuclide sample. Results are shown in the following table.

Analyte	UNITS	LOD	MCL	UW 10
ALUMINUM	(ug/l)	0.20		3.1
ANTIMONY	(ug/l)	0.20	6	<0.2
ARSENIC	(ug/l)	0.20	10	0.88
BARIUM	(ug/l)	0.20	2000	29
BERYLLIUM	(ug/l)	0.20	4	<0.2
CADMIUM	(ug/l)	0.20	5	<0.2
CALCIUM	(mg/l)	0.010		69
CHROMIUM	(ug/l)	0.20	100	1.6
COPPER	(ug/l)	0.20		1.1
IRON	(mg/l)	0.0014		0.60
LEAD	(ug/l)	0.20	15	<0.2
MAGNESIUM	(mg/l)	0.011		36
MANGANESE	(ug/l)	0.20		70
MERCURY	(ug/l)	0.02		<0.02
NICKEL	(ug/l)	0.20	100	0.64
SELENIUM	(ug/l)	0.20	50	0.39
SILVER	(ug/l)	0.20		<0.2
SODIUM	(mg/l)	0.027		3.1
THALLIUM	(ug/l)	0.20	2	<0.2
ZINC	(ug/l)	0.20		15
ALKALINITY	(mg/l)	10.000		298
CHLORIDE	(mg/l)	1.200		7.4
CONDUCTIVITY	umhos / cm	3.00		570
FLUORIDE	(mg/l)	0.12	4	<0.12
HARDNESS TOTAL (CaCO3)	(mg/l)	0.070		320
NITROGEN-Nitrate&Nitrite	(mg/l)	0.180		1.1
NITROGEN-Nitrate	(mg/l)	0.120	10	1.1
NITROGEN-Nitrite	(mg/l)	0.060	1	<0.06
pH LAB	s.u.			7.6
TOTAL SOLIDS	(mg/l)	6.00		332
SULFATE	(mg/l)	1.20		9.5

LOD = Level of Detection

MCL = Maximum Contaminant Level

RESIDENTIAL IRON & MANGANESE – Residential tap samples were collected from thirty-three homes in the Well 8 service area in September. Water from Well 8 has fairly high levels of both iron and manganese, minerals that can cause yellow, orange, or brown colored water. The samples were collected while Well 8 was operating and after the well had been delivering water to the neighborhood

nearly continuously for three months. Manganese levels ranged from 4-55 parts per billion (ppb) with a median of 39 ppb. Two samples exceeded the secondary standard of 50 ppb. Iron levels ranged from 0.02-0.66 parts per million (ppm) with a median of 0.46 ppm. Over 60% of the samples exceeded the secondary standard of 0.3 ppm. Secondary standards are established for aesthetic reasons such as staining of laundry and plumbing fixtures rather than for public health concerns. The Water Utility expects to collect additional samples in the coming months after the water mains serving these locations have been flushed and water from another well is serving these homes.

Well Status Report – Seasonal Wells

Wells 8, 10, 17, and 29 are currently off-line for the winter. Well 17 was taken out of service on October 17 and Wells 6 and 28 will be shut down for the winter later this month. Well 27, normally a seasonal well, will remain in service this winter. Water from this well will be needed while Well 18 is out of service for preventative maintenance on the motor, pump, and bore hole.

Subscribe to the Drinking Water Quality Listserv

People who want to receive regular updates on Madison's drinking water quality can subscribe to this Listserv at:

<http://lavos.wiscnet.net/mailman/listinfo/drinkingwaterquality>

Sincerely,
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