



NEWS AND INFORMATION

FOR PUBLIC WATER SUPPLIERS IN MINNESOTA

## Minneapolis Keeps Up with Distribution System Renovation



The city of Minneapolis is cleaning and lining more than 39,000 feet of its distribution system this summer. One of the projects is along Johnson Street in northeast Minneapolis. See page 2 for the story.

## Water Operator Exam Dates

- September 16, St. Cloud*
- September 20, Park Rapids*
- October 6, Marshall*
- October 14, Owatonna*
- October 19, Collegeville*
- October 25, Shoreview*
- November 22, Clarks Grove*
- December 1, Bemidji*
- December 7, Biwabik*

*See calendar on back page for more information*

## EPA Drinking Water Infrastructure Needs Survey and Assessment

In 2011 the United States Environmental Protection Agency (EPA) is conducting a Drinking Water Infrastructure Needs Survey and Assessment. Thirty-one hundred public water systems throughout the United States have been selected to participate, with 91 of them being in Minnesota. The survey began in April 2011 and will continue through October 2011. The Minnesota Department of Health has been and will be cooperating with the selected public water systems to complete the surveys and return them to EPA for analysis.

The information that the public water systems provide on the survey will help determine the total capital investment needed for drinking water systems in Minnesota and nationwide. EPA uses this estimate of need to allocate the Drinking Water State Revolving Fund (DWSRF) monies to states, with each state receiving a share of the DWSRF in proportion to its total share of the national need. By participating in this survey, public water systems ensure that Minnesota maximizes its share of DWSRF monies. This money will be critical in maintaining drinking water infrastructure in Minnesota and ensuring safe drinking water can be provided to citizens of Minnesota.

## An Understandable Mistake

*The Oregonian* in Portland, Oregon, reported that the Portland Water Bureau drained 8 million gallons of water after a security camera caught a man urinating in one of the city's open reservoirs. David Shaff of the water bureau admitted that the "yuck factor" had much to do with their decision to drain the reservoir, noting that they don't dispose of water when they find animal carcasses in the reservoir. "This is different," he said. "Do you want to drink pee?"

The urinator, a 21-year-old man named Josh Seater, explained, "I thought it was a sewage plant."

We never really grow up;  
we only learn how to act in public.

## Minneapolis Distribution Crews Maintain Critical Infrastructure

Minneapolis Water Works has been the subject of international attention and acclaim with its ultrafiltration treatment plant, which opened in 2005. The plant was called “one of the most advanced water treatment systems in the world” that marked “a sea change in the treatment of drinking water” by Robert D. Morris in his book, *The Blue Death: Disease, Disaster, and the Water We Drink*.

Staying out of the spotlight but doing work that is just as critical is the distribution arm of the utility. Its 1,000 miles of pipe, a lifeline to supply the city with its most precious resource, is hidden beneath the surface, leaving residents, when they hear the word “infrastructure,” to think of roads and bridges, important components to a community but not near as vital as what they don’t see.

That’s fine with Marie Asgian, superintendent of water distribution. “If you can take us for granted,” she says, “we’ve done our job well.”

### History

Minneapolis first started pumping water from the Mississippi River for fire protection in 1867. A few years later the city pumped water into a small number of homes and businesses, establishing a drinking water supply. Personal consumption rose quickly with the convenience of piped-in water as the distribution network grew.

By the turn of the century Minneapolis had built settling basins and reservoirs in Columbia Heights and eventually added a treatment plant on the site. To increase storage capacity the city added three water towers in some of its elevated neighborhoods. The Kenwood tower, to the west of downtown Minneapolis, was built in 1910; the Prospect Park tower, off University Avenue in southeast Minneapolis, was built in 1913, and, two years later, the city purchased an existing water tower, the Washburn tower in an area known as Tangletown off 50th Street and Nicollet Avenue in south Minneapolis, and extended the height of the tower by 25 feet for additional pressure.

Minneapolis increased the pressure in 1931 in this part of the city by demolishing the Washburn tower and building a new one. By this time, the utility had added another treatment plant, in Fridley along the Mississippi River.

The Washburn, Kenwood, and Prospect Park water towers still stand and have been designated as city landmarks although none is used for water storage any more (the Washburn tower lasted the longest in its original function, holding water into the 2000s). Each tower is distinct. Prospect Park residents use the “witch’s hat” feature of their tower as a means to decorate the tower on Halloween. The Washburn tower has a number of adornments, including 16-foot-tall “guardians of health” mounted on pilasters, along with eagles at the base of the dome.

### Today

Rehabilitation or replacement of the distribution system is an ongoing task for Minneapolis. At the current rate of funding, approximately 1 percent of the distribution system is renovated each year.

Pipes installed after the early 1970s are made of ductile iron that comes from the factory with cement lining on the inside. However, this makes up only about 25 percent of the system. Most of the distribution system consists of unlined cast iron, and well over half of it was constructed prior to 1930.

“It’s not that old pipe is bad pipe,” said Asgian. “If it’s in proper bedding, it will last 200 years. It’s all about the bedding. With good granular material that drains away from the pipe, the likelihood of a break is low.”

Minneapolis had 29 water main breaks in 2010. Asgian said they won’t put a cement lining in a pipe that has a failure history; if anything, they will install a structural liner, a process that involves cleaning the inside of the pipe, pulling a sock liner injected with epoxy resin through it, and robotically drilling out the service taps after the resin has cured. This creates a new pipe within the existing pipe. Pipes that are structurally sound will be cleaned with metal scrapers prior to the installation of a cement mortar lining.

Cleaning and lining of pipes has aesthetic benefits, reducing rust and complaints of red water, but Asgian points out the other effects, such as improved flow for fire protection and prevention of nitrifying bacteria that can reduce the disinfection residual.

**Continued on page 4**



From left to right: the Prospect Park tower, the Kenwood tower, and the Washburn tower, along with a closer look at one of the “guardians of health” and the eagle at the base of the dome.

## REGISTRATION FORM FOR FALL 2011 SCHOOLS

You may combine fees on one check if more than one person is attending a school; however, please make a copy of this form for each person. For questions regarding registration, contact Jeanette Boothe at 651-201-4697.

To request an exam application, contact Noel Hansen at 651-201-4690 or Mark Sloan at 651-201-4652.

- Southwest School, October 6, Marshall. Fee \$30 (\$35 at the door).
- Southeast School, October 14, Cabela's, Owatonna. Fee \$30 (\$35 after October 3 or at the door).
- Northwest School, November 29-December 1, Hampton Inn, Bemidji. Fee: \$130 (\$140 after November 18 or at the door).

Name \_\_\_\_\_ Employer \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zip \_\_\_\_\_ Day Phone \_\_\_\_\_

E-mail Address \_\_\_\_\_

**Please enclose the appropriate fee.** Make check payable to Minnesota AWWA. Mail this form and fee to Drinking Water Protection Section, Minnesota Department of Health, P. O. Box 64494, St. Paul, Minnesota 55164-0494.

For the Central School October 19 in Collegeville, registration is \$40 (\$20 for students). Send a check, payable to AWWA - Minnesota Section, to Laura Schwantz, St. Cloud Water Department, 400 2nd Street South, St. Cloud, Minnesota 56301.

### Breaking News: Bad Bounce Puts *Waterline* Editor on Ice

By Jeanette Boothe

Saturday morning, June 4, started out as a beautiful day. Low winds. A good day for skydiving. Stew Thornley had been working toward having that perfect jump. He'd been working on his "core" to prevent the spinning he'd had trouble with on past jumps. So he drove to Skydive Twin Cities in Baldwin, Wisconsin, for his jump.

He got suited up and up in the plane he went, along with his jumpmaster. The jumpmaster is the person who,



**Jeanette Boothe gets the scoop from Stew "Crash" Thornley.**

by way of a walkie talkie and microphone, can communicate with the jumper to help him get down safely. At 13,000 feet Stew started his 14th jump. Everything was going well. He wasn't spinning around in circles like he used to. At 5,000 feet he pulled his ripcord and floated down. As he approached the ground he pulled down on the cords on his canopy, called flaring, to slow down. After he had started the flare he realized that he had flared too soon and decided to let go. Too late. Now he was in a dead drop with 10 to 15 feet left to go.

He landed feet first and then onto his back in an alfalfa field. "Wave if you are okay!" came over his earphone.

He waved but just lay there. He didn't feel like getting up. "Wave if you need help!" was the next thing he heard. He waved again. An ambulance was called and two arrived. The EMTs first took the parachute pack straps off his legs and then put him on a backboard and into the ambulance. He was brought to the hospital in Baldwin. Doctors there determined he had broken the T12 vertebra in the front. He was later transferred to Regions Hospital in St. Paul.

In order to avoid surgery he will be in a back brace for three months. The brace was made in Phoenix and then flown in overnight. While he was waiting for the brace to arrive he enjoyed the "free" food, the nurses waking him up in the middle of the night to give him sleeping pills and pain medication, and of course the massages and sponge baths. There were also some bodily functions that the nurses and doctors felt were important that Stew had no problem passing.

Stew said this is the third bone he has broken since he turned 50. Maybe this is a sign. He has said that this was his last jump.



Crews from Minneapolis Water Works shown at the distribution yards in southeast Minneapolis and on the job site in northeast Minneapolis. Shown in the lower right are Mark Ebert, Bob Ervin, and Marie Asgian.



Two factors govern the selection of project locations. One is an opportunity to perform work in conjunction with street construction. The other is the magnitude of the problem. Minneapolis crews are working with a contractor, Heitkamp, Inc. of Watertown, Connecticut, on a project along and around Johnson Street in northeast Minneapolis, an area that has had many problems with red water. City crews maintain control of the water during the project, which includes installation of temporary water lines from hydrants from adjacent blocks as they take hydrants out of service on the block currently under construction.

Heitkamp performs the rehabilitation work, using metal scrapers to clean the pipe and then installing a cement

mortar lining. The pipe in this area was installed in 1906. Although the cleaning and lining of a total of 12,150 feet of pipe, divided into two phases, takes fewer than two weeks, the overall project—which includes excavation and associated work—began in late April and will be completed in mid-October.

The total project cost of \$612,000 is in line with the typical cost of \$50 to \$60 per foot for cleaning and lining. Asgian says replacement costs are about \$300 per foot.

The northeast Minneapolis project is one of seven that the utility is performing in 2011. Overall, city distribution crews will clean and line nearly 39,000 feet of pipe at a cost of \$2.3 million.

## Waterline

Published quarterly by the Drinking Water Protection Section, Minnesota Department of Health

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Past issues of the *Waterline* are available at <http://www.health.state.mn.us/water/newsletters.htm>

# Ground Water Rule Refresher

By David Rindal

As summer ends, days shorten, and total coliform detections increase, a Ground Water Rule (GWR) refresher might be useful. The triggered monitoring requirements of this regulation have existed since the beginning of 2010, but they can be unclear for both water operators and Minnesota Department of Health (MDH) staff. In addition, a new set of “significant deficiencies” may necessitate corrective action as of July 1, 2011.

Triggered monitoring or the source well sampling required following any standard (neither investigative nor repeat) Total Coliform Rule (TCR) positive result should be performed within 24 hours of receipt of the TCR positive result(s). If the triggering positive result is received on a Wednesday, Thursday, Friday, or Saturday, it may be necessary to wait until the following Monday to collect GWR triggered monitoring samples. The following steps will help guide the monitoring process:

- Find your GWR or TCR Source Water Monitoring Plan.
- Identify source wells that supply the site(s) of any TCR positive total coliform sample(s).
- If a sampling plan doesn't exist, eliminate source wells not hydraulically connected to the TCR-positive site due to pressure zone valves.
- Before sampling, remove any point-of-use devices or faucet attachments such as screens, aerators, washers, or hoses.
- Obtain one 100 milliliter (mL) bacteriological sample bottle from your contract laboratory for each TCR positive total coliform sample and each source well.
- Recommendation: You may sterilize the faucet prior to collecting the sample. The sterilization is done after removing any attachments. The sterilization can be done by flaming the edge of the faucet with a torch or cigarette lighter for at least 15 seconds or wiping the edge with an alcohol wipe.
- Collect one 100 mL bacteriological sample for each TCR positive total coliform sample from every identified source well.
- If one or more raw water sample taps draw from a combined flow pipe, collect one 100 mL sample for each well by controlling well operation such that:
  - Each well pump provides 100 percent of the flow to the combined flow pipe, or
  - Multiple well pumps provide mixed flow to the combined flow pipe.
- Write the source well names and/or numbers for each sample on the sample bottle(s).
- Write the sample collection date and time, the name of the person who collected the sample, and sampling point on the laboratory request form.
- Return the sample(s) to the certified contract laboratory on the same day the sample is collected, by first-class mail, overnight courier, or hand delivery.

If GWR triggered monitoring samples are not submitted to a certified laboratory within five business days from the initial Total Coliform Rule positive sample result notification, you may receive a Notice of Violation for this GWR monitoring violation.

Lastly, as of July 1, 2011, Minnesota public water supplies must complete corrective action(s) or comply with an MDH-approved corrective action plan within 120 days of the date of notice of any of the significant deficiencies listed in the table.

<b>Sanitary Survey Element</b>	<b>MDH Significant Deficiency</b>
Source	A flooded well is being used.
Treatment	There is one or more cross connections at any point in the treatment system.
Distribution System	The system is subject to contamination from hazardous cross connections.
Finished Water Storage	There is one or more holes in the storage tank roof or around hatches.
Pumps, Pump Facilities, and Controls	One or more cross connections exist to a non-potable supply, pump, or generator cooling water, including air/vacuum relief valves cross connected to floor drains.
Monitoring, Reporting, and Data Verification	The system has chronic total coliform bacteria detection with inadequate remediation or follow-up.
System Mgmt. and Operation	Failure to comply with enforcement actions and compliance agreements.
Operator Compliance with State Requirements	The system does not employ or contract with a properly certified water operator.

## Reminder to All Water Operators

When submitting water samples for analyses, remember to do the following:

- Take coliform samples on the distribution system, not at the wells or entry points.
- Write the Date Collected, Time Collected, and Collector's Name on the laboratory request form.
- Write the Sample Point on the laboratory request form.
- Attach the label to each bottle (do not attach labels to the lab form).
- Include laboratory request forms with submitted samples; make sure the information on the bottle label and the lab form is similar.
- Use something other than a rollerball or gel pen; the ink may run.

If you have questions, call the Minnesota Department of Health contact on the back of all sample instruction forms.



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## CALENDAR

### Minnesota Section, American Water Works Association

\*October 6, Southwest Water Operators School, Marshall, Contact Jeff Larson, 507-537-7005.

\*October 14, Southeast Water Operators School, Cabela's, Owatonna, Contact Dennis DuChene, 507-384-0559.

\*October 19, Central Water Operators School, St. John's University, Collegeville, Contact Lisa Vollbrecht, 320-255-7225.

\*Nov. 29-Dec. 1, Northwest Water Operators School, Hampton Inn, Bemidji, Contact Jeanette Boothe, 651-201-4697, or Stew Thornley, 651-201-4655.

\***Suburban Utility Superintendents Association School**, October 25, Shoreview, Contact Kevin Chmielewski, 651-490-4611.

Information for all district schools, including agendas, is at

<http://www.health.state.mn.us/water/wateroperator/trng/schoolagendas.html>

**Minnesota Rural Water Association**, Contact Kyle Kedrowski, 800-367-6792

September 7, Operation & Maintenance, Warren

\*September 14-16, Water Certification Refresher Course, St. Cloud

\*September 20, Operation & Maintenance, Park Rapids

October 13, Water and Sewer Rate Setting, St. Cloud

October 25, Winterizing Your Water System, Bemidji

October 26, Winterizing Your Water System, St. Cloud

November 2, Financing Your Community Projects, St. Cloud

November 15, Cross Connection & Backflow Prevention, Grand Rapids

November 16, Cross Connection & Backflow Prevention, Alexandria

November 17, Cross Connection & Backflow Prevention, Burnsville

\*November 22, Operation & Maintenance, Clarks Grove

November 30, Operation & Maintenance, Waite Park

\*December 7, Operation & Maintenance, Biwabik

### *MRWA Class D and E Training*

#### *Class D*

September 14, St. Paul  
October 11, Park Rapids

#### *Class E*

October 6, Ely  
November 22, Willmar  
December 7, Hastings  
December 14, St. Peter

**\*Includes a water certification exam.**

For an up-to-date list of events, see the training calendar on the MDH web site:  
[http://health.state.mn.us/water/wateroperator/trng/wat\\_op\\_sched.html](http://health.state.mn.us/water/wateroperator/trng/wat_op_sched.html)