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Inside:
From wings to water
What is on the horizon?
Industry news
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Storage Capacity: 400,000 Gallons
Location: Dennison, MN
33 Years Young

Installed: 1991
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Paul Gillispie, Water Superintendent, City of Dennison, MN

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<th>Item</th>
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<td>SP15</td>
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<tr>
<td>SP15MIDDLE</td>
<td>Extra Middle Section</td>
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The SludgePro XL features 1-1/4" diameter tubing and is expandable to 25-ft (just add mid sections) with a high flow check valve that is easy to clean. Manufactured from high strength polycarbonate tubing with taped numbers from 1 to 14 feet.

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What do you know about MN AWWA?

Is what you know about Minnesota AWWA getting in the way of what you don’t know? Minnesota AWWA volunteers have been busy ensuring 2013 has an event that suited to the needs and wants of all Minnesota’s Water Professionals.

Please take the time to review the 2013 Membership Calendar; read this issue of the Breeze; log on to the newly revised website (MNAWWA.org); like us on Facebook.

Summer 2013 will be overflowing with MN AWWA activities that require your participation to be successful. We hope you are well informed of the many opportunities available from MN AWWA.

What do you want from MN AWWA?
The MN Section needs your involvement to meet and exceed the expectations of our members. Research has shown that people who volunteer may live longer than those who do not, as long as their reasons for volunteering are to help others rather than themselves.

There are a variety of volunteer opportunities available that fit any interest level and can help showcase your skills, talents, abilities and passions. Get involved today; contact me, a board member or your district trustee.

MN AWWA activities & opportunities

- Ms. Shari Harley will present special session on Candor - unreserved, honest, or sincere expression: forthrightness
- Water For People Activities:
  - Concert
  - Motorcycle Ride
  - 5K Family Fun Run
  - Training Sessions (Membership Calendar)
- The 97th MN Section Annual Conference

Each MN AWWA Volunteer’s brings a set of unique experiences to the planning committees; many are forming now. New and fresh ideas are always needed! Any and all levels of participation are welcome; moderating at a seminar or planning a motorcycle trip or reaching out to sponsors or other members. Even if you are not able to participate on a planning committee, please be sure and participate in all that MN AWWA has to offer.

Do not stop learning about MN AWWA

To continue to be recognized as the leading organization dedicated to providing safe drinking water, the Minnesota AWWA and its members must continue to learn, grow and improve.

Thank you for your dedication to safe drinking water and for your efforts to make the Minnesota Section successful.
When it comes to choosing pipe, you get what you pay for. And with ductile iron, what you get is stronger, more dependable material that withstands the rigors of installation and operation better than plastics. Just like everything else we do, AMERICAN ductile iron pipe is made the right way. Because doing things the right way is the AMERICAN way.
Message from the Director

Busy times for AWWA

I am writing my report while waiting in the Nashville airport at the conclusion of the 2013 American Water Works Association Winter Board Meeting. Of course, the first flight was cancelled due to the pleasant weather in Minneapolis. The meeting was informative, fun, and had a downside. First the bad news; Uma Vempati was running for the position of director-at-large and, unfortunately, was not successful this time. Uma presented an excellent speech to the board that was very well received. I strongly encourage Uma to run again next year. He has much to offer the AWWA board, indicated by what he has done and will continue to do for the Minnesota Section. His passion for the water industry impressed the entire board.

There are many things happening at AWWA at this time. I will cover the high points in this report and have more details in the Minnesota Section board minutes in the February meeting. Elections were held for new officers of the Association. John Donahue, Illinois, was elected as incoming president. New vice-presidents elected are John Alston, Montana; Doug Brinkman, Chesapeake; Jeff Nash, Florida; and Mike Simpson, Indiana. Martha Segal, Tennessee-Kentucky was elected as director-at-large.

The executive director, David LaFrance, presented information on and discussed membership, which is always key to the association and is on an upward trend. It is at its highest point since June 2010 with just over 50,000 members and a 4 percent increase over 2011. The 2012 and 2013 business plans were discussed and approved. Many projects were completed last year, and this year has several new projects.

Some of last year’s obvious projects were the new-look web page and the addition of four additional topic areas to Communities of Interest. You will also see a new approach to AWWA branding. All information, advertising, awards, banners, and recognition will have the same theme in graphics and art work.

The budget was presented and approved. The Finance Committee has suggested a new approach to AWWA for budgeting process. The format will now be a revolving five-year budget plan. The new budget now looks at 2013 to 2017. It will be reviewed and adjusted every year, as necessary. The committees and staff will now be able to better plan and project where the association is headed on new and existing projects. The executive director has been allotted $2 million in new five-year budget plan to develop new projects and programs in order to ensure the viability of AWWA now and into the future.

AWWA was asked to support Patricia Mulroy, general manager of Las Vegas Nevada Water Authority, in confirmation of her appointment as Secretary of Interior. Mulroy is a longtime member and supporter of AWWA and the water industry. Support was unanimous. Other happenings in D.C. pertain to the U. S. Environmental Protection Agency. New lead and copper rules go into effect in January 2014. A point was made that any existing inventory of materials that exceed the new lead standard will not be usable, so clean out any inventory. Another probable rule change will be sampling requirements for lead and copper, nitrosamines, strontium and chlorate, which may create future challenges for those disinfecting with sodium hypochlorite. AWWA has published a position paper on hydraulic fracturing, ‘fracking,’ that will be available on the website in late January and has been mailed to utility members. The Washington D.C. office will also be providing the AWWA Utility Insider weekly to utility members on legislative happenings. Another valuable benefit.

Nancy Sullivan is heading up a program titled the Student Experience at AWWA. The program will be launched at the Water Quality and Technology Conference in Toronto, Ontario. Some of the highlights will be enhancing resumes, scholarships, publications, and career fairs. It will also assist students in developing a network and promote involvement in AWWA. More information is available through AWWA Student Center.

Our Minnesota Section mentoring program is making good progress but will always be a work in progress that continues to grow. Please contact me to get involved.
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Welcome to the spring issue of the Breeze. Spring means water operator schools, warmer weather, Safe Drinking Water Week, and mushy stuff like young people’s thoughts turning to love or something like that.

Winter is a joy for some, a grind for others, and often a bit of both. Minneapolis Water Works crews got to work in subfreezing temperatures in January to deal with a break in a 36-inch main after a private contractor ruptured the pipe. More than 14 million gallons poured out, and it took a big effort to isolate the area, make sure adequate pressure had been maintained in adjacent areas, fix the pipe, and have the water tested. This issue of the Breeze contains some photos and a summary of what happened—a great example of water professionals in action.

“Spring is in the air”

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Board Highlights
February 7, 2013
Minnesota AWWA board meeting

FINANCIAL REPORT
As of October 31, 2012, section income for the year was $313,187 and expenses were $271,080 for a net gain of $42,107. Investments were up since the beginning of the year by $21,789 for a net gain of $63,896.

VOLUNTEER COORDINATOR
MONA CAVALCOLI
Key projects have been the section calendar, sponsorship program, and the call for papers for the section annual conference. A delay in the mailing process for the calendar resulted in many people not receiving the calendar until mid-January. Options for dealing with this next year include moving up the production date and budgeting additional funds for first-class postage. The sponsorship program was launched in mid-December, and the deadline for applications has been extended. From the call for papers, more than 20 abstracts have been received and sent to the conference program committee.

UMA VEMPATI’S DIRECTOR-AT-LARGE CANDIDACY
Uma Vempati, who was a candidate for director-at-large at the AWWA winter meetings, wrote, “I had the honor to represent MN AWWA by running for a Director At Large position at the Association level. The elections were held at the 2013 Winter Board Meeting of Directors on Sunday, January 20, 2013. I was disappointed I was not successful in being elected but it was a great learning experience. I am extremely appreciative of the MN Section of AWWA to sponsor me in this opportunity. Thank you! If the MN AWWA Board gives me another opportunity, I would be honored to run again in 2014.”

MINNESOTA ASSOCIATES COUNCIL
The council met November 8 with 15 members present. Exhibits coordinator Scott Bredehoft reported that 96 vendors were at the section annual conference in September, 8 fewer than the year before. Chris Glassing reported that the city of Minneapolis won the pipe-tapping competition and will represent the section at the AWWA Annual Conference and Exposition (ACE) in Denver in 2013. Pat Conrad from Bloomington won the Meter Madness Competition and will represent the section at ACE. The field of 17 competitors included Stew Thornley, who, due to his extreme lack of talent, has been banned from future competitions.

The Water For People Concert will be April 19 at the Medina Entertainment Center. Dave Brown reported that 22 people took part in the motorcycle ride, which raised nearly $2,500 for Water For People. The next ride is August 17. A 5K run to raise money for Water For People will be held August 9.

PUBLIC AFFAIRS COUNCIL
Minnesota AWWA is contributing $1,000 to a poster contest within Minnesota schools. The section is partnering with other sponsors, including the Minnesota Department of Health and H2O for Life, and will present bottle filling stations to the winning schools.

Dave Brown will represent the section on a Malawi impact school May 4-10. Brown has 10 speaking engagements scheduled at water-related training after his return to help with Water For People fundraising. Water For People has been working in Malawi since 2000. In 2006, it changed its strategy from small projects in widespread areas to concentrated efforts in three regions: peri-urban Blantyre and the rural districts of Chikhwawa and Rumphi. Since its start, Water For People-Malawi has become a leader in the water and sanitation sector in the country, promoting innovative and sustainable approaches to water and sanitation services.

YOUNG PROFESSIONALS
Chair Brent Massmann reported that the committee traveled to local community colleges and universities as part of its focus on student members and retention. The committee hosted an informational meeting to inform students about AWWA and ways they can get involved. Massmann will attend the Young Professionals Summit in March. The membership subcommittee hosted recruitment events at the University of Minnesota Twin Cities campus and St. Cloud Technical and Community College.

Adam Marcos, an engineer with Black & Veatch, will represent Minnesota at the 2013 ACE with his Fresh Ideas poster, which reviews a solution to a water quality issue at the city of Burnsville.

David Weum has taken over from MDH-colleague Lucas Martin to organize the Texas Hold ’Em fundraiser at the section conference.

TRAINING COUNCIL
Chair Bo Johnson reported that the council has a drafted a restructure of the council to better align it with Minnesota AWWA goals and allow for better organization of shared resources among training planning committees.

The 2013 Drinking Water Institute will be in Rochester August 5-7.

The Water Utility Management Institute will be March 12-14 in St. Louis Park.
Governing Board Highlights

The Region III meeting of section officers will be April 27-28 in Milwaukee. The AWWA Summer Workshop will be in Denver July 25-26.

MEMBER VS. NON-MEMBER FEES FOR THE CONFERENCE REGISTRATION:
The idea behind the difference between the member vs. non-member fee is to create a greater incentive for people to become members by making the difference in cost great enough to encourage membership: $245 for members and $325 non-members is proposed. Those operators who pay non-member fee get operator membership for free. Those who do not qualify for operator membership can become a new member for a discount equal to the difference they paid between member and non-member registration (additional $99 to become member).

Grant Meyer moved and Mike McNabb seconded to approve the fee structure proposed by Mona Cavalcoli for 2013 annual conference registration. Motion moved unanimously.

TRAINING AND EDUCATION COUNCIL (TEC) RESTRUCTURE:
Bo Johnston provided updates to the board in regards to the restructuring of TEC. The restructuring process is in progress. Focus of TEC restructuring is to ensure updated educational information is provided to members. There are three subcommittees in TEC: 1) Training Committee focuses on existing training opportunities, 2) Education Development Committee focuses on developing new educational programs, and 3) Resources Committee focuses on providing organizational support for the Training Committee and maintain list of speakers, papers, and other resources. Johnston is seeking input and comments from the Board members by April 1. Johnston will bring more updates for the next board meeting.

CONTINUING EDUCATION UNIT (CEU) CREDITS – AUDITABLE METHOD
There were lots of requests on how one can obtain CEUs for the conference. Nancy Sullivan indicated that AWWA uses a form that the attendees can fill out and get a signature from the moderator. Sullivan will send a sample form that ACE uses. CEU scanners are one of the options. TEC will also do some research by contacting various licensing boards and come up with some options on how to track the CEUs and professional development hours for the conference attendees.

Johnston contacted the Minnesota engineering board regarding the CEUs. In order to obtain CEU credits for license renewal, engineers need to have a copy of the conference brochure with the sessions that they attended circled. Operators can obtain 16 credits by attending the Minnesota AWWA annual conference.

The board gave direction to the Conference Council to add number of CEUs next to each session in the fall conference brochure. Also, in the Conference Bulletin, the Conference Council will include the language on how the engineers and operators can obtain CEUs for attending annual conference.

WATER EFFICIENCY COMMITTEE
Bernie Bullert distributed a document that lists various ideas that Water Efficiency Committee came up with in regards to the water utility efficiency efforts. The board will review the ideas and possibly rank them in terms of priority and importance. These ideas will be assigned to the right committee and/or council after the board’s review.

COMMITTEE FOR MINNESOTA 2050 PROGRAM
Minnesota 2050 Program is in the process of developing a documentary focusing on the status of the civil engineering infrastructure including roads, bridges, and water pipelines, etc. (similar to the Liquid Assets Minnesota documentary).

Uma Vempati made a motion to form a subcommittee under the Public Affairs Council that will represent Minnesota AWWA in the Minnesota 2050 Program. Grant Meyer seconded the motion. Motion passed unanimously.

STUDENT EXPERIENCE
AWWA has launched a new program to improve the student experience at its conferences. Information regarding this program was given to Bo Johnston to be forwarded to the Young Professionals Committee for discussion.

CANDIDATES FOR DIRECTOR AND CHAIR-ELECT
Bill Spain will be contacting the eligible candidates for director, and Carol Blommel Johnson will be contacting the eligible candidates for chair-elect.

ONLINE REGISTRATION UPDATE (VEMPATI AND MARTIN)
Uma Vempati and Lucas Martin provided an update on the online registrations. A lot of work was put into fixing the issues related to conference online registration. The Southeast District school School will be taking online registrations. Vempati and Martin will bring an update regarding this to the next board meeting.

UTILITY FLYER
AWWA is sending out utility flyers to the utility members every other month to keep them informed on what is happening in Washington, D.C.

White Paper on Fracking Water
AWWA published a white paper on fracking water.

• The next Minnesota AWWA board meeting will be April 19.
• Full minutes of the February 7 board meeting are on the Minnesota section web site (http://mnawwa.org).

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From wings to water

This article first appeared in the November-December 2012 issue of Water System Operator magazine, published by COLE Publishing, Three Lakes, WI. It is reprinted by permission.

By Ted J. Rulseh

When Kevin Horgan’s career took a sudden detour, he wasted little time getting back on track. A little over six years ago, a strike cost him his job as an avionics mechanic with a Minneapolis-based airline.

Today, he leads the maintenance team at the water treatment plant in Eden Prairie, Minnesota, a Minneapolis suburb. He and three colleagues — two of them also former airline mechanics — take care of the city’s 28 million gallon per day (design) lime softening/filtration plant.

Horgan leads the team with a strong sense of pride and with gratitude for a city that took him on despite his lack of water treatment and utility experience and allowed him to move quickly up through the ranks. The arrangement has been mutually beneficial: Horgan has built a new career, and the city now has a team capable of handling most maintenance and repairs with far less reliance on outside vendors.

Surprising as it might seem, Horgan’s background in avionics for airliners and U.S. Marine Corps helicopters has translated well to servicing the water treatment plant’s equipment and systems.

Trained on aircraft

Horgan grew up in the Bronx — his father was an FBI special agent stationed in New York City. When Horgan was 13, his father passed away, and his mother moved the family back to her home state of Massachusetts. Horgan graduated from high school in Danvers, Mass., and joined the U.S. Marines in 1980.

For a year he studied at the Marines’ avionics (aviation electronics) school in Millington, Tenn. He then spent four years at Marine Corps Air Station Kaneohe Bay in Hawaii, working on CH-53 heavy-lift helicopters used for ferrying cargo and troops, and UH-1N helicopters used for tasks including reconnaissance and carrying small groups of Marines in-and-out of combat.

After leaving the service, Horgan studied for two years at East Coast Aero Technical School in Lexington, Massachusetts, earning a graduation certificate and Federal Aviation Administration Airframe Maintenance and Power Plant Maintenance licenses. “Those licenses essentially mean anything that flies, I am allowed to work on,” he says.

In 1987, he took a position with Northwest Airlines in Minneapolis, staying until the September 11 terror attacks sent the airline industry into turmoil. Ultimately his union went on strike, and he never returned to the airline. “Minneapolis was a maintenance hub for Northwest, and about 10,000 mechanics were now unemployed, so there weren’t a lot of people beating down the door to hire me,” Horgan recalls.

“I found out that Eden Prairie had an opening for a heavy equipment mechanic. I put in for that job and didn’t get it, but they looked at my qualifications and asked if they could put my application in for a utility maintenance job. I said, ‘Sure.’ It was in the maintenance field. It was up my alley. They called me for an interview, I did well, and they hired me as an entry-level utility maintenance technician.”

Mister fix-it

In that role he was part of a crew taking care of the water distribution system and storm and sanitary sewers. It didn’t take long for his skills to get noticed. “The radio
in the city garage wasn’t working as it should,” Horgan recalls. “And somebody said, ‘You’ve worked with radios. Can you fix this?’ And I fixed it.

“And then someone said the pendant control for operating one of our crane trucks remotely needed to be rewired. I rewired it. Almost every time something broke, they pointed it out to me, and I started to fix everything." City leaders took notice, and after 14 months he was promoted to the water treatment plant’s lead maintenance technician slot. Along the way he earned his Minnesota Class C water treatment license and is now working toward his Class B certification.

His team members are maintenance technicians Michael Comeans, Ronald Lundberg (both former aviation maintenance mechanics), and Dustin Bones, a U.S. Army veteran with a background in motorcycle maintenance.

Together, they care for a plant that on average delivers 22 million gallons per day to the city’s 60,000 residents (18,000 service connections). Groundwater from the Prairie du Chien and Jordan aquifers goes through lime softening, coagulation, pH controls, dual-media filtration, and disinfection. Three water towers provide pressure for distribution through 265 miles of water mains.

**Driven by a philosophy**

“The first time I walked through this plant, I remember thinking two things: This place is huge, and this place is immaculate,” Horgan recalls. “It was reminiscent of walking into a Marine Corps barracks on inspection day. It was just beautiful.”

He has strived not just to keep it that way but to make it even better. “I try to run a professional department,” he says. “I want my team members to be technically proficient. I want them to be good troubleshooters and problem solvers. We don’t just make repairs. We train. We hold regular training seminars where we get together and look at certain complex systems. As a group we’ll go through these systems, how we would troubleshoot them for different kinds of breakages, and brainstorm ways to keep downtime to a minimum.”

Not long ago, he took part in a LEAP Academy (Leadership, Education, and Partnership) presented for the city by Dakota County Technical College. It included an exercise in which Horgan was asked to write down what he would say to his subordinates if leaving for an extended time, to remind them what he valued as a leader and would want them to carry on in his absence. His response spells out his

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1. Place the highest priority on not interrupting the flow of water through our facility — especially due to our maintenance actions.
2. Finish today’s projects today. If completion today is not possible, the project automatically becomes tomorrow’s highest priority.
3. No individual in our department is finished with his work until everyone in our department is finished with our work.
4. Seek consensus on your courses of action before setting out to make a repair. (“Collaboration produces better results than any one person can produce,” Horgan adds.)
5. Take personal responsibility for others’ safety on the job. Remind each other often to use your personal protective equipment, call someone if you need help, and please be careful.
6. Hold morning briefings to establish the plan of the day.
7. Hold each other accountable for each person’s individual actions on behalf of the department, bearing in mind that our personal reputations and the department’s reputation are one and the same.

He also promotes a culture of mutual respect: “I don’t tolerate petty rivalries. I don’t tolerate any coarse language. We look at the work as professionals. We address each other professionally. We do things to affirm each other. I try to discourage those small nuisances that can turn into bigger things.”

Transferring skills
With that foundation, Horgan and his team have set out to diversify their skills and gain the ability to handle the vast majority of maintenance and repairs in-house. The maintenance department was reorganized early in Horgan’s tenure, and as a result his team members are his own hires.

“One thing I tried to do — as we needed people, I made it a policy that whoever we brought in would need to have some industrial science skills,” Horgan says. “They would need to have completed an associate degree in some sort of a maintenance discipline.

“Our systems include electrical, mechanical and pneumatic devices. We’ve got pumps, piping, slakers, chemical feed equipment — we have quite a lot of equipment and building infrastructure that needs maintenance. “Our biggest challenge, with our varied backgrounds, was to take what we knew and apply it to this industry. Actually, a lot of things in our
backgrounds dovetailed very nicely with water treatment. In aircraft, a lot of flight-control surfaces are controlled using pneumatics and hydraulics, and it's the same with a lot of our valving in the plant. The industrial science principles we learned in the airline industry are the exact same principles that apply in the water industry."

**More self-reliance**

"It's a matter of getting familiar with new equipment," Horgan says. "We take full advantage of the maintenance manuals. We take advantage of Google and other Internet resources. Then we bring our unique qualities to the table from our backgrounds, and we can accomplish an awful lot of things that we used to farm out to vendors.

"For example, we used to farm out a lot of the controls and troubleshooting of our 4-20 mA systems. We made some equipment investments, and we do that kind of troubleshooting ourselves now. We have a signal generator we can use to test our building wiring. We can induce 4-20 mA signals to make sure our SCADA system is reading properly. We've got meters that can glean the 4-20 mA signals generated by our equipment, and they help us troubleshoot those systems without calling outside vendors.

"We do a lot of pump overhauls that used to get farmed out. We've got the equipment and expertise not just to rebuild a pump but to improve the mean time before failure. No one stewards equipment better than an in-house maintenance staff. I'm convinced of that."

In one instance, the team was struggling with rime ice formation on the exhaust outlets of the plant's four dual-diaphragm, air-operated sludge pumps. "Moisture in the air, combined with the local temperature drop around the muffler, formed ice that would impede the exhaust, so that the efficiency of the pump would suffer," Horgan recalls.

Bones came up with a solution: placing the exhaust outlets under water. The team plumbed a simple tank about half-filled with water so that the air exhausts into a manifold at the bottom. A small stock tank heater keeps the water from freezing.

"We tested it out, and it eliminated the rime ice," says Horgan. "But it also took the decibels in the room down from about 120 to about 75. The water provides just a hint of backpressure, so that when the stroke of the pump gets to the extreme left or right, it doesn't slam into a hard stop. It gently hits its..."
stop before it strokes back the other way.

“So we got a threefold benefit. We eliminated the rime ice, reduced exhaust noise in the room, and increased the mean time before failure on the pump.”

**Ever improving**

For the future, Horgan looks forward to taking advantage of a computerized maintenance management system (CMMS) from Novotx that the Utility Division is phasing in this year. Horgan’s goal is for the team to deliver an optimum combination of inspections and planned maintenance to prevent equipment issues, and broad and deep skills to correct issues that occur.

To that end, team members are teaching each other their respective specialties during lunch-hour sessions. “We all share our insights that make us special in any one area, so that we all grow together,” Horgan says. “That way we’re not hamstrung if I’m not here on a given day and there’s an electrical problem that needs troubleshooting, and we’re not hamstrung if someone with a different specialty is on vacation for two weeks. We’re all equally versed in most of the equipment. It has taken time to get to that point, but we were deliberate in making that happen.

“It goes a long way when you have your own maintenance staff and they have the time to really look at the equipment. You can really effect some serious change in the way your plant operates.”

**Praise from the top**

Rick Wahlen, manager of utilities for Eden Prairie, calls Horgan an employee who “performs about two levels above his pay grade. He and his team, with the skills they brought to our plant, have saved us enough money by doing work internally to offset the cost of adding an employee to the staff.

“Kevin also creatively finds ways to locate spare parts by working with local machine shops to fabricate items for which otherwise we would incur long lead times and high costs. When Kevin looks at a piece of equipment, he’s not simply interested in fixing what’s wrong.

“He’s interested in applying his knowledge to understand its purpose and how the entire system is supposed to function, so he can repair it in the best way possible. He is living proof that there can be considerable value in bringing skilled people from outside the water industry into our world.”

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In the water industry we have a big problem: buried infrastructure. Water is essential to all life and we have developed an ingenious system of delivering safe, clean water to most households throughout the United States. This system consists of thousands of miles of buried pipes. The problem isn’t with the pipes—at least not with the hydraulics and method of delivery. The problem is that the pipes are old, and maintenance has been minimal or nonexistent.

Unfortunately, pipes are not like a fine wine; they don’t get better with age. The challenge we face is how to best manage the backlog of aging pipelines on increasingly tight budgets. Let’s face it, pipes aren’t getting any younger and budgets aren’t getting bigger, and with the enormous financial burden looming on the horizon, we need to be smart with how money gets spent. According to the U.S. Environmental Protection Agency, it is estimated that about $1 trillion will need to be spent in the next 20 years upgrading water infrastructure.

With this in mind we need to consider how best to approach the problem. Knowledge is power, and a pipeline condition assessment program can be used to gain knowledge and empower us to make cost-effective decisions. Here are some thoughts on what to consider when developing a pipeline condition assessment program:

- **We need to better understand system condition.** Generally we have a sense of how reliable the system is based on how many breaks are occurring. Most utilities realize that the number of breaks per year is increasing, indicating that system
reliability is decreasing. However, pipes have been installed under different contracts at different periods of time, and environmental conditions in which pipes reside vary. This means that the entire system is not necessarily unreliable and not all pipes are on the verge of failure. The key is to better understand the overall condition of the system and try to identify areas where more information is needed to better gauge the overall condition of the system. With this knowledge in hand, decisions can be made to better manage risk and maintain system reliability. System knowledge is the foundation from which a strong asset management system can be built.

- **Not all pipes are old.** The good news is that not all pipes are old, but it is important to understand that newer pipe can also fail. Failure of newer pipe is usually attributed to manufacturing defects or poor installation practices. Most of the issues associated with early failures can be managed through a well-defined inspection and acceptance program. However, even with a robust inspection and acceptance program, failures within newer batches of pipe may still occur, but they should be minimized. For this reason, newer pipe can generally be left alone and isolated failures can be managed reactively. The important thing is to monitor newer pipe so that it can be inspected at the appropriate time to prevent an

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increasing rate of failure.

- **Not all old pipes will fail.** While pipes tend to fail as they age, not all old pipes fail. It is true that the likelihood of failure increases, but some pipes last longer. For example, there are two different types of cast iron pipe, pit cast and spun cast. Based upon a limited review of data it appears that the pit cast has a longer life cycle than the spun cast. This is likely due to the fact that the pit cast pipe typically has a thicker wall, meaning that it can withstand more stress and wall loss before it fails. Further, environmental conditions have a big impact in how long a pipe may last. Pipe installed in corrosive soils where there are stray currents will likely have a shorter life cycle than pipe installed elsewhere. While these points may seem intuitive, they are important points that must be taken into consideration when analyzing failure data. Pipe type, method of manufacture, and environmental conditions are all factors that must be taken into consideration when selecting cohorts for life-cycle analysis.

- **We can’t look at everything; therefore, we need to optimize the decision making process.** While it is important to learn as much as you can about the system, it’s not possible to look at everything all at once, as most of the distribution system is not accessible for inspection and it is expensive to gain access for inspection. So, in order to gain insight into the system condition, a process needs to be followed that systematically and methodically prioritizes pipes for inspection. As mentioned earlier in this article, most utilities know where breaks occur and typically track this information in a work order management system.

Failure data, no matter how much information is collected during repair, is valuable. This data can be used in the development of a risk map that in turn can be used to prioritize which pipes should be inspected first. Risk mapping requires assigning criticality and probability of failure to pipe segments within the system. Determining criticality requires assigning criteria based on the importance of each individual pipe to system function and the potential

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consequences associated with a pipe failure. Probability of failure is developed by performing a life-cycle analysis using failure data, which can be obtained from break information recorded in a work order management system. The product of criticality combined with the probability of failure is the risk. High-risk pipes should be inspected first.

As inspections are performed, more detailed data regarding the actual condition of the pipe is gathered. These data are used to further refine the pipeline-condition database. As more data are collected, information in the database can be increasingly trusted for rehab/repair/maintenance strategies. This includes performing a desktop analysis and field inspections as shown in Figure 1 above. By doing this capital funds can be targeted at the riskiest pipes that may be in the most need of repair or replacement, represented by prioritized work in Figure 1. The remaining pipes can then be actively managed or reactively repaired. Reactive repairs should decrease over time, allowing for more funds to be directed towards proactive maintenance on pipes that have been prioritized for active maintenance.

A pipeline condition assessment program should not be confused with asset management; it is not a replacement for asset management. Rather, it is the data-collection process upon which a successful asset management system can be built and implemented. The fundamental difference is that a pipeline condition assessment program should be designed to collect information about the system while the overall asset management system should use this data to develop rehab/replacement and management strategies to optimize spending and secure funding. As such, it is a worthwhile endeavor to invest the time and funding in making a pipeline condition assessment program robust and defendable.

**Feature**

**“System management means that pipes don’t necessarily need to be replaced or even rehabilitated”**

**Conceptual Layout of PCA Process**

Essentially, the process needs to leverage what you know/learn about the system for developing rehab/repair/maintenance strategies. This includes performing a desktop analysis and field inspections as shown in Figure 1 above. By doing this capital funds can be targeted at the riskiest pipes that may be in the most need of repair or replacement, represented by prioritized work in Figure 1. The remaining pipes can then be actively managed or reactively repaired. Reactive repairs should decrease over time, allowing for more funds to be directed towards proactive maintenance on pipes that have been prioritized for active maintenance.

A pipeline condition assessment program should not be confused with asset management; it is not a replacement for asset management. Rather, it is the data-collection process upon which a successful asset management system can be built and implemented. The fundamental difference is that a pipeline condition assessment program should be designed to collect information about the system while the overall asset management system should use this data to develop rehab/replacement and management strategies to optimize spending and secure funding. As such, it is a worthwhile endeavor to invest the time and funding in making a pipeline condition assessment program robust and defendable.

And include more detail.

- **We need to develop a systematic process that is defendable.** Using a risk-based approach to improving system reliability should provide data needed to support subsequent decisions to be made with respect to rehabilitation or replacement. Further, data can be used as a tool for system management. System management means that pipes don’t necessarily need to be replaced or even rehabilitated; rehabilitation or replacement of pipe becomes an alternative in the management toolbox. If pipes are in reasonable condition, active monitoring and re-inspection are viable alternatives. Doing nothing is also a viable alternative. These sorts of decisions need to be backed up with the appropriate level of data, and, if the pipeline condition assessment is systematic and analysis is robust, then these types of decisions become defendable. Further, life-extending strategies such as cathodic protection can more readily be evaluated.

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**Figure 1. Conceptual Layout of PCA Process**
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Designing your pipeline for 100 years or more: Can it be cost effective?

By Ahmad Habibian, PhD, P.E., Black & Veatch Corporation

Introduction
The standard practice of designing water pipelines for a 50-year design life has been around for quite some time. We now have the demonstrated experience that, while some pipes may not last as long as 50 years, many continue to serve their function well beyond 50 years. Additionally, with the improvement in the quality of pipeline materials, advances in manufacturing processes, and enhanced construction techniques, it is logical to expect the pipelines we design and install today will last longer than their predecessors. The key issue, though, may be to determine if an approach can be developed to reduce the life-cycle cost of the pipeline by spending more money upfront and extending the service life. This approach will broaden the application of asset management principles from maintaining the current assets to designing future assets.

This paper will explore the following questions:

1. Can we conservatively design a pipe for a design life of 100 years or more?
2. Would it be cost effective?
3. Would it be prudent to design a pipeline today for the next century, considering the society’s needs and way of life may be very different from what we consider as the norm today?

Design life versus service life
The concept of design life was initially developed in the engineering community as a required parameter for performing cost-benefit ratio analyses of various design alternatives and comparing such alternatives from an economic standpoint. Often, the term design life is used interchangeably with the term service life. There is, however, a subtle difference between these two terms: when a new pipe material is introduced into the market, there are no hard data available to establish its service life. Extrapolation techniques are used to project the service life, which is then used as the design life for economic analysis of alternatives.

Over time, as the industry gains experience with the performance of a material under installed conditions, the service life may be adjusted upward or downward. For example, while many old cast-iron pipes were designed for a 50-year design life, experience has shown that they can last much longer.

Reliability-based service life
A new concept emerging in the industry is that the service life is not fixed but
Feature

This reliability-based concept is now used by many utilities in the United States and overseas to develop pipeline rehabilitation needs and maintenance management programs. The same concept can be used when performing life-cycle cost analysis during the phase of a new pipeline. Instead of performing the life cycle cost analysis for a fixed service life, the analysis will incorporate the gradual degradation of the pipeline over time and any intermediate corrective action, such as rehabilitation, that may be envisioned to be taken during the service life of the pipeline to maintain the minimum level of service required.

The minimum level of service required plays a critical role in determining the service life of pipelines. For example, utility managers in the United Kingdom and Australia tend to use the “run to failure” philosophy for non-critical pipelines and end up using service life of up to 200 years for the purpose of developing renewal and replacement rates. A consequence of this philosophy is an acceptance of a higher failure rate and, consequently, a lower level of service.

Can we conservatively design a pipe for a design life of 100 years or more? The experience gained over the past century combined with advances in pipe materials, design and installation techniques, and implementation of effective long-term maintenance practices makes it possible to design pipelines with a design life of more than 100 years. The key considerations to achieving a 100+ year design life include:

- Design
- Pipe material and its durability
- Design methodology, including design criteria
- Corrosion allowances and protection systems
- Protection the asset from adverse environmental elements (corrosive water and soils, stray currents)
- Additional sacrificial or reserve capacity at the design stage
- Installation
- Proper pipe fitting and installation, including ensuring internal/external coatings are not damaged
- Proper installation of cathodic protection devices (if required)
- Embedment and backfill materials

The KANEW model developed by the Water Research Foundation, for example, is based on a ‘survival function’ as illustrated in Figure 1. This chart shows typical survival curves for a pipeline under pessimistic and optimistic scenarios. Based on this model, 50 percent of the pipeline will be deteriorated and need to be replaced by the time it is 60 to 80 years old. By the same token, 10 percent of the pipeline would last from 90 to 110 years.
to provide proper lateral support
- Proper testing and inspection prior to placing into service
- Long-term asset management
- Ongoing monitoring and maintenance
- Reduction of the expected level of service, such as tolerance of a greater number of breaks per mile per year. This approach has been used in Australia.

By carefully investigating and incorporating some or all of these elements, the designer can extend the design life of the pipeline beyond the traditional 50-year mark. For example, coated metallic pipes with an active cathodic protection system can easily survive 100 years or more.

Would Longer Period Design Life Scenarios Be Cost-effective?
An important consideration in designing pipelines for longer service life is a cost benefit analysis. The service life should be linked to maintenance costs and considered in terms of whole life cycle cost. Pragmatically, one should ask what more could be done at the design and construction phase to help prolong the service life and at what cost.

As part of this approach, in addition to structural design, consideration should be given to other aspects such as the probable failure modes, consequences

“By carefully investigating and incorporating some or all of these elements, the designer can extend the design life of the pipeline beyond the traditional 50-year mark”
and mitigations, e.g., Failure Mode Effect (Criticality) Analysis, leading to Fault (and Event) Tree Analysis, and metrics on a range of options identifying the best value solution. This approach can be taken in choosing the most suitable balance of capital and maintenance cost items.

Would it be prudent to design a pipeline today for the next century, considering the society's needs and way of life may be very different from what we consider as the norm today?

This is a relatively difficult issue to tackle. It requires insight into what the future might hold. To illustrate the issue, consider a utility contemplating the building of a major transmission line. The selection of the pipe size and its hydraulic capacity is very critical and is dependent on a number of assumptions related to projection of future demand. The accuracy of such projections decreases as the time horizon increases. For example, while one may be able to project the future demand over the next 50 years, the projections will be less certain for a 100-year planning period. Furthermore, unforeseen trends and technologies may fundamentally change the drivers for demand. For example, it is not difficult to imagine self-sustaining industrial or commercial establishments in the future. Such establishments can have on-site recycling systems that eliminate the need for a constant supply of water. Small-scale recycling units for high-rise apartment buildings or even single-family residential units are possible as well. The potential for such fundamental changes has a significant impact on water demand and can be argued to be a reason for not designing pipelines to meet predicted water demands for very long periods due to a possible low level of accuracy in prediction techniques.

Summary
Advances in pipe materials, design and installation techniques, and implementation of effective long-term maintenance practices make it possible to design pipelines with a design life of more than 100 years. A life cycle cost analysis, incorporation of pipe-material degradation, ongoing maintenance, and mid-life corrective action should be performed to optimize the balance between upfront capital costs and long-term maintenance and corrective-action costs. While design life beyond 100 years is feasible, it may not be a prudent strategy due to uncertainty in demand projections over longer planning periods and the potential for fundamental shifts in the way customers use water.
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While Congress is basically gridlocked, the table below lists several upcoming regulatory actions by the U.S. Environmental Protection Agency (EPA) that are on the horizon.

Note that this table doesn’t include the final Third Unregulated Contaminant Monitoring Rule (UCMR3) or the final Revised Total Coliform Rule (RTCR). The final UCMR3 was published in the Federal Register on May 2 (77 FR 26072), and monitoring has to be conducted in four consecutive quarters in 2013-2015. Systems serving greater than 10,000 people are required to monitor for 21 List 1 chemicals, and systems serving greater than 100,000 people also have to monitor for 7 List 2 chemicals. Six analytical methods are required for the List 1 chemicals, and a seventh method is used for the List 2 chemicals. Two significant changes in UCMR3 are that consecutive systems are now required to conduct the monitoring and several of the analytical methods have field-blank requirements (and those requirements are not the same for each method where a field blank is required). EPA has scheduled two free UCMR3 webcasts on September 10 and 19.

The final RTCR is in an interesting place now due to the November election. The final RTCR is currently undergoing review by the Office of Management and Budget (OMB) Office of Information and Regulatory Affairs (OIRA), and that 90-day review is scheduled to be completed at the end of August. At that point, final signatures would be obtained and the final rule published in the Federal Register, which typically takes a couple of months after completion of the OIRA review. But that timetable would put the final RTCR out in late October, right before the November election. Most in the drinking water community know that the final RTCR is the result of a negotiated rulemaking process, and all stakeholders signed the Agreement-In-Principle and agree with the revisions inherent in the RTCR. But that doesn’t mean that the final RTCR could be portrayed either way – as an example of the administration streamlining a regulation and improving public health or as an example of the administration...
putting out another “job-killing” regulation. At this point, it’s impossible to predict when the final RTCR will be published and/or how it will be portrayed.

Shifting now to several upcoming regulatory actions that are on the horizon, the new definition of “lead-free” becomes effective on January 4, 2014, three years after the legislation was signed by President Obama (PL 111-380). This legislation changes the definition of “lead-free” to less than 0.25% lead, and any new meters, pipe saddles, etc., that are installed have to meet this new definition as well as any parts that are used in repairs. EPA held a stakeholder meeting on August 16 to discuss some of the technical issues surrounding the implementation of this new definition. Water systems will need to appropriately manage their inventory throughout 2013 in order to meet this new deadline.

The perchlorate regulation is supposed to be published in February 2013, two years after EPA’s decision to regulate perchlorate, according to a Safe Drinking Water Act (SDWA) deadline. However, given the ongoing reviews by the Science Advisory Board (SAB) Perchlorate Advisory Panel and the National Drinking Water Advisory Council (NDWAC), meeting that deadline will be challenging for EPA. The SAB Perchlorate Advisory Panel met in Washington, DC on July 18-19 to review the basis for the perchlorate Maximum Contaminant Level Goal (MCLG). The report from the SAB Perchlorate Panel is expected in the October timeframe. The NDWAC is going to discuss perchlorate at a meeting in Chicago on October 4-5. The perchlorate MCLG has several complex scientific issues on such issues as iodide deficiency, how much of a change in iodide levels is significant based on EPA’s PBPK model, and EPA’s life-stages analysis. This last issue could be precedent-setting for other future regulations based on the increased amount of water consumed per body weight for infants and toddlers as compared to adults.

The schedule for the preliminary third regulatory determination has slipped a bit and now looks to be coming out sometime in 2013. Again, that timeframe could depend on the results of the November election, but keep in mind that the SDWA requires EPA to make regulatory determinations (either positive or negative) on at least five contaminants every five years, and the second regulatory determination was published in July 2008. So with this statutory deadline, this round of regulatory determinations cannot be delayed for very long.

On June 16, 2011, EPA held a stakeholder meeting to discuss the health effects and occurrence data for the subset of contaminants from the Third Contaminant Candidate List (CCL3) that were being investigated further for the third regulatory determination. Based on the discussions at that meeting and subsequent discussions, the regulatory pundits predict that EPA will make positive regulatory determinations for nitrosamines, strontium, and chlorate.

Of the three, regulating nitrosamines now would be controversial for a couple of reasons. First, due to nitrosamine formation inside the body (endogenous), the percentage of total risk reduction from a nitrosamine drinking water regulation would be very small. It’s debatable whether a nitrosamines drinking water regulation would meet the SDWA criteria for “...a meaningful opportunity for health risk reduction...”

Second, potential risk-management strategies for water systems to reduce nitrosamine concentrations are not clear at this time. Many potential treatment options create simultaneous compliance issues. For example, a water system that discontinues its use of PolyDADMAC polymers could potentially create compliance issues with the recently revised lower turbidity standards. Additionally, the treatment studies published to date were laboratory studies, not pilot- or full-scale studies as required by the SDWA.

Given the timeframes in the first two regulatory determinations, if EPA publishes the preliminary third regulatory determination sometime in 2013, the final third regulatory determination would be published in 2014 or 2015. If EPA makes
any positive regulatory determinations, as predicted previously, the agency would have to publish a proposed regulation within 24 months and would have 18 months after the proposal to publish the final regulation (both are SDWA deadlines). If needed, the EPA administrator can ask for an additional nine months to publish the final regulation. American Water Works Association has scheduled a webcast on the third regulatory determination on September 5 that will address some of the issues surrounding this determination.

It is likely that the preliminary third regulatory determination will also have several negative determinations for several contaminants with zero or near-zero occurrences in the First and Second Unregulated Contaminant Monitoring Rules (UCMR1 & UCMR2). These contaminants include, but are not limited to nitrobenzene, RDX, dimethoate, disulfoton, diuron, and molinate.

The proposed Long-Term Lead and Copper Rule (LT-LCR) Revisions are scheduled to be proposed in 2013. Issues that will likely be addressed in these revisions include:

- Lead service line replacement, partial or otherwise,
- How to determine when corrosion control is optimized, i.e., the acceptable ranges for water quality parameters,
- Sample site selection criteria, and
- Sampling issues such as the potential removal of aerators and the acceptable stagnation period.

The carcinogenic Volatile Organic Compound (cVOC) Rule is also scheduled to be proposed in 2013. EPA is in the process of collecting more occurrence and treatment data in order to determine what cVOCs might be included in this regulation. Potential co-occurrence, as well as common treatment, will likely be factored into consideration of what cVOCs might be included in this regulation.

Finally, EPA is likely to propose the Third Six-Year (SY3) Review of existing drinking water regulations in 2015 in order to finalize it by 2016 (six years after the Second Six-Year Review was published, in June 2010). Under the SDWA, EPA is required to look at all of the existing drinking water regulations every six years and, based on new health effects, analytical methods, occurrence, and treatment data, determine if a revision is necessary or not. In a separate but related effort, in August 2011, EPA released its plan for a retrospective review of all of its regulations to comply with Executive Order 13563. Besides the LT-LCR Revisions previously discussed, EPA also listed the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) in this plan for a potential review.

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Mammoth main break in Minneapolis

Winter is a season for water main breaks. But the break in downtown Minneapolis the afternoon of Thursday, January 3, 2013 was distinctive for two reasons: though it happened in winter, it wasn’t the result of the stress of cold weather; in addition, the break occurred in a 36-inch pipe, bringing an unprecedented gusher with effects felt through a large portion of the city. Minneapolis distribution foreman Mark Ebert said it was the largest main break he has seen during his 33 years with the city.

The break occurred at a construction site at 2nd Street North and Hennepin Avenue when a private contractor ruptured the water pipe. The city lost more than 14 million gallons of water, much of which flooded streets down to the river and submerged a number of vehicles in the garage of the nearby post office. The cost of the lost water itself was $65,000.

Minneapolis Water Works crews followed procedures for isolating the area, but because of the size of the main, it took more than two hours to close the valves. Valves farther from the site had to be closed first to reduce the flow in the area of the break. By late afternoon, the affected area was confined to three blocks between 2nd Street and Washington Avenue and between Hennepin Avenue and Third Avenue North.

As distribution crews closed valves, others checked water pressure in the surrounding area, concerned that a drop below 20 pounds per square inch (psi) could cause back-siphonage issues. Although pressure dropped in buildings near the break site, the city confirmed that pressure had stayed above 20 psi in the nearby Federal Reserve Bank and Hennepin County Central Library.

Waterworks officials consulted with the Minnesota Department of Health (MDH), and the city issued updates on its web site and on Facebook while also communicating with local media. Workers delivered notices to buildings in the affected area with orders not to use the water.

By the weekend the city restored water to the three-block area with temporary lines from fire hydrants while crews continued to fix the broken pipe (shown above). Distribution crews bolted a pair of sleeves over a longer section of new pipe to replace the damaged portion.

The city flushed and disinfected the lines in the affected area and worked with MDH engineers Ike Bradlich and Lucas Martin to take bacteriological samples and to check the water for possible contamination from volatile organic chemicals. The samples came back clean. Within a week of the break, Minneapolis had restored all water service to the area and confirmed that the water was safe to drink.

The cost of dealing with the water break to the city, which includes lost water and overtime for workers but does not include damage to private property, is estimated to be more than $325,000.
Schmidt organic water

A brewery for more than a century, a site along West Seventh Street in St. Paul is continuing to produce an even more precious product—drinking water. Schmidt Organic Water has a pair of water dispensers on the outside of its building, and people line up on a regular basis to fill their jugs.

Schmidt, “The Brew that Grew with the Great Northwest,” is the most-remembered beer that has been made here since Christopher Stallman founded a brewery on the property in 1855. Now a well extends more than 1,000 feet into the Mount Simon-Hinckley aquifer to draw water, which is treated through aeration and filtration (for iron removal) but with no chemical addition.

Site manager Phil Gagné says they increased the price of water from 50 to 75 cents per gallon at the beginning of 2013 and continue to sell an average of 200 gallons a day.

The buildings are now being converted into other uses, including artist lofts and a brew house, where beer under a new label will be sold. The water vending along West Seventh Street will remain and continued to be monitored by the Minnesota Department of Health.
John Frederick Blackstone obituary

Published in Pioneer Press on November 25, 2012

John Blackstone, a project engineer for St. Paul Regional Water Services (SPRWS), died of cancer November 20 at the age of 68. Blackstone had worked in the water industry for many years and came to St. Paul from the U. S. Army Corps of Engineers in 2004. "He had sterling recommendations," said Dave Schuler, head of the engineering division as SPRWS, "and he lived up to his billing." Blackstone worked on large projects for the utility, including meter replacement and lake reservoir restoration. "He was a master juggler [of projects] and a great communicator," said Schuler. "You start everything with building relationships, and I don't think I ever introduced him to someone he didn't already know." Blackstone is survived by his wife, Linda Kjerland, three children, and four grandchildren.

In other news, former Erskine water superintendent Bill Canniff died February 19 at the age of 80.

Drinking Water Institute to be held in Rochester in August

Water Works! A Drinking Water Institute for Educators will be held in Rochester this summer from Monday, August 5 to Wednesday, August 7. Each year Minnesota science teachers attend the three-day Institute, learning about drinking water and about ways to develop inquiry-based activities that can be incorporated into their existing science curriculum. The program is free to interested teachers, who will receive college credit for their participation.

Water Works! is sponsored by the Minnesota Department of Health and the Minnesota Section of AWWA and is conducted through a partnership with Hamline University’s Center for Global Environmental Education. More information is available on the MDH website at http://www.health.state.mn.us/water/institute/index.htm.

Poster contest

The Minnesota Department of Health is working with H2O for Life, Dow Water and Process Solutions, Bongard Corporation/Elkay, and the Minnesota Section of American Water Works Association on a contest within Minnesota schools to have students develop posters about drinking water.

Funded by grants from the participating organizations, a bottle filling station will be awarded to the schools of the students who produce the winning posters. Four filling stations will be awarded, one each for the winning entry from an elementary school, middle school, and high school as well as for the best overall poster. In addition, a $50 check will be awarded to the four student winners.

The winners will be announced in conjunction with World Water Day March 22 and will also be celebrated during Safe Drinking Water Week in May.

Poster contest

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Poster contest


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To systems that chlorinate

By Mackenzie Hales
Minnesota Department of Health, Community Water Supply Unit

The Minnesota Department of Health (MDH) has been issuing a lot of easily avoidable notices of violation for missing disinfectant residual (DR) results. A few tips to avoid having this happen to your system:

1. Always write the chlorine residual in the proper area on the lab form. Do not write the chlorine residual on the bottle; there is no guarantee that the lab will record it for you. Bottles get thrown away, so there is no record of it left behind.

2. Keep a copy of the lab form you send into the lab with your samples. That way, if the lab fails to report the chlorine residual, you have proof that you recorded it and can avoid a violation.

3. If a lab returns the bacteriological/disinfectant residual report to you without the DR and you have proof that you provided the DR to the lab, please contact us proactively with that information.

Note on properly filling bacti sample bottles: MDH has been receiving a lot of bacti samples with insufficient volume for total coliform/E. coli analysis. When filling up your bacti sample bottles, make sure you fill them up so the bottom of the meniscus is at the top of the 100 milliliter fill line.
MDH updates and reissues press release on shady sales of water treatment devices

In response to continuing reports of deceptive and aggressive sales tactics by some sellers of home water treatment equipment, the Minnesota Department of Health has updated and reissued a press release, advising homeowners to beware of false claims, deceptive sales pitches, and scare tactics.

MDH had put out a press release in 2010 about the topic. Since then, police in Richfield alerted residents after some had bottles left at their doors with a request for a water sample. One Richfield resident, after providing a sample, said he was visited by a company’s representative with “an aggressive sales pitch for a treatment system costing more than $6,000 and had difficulty getting the salesman to leave.” Falcon Heights officials advised their citizens to call 911 if they saw anyone dropping off sales kits.

A few years ago MDH got a report of a sales rep telling a homeowner in the northern suburbs that he was working with the state health department, which had grant money available for homeowners needing home treatment equipment. This claim (which was false) led the sales rep to try to pressure the homeowner into a quick decision based on the possibility of the grant money no longer being available in the near future.

In the press release MDH outlined some of the sales tactics used by some companies, explained the standards that are used for testing public water systems and that residents can be confident in the safety of their water unless told otherwise by their utility, and made recommendations for those considering the purchase of a home system.

The press release resulted in a number of stories, including in the St. Paul Pioneer Press and on Minnesota Public Radio and the Minnesota News Network.


“MDH has updated and reissued a press release, advising homeowners to beware of false claims, deceptive sales pitches, and scare tactics.”

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Eagan fills its plate

Plate settlers continue a new trend in water treatment optimization processes. “Once the domain of the wastewater industry as a means of reducing the footprint required for clarification and solids consolidation,” said Todd Butz of Treatment Resources, Inc. of Minneapolis, “the process has found a new niche as an efficient method of recovering backwash water that is benefitting more and more water treatment plants.” Water conservation is one reward, allowing treatment plants to recover more than 95 percent of their wastewater, but the benefits go beyond that.

“Beyond savings on sewer charges, the bigger impact is operational flexibility and the ability to more quickly turn around a sequence of filter backwash events,” said Steve Gilberg, the water production supervisor for the city of Eagan, Minnesota, which recently added plate settlers to its South Water Treatment Plant. Gilberg explained that conventional backwash systems, using backwash tanks, required a polymer to bind with the sludge. “There is a settling time where the sludge particulates must grow and sink to the bottom of the tank—in our case it took about three to four hours. Now, with our plate settler in place, we use far less polymer and can start the reclaim process immediately after backwashing.

“Before, we could do four backwashes a day, and all the backwash tanks would be full. We’d have to wait three to four hours for the poly to settle out. We would then start to pump down our tanks; this would take another two hours for a total turnaround time of six hours. Before the addition of the settler, we could get three to four days of filter run time a day, and all the backwash tanks would be full. We’d have to wait three to four hours for the poly to settle out. We would then start to pump down our tanks; this would take another two hours for a total turnaround time of six hours. Before the addition of the settler, we could get three to four days of filter run time in the summer if we’re lucky. This summer [2012] we increased that nearly 100 percent to six or seven days of run time per filter.”

What changed to create such a long filter run time? Gilberg said, “By having a plate settler, less wastewater is recycled back into the splitter box at the head of the plant. With less waste recycled, the filters are less likely to bind, giving us longer filter run times.”

Steve Nelson of Bolton & Menk, Inc. noted, “The plate settlers also enabled Eagan to more easily optimize their polymer addition because the solids concentration is uniformly blended prior to the polymer being added. This helps prevent the intermittent overfeed of polymers that had the tendency to carry over onto the filters and contribute to partial filter blinding and decrease filter runs. Jar testing and assessing the current mass balance of solids and desired plant operations was the key to the successful renovation.”

South of the Minnesota River amid the also-burgeoning suburbs of Burnsville, Apple Valley, and Lakeville, Eagan has grown from a small community to one of the 10 largest cities in Minnesota. Transportation improvements, including a new Cedar Avenue (Minn. Hwy. 77) bridge and the completion of Interstate 35E across the river, have contributed to more commuters settling in Eagan. In addition, the city has a number of large employers of its own, including the bulk-mail center for the post office, Blue Cross Blue Shield, and West Publishing (now part of Thomson Reuters). It was also home to the world headquarters for Northwest Airlines.

As has been the case with other outer-ring suburbs, Eagan has had to build its municipal services to match population growth, which has more than tripled to 64,000 people since 1980. With water coming in from 21 wells, in 2012 Eagan produced nearly 4 billion gallons

“With less waste recycled, the filters are less likely to bind, giving us longer filter run times.”
of drinking water for its residents and commercial users.

Public water wells began replacing private supply systems in the 1960s, and Eagan put its first water treatment plant into service in 1985. In 1991, another plant was added a few miles to the south, and, like the north facility, removes iron and manganese.

Eagan completed an expansion of the north plant in 2005, doubling its number of filters to 16 and increasing its capacity by more than 80 percent to 22 million gallons per day. The project also included upgrades to the chemical feed systems and sludge handling, the latter in response to more stringent regulations regarding the discharge of backwash water.

Plate settlers were added with the expansion at the North Plant as they were in a later upgrade at the South Plant, but with a key difference. "The North Plant and the South Plant achieved blending in an existing backwash tank," said Nelson, who led the design of both plant renovations. "The difference is that the South Water Plant also converted one of the existing backwash tanks into a plate settler room. This also required the addition of a second story over the buried backwash tank (a new plate settler room) that allows for easy observation and access to the plates, mixers, and flocculator."

"That was the biggest hurdle," said Gilberg of the retrofit. "You don't mess with your backwash tanks. If anything, you want more."

Nelson added, "This was a hurdle in that it seemed intuitively like the city would be losing backwash capacity by losing one of their three backwash tanks. However, the net effect was a great enhancement in the ability to handle backwash water."

The South Plant had three tanks performing conventional backwash. The utility cut off the top of Tank A to fit the plate settler in it. "From our filter cells, we dumped everything into the C tank," explained Gilberg of the process that is now operating. "From the C tank, we pump the waste into the plate settler."

Gilberg said the South Plant benefitted from advances in technology in the years following the expansion at the North Plant as well as learning from the experiences at the North Plant. "If we could do it, we wanted a physical break from the plate settler into the system, so we ran the effluent of the plate settler into the B tank. That was a big thing for us."

Gilberg and Nelson have been tracking the gains in recovery from the plate settler. "We are now recovering 98-plus percent of the backwash water from the filters and are able to reintroduce it into our system," said Gilberg. "Before that, it was about 60 percent, with the rest going down the sewer."

"The turnaround time for filter cells backwashed to Tank C is about two hours. We'll initiate a backwash and dump that water into the C tank. There is a pressure transducer in the C tank that allows us to see the level we want our plate settler feed pump to run. This allows us the flexibility to run the plate settler summer and winter. The plate settler effluent then flows to the B tank, a physical break because if the plate settler would malfunction (usually a polymer issue), we would have time to settle the sludge out in this tank. From the B tank, or effluent tank, we pump clean water back to the splitter box at the head of the plant. The net effect is a 50 percent reduction in time required to backwash water and reclaim eight filter cells."

The plate settler at the South Plant was installed in the summer of 2010, and the utility made adjustments over the next few months. It was fully operational throughout 2012, and Gilberg said, "With the hot, dry summer, it was a great year to really show how this plate settler works."

"It was a benefit to have a plate settler at the North Plant. We had some operational pitfalls with the North Plant settlers, and the improvement from the North Plant was applied to the plate settler at our south facility."

"The way the flocculation chamber ties together with the sludge hopper was carefully specified during the design," added Nelson. "As a result, the plate settlers at the South Plant do not have the tendency to plug up with the filter media."

Gilberg and Nelson said the benefits include:

• decrease in filter down time as the filters can be backwashed and the water recycled in continuous succession if necessary, effectively reducing the time required to turn over all eight cells by about 50 percent.
• decrease in polymer from .9 milligrams/liter (mg/L) to .2 mg/L.
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