

# ServiceLine

— The Official Publication of the South Dakota Association of Rural Water Systems —



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# President's Message

Ron Gillen, SDARWS President



## NRWA In-Service

In June, most of the Association staff will travel to Little Rock, Arkansas for the National Rural Water In-Service Training. At In-Service, rural water professionals from around the nation gather together to train and discuss their work with others in their peer group. The goal of in-service is to learn about new techniques unique to each position, share expertise, and learn about new funding sources.

## Water Pro

It isn't too early to start thinking about attending this year's WaterPro Conference in Orlando, Florida September 12-14, 2016. NRWA puts on a fantastic show which brings in hundreds of vendors and hosts informative training sessions in operations, management, boardsmanship and governance for those involved in water and wastewater utility systems – large and small, municipal and rural. This year NRWA is adding villages to their exhibit hall. The Villages are an area designated for interactive demonstrations, hands-on learning, networking and discussion on a specific topic. These are learning opportunities unlike anything offered before at the WaterPro Conference. The three villages currently scheduled are Locks and Physical Security, Rapid Response and Recovery and Smart Technology. For more information on this conference, including registration and hotel reservations, please visit [www.waterproconference.org](http://www.waterproconference.org). 💧

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ServiceLine

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# Events Calendar

## MAY

### **24 – CONTROL VALVE WORKSHOP** **Oacoma Community Center**

This workshop will cover the operation and maintenance of control valves used in water systems as well as other valves and appurtenances used in water distribution systems. Registration begins at 8:00 a.m. with the workshop starting at 8:30 a.m.

### **24 – DISCHARGE MONITORING REPORTS TRAINING** **Rapid Valley SD/WS**

Tim Flor, SD Department of Environment and Natural Resources (DENR), will be the main presenter for this training workshop. Beginning in 2017 all wastewater Discharge Monitoring Reports will be required to be completed and sent to DENR via computer. Learn this new process and how to successfully complete these forms during this hands-on workshop.

### **25 – CONTROL VALVE WORKSHOP** **WEB Water Shop – Aberdeen**

This workshop will cover the operation and maintenance of control valves used in water systems as well as other valves and appurtenances used in water distribution systems. Registration begins at 8:00 a.m. with the workshop starting at 8:30 a.m.

### **26 – CONTROL VALVE WORKSHOP** **Colman Community Center**

This workshop will cover the operation and maintenance of control valves used in water systems as well as other valves and appurtenances used in water distribution systems. Registration begins at 8:00 a.m. with the workshop starting at 8:30 a.m.

## JUNE

### **7 – ICE PIGGING WORKSHOP** **City of Fort Pierre**

This two-day workshop is presented in conjunction with Utility Service Group and consists of ice pigging demonstrations, as well as presentations on tank maintenance and mixers, well maintenance, and helium leak detection. Class begins at 9am and goes until 4:00 p.m. on day one; 8:00 a.m. to 10:30 a.m. on day two. Lunch provided to all who pre-register.

## JUNE

### **14 – PIPE TAPPING, AUTOMATION AND HYDRANT WORKSHOP** **Rapid Valley Sanitary District**

This workshop is presented in conjunction with DSG and covers the fundamentals of pipe tapping, brass fittings, meter pits, curb stops, pump and treatment automation, and hydrant fundamentals and repair. Class runs from 8:00am - 4:00pm.

### **15 – PIPE TAPPING, AUTOMATION AND HYDRANT WORKSHOP** **Winner Fire Hall**

This workshop is presented in conjunction with DSG and covers the fundamentals of pipe tapping, brass fittings, meter pits, curb stops, pump and treatment automation, and hydrant fundamentals and repair. Class runs from 8:00am - 4:00pm.

### **16 – PIPE TAPPING, AUTOMATION AND HYDRANT WORKSHOP** **Lewis and Clark RWS Treatment Plant**

This workshop is presented in conjunction with DSG and covers the fundamentals of pipe tapping, brass fittings, meter pits, curb stops, pump and treatment automation, and hydrant fundamentals and repair. Class runs from 8:00am - 4:00pm.

## JULY

### **12 – BASIC WATER TREATMENT** **Aberdeen Ramkota**

This course covers the Association of Boards of Certification "Need to Know" requirements for the Class I & II Water Treatment Exams. Class begins each morning at 8:00 a.m. local time and wraps up around 4:30 p.m. on Tuesday and Wednesday and approximately 11:30 a.m. on Thursday.

### **19 – 30TH ANNUAL RURAL WATER OPEN** **Elmwood Golf Course, Sioux Falls**

Register online at [www.sdarws.com/golf.html](http://www.sdarws.com/golf.html). Shotgun start at 9:00am. \$60/golfer includes lunch, cart, and 18 holes of golf.

## AUGUST

### **9 – WATER DISTRIBUTION** **Watertown Events Center**

This course covers the Association of Boards of Certification "Need to Know" requirements for the Class I through III Water Distribution Exams. This course only covers the material for Water Distribution. Operations Specialists who wish to attempt a Wastewater Collection Exam should attend the Wastewater Collection Course. Class begins each morning at 8:00 a.m. local time and wraps up around 4:30 p.m. on Tuesday and Wednesday and approximately 11:30 a.m. on Thursday.

**REGISTER FOR CLASSES ONLINE AT:**  
**[go.activecalendar.com/sdarws](http://go.activecalendar.com/sdarws)**

*Course agendas, maps and registration are all available online at [www.sdarws.com](http://www.sdarws.com). All classes are free unless otherwise noted. For more info on these and other events, visit [www.sdarws.com](http://www.sdarws.com) or call 605-556-7219.*



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# THE NEED TO KNOW OF NITRIFICATION

By Steve Attema, SDARWS Circuit Rider

Nitrification is a microbial process by which reduced nitrogen compounds (primarily ammonia) are converted to nitrite and nitrate. Ammonia is present in drinking water through either naturally-occurring processes or through ammonia addition during secondary disinfection to form chloramines.

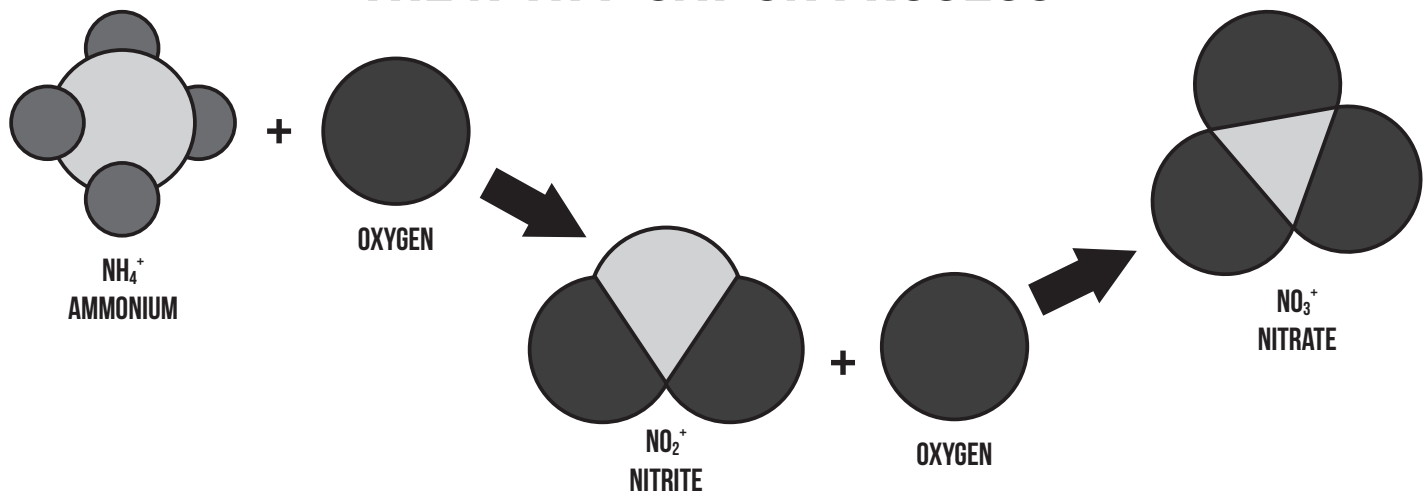
There are several water quality issues that can arise when nitrification occurs in a distribution system:

- **ELEVATED NITRATE/NITRITE LEVELS** – as stated before nitrification converts ammonia to nitrite and nitrate. Nitrate and nitrite are EPA regulated contaminants with a MCL of 10 mg/L and 1 mg/L respectively. In addition they can have potential health effects, especially in infants under the age of 6 months.
- **DISINFECTION DEPLETION** – As chlorine gets depleted in your distribution system the bacteria responsible for

nitrification can get a foothold and begin growing. As they grow and reproduce on the walls of your pipes and water tanks they produce nitrite. Nitrite then reacts with the remaining chlorine residual and can quickly deplete it taking it down to near 0 mg/L of residual. What actually happens is the chlorine reacts with the nitrite (called oxidation) and converts it to nitrate with the subsequent loss of that chlorine residual. Once this happens the organisms can really take over and before you realize it we have a big problem on our hands; no chlorine residual and no protection for other microorganisms to begin growing. Before we know it we are failing Revised Total Coliform Rule (RTCR) samples and the potential to have nitrite levels above the MCL of 1 mg/L.

- **REDUCTION IN P<sub>H</sub> AND ALKALINITY** – While reduction of pH and Alkalinity may not be in direct violation of any EPA rules the reduction may cause greater leaching of lead and copper piping and in turn lead to a violation of the USEPA Lead and Copper rule.

## THE NITRIFICATION PROCESS



Nitrification can occur under many circumstances but there are factors that can make it more likely to occur:

- **FREE AMMONIA LEVELS** – since ammonia is the starting compound for the nitrification process, higher levels of free ammonia in the distribution system will increase the likelihood of nitrification occurring.
- **WATER TEMPERATURE** – nitrifying bacteria thrive in the higher water temperatures created by the summer months. During this time it would be advisable to conduct water quality tests within the distribution system more frequently to determine if nitrification is occurring.
- **WATER AGE** – it takes time for nitrifying bacteria to become established in the system. Dead end water mains, low water usage, too much water storage, and mains that are too large can factor into high water age. Maintaining a consistent

flushing program and optimizing water levels in storage can help reduce water age.

- **LOW RESIDUAL DISINFECTION LEVELS** – higher disinfection residuals can eliminate nitrifying bacteria before they become established in a system. Lower residual levels hamper the system's ability to control the bacteria.

Many water systems throughout the state currently use chloramines to maintain a disinfection residual in their distribution system. When feeding chloramines it is critical to maintain the correct chlorine to ammonia ratio. When the chlorine to ammonia ratio is too low, free ammonia is not combined with chlorine and may lead to nitrification within the system. When the chlorine to ammonia ratio is too high it may lead to forms of chloramine that cause taste and odor issues as

...continued on page 28

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# CAN THE WATER ISSUE IN FLINT HAPPEN IN MY SYSTEM?

*By Delvin DeBoer, Special Projects Engineer, AE2S*

Drinking water quality issues in Flint, Michigan have drawn the attention of national news media. Decisions were made that changed distribution system water quality, causing increased lead concentrations at the customer's tap and additional water quality issues. Articles from news media outlets and information from the City of Flint website were used to prepare the following general summary of the technical water supply story, without delving into the underlying political, professional or social undertones of this account.

According to the City of Flint 2014 Annual Water Quality Report, in May 2014 the City of Flint began distributing Flint River water treated at the Flint

water treatment facility. Prior to that time, Flint distributed treated water received from the City of Detroit, and decided to switch to the Flint River treated water for economic reasons. The Flint River was to be a temporary water source, since the City of Flint was to obtain Lake Huron raw water from a pipeline being constructed by the Karegnondi Water Authority, scheduled to be completed late 2016.

During the summer of 2014, customers in some areas of the city experienced "rusty" water as a result of cast iron pipe corrosion. The City of Flint water supply received total coliform and E. coli violations in August and September 2014, and a total trihalomethane violation in December of 2014. In response, the city moved to decrease water age in the distribution system, optimized their ozone treatment process, and installed granular activated

carbon in the filters at the water treatment plant.

The issue that sparked the recent national media attention was elevated blood lead levels found in children during a study by the Hurley Medical Center in Flint. Subsequently, a research team headed by Dr. Marc Edwards, an engineering professor from Virginia Tech and expert in lead and copper corrosion, found elevated lead levels in water samples collected from Flint households. Further studies by Dr. Edwards' team found that the Flint

River treated water was much more corrosive than the Detroit water. The switch to the Flint water likely released lead from customer service lines and premise plumbing. To mitigate the corrosion issue, Flint switched their water supply back to Detroit treated water in October 2015, and

have begun dosing additional orthophosphate to the water to inhibit lead corrosion.

News accounts and professional reports generally agree that changing water sources caused a substantial change in water quality in the Flint distribution system. Dr. Edwards' group linked high chloride levels relative to sulfate in the Flint River treated water to its increased corrosivity relative to the Detroit treated water. Additionally, the Detroit water contained an orthophosphate corrosion inhibitor whereas the Flint River treated water did not. These water quality differences likely caused increased potential for iron and lead corrosion.

This incident should draw the attention of water professionals. A likely question might be, "Could something like this happen in my water supply

**WATER QUALITY FACTORS THAT CAN AFFECT CORROSION TOWARD IRON, LEAD AND COPPER INCLUDE TEMPERATURE, PH, DISINFECTANT TYPES AND CONCENTRATIONS, THE CONCENTRATIONS OF VARIOUS ANIONS SUCH AS CHLORIDE, SULFATE AND BICARBONATE, AND CORROSION INHIBITOR CONCENTRATIONS.**

system?” Perhaps a question more to the point, “What water quality changes could occur in my system that might cause issues with my customers?”

Water quality factors that can affect corrosivity toward iron, lead and copper include temperature, pH, disinfectant types and concentrations, the concentrations of various anions such as chloride, sulfate and bicarbonate, and corrosion inhibitor concentrations. Whenever the values of these parameters change substantially in a distribution system, the water may become more or less aggressive to metals.

It is not unusual for untreated ground water in the upper Midwest to be corrosive. Most water systems with corrosive groundwater have addressed that issue in response to compliance with the Lead and Copper Rule, most commonly by pH adjustment or by treatment with a corrosion inhibiting phosphate chemical. Systems using corrosion inhibitors must be careful to provide a consistent residual of the corrosion inhibiting chemical, since inhibitor concentration changes or loss of the inhibitor concentration could activate the metal surfaces to corrosion.

The quality of surface water sources varies more widely than ground water. For example, surface water temperatures in the upper Midwest can vary from close to freezing to 25° C. This change in temperature impacts chlorine decay in the distribution system, with potential influence on the corrosion process. Temperature changes also can affect the concentrations of phosphate chemicals, especially the reversion of polyphosphate to orthophosphate that occurs if polyphosphate or blended poly/orthophosphate chemicals are applied.

As illustrated by the Flint experience, if a system anticipates switching to a new source of supply (or considers blending water from multiple sources), the

potential exists for a change in corrosion activity, and an evaluation of this change is certainly warranted. Changing forms of disinfectant (free chlorine versus chloramine) can also impact corrosivity. These source water or disinfectant changes will frequently trigger attention to the Lead and Copper Rule sampling requirements, especially if the system has been on reduced monitoring. These sampling and reporting requirements must be confirmed by communication with the appropriate state of federal regulatory compliance agency.

The Flint experience also alerts the water supply industry to the presence of

corrodible metals, (such as iron, lead or copper) in water distribution systems and premise plumbing. Even though systems may have an effective corrosion control program that minimizes the risk of exposure to the customer and complies with the Lead and Copper Rule, asset management initiatives should consider the benefits of removing, replacing or lining (where appropriate) corrodible metals to mitigate the potential risk of potential metals release. Perhaps the simplest applications of this idea are to complete a lead service line replacement program or a cast iron pipe lining or replacement project.

Finally, the Flint experience raises the importance of protecting water quality in the distribution system. Beyond appropriate treatment at the water treatment plant, cross connection control, flushing programs, preventing stratification in water towers, and maintaining appropriate chlorine residuals are among the tools that public water supply systems employ to ensure water quality

is maintained in the water distribution system. Responding appropriately to customer water quality concerns, collecting and reporting the required regulatory compliance samples and communicating the results to customers in annual water quality reports provides a basis for customer confidence in their public water supply. ♦

**AS ILLUSTRATED BY THE FLINT EXPERIENCE, IF A SYSTEM ANTICIPATES SWITCHING TO A NEW SOURCE OF SUPPLY (OR CONSIDERS BLENDING WATER FROM MULTIPLE SOURCES), THE POTENTIAL EXISTS FOR A CHANGE IN CORROSION ACTIVITY, AND AN EVALUATION OF THIS CHANGE IS CERTAINLY WARRANTED.**

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The first SDARWS Water Warriors fishing tournament was held April 30th at the Cedar Shore Resort and Marina. Nineteen 2-3 man teams participated in the event which was sponsored by AE<sub>2</sub>S. While the fishermen had to put up with some challenging weather conditions (30 mph winds), 49 fearless fisherman braved the elements and brought in some nice keepers.

The Happy Hookers from Clay Rural Water came in as the winning team with a total of seven fish and a combined weight of 12.75 lbs., which netted them \$600. The Happy Hookers also snagged the largest fish which weighed in at 4.04 lbs and earned the team a 35-quart Pelican Cooler donated by DSG.

Perkins County RW came in second place with a total of six fish for a combined weight of 8.13 lbs – which was good enough earn them \$500.

After the fishing tournament, a burger and brat buffet was enjoyed by everyone during the awards ceremony. Thanks to our generous sponsors, every fisherman went home with a prize.

Plans are currently underway to hold the Second Annual SDARWS Water Warriors Fishing Tournament the last Saturday in April 2017 at the Cedar Shore Resort and Marina. Look for more information at our Annual Technical Conference in January. ♠

## SDARWS 2016 FISHING TOURNAMENT WINNERS

- 1<sup>ST</sup> Clay RW – The Happy Hookers
- 2<sup>ND</sup> Perkins Co. RW
- 3<sup>RD</sup> Big Sioux RW
- 4<sup>TH</sup> Salem
- 5<sup>TH</sup> Sioux Falls Team 1
- 6<sup>TH</sup> Chamberlain Team 3
- 7<sup>TH</sup> Sioux Falls Team 2
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# WATER TECHNOLOGY EXPO

## 2016 RECAP

The 2016 Water Technology Expo took place on April 27 & 28 at the Rapid City Ramkota. The fifth annual EXPO delivered what EXPO attendees have come to expect – Great presentations, a variety of exhibitor booths and a room full of eager attendees.

Over 130 individuals participated in this year’s EXPO; there were 17 presentations over the day and a half event. These presentations covered topics ranging from source water protection to advanced water metering.

One of the features that makes the Technology EXPO unique is the display booths integrated with the training room. This configuration allows for exhibitors to learn from the presenters and provides quick access for attendees during breakout sessions. This year’s EXPO hosted 32 exhibitor booths. The attendees did a great job of meeting with exhibitors. This interaction is vital to the EXPO’s success as the vendors pay a small fee to help keep the EXPO an affordable, must attend event for systems west of the Missouri.

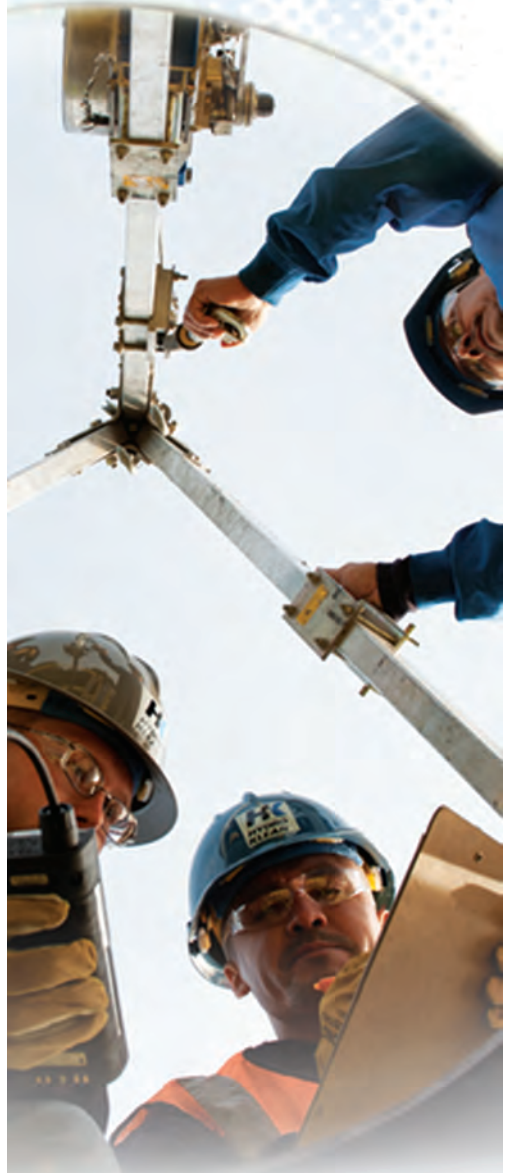
Feedback from the evaluations indicated that attendees feel that this event should continue, and SDARWS plans to keep the EXPO going. Certified Operations Specialists who attended the EXPO took away many good ideas to be implement into their systems; they also earned 10 hours of continuing education credit to aid them in maintaining their certification.

Rural water staff have already begun planning the 2017 EXPO, look for information about that event after the conclusion of the ATC. ♦





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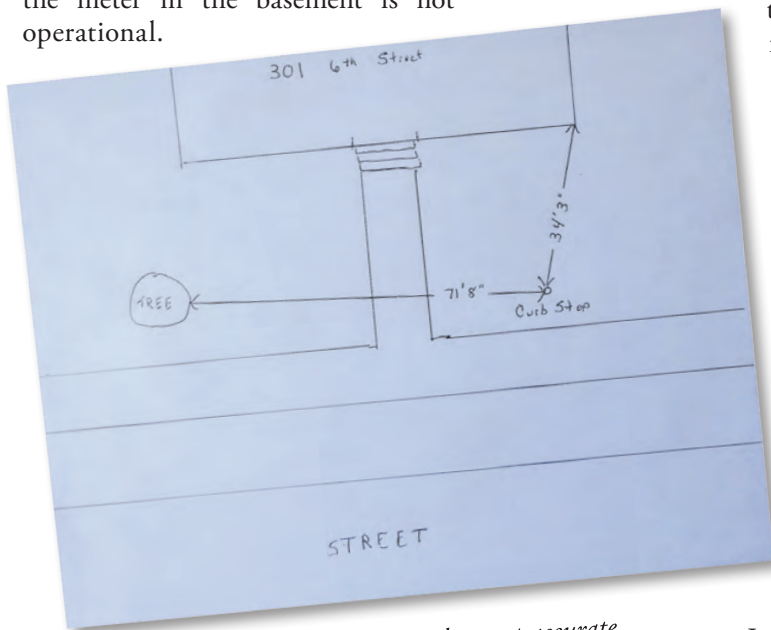


# “I’m Sure It’s Here Somewhere”

## THE BENEFITS OF MAPPING

By Mike Moeller, SDARWS Circuit Rider

You are the city water operation specialist. You get a call from City Hall to turn the water off at a home that has a leak in the basement, and the valve on the service line before the meter in the basement is not operational.



*Hand-drawn maps... not always the most accurate.*

You head to the address to shut the water off with the hand drawn map from the previous operation specialist. It has measurements off the house and a tree in the yard. Upon arrival you notice the tree that is on the hand-drawn map is no longer in the yard, and the current homeowner has no idea of the location of the tree on the map. You look at the hand-drawn map again and realize that the house has been remodeled over the years, and the corner of the house that you are suppose to measure off of has been added on to. It’s a guessing game at this point as to where the curb stop could be, and if it doesn’t have a metal top on the riser pipe to use a locator, finding it could be almost impossible.

This is a scenario that many operation specialist deal with more times than not. The City of Fort Pierre has decided to change all of that. Vern Thoreson and Joey Montana contacted SDARWS late last year to see if any assistance could be given to them in creating a map with all their water system components mapped with GPS coordinates. SDARWS told them it could be done and that we would be glad to help.

The first thing that SDARWS and Joey Montana decided to map was all the water main valves in town. This was the easier portion of the mapping to do since most of the valves in town were at street level and had not been covered by any chip seal or asphalt. Some of the valves were located along the river front and had been covered with dirt during the flood of 2011. These valves had to be located and uncovered to ensure that it really was a valve and not just a coffee can buried in the dirt. While on site mapping the valves, Joey decided that it would also be a good idea to map all of the air release valves, pressure reducing valves, and fire hydrants. SDARWS agreed; if you are going to create a map, you might as well have everything on it and not leave anything off that you may need to find in the future.

The next step in the mapping process was to locate all of Fort Pierre’s curb stops. This proved to be the most daunting task of the whole mapping process. Locating curb stops in some cases is not very hard, and in other cases can take over an hour for just one. SDARWS, Joey and four other city of Fort Pierre employees began the locating process by digging them up if need be, and painted both the curb in from of them and the ground over them for every single curb stop in the city. Just locating curb stops took approximately two weeks, and that did not include the week of mapping them after they had been located. All but 11 curb stops were located after two

*...continued on page 21*



*System mapping in Marion Gardens addition.*



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**MAPPING: continued from page 19...**

weeks, and it was determined they would eventually be found and added to the map at a later date.

After all the curb stops had been located it was time to collect their GPS locations. SDARWS used Trimble data collection equipment to collect both the GPS location and elevation of each curb stop. The process of collecting all the GPS coordinates for the curb stops took a little over a week. The time spent locating and collecting the data is small compared to the time savings for future employees who will be able to just walk up to any curb stop or valve compared to trying to find them when the exact location was unknown. "I may retire someday and I don't want my replacement to have to find them all like I had to when I started," said Joey Montana.

After all the GPS data is collected, it comes time to build the map. The data is processed and laid over a Google Map

image. The map is then printed off and laminated before it is presented to the city. Fort Pierre is fortunate in another aspect as they have a public works director who has mapping experience, and is taking the data that SDARWS has collected and is making overlays of his own and converting them into a digital format so that they can be digitally accessed by city employees on a computer or tablet. Fort Pierre is looking into purchasing an iPad which will help with time efficiency as their operators will be able to view their map at the click of an app when he or she is at the location of whatever they are working on.

Digital maps are very useful tools to have, and are actually quite inexpensive. SDARWS charges a \$500 dollar minimum fee for systems under 500 population, and then \$1 per person after 500.

If water mains are to be digitized there it is an additional \$500 fee. The time saved is well worth the small fee SDARWS charges for time and equipment use. If your system is interested in our mapping services, please call our Madison office at 605-556-7219. ♦



*Nick Jackson assisting with the locating process.*



*Curb stops aren't always at ground level...*



*Mike Moeller collecting GPS coordinates of a curb stop.*

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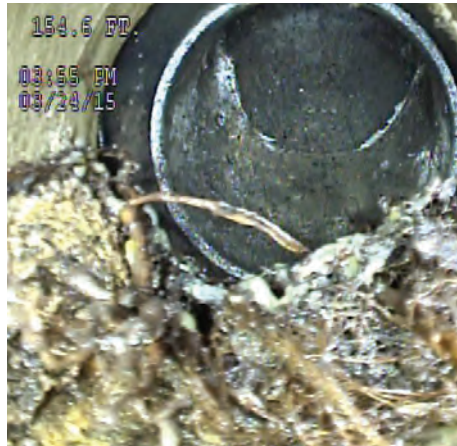
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*By Jerry Hemeyer, SDARWS Wastewater Technician*

Insurance companies are getting tougher on paying claims for backed up sewers. A maintenance program is essential for such insurance claims.

The main part of a maintenance program is records. These records will explain the collection system over an extended period of time. If an area has continued sewer blockages it should be televised to see what the problem is. Tree roots are the main cause of sewer backups. Tree roots will break clay pipe allowing water, dirt and potential sewer main collapses. The best way to find the condition of the pipe is to clean and televise the problem area.

While cleaning, you must make sure to look at the material that is being removed from the pipe. If pieces of pipe are seen, it is important to stop the cleaning procedure. Another thing to look for is to see if the water from the cleaning changes color from dark to a light color; the end of the cleaning hose may be out of the pipe. The next step is to televise the pipe to pinpoint the problem. Most cameras have the capability to not only record but take pictures of the troubled area. This video recording makes for a good report that the board or an engineer can assess and make decision a on what repairs are needed.

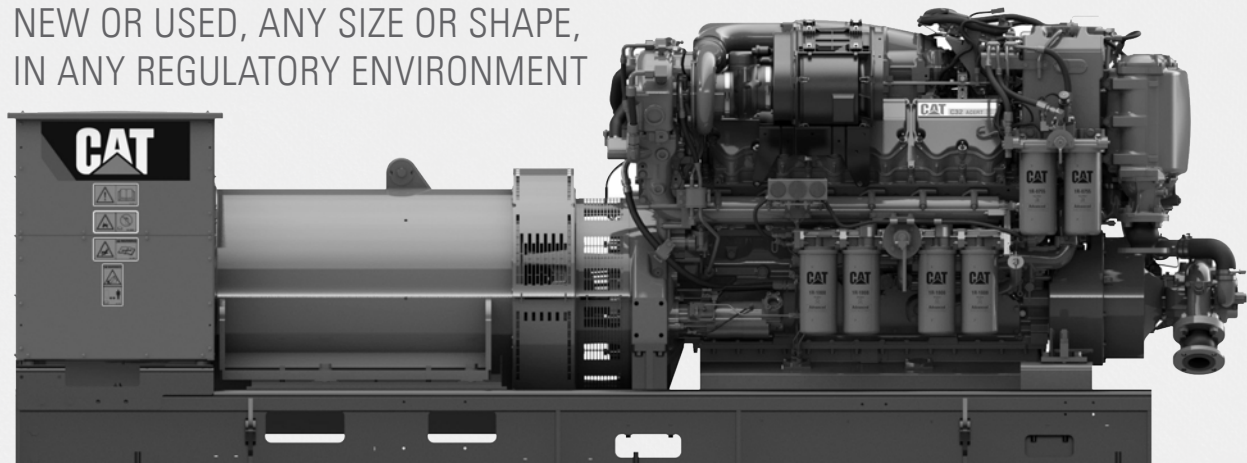
Many systems now have a contractor come in to clean and televise a portion of the system. Many cities divide their system into four sections, and every four years the entire system is cleaned and televised.

South Dakota Association of Rural Water Systems does have a sewer camera to assist with systems that want to televise areas that may have problems. For more information contact Jerry Hemeyer, Wastewater Technician for South Dakota Association of Rural Water Systems at 605-201-0170. ♦



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## SDARWS FINDS LEAKS ON PVC PIPE

*By Morris Elcock, SDARWS Circuit Rider*

SDARWS leak detection equipment has expanded and improved over the years. We have hand-held leak detectors that we use to listen to valves and hydrants, and with our ground microphones we can listen for leaks underground on pipes. We also have two leak detection trailers that work great to flow test a section of a distribution system; if the section of the system has no flow then there is no leak, if there is a continuous flow and we cannot determine where the flow is going we then can use the correlator to check the mainlines and service lines for the noise of a leak.

With each piece of leak detection equipment we now have – both old and new – I feel that we can now offer to our member systems leak detection services that are second to none. We do have equipment fees that we use to provide the maintenance on our equipment, and a system will find that no one can beat the price.

For now, however, I want to focus on our Echologics Leak Finder ST Correlator that uses sensors that connect to hydrants, valves, or directly to the pipe to locate a leak. In order to do a good job with a Correlator we need to know exactly (or to the best of your ability) the location of your line so that we can enter the correct length of the line into the computer. We also need to know the diameter of the pipe, and what kind of pipe it is, (i.e. cast iron, ductile iron, copper or PVC). Yes it WORKS on PVC pipe.

The 'LeakFinderST enables us to locate "quiet" narrow band, low frequency leaks and leaks previously identified as background leakage on water mains, with a wide range of materials such as: plastic (PVC, PE, MDPE, HMDPE), pre-stressed concrete cylinder pipe (PCCP) asbestos cement (AC) and ductile, and cast iron (DI, CI) steel.

As an advanced Windows-based leak noise correlator, LeakFinderST can quickly and effectively locate leaks that other correlators cannot. Its enhanced correlation function accurately identifies narrow-band leak noise – making it ideal for PVC pipes, small leaks, multiple leak situations, and testing environments where there is high background noise.

The LeakFinderST was designed and developed by acoustic engineers and the interface perfected in the field, through collaboration with end users, to provide an accurate, non-invasive leak detection system. It can pinpoint quiet leaks, accurately.

So what should a system do if they know they have a leak in say a two or three block section of their distribution system and want some assistance? Give us a call and we will ask some questions like, "do you know the location of the pipe?", "do you know the type of pipe?", and, "are there valves and hydrants on the line?" The reason we ask these questions are the answers to these questions help us to decide what equipment would be best to use to assist in finding your leak.

For more information on leak detection please contact the SDARWS office in Madison at 605-556-7219, or call SDARWS Circuit Rider Morris Elcock direct at 605-201-9561. ♠

well as lowering total chlorine residuals. Most systems using chloramine use a chlorine to ammonia ratio of approximately 4:1 or 4.5:1. As you can see in Chart 1, these ratios (4:1 and 4.5:1) are on part of the curve where monochloramine are formed and before chloramines are partially destroyed.

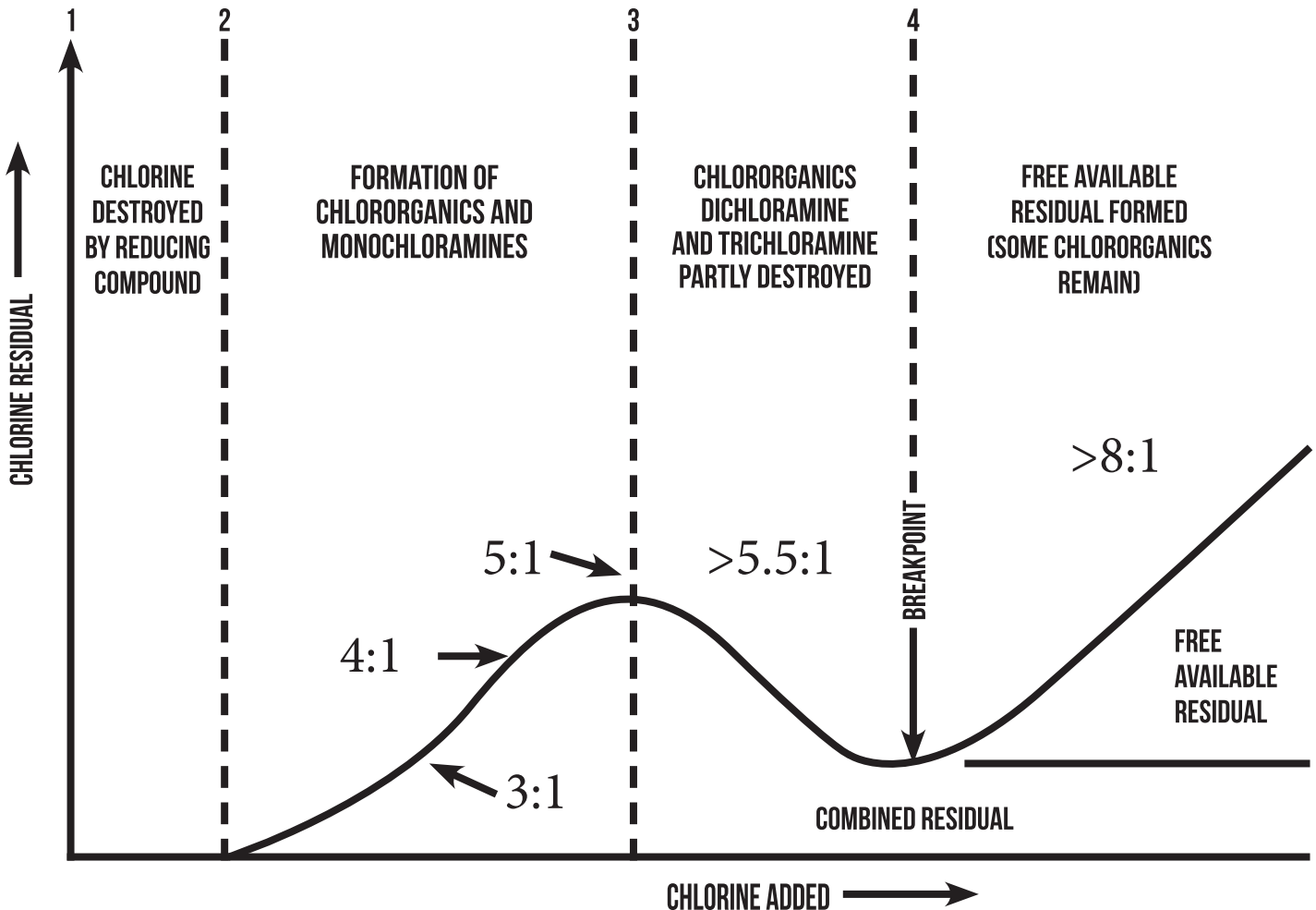
If your water system feeds straight chlorine you may be inadvertently feeding chloramines due to naturally occurring ammonia in your water source. A simple way to test this is to run free chlorine test and a total chlorine test at the same time and location. If there is a large difference between the free chlorine and the total chlorine results you may have chloramines in your system. Refer to Table 1 for an example of each.

As you can see Example 1 shows little to no chloramines formed and Example 2 shows chloramines have most likely been formed. If you have an unexpected large difference, such as the one seen in Example 2, further investigation and testing may be necessary. If you have any questions or need assistance please contact South Dakota Rural Water. 💧

**Table 1: Free and Total Chlorine Examples**

	Example 1	Example 2
<b>Total Chlorine Result</b>	2.5 mg/L	2.5 mg/L
<b>Free Chlorine Result</b>	2.4 mg/L	0.5 mg/L
<b>Difference</b>	0.1 mg/L	2.0 mg/L
<b>Conclusion</b>	Most likely forming little to no chloramines	Most likely forming a good amount of chloramines

## CHART 1: BREAKPOINT CHLORINATION CURVE SHOWING AFFECTS OF VARIOUS CHLORINE TO AMMONIA RATIOS



# CERTIFICATION CHANGES

By Jim Zeck, SDARWS Training Specialist

Some major changes will be occurring in the certification training program beginning July 1, 2016. These changes are in response to feedback we have received from operations specialists over the years that the South Dakota Department of Environment and Natural Resources (SD DENR) has incorporated into our training contract.

Some courses will not be changing that much, they include the following:

- Small Water Treatment Workshop (2/year)
- Advanced Water Treatment (1 every other year)
- Advanced Wastewater Treatment (1 every other year)
- Basic Water Treatment (3/year)
- Intermediate Water Treatment (2/year)

The remainder of the courses will see significant changes. First is the Wastewater Collection/Water Distribution Course. This course will be separated into two courses, i.e. no longer will we cover both topics in a single course.

The Wastewater Collection Course will become a standalone 2 ½ day course. We will be doing three of these per year. This change will allow us to better cover the material and also to incorporate more advanced topics. We will also have more time to cover some of the math at a slower pace.

The Water Distribution Course will also become a 2 ½ day

course with the same benefits as the Wastewater Collection Course. Many operators who wish to take a class II or higher level exam have commented that they would like to have more advanced material. By making this a full 2 ½ days we will now have the time to cover the Class I material and expand into Class, II, III & IV material. We will also be doing three of these courses throughout the year.

Finally the Basic Wastewater Treatment Course will be split apart into three one-day Stabilization Pond Workshops and two Wastewater Treatment Courses. The one day pond workshops will cover most of the material needed for a person wishing to take the stabilization pond exam. The new Wastewater Treatment Course will again be a 2 ½ day course allowing us to cover class I through III wastewater treatment topics. We will be offering two Wastewater Treatment Courses per year.

Operators will want to make note of these changes. No longer will we cover much stabilization pond material in the wastewater treatment course. Operators who are used to getting the stabilization pond material in the old basic wastewater treatment course may be disappointed when they find we will be spending less than ½ hour cover pond material in the new Wastewater Treatment Course.

If you have any questions on certification training courses, call SDARWS at 605-556-7219, or Rob Kittay, Secretary of the Board of Operator Certification at 605-773-4208. ♦





# WATERPRO ONLINE COMMUNITY LAUNCHES NEW INTERFACE

DENNIS N. DAVIS, EXECUTIVE DIRECTOR

The WaterPro Community recently launched a new, updated interface, bringing a new look and new functionality to the online community of water professionals.

The WaterPro Online Community, originally launched in January of 2015, is designed for water and wastewater professionals to provide an exclusive opportunity to network, ask questions and share experiences about the water industry – the industry we all depend on.

Since that time, over 1300 individuals have added 884 posts, made 3,765 comments and replies, read 230 blogs as well as provided important answers to a multitude of questions.

The new WaterPro Community features a phone and tablet

friendly design. All community pages will now adapt to the user's device, changing size and layout to ensure it fits the screen. This allows users to experience all the buzz of the community, no matter how they choose to connect.

New users can register to receive a 30-day free trial to the community. WaterPro Community memberships include membership to the National Rural Water Association and renew for \$49 per year. South Dakota Rural Water also gives discounts to our Annual Technical Conference and Leadership Seminar for WaterPro members.

To learn more about WaterPro membership and how it can benefit you, visit: [www.waterprocommunity.org](http://www.waterprocommunity.org).

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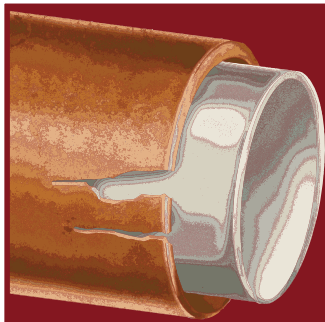


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# CASE STUDY

## 24-Year-Old Tank Installed in 1987 Gets Stunning Facelift

Installed: 1987  
 Client: Rochester Public Utilities  
 Location: Rochester, MN  
 Tank Type: Aquastore® Glass-Fused-to-Steel  
 Storage Capacity: 1 Million Gallons  
 Contractor: Engineering America

### PROJECT OVERVIEW:

Aquastore glass-fused-to-steel tanks never need to be sandblasted and painted. However, after decades of use, some customers wish to clean up the tank cosmetically. The tank can **remain in service** during the thorough power washing, as well as during fillet replacement and installation of nut covers.

Engineering America worked with the city of Rochester, Minnesota, to give their water storage tank a “facelift” after **24 years**. The interior and exterior cleanup provides extra life to the tank and gives it a “like new” appearance.

Engineering America’s professional service team power washed and cleaned the tank exterior walls, removed existing sealer and replaced it with new polyurethane sealer, then installed white HDPE plastic covers over exterior nuts and washers. This highly cost-effective process produced a refreshed looking tank in Rochester.

*“We’re pleased with how  
 the project turned out.”*

Doug C. Rovang, P.E.  
 Senior Civil Engineer  
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