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President's Message

Ron Gillen, SDARWS President



WaterPro Conference

It isn't too early to start thinking about attending this year's WaterPro Conference in Orlando, Florida September 12-14, 2016. Save \$55 by registering before August 12th. 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.

Leadership Seminar

Association staff are busy getting ready for our Annual Leadership Seminar which will be held at the Best Western Ramkota Hotel in Pierre November 16-17th. This seminar is geared towards Rural Water System Directors and Board Members and includes informational sessions on water rates, asset management, sustainability, financing, and director and manager panels. The cost to attend Leadership is \$125, and includes a meal at the President's Reception on the evening of November 16th. Registration for this event will be available on our website at www.sdarws.com, or by calling the SDARWS office at 605-556-7219. Stay tuned for the agenda in the next issue of *ServiceLine*.

ATC Call for Papers

SDARWS is looking for presentations for our Annual Technical Conference in Pierre January 10-12, 2017. The ATC is our biggest training event of the year and hosts around 400 individuals. If your company is interested in hosting a training session, please submit your abstract online at: www.sdarws.com/atc.html. For more information, please see page 7. ♠

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Events Calendar

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.

30-1 – WASTEWATER COLLECTION Sioux Falls Water Reclamation Facility

This course covers the Association of Boards of Certification “Need to Know” requirements for the Class I through III Wastewater Distribution Collection Exams. This course only covers the material for Wastewater Collection. Operations Specialists who wish to attempt a Water Distribution Exam should attend the Water Distribution 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.

SEPTEMBER

27-29 – INTERMEDIATE WATER TREATMENT Rapid City Ramkota

This course covers the Association of Boards of Certification “Need to Know” requirements for the Class II & III 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.

OCTOBER

12 – STABILIZATION POND WORKSHOP Sioux Falls Water Reclamation Facility

This course covers the material on the Association of Boards of Certification Stabilization Pond Exams. It does not cover material on the Class I or higher Wastewater Treatment Exams. This is a single day workshop starting at 8:30 a.m. local time and wrapping up around 4:30 p.m. Sioux Falls Water Reclamation Facility
4500 N. Sycamore, Sioux Falls SD 57101

25-27 – BASIC WASTEWATER TREATMENT Sioux Falls Water Reclamation Facility

This course covers the Association of Boards of Certification “Need to Know” requirements for the Class I & II Wastewater Treatment Exams. This course does not cover the material included in the Stabilization Pond Exam. Operators who will be attempting the Stabilization Pond exam should consider the Stabilization Pond Workshops. 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.

NOVEMBER

15-17 – WATER DISTRIBUTION Spearfish Holiday Inn

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. 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

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



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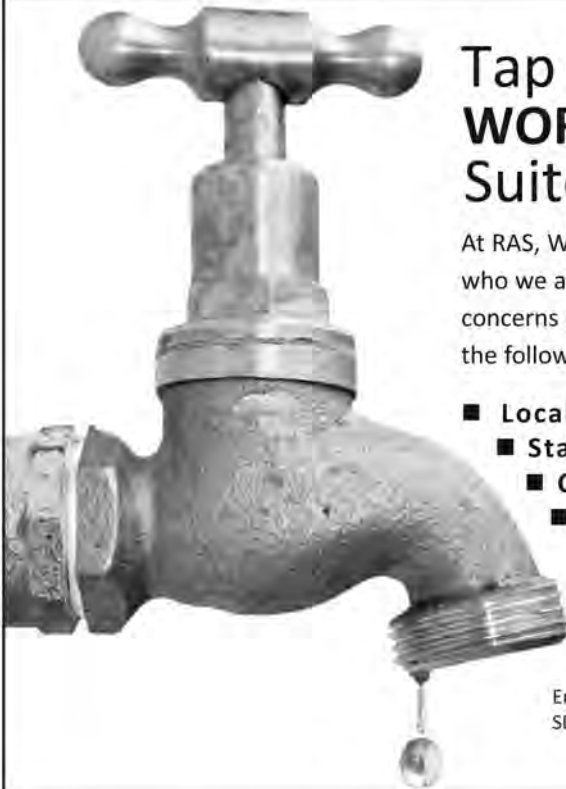
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ANNUAL TECHNICAL CONFERENCE

CALL FOR PAPERS

The South Dakota Association of Rural Water Systems is looking for presentations for our 2017 Annual Technical Conference in Pierre, SD January 10-12.

Please submit your abstract for SDARWS's 2017 Annual Technical Conference. Presentation themes may include, but are not limited to the following:

- Drinking water security strategies and tools
- How Water Storage Can Impact Water Quality
- Fair Labor Standards Act
- Hands-on sessions:
 - ◆ Control valve repair kits
 - ◆ Hydrant maintenance and repair
 - ◆ Solution pump repairs (diaphragm and peristaltic)
 - ◆ Repair couplers, saddles, wet tapping
- The importance of Cross Connection Control
- Water Rights for public systems
- Ice Pigging to clean water and sewer pipelines
- Source water protection and sustainability of water supplies
- Climate change, water and energy efficiency, and conservation
- Clean Water Act/SDWA connections, nutrient pollution, and Harmful Algal Blooms (HABs)
- Emerging drinking water treatment technologies and optimization of current technology
- State revolving loan fund tools and techniques/green infrastructure strategies
- Small systems: TMF, sustainability strategies, technologies, and compliance
- Workforce, operator certification, and/or technical assistance initiatives
- Data management
- Distribution system issues
- Emerging contaminants in drinking water, both chemical and microbial
- Drinking water research
- Sanitation and wastewater management
- Risk assessment, risk communication and consumer outreach
- Implementation of regulations – challenges and successes

If you would like to make a presentation, please submit a one-page abstract with the proposed presentation title, and the name, title, affiliation, and contact information for the speaker to:

South Dakota Association of Rural Water Systems
PO Box 287
Madison, SD 57042
or email ATC@sdarws.com by October 14, 2016!

Or submit online – www.sdarws.com/atc.html

All submissions must comply with the following guidelines:

1. Deadline for submissions is October 14, 2016
2. Abstract submissions are limited to text only.
3. The conference planning committee will select submitted abstracts for sessions.
4. Please include a five sentence biography along with a 500 word abstract or description of your presentation. ●

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- October 21, 2016 deadline
- **February 2017**
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ICE PIGGING IN FORT PIERRE

By Steve Attema, SDARWS Circuit Rider

SDARWS, SUEZ Water Advanced Solutions and the City of Fort Pierre hosted a class showcasing an innovative new technology called Ice Pigging on June 7th and 8th, 2016. This technology is an effective pipe cleaning solution in both potable water mainlines and sewer force mains. The following paragraphs will highlight the process and benefits of Ice pigging.

Sediment fats, oils, greases (FOG) and debris accumulation in wastewater collection systems clog force mains and siphons causing pipeline restrictions. Restricted flows can cause increased energy use, increased sanitary sewer overflows and can lead to capital improvements including increased pumping capacity and force main replacement. Current approaches to clean force mains such as cleaning with hard pigs and soft swabs present a risk because hard pigs can get stuck in the force main causing a need for emergency excavation. Excavating to retrieve a hard pig is costly, time consuming and in some cases with highways, river crossings and developed areas, is not an option. Where redundant systems do not exist, the cost to install a temporary by-pass system may be enormous. Other technologies, like flushing and water-jetting are inefficient and sometimes ineffective. In addition, these processes use a lot of water which may not be readily available.

Developed by the University of Bristol, England, ice pigging is an award winning, innovative, low risk, advanced pipe cleaning technology to clean force mains, siphons and better manage pipeline assets.

Ice pigging has been proven to be between 100 and 1,000 times more effective at removing sediment and debris than water flushing alone. The ice slurry can be inserted and removed through line taps, air valves, and other existing fittings so expensive excavations are not required. Ice Pigging harnesses the characteristics of a semi-solid material that can be pumped like a liquid but behaves like a solid once the pig is formed in the pipe

Because ice pigging relies on the natural glacial effect of ice to pick up unwanted sediment it uses approximately 50% less water than standard water flushing and takes significantly less time, typically the section of main being cleaned is out of service for no more than 30 minutes.

Traditional cleaning methods do have operational limitations that ice pigging can overcome. A main feature of ice pigging is that it cannot get stuck, if for some reason the pig would get stuck, we would allow the ice to melt and flush it from the main. Pipe bends, changes in diameter or butterfly valves can all pose problems for swabbing or pigging, yet ice pigs can easily negotiate these obstacles. To launch and receive traditional pigs, excavations have to be made to allow the installation of launch and reception stations. This can mean costly, extensive interruptions to force mains and siphons and require the installation of bypass pumping.

Ice pigging represents a sustainable best practice over traditional approaches to force main cleaning:

- It is efficient, rapid and environmentally friendly.
- It combines operational benefits of flushing with the

...continued on page 14

ICE PIGGING: continued from page 13...

impact of solid pigging.

- Ice slurry injects through existing fittings.
- System pressure pushes ice.
- Suitable for pipes of all sizes and materials.
- It effectively removes biofilm, iron, manganese, FOG, grit and sediments.
- Approximately 50% less water is wasted.
- Produces quantifiable results.
- Exceptionally low risk.

A live demonstration of the ice pigging process was performed on a water main line on July 7th and sewer force main on July 8th in Fort Pierre. In addition to the live demonstrations and classroom presentations on ice pigging, SUEZ Water Advanced Technologies also gave presentations on tank maintenance and mixing systems, well maintenance and helium leak detection.

SDARWS would like to thank SUEZ Water Advances Solutions for providing the classroom training and ice pigging demonstration. SDARWS would also like to thank the City of Fort Pierre for providing locations for the demonstrations and for the pork loin lunch (cooked wonderfully by Fort Pierre's own Vern Thorson). Another thank you goes to the Fort Pierre Fire Department for providing the venue for the classroom training. ♠





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WATER TOWER SPECIALISTS





SDARWS HOSTS 30TH ANNUAL RURAL WATER OPEN

The 30th Annual Rural Water Open hosted 148 golfers on at the Elmwood Golf Course in Sioux Falls on July 19th. At shotgun time the field consisted of 37 four-man teams. Due to ongoing improvements at Elmwood, the East Course and North Course were utilized for this year's tournament; traditionally the North and West Courses have been used.

When it comes to golfing, the Rural Water Open brings out an array of talent. Scores were competitive this year with 24 teams posting scores below par. Scores ranged from eleven under (60) to nine over par (80). The average score this year was 68.5 or two under par for our 37 teams. The Corporate Sponsors who helped make this event possible are listed on page three. Without their sponsorship, it would be impossible to award prizes to all players. All of the team prizes, in both flights, were awarded prizes based on Corporate Sponsor donations.

Following Rural Water Open traditions, the tournament format included four person teams playing an 18-hole scramble with no championship or amateur division. After the scores were posted and verified by the scoring czar Jim Zeck, all team scores were listed from lowest to highest and then the field was split in half with 18 teams in two flights. To summarize, the 1st flight teams ranged from -11 to -3; 2nd flight ranged from -2 to +9. Needless to say, with 37 teams participating we had numerous ties. For example, five teams tied at even and four teams tied at -5. To determine proper team places we reverted to a scorecard playoff starting with the number one handicap hole.

Our first place team from the 1st flight consisted of a group of golfers playing for Tim Munson with HD Supply. Our winner from flight 2 was a team from Randall Community Water District. Our last place team consisted of Chris Ruskamp, Grant Groos, Lenny from Tea, and Michelle Barrett. Congratulations to the winning teams!

In addition to vying for the lowest team score, individuals were awarded flag prizes on several holes. Kyle Kampshoff got closest to the pin on #3 and received \$100. Marlin Overman had the longest drive on #7 and he received \$100 provided by our corporate sponsors. Doug Herron won \$100 for being closes to the pin on #8. Randy Jencks won a stainless steel mug, an Austads gift card donated by DSG, and a dozen Pro V1 balls donated by our Corporate Sponsors. Rich Munson was closest to the pin on #15 and received a \$100. Jerry Backes sunk the longest putt on #18 winning he and his team members \$50 cash donated by HR Green.

The Government Relations Committee's WaterPAC was again held on a par 3 hole. The WaterPAC hole gives each golfer that buys a \$5 chance an opportunity to be entered into a drawing for \$100 if they hit their drive on the green; if they do not make the green they are entered into a consolation prize drawing. This year the WaterPAC hole raised \$700. The contribution to WaterPAC from the 2016 Rural Water Open totaled \$1,345. Special thanks go to SDARWS Past-President Dan Carlson, Vice President Dale Thompson, and Government Relations Committee members Larry Wasland and Otto Hagedorn for manning the WaterPAC hole. Special thanks goes out to Lorene



Wasland for keeping order at the WaterPAC hole this year.

2016 marked the second year for the WaterPAC Putting Challenge sponsored by Direct Automation. Along with raising \$645 for WaterPAC, eager participants were also treated to an ice cold beer. A big thank you goes to Direct Automation for sponsoring the challenge. Putters were “coached” by Kurt Pfeifle, who hung up his clubs up this year due to a recent shoulder surgery. Thanks Kurt!! Willing participants attempted to sink three balls from about 15 feet. For each putt made, the golfer won a Pro V1 golf ball and was entered into a drawing. The challenge turned out to be quite a feat! We had 129 attempts at the challenge (up from 112 the

year before). Jack Miller was the only individual who sunk three putts, and for that effort he won \$100. Todd Schlunsen was one of the lucky ones to make two putts; his name was drawn for the rural water watch. Jon Hauge was one of many who were able to sink one putt; he was awarded a sterling silver rural water ball marker for his efforts.

In conclusion we would like to thank all the sponsors, participants and volunteers who helped make this event successful. Golfers please remember to check out the corporate sponsors on page three, and when they stop by your facility let them know you appreciate their generosity and continued support. Hope to see you next year! ♣



Saved the best for last (place)!



Randall CWS - Second Flight Winners



HD Supply - First Flight Winners

South Dakota Rural Water AWARD NOMINATIONS

Do you know someone who is doing a great job? Goes above and beyond the call of duty? Has your water system achieved excellence this year – or has overcome some amazing challenges?

Give recognition where it is due by completing our Awards Nomination Form. Awards will be presented at the Awards Brunch at the ATC – January 12, 2017. **Application deadline is October 28, 2016.** Eligible nominees must be affiliated with a system member in good standing. The online form can be found at www.surveymonkey.com/r/waterawards, or through a link on our website at: sdarws.com/atc.html.

WE ARE ACCEPTING NOMINATIONS FOR THE FOLLOWING CATEGORIES:

RURAL WATER SYSTEM OF THE YEAR: a member system who puts forth exceptional efforts to properly manage, operate, and maintain their drinking water system.

RURAL WATER MANAGER OF THE YEAR: Recognition for a manager of a Rural Water System for outstanding performance in operating a Rural Water System.

RURAL WATER OFFICE PERSON OF THE YEAR: Recognition for an administrative employee of a Rural Water System for outstanding performance in office management and procedures

RURAL WATER SYSTEM OPERATIONS SPECIALIST OF THE YEAR: Recognition for a State of South Dakota Certified Operator who is actively working for a Rural Water System with outstanding leadership ability/accomplishments in drinking water.

MUNICIPAL MANAGER OF THE YEAR: Recognition for a municipal manager for outstanding performance in managing a municipality.

MUNICIPAL OFFICE PERSON OF THE YEAR: Recognition for an administrative employee of a municipality (i.e. clerk, finance officer, etc.) for outstanding performance in office management and procedures.

MUNICIPAL OPERATIONS SPECIALIST OF THE YEAR: Recognition for a State of South Dakota Certified Operator who is actively

working for a municipality with outstanding leadership ability/accomplishments in drinking water.

CARROLL ANDERSON MEMORIAL: The Carroll Anderson Memorial Award is a tribute to the exemplary work of Carroll Anderson who gave generously of his time, talents, and efforts to the Kingbrook Rural Water System and the South Dakota Association of Rural Water Systems. This award recognizes an individual's outstanding voluntary contributions to the advancement of rural community water systems in South Dakota, and is the greatest tribute the Association can bestow recognizing an individual's contributions to both the member system and to SDARWS.

FRIEND OF RURAL WATER: This distinguished honor is awarded to agencies, organizations, or individuals who have lent a hand in supporting this fantastic phenomenon we call Rural Water. The ability to provide life's essential need, water, to all the citizens of South Dakota was not done by one person or organization; it is a collective effort encompassing many.

SPIRIT OF RURAL WATER: This award was introduced in 2010 and is presented to an individual, business or group that goes above and beyond for a rural water system or rural water cause. South Dakota Rural Water wants to recognize exceptional rural water advocates that stand out from the pack because of their commitment to rural water issues and/or their passion for the job. Eligible candidates include rural and community water consumers, employees, directors, as well as lawmakers, businesses, or any person or group that puts forth a noble effort to advance rural water.

DONALD B. POSPISHIL: This award honors the work of Don Pospishil who dedicated many years of his life to helping small water systems across South Dakota. The Donald B. Pospishil Award is awarded to individuals who demonstrate leadership abilities in the water supply field, provide quality services to consumers, and exhibit professionalism and dedication while operating and maintaining a small water system.

South Dakota Rural Water 2016 AWARDS NOMINATION FORM

This form is also available online at: www.surveymonkey.com/r/waterawards
or through a link on our website at: www.sdarws.com/atc.html

Name of Nominee _____ Title _____

Employer _____ Years with System _____

Name of person making nomination _____

Address _____

City _____ State _____ Zipcode _____

PLEASE INDICATE AWARD:

- | | |
|--|--|
| <input type="checkbox"/> Rural Water System of the Year | <input type="checkbox"/> Municipal Office Person of the Year |
| <input type="checkbox"/> Rural Water Manager of the Year | <input type="checkbox"/> Municipal Operations Specialist of the Year |
| <input type="checkbox"/> Rural Water Office Person of the Year | <input type="checkbox"/> Carroll Anderson Memorial |
| <input type="checkbox"/> Rural Water Operations Specialist of the Year | <input type="checkbox"/> Friend of Rural Water |
| <input type="checkbox"/> Municipal Manager of the Year | <input type="checkbox"/> Spirit of Rural Water |
| | <input type="checkbox"/> Donald B. Pospishil |

SUPPORTING INFORMATION: Please provide a narrative for why this nominee deserves the award. (Outstanding accomplishments, contributions to system and state association, certifications, awards, exemplary work on legislative Issues, leadership, civic activities, etc.)

DEADLINE TO APPLY IS OCTOBER 28, 2016

Please complete this entry form and mail to:
SDARWS | Attn: Jeremiah | PO Box 287 | Madison, SD 57042
or scan and email to atc@sdarws.com

Form is also available online at: www.surveymonkey.com/r/S2VKBRX
or on our website at: www.sdarws.com/atc.html



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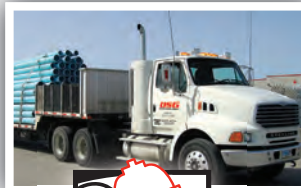
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IT'S TIME TO THINK ABOUT SMOKE TESTING

By Jerry Hemeyer, SDARWS Circuit Rider

Now is the perfect time of year to start thinking about smoke testing your wastewater collection system. The past twelve months have been extremely dry for most of our state and these conditions allow the ground to crack or open up. This allows the smoke testing procedure to pinpoint any leaks in collection lines as the smoke will easily find its way to the surface. If the sewer is in good condition then the forced smoke will emerge from manhole lids along the line and house vents on the roof. If the line has defects, the smoke will find the break and try to escape through the break.

Several towns that we have already smoke tested found several issues within their system. Most of the problems were cleanouts, cracked service lines, or vacant lots where a house had been removed but the sewer had not been properly plugged.

Smoke testing is generally intended to find:

- buildings that have illegal downspout, cellar, yard or foundation drain connections to the sanitary sewer
- illegal sump pump discharges into a sanitary sewer
- points of groundwater or surface water intrusion into sanitary sewers
- any cross connections between sanitary and storm sewers

There are certain requirements that the utility must do to prepare to smoke test:

1. A Public Notice must be sent out to the residents in the area to be smoked.
2. The Fire Department, Police Department and 911 must be contacted.
3. A map of the system should be with the smoke crew for reference.
4. A phone number for the public should be put on the Notice so residents can call if smoke appears in their home or business.
5. The manholes must be accessible or brought to the surface of the road.
6. Transportation such as golf carts or four wheelers help in mobility.

If you are considering smoke testing and would like South Dakota Rural Water to help, please contact Jerry Hemeyer, 605-201-0170. ♦



*Sewer mains flooding during rains?
Time to schedule some smoke testing!*



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THE IMPORTANCE OF VALVE EXERCISING

By Mike Moeller, SDARWS Circuit Rider

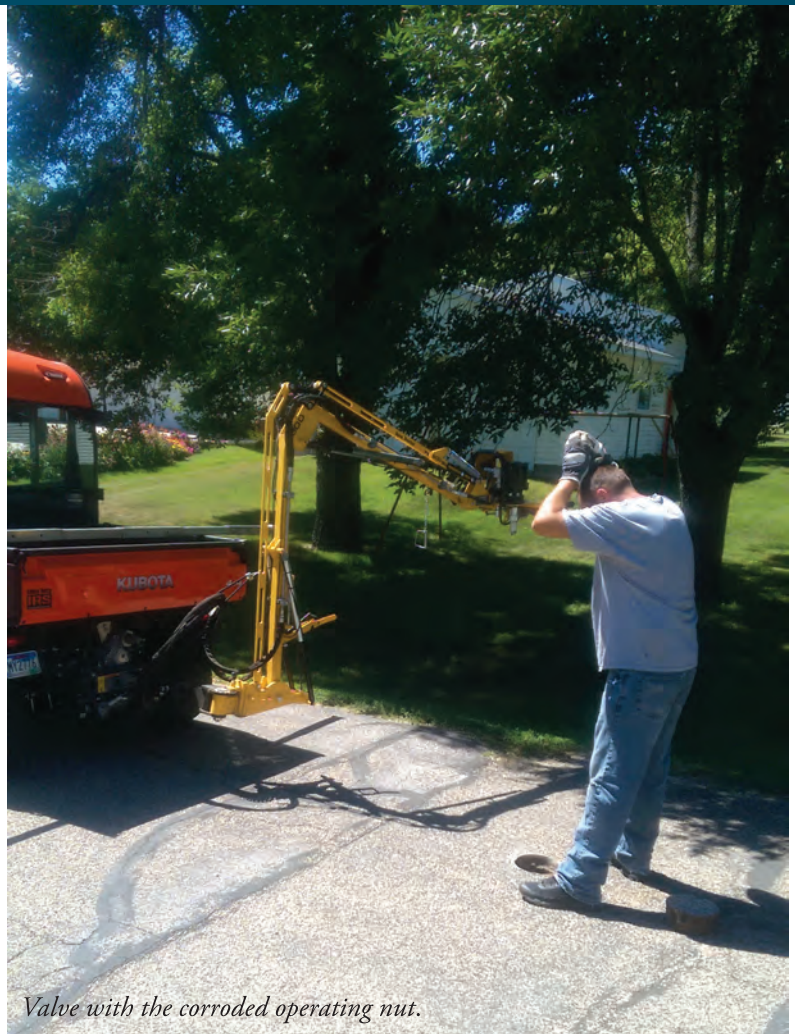
Everyone has heard the old saying, “out of sight out of mind,” but there are some things that are out of sight and should not be out of mind. One of those items is the valves in your water system; they are found in every system no matter how big or small, and seem to be overlooked until the time they are needed. Valve exercising is a very important part of preventative maintenance to your system and should be done on a regular basis to ensure easy operation and also to make sure that the valves shut off completely when an emergency occurs.

South Dakota Rural Water (SDARWS) has helped many systems throughout the state with valve exercising, and has come across some communities who were in dire straits when it came to proper valve operation. One of these systems was a small town in the northeast corner of the state. Rosholt, SD has 27 water main valves in town. When SDARWS stopped by to discuss how things were going and to let them know what we had to offer for help, the city operator informed us that of the 27 valves in town, only one of them was operational. The valve at the base of the water tower was the only valve in town that would even move. This was a good thing for the fact that if they had a water break in town they could isolate it, but was a bad thing due to the fact that the whole town had to be shut down to repair a leak. SDARWS told the city operator and the finance officer that they could have the valves exercised and possibly get most of them working again. The finance officer said that they were in the process of putting a specification together to have all the valves in town replaced. SDARWS told the finance officer why not give it a shot – they would not be out anything if the valves still could not be operated after being exercised, and they agreed to have them done.

SDARWS returned a couple weeks later with the Spin Doctor valve exerciser and got to work exercising the valves. We were able to get 26 of the 27 valves operating again. The only one that SDARWS could not get exercised was because the operating nut on the top of the valve was corroding away.

The finance officer and city operator were very happy with the outcome and were thankful that SDARWS saved the city a huge sum of money.

SDARWS also has helped a larger town in central South



Valve with the corroded operating nut.

Dakota by performing some valve exercising. In June, 2011 the city of Fort Pierre learned a valuable lesson on the importance of valves that operate freely. Fort Pierre, like many other cities along the Missouri River in 2011, had to deal with some major flooding. One would think, “why would free valve operation be an issue with flooding?” The city operators in Fort Pierre came up with a plan to isolate portions of the flooded area by shutting off one valve instead of six or more in the event one of the water mains would get damaged from the possible ground shifting due to saturation. The city operators found that many of the valves turned very hard – and sometimes it would take two people with cheater bars on the valve wrench to turn the valve closed. This was not an easy task considering most of the time they were standing in water with a thin layer of mud and sand under their feet.

Fort Pierre decided at this point that they would put a valve exercising program in place to make sure their valves turn

...continued on page 24

VALVE EXERCISING: continued from page 23...

freely and shut down completely. SDARWS assisted in this process by exercising almost 700 valves throughout the city. Most of the valves in the city were able to be exercised and operated freely afterwards. Some of the valves had to be replaced due to the fact that the valves were in “hot” soil and the bonnet bolts would break when the valve was turned. Vern Thorson, Utilities Manager, said, “it’s not such a bad thing when the valve breaks cause then you know where your weak spots are and can repair them before an emergency situation occurs.”

Valves are a very important part to any water system and proper operation of the valves is a must. The valves in your water system should be at the least exercised every two years if not more. SDARWS understands that most city operators are very busy and may not have the time to do it as often as they should be and that is why we are here to help you with valve exercising, and maybe to even set up a program where we come and do it for you. If you are interested, please contact us at 605-556-7219. ♦



Packing bolts rotted away and valve leaks when not in the full open position.



Exercising valves on hydrant legs.



Valve exercising with the Spin Doctor.



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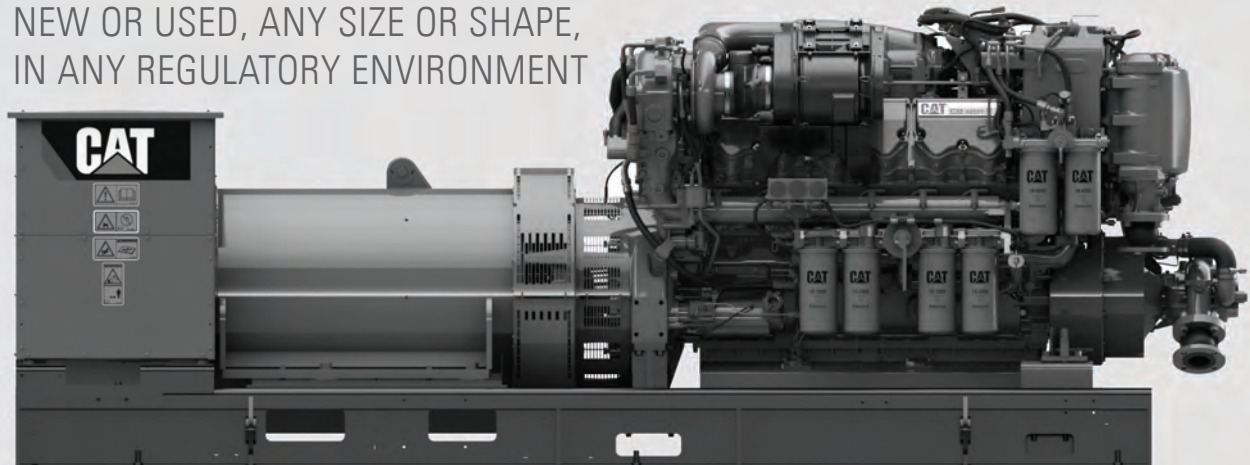
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Certification Practice Questions

1 Static suction head plus friction suction head plus static discharge head plus friction discharge head makes up the _____ of a pump.

- a. operating pressure
- b. pump curve
- c. total dynamic head
- d. velocity head

2 The volume of a cone with a diameter of 16 ft and a height of 12 ft is _____ ft³.

- a. 84
- b. 256
- c. 502
- d. 804

3 Water is at its greatest density at a temperature of

- a. 32oF
- b. 39.2oF
- c. 37oF
- d. 45oF

4 A heavy growth of algae in a surface water reservoir will have which one of the following effects on the water?

- a. lower the pH during the day
- b. raise the pH during the day
- c. will have no effect on the pH
- d. raise the pH at night

5 A step in determining the threshold odor number is

- a. counting the odor-producing organisms present.
- b. diluting the sample with distilled water.
- c. diluting the sample with odor-free water.
- d. matching the odor against the standards.

6 A centrifugal pump when operating normally shows a discharge pressure of 100 psi and the Venturi meter shows a flow rate of 20,000 gpm. Suddenly the pressure drops to 90 psi and the flow rate increases to 23,000 gpm. You would suspect:

- a. a faulty gauge and manometer tube.
- b. a large leak in the pump discharge line.
- c. foreign matter caught in the Venturi-tube throat.
- d. the packing is sucking air.

7 A test on a water supply showed a hardness of 232 mg/L. If this is reduced by 21%, what should the hardness of the water be after treatment?

- a. 138 mg/L
- b. 174 mg/L
- c. 183 mg/L
- d. 211 mg/L

8 A water treatment plant used 647 chlorine cylinders during one year's operation. The average withdrawal from each cylinder was 138 lb. What was the total number of pounds of chlorine used?

- a. 89,875 lb
- b. 89,286 lb
- c. 70,872 lb
- d. 69,876 lb

9 The bacteriocidal action of free available chlorine compared with that of combined available chlorine is:

- a. greater.
- b. less.
- c. the same under most conditions.
- d. not possible to determine.

10 The condition in infants known as methamoglobinemia is thought to be caused mainly by high concentrations of:

- a. phosphate.
- b. nitrate.
- c. fluoride.
- d. chloride.

Answer Key

1) C 2) D 3) B 4) B 5) C
6) B 7) C 8) B 9) A 10) B

7

WAYS TO EFFECTIVELY COMMUNICATE THE SAFETY OF YOUR DRINKING WATER SUPPLY

By Heather Syverson, Communication Coordinator – AE₂S

Due to the intense media coverage of the Flint, MI water crisis, water utility managers across the country are now fielding questions from customers and local media outlets about the safety of drinking water. The good news is that each community water system should already be equipped with the information customers are seeking, thanks to the Safe Drinking Water Act requirement to provide an annual Consumer Confidence Report (CCR) to the public.

The CCR, frequently called a Water Quality Report, summarizes results of the previous year's drinking water quality analyses, communicates information about the water supply system of interest to the customer, and conveys health impacts of drinking water. Assuming each water system already made paper copies of the CCR available and/or posted a direct link to the entire report on the utility's website as required by the U.S. Environmental Protection Agency (USEPA), a reminder to customers that the information is always available to them is a prudent consideration.

HERE ARE SEVEN WAYS A COMMUNITY WATER SYSTEM CAN MAKE THE MOST OUT OF A CCR REPORT:

NEWSLETTER ARTICLE: Use a monthly or quarterly newsletter to remind customers that they can access the utility's CCR in its entirety online and be sure to provide the web address. To go one step further, provide a summary of the CCR's findings for those who don't want to read the entire report. Also make paper copies available, if requested.

WEBSITE ARTICLE: Even if the CCR is already posted on the utility's website, a brief article that includes the original link to the report can be posted in a prominent place on the website's home page.

UTILITY BILLS: Print a brief thank you to customers for entrusting the utility with providing their drinking water and include a link to the CCR.

BE AVAILABLE TO THE MEDIA: If contacted by a reporter, consider it an opportunity to promote the water system's successes and explain the treatment techniques that ensure

public safety. If asked about violations that appear on the CCR, explain what was done to rectify the situation.

NEWS RELEASE: Go directly to the media with information about local drinking water quality and include the link to the CCR report.

SOCIAL MEDIA: Posting a link to the CCR on Twitter and Facebook is a simple and free way to remind your followers that a utility is being transparent about water safety.

INFOGRAPHICS: Use infographics to illustrate your message. Infographics can be effective in so many places – website, newsletter, utility bills, news releases, and social media. Here's an example of an infographic that AE₂S Communications produced for the City of St. Cloud, MN. 📌



See more at: www.ae2s.com/newsletter/Th Update/Update2016/March/CCR.html#sthash.V3q3wDAY.dpuf

SDARWS' PORTABLE LARGE METER TESTER



By Morris Elcock, SDARWS Circuit Rider

Earlier this year I put together an article about our portable large meter tester (PLMT) made by Badger. It has been a somewhat busy year for the PLMT, and based on what it has found so far, I feel it is worth spending some more time talking about the benefit of not only testing large meters, but testing them in their own environment. So far in 2016 I have found several meters testing all over the charts. I have found system supply meters testing from 4% – 15.7% fast, and I have found system customer meters registering up to 16.3% slow. SDARWS can flow test on site large meters with the Badger Meter Portable Large Meter Tester. The PLMT is connected to the test plug on the field meter or field tap. Water runs through the portable large meter tester to test flows of 0.25 to 500 gpm. The registration is then compared with the field meter and accuracy computed. This is an invaluable tool in helping a water utility earn full revenue on all water distributed to their customers.

The tester contains all equipment necessary for field testing, including fire hoses and standard adapters. With the accessibility of a test plug on the meter or a test tee on the line, the unit will test all large meter products.

When SDARWS assists a water utility with a system wide leak detection survey, the PLMT can be used to test your supply meter in addition to testing your large customer meters.

For more information on the PLMT, please contact the SDARWS office in Madison at 605-556-7219, or call SDARWS Circuit Rider Morris Elcock on his mobile phone at 605-201-9561. ♦



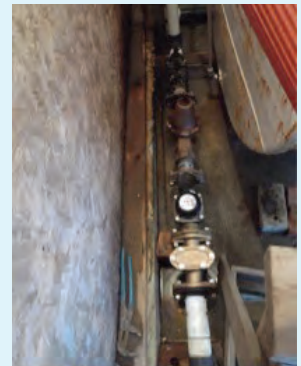
This 2" meter was registering only 83.7% of the water going to a pool daily through a 3/4" line.

BEFORE



This 2" Turbo meter was installed with a 2" PRV before the meter and tested at 104% at 60 gpm.

AFTER



The 2" Turbo meter was then installed with a 2" Strainer before the meter and the 2" PRV was then moved to the downstream side of the meter, it was then retested and the accuracy was then 99.9% at 60 gpm.



WATER SECTOR LACKS INVESTMENT

DENNIS N. DAVIS, EXECUTIVE DIRECTOR

The Department of Homeland Security's National Infrastructure Advisory Council released a 210 page final report July 11th stating that the water sector faces resilience challenges in disaster preparedness and infrastructure investment and as a whole the sector is undervalued, underfunded and under supported.

The NIAC report also indicated that the Environmental Protection Agency does provide support for the water sector through its main mission of protecting water quality. However, EPA should also consider prioritizing security and resilience, in addition to working collaboratively with utilities, and national and regional associations, to increase technical resources and capabilities with a focus on cybersecurity.

The Council also found that there is a lack of understanding by the public of impacts from water disruptions. Lack of information about water service reliability, and the fact that customers take their water for granted, has made it difficult for the water industry to garner public support when rate

increases are needed for infrastructure improvements.

Finally, the Council recommended the federal government assess drinking water and wastewater disruption risks and identify ways to mitigate those challenges. It also should increase technical resources, investment and other financial resources for the sector and specifically focus on strengthening water facilities in high needs communities.

"A great deal needs to be done to strengthen the security and resilience of critical infrastructure. Although much of the responsibility rests with the owners and operators who design, build, operate, maintain, and repair the infrastructure, the Federal and State governments are critical partners in this endeavor."

The full report can be found online at: <https://www.dhs.gov/sites/default/files/publications/niac-water-resilience-final-report-508.pdf>.

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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
 Rochester Public Utilities



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