

SOUTH DAKOTA RURAL WATER'S

Quality On Tap!

October 2016 | Volume 12, Issue 2

**ECONOMIC DEVELOPMENT:
WHERE DO WE GO FROM HERE?**

**24 HOURS
WITHOUT WATER**

**GEOLOGY & SOUTH DAKOTA
WATER RESOURCES
LAYERED ROCK AQUIFERS**

A MESSAGE FROM THE PRESIDENT OF THE BOARD

Ron Gillen, President
South Dakota Association of Rural Water Systems



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. The cost to attend Leadership is \$140, and includes a meal at the President's Reception on the evening of November 16th. There will be a \$15 discount for WaterPro members. Registration for this event will be available on our website at sdarws.com. The tentative agenda is below:

If you haven't attended a leadership training in the past, I highly suggest you register to attend this one. Registration for this event is available on our website at www.sdarws.com. The tentative agenda is below:

WEDNESDAY – NOVEMBER 16, 2016

- 1:00 Welcome** – Ron Gillen, President (*SDARWS*)
Flag Presentation – Nick Jackson (*SDARWS*)
National Anthem and Pledge of Allegiance
- 1:15 Sustainable Water Systems**
– Dennis N. Davis (*SDARWS*)
- 1:30 Parliamentary Procedure**
– Nancy Moose, Dakota State University
- 2:15 The Effects of Climate Change on Ground Water**
– Laura Farris, Region 8 EPA Climate Change Coordinator
- 3:15 Break**
- 3:30 Attorney's Corner**
– Margo Northrup, Attorney, Riter, Rogers, Wattier, Northrup, LLP
- 5:30 President's Reception**
- 6:00 Dinner w/ Guest Speaker**
– Marty Jackley, South Dakota Attorney General

THURSDAY – NOVEMBER 17, 2016

- 8:00 Rural Development 101: Getting Ready for a Loan**
– Doug Roehl, Community Programs Director, RD
- 9:00 Break**
- 9:15 Augmented Reality – The Future of GIS**
– Brady Hustad, ArGIS
- 10:00 Break**
- 10:30 Leadership Panel: Strategic Planning, Rate Management, and Holding Productive Meetings**
– Greg Merrigan (*Clay*), Ron Gillen (*Aurora-Brule*), Kurt Pfeifle (*Mid-Dakota*), Dave Meyerink (*Randall*)
- 11:15 Economic Development & You**
– Joe Fiala, Research & Comm. Development Director, GOED
- 12:00 Closing Comments** – Ron Gillen (*SDARWS*)

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Rick Doud

Class B East River
Fred Snoderly

Class B West River
Vacant

Class C
Vacant



MAKE PLANS TO ATTEND THE 2017 ANNUAL TECHNICAL CONFERENCE

Dennis N. Davis, Executive Director
South Dakota Association of Rural Water Systems

While the Annual Technical Conference is still a few months away, the staff at South Dakota Rural Water are already busy behind the scenes gearing up for the event which kicks off Tuesday, January 10th at the Best Western Ramkota in Pierre.

Registration will be available soon on our website at sdarws.com which aims to improve communication for both exhibitors and attendees, and should also ease the registration process. Our website will contain up-to-date agendas and news regarding the conference and the ability to register online. For those with smartphones – once you are registered online you will have access to our mobile app where you can manage your event registration, access event information on-the-go, and improve networking opportunities. Our Early Bird registration discount will be available until December 16, 2016 – so be sure to register early!

This year's keynote speaker is Colonel Mark Johnson of Eudora, Kansas. Mark is one of America's top motivational speakers, traveling the world and the United States inspiring audiences to achieve great success, above and beyond their expectations. He has made presentations in every U.S. state and twelve nations overseas.

Mark has led a fascinating life, full of travel and death-defying adventure. He survived numerous harrowing life and death

situations during his twenty-one years as a Colonel in the Green Berets. He commanded specially-trained and educated teams that our nation selected for the most dangerous and hazardous missions. He conducted operations, many of a sensitive and classified nature, in over fifty-five nations on four continents. The invaluable lessons he learned in leadership, motivation, and team building, were shaped in times of extreme danger on the battlefields of the world. He learned to inspire those in his care to fearlessly excel despite enormous odds and he now translates those valuable lessons to today's world.

This year's awards brunch will feature a public judging of the top three finalists in the SD Rural Water Taste Test. The winner chosen at this taste test will go on to represent South Dakota in the National Rural Water Taste Test held at the Rural Water Rally in Washington, DC in February. If your water system is interested in participating in the taste test, make sure that they bring a quart-sized glass jar filled with water from your water system to the Registration Desk by 2pm on Tuesday, January 10th.

We will again be hosting a spouse program – so be sure to bring along your significant other. Hotel room blocks are also open until December 5th.

We look forward to seeing you in Pierre!

MARK YOUR CALENDARS!

JANUARY 10-12
ATC
2017

SOUTH DAKOTA RURAL WATER'S
ANNUAL TECHNICAL CONFERENCE

Pierre Ramkota Hotel & Convention Center
sdarws.com/atc.html

OUT AND ABOUT

SEPTEMBER

21-25 – SOUTH DAKOTA FILM FESTIVAL, ABERDEEN

The South Dakota Film Festival features jury-selected films from South Dakota and around the world. The events run Wednesday through Sunday. Sessions vary, so please check the website for specific times. Most sessions take place at the Capitol Theatre in downtown Aberdeen. <http://southdakotafilmfest.org/>

22-25 – SOUTH DAKOTA FESTIVAL OF BOOKS, BROOKINGS & SIOUX FALLS

Meet Pulitzer Prize winners alongside your favorite national and regional authors at South Dakota's premier literary event. Meet more than 60 authors, visit exhibitors featuring authors and publishers, and attend any of 100-plus sessions to become a better writer and expand your love of reading. Festival events are free, open to the public and suitable for all ages. Select special events require tickets. For more information, visit: <http://sdhumanities.org/festival-of-books>.

21-26 – PIONEER POWER & TOY SHOW, MENNO

Enjoy the 30th Annual Menno Pioneer Power & Toy Show featuring steam threshing, plowing, baling, saw mill, corn shelling, historic jail, sod house, 1884 schoolhouse, railway depot with sidecar, blacksmith shop, farm emporium, stone ground wheat flour, bread baked in a stone Russian oven and more. Activities for all ages: parade, children's pedal pull, rides and petting zoo, crafts, flea market, bale throwing, tractor pull and mini-rod pull. International Harvester will be featured in 2016. www.pioneeracres.com/powershow.html

OCTOBER

SEPT. 29-OCTOBER 1 – BUFFALO ROUNDUP & ARTS FESTIVAL, CUSTER STATE PARK

Feel the thunder at the annual Custer State Park Buffalo Roundup on Friday, September 30. Watch cowboys, cowgirls and park rangers as they roundup and drive the herd of approximately 1,300 buffalo. Be sure to plan for plenty of time at the three-day Arts Festival, September 29-October 1, where more than 100 vendors will offer fine arts and crafts and South Dakota made products. (On Friday, parking lots open at 6:15 a.m. Early arrival is recommended.) <https://gfp.sd.gov/state-parks/directory/custer/events/buffalo-roundup/>

8 – OKTOBERFEST, ABERDEEN CIVIC ARENA

Oktoberfest in Aberdeen celebrates our region's German/Russian heritage with Bavarian culture, music, dancing, food, beer and wine. Activities include a German breed dog parade, dachshund races and a Root Beer Garden, along with a children's area with face painting, crafts and inflatables. There will be contests for stein-holding, best costumes and yodeling, as well as a craft beer tasting event. Join in the fun!

7-9 – NORTHEAST SOUTH DAKOTA ART CRAWL, SISSETON

The Art Crawl features area artists and their original artwork in locations in Sisseton and surrounding communities. Individual artists will display their work at designated locations and personal studio spaces. Local musicians will provide entertainment and individual artists will conduct demonstrations. Tentative hours are Friday 4-7 PM, Saturday 10 AM – 5 PM, and Sunday 12 noon to 3 PM. For additional info call 605-200-2252 or email at artcrawl@hotmail.com.

15 – A HAUNTED FORT – FORT SISSETON HISTORIC STATE PARK, LAKE CITY

In the afternoon at Fort Sisseton Historic State Park near Lake City, there will be fun fall-themed activities and crafts for the entire family, but beware after the sun goes down. After dusk, tours of our Haunted Fort will begin and, while the soldiers won't be able to attend, they'll be there in spirit. All are welcome to the afternoon activities. The evening tours are by RSVP appointment only. State Park entrance license required.

29 – HARVEST FESTIVAL, YANKTON

A family fun Event celebrating the fall season featuring harvest themed activities for children, Arts and Crafts Vendor Fair & Farmer's Market, Music, Monster Paws Dog Walk, see what lurks on the historic Meridian Bridge, waffle breakfast, chili feed, even pig races! Stroll the shops, eateries and pubs of historic downtown, maybe catch the classic film at the Dakota Theatre. After dark join in the Zombie Walk Pub Crawl. Later the ghouls gather at the Brewery Building 200 Walnut for a haunting good time with Dueling Bands! Dance the night away until midnight in your best costume. www.harvesthalloween.com

NOVEMBER

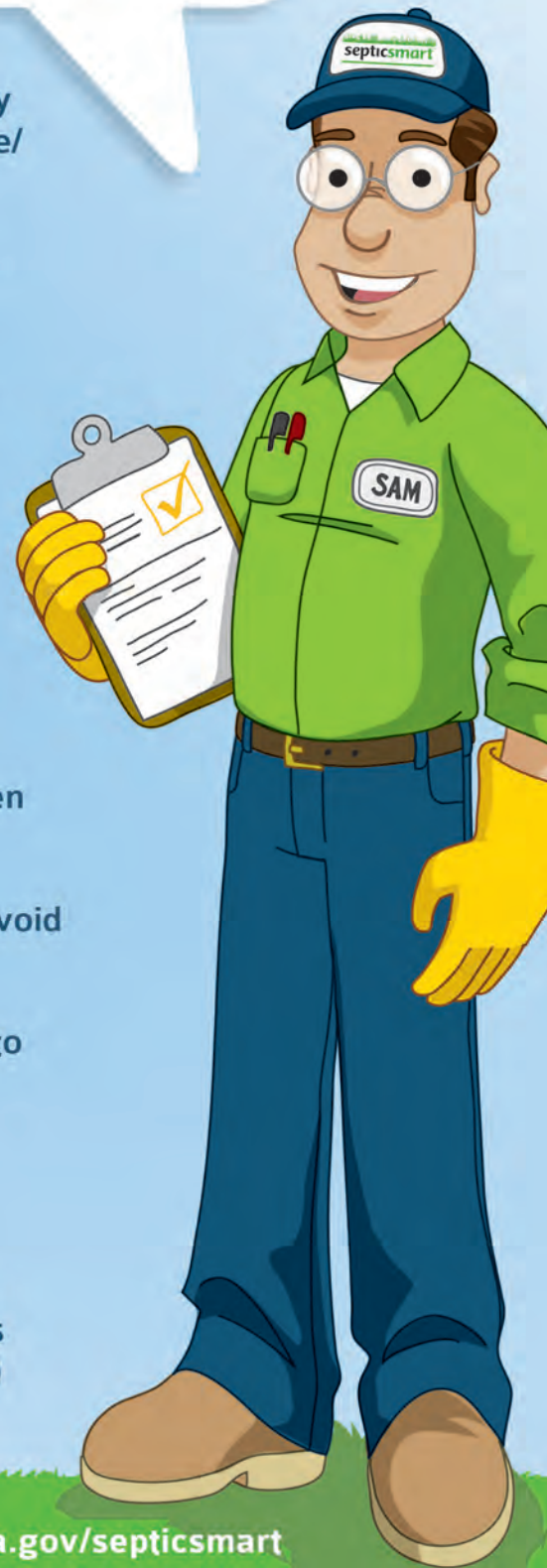
22-DEC. 26 – CHRISTMAS AT THE CAPITOL, PIERRE

The annual Christmas at the Capitol display in Pierre includes nearly 100 trees that are decorated by volunteers from communities, schools, churches, nonprofit organizations and state government offices. This year's Grand Lighting Ceremony takes place in the rotunda on Tuesday, November 22, at 7 p.m. The display is then open to the public 8 a.m.-10 p.m. daily through December 26. Other areas of the Capitol are also decorated for the holiday season, including the Capitol grounds.

If you would like your event featured in the January 2017 issue of Quality on Tap!, please email your event description to: info@sdarws.com. January's issue will cover events taking place January - March 2017. Event listings are subject to approval by the QOT Editorial Board.

Top 10 Ways to Be a Good Septic Owner

- ✓ Have your system inspected every three years by a qualified professional or according to your state/ local health department's recommendations
- ✓ Have your septic tank pumped, when necessary, generally every three to five years
- ✓ Avoid pouring harsh products (e.g., oils, grease, chemicals, paint, medications) down the drain
- ✓ Discard non-degradable products in the trash (e.g., floss, disposable wipes, cat litter) instead of flushing them
- ✓ Keep cars and heavy vehicles parked away from the drainfield and tank
- ✓ Follow the system manufacturer's directions when using septic tank cleaners and additives
- ✓ Repair leaks and use water efficient fixtures to avoid overloading the system
- ✓ Maintain plants and vegetation near the system to ensure roots do not block drains
- ✓ Use soaps and detergents that are low-suds, biodegradable, and low- or phosphate-free
- ✓ Prevent system freezing during cold weather by inspecting and insulating vulnerable system parts (e.g., the inspection pipe and soil treatment area)



ECONOMIC DEVELOPMENT: Where do we go from here?

By Jason Upho, Executive Director, Arlington Community Development Corporation,
and Randy Jencks, General Manager, Kingbrook Rural Water System



During the mid-1970's South Dakota participated in an experiment along with seven other states to bring quality water to rural residents. Our attendance at the first meeting of the National Rural Water Association resulted in South Dakota joining the organization as a member, and set our state on a course that led to our current status as a leader in the rural water industry. Similar in concept to the Rural Electric Associations, rural water began as a dream by pioneers in our industry who had the foresight and imagination to think big and then find a way to make it happen. After nearly forty years of growth, rural water systems have flourished and now extend to all corners of the state.

As we look to the future there are impediments to the sustained growth achieved over what could be classified as our initial "start up" period. One of these involves system boundaries that once were unlimited but now in many cases, extend only to the neighboring rural water system. While there are a few newly organized rural water systems, growth for the many mature systems, if it comes, will not be by constructing new water mains beyond existing service areas and will instead have to come from within our current boundaries. A question on the minds of many progressive boards is "how do we continue current revenue growth to cover future expenses; where do we go from here?"

The world may be getting smaller but population density is not, in other words Organic growth has become more and more difficult in rural communities since the dawn of the Internet age.

Why? In a small world commercial industry is bigger. The so called Walmart effect changes the organic growth potential of rural communities by limiting the potential of the mom-and-pops.

The second effect in play is the boundary proximity. It used to be that each small community affected a certain given area (the

school district more or less) and within that area certain things were contained including commerce, utility and workforce. As bigger cities pulled more workers from rural areas and as the school districts melded, rural utilities underwent an expansion of their footprint that enabled them to either maintain the same number of accounts or in many cases grow. This growth for many systems has reached a plateau and may even begin to decline in the foreseeable future.

The solution? Organic growth – growth from within. The future of this growth considering commercial industry, utilities and resident workforce is a function of expanding existing opportunity across a broad spectrum of rural areas including smaller communities. While large rural water users such as dairies, ethanol plants, confined animal feeding operations, etc, are certainly an engine for future rural water growth, they require enormous investment and often are not the answer. Another option is expanding local opportunities in our communities.

Local economic development organizations help in this endeavor by providing low interest business loans, technical assistance and entrepreneurship resources. In support of this effort, some local utilities offer assistance by providing scaled utility rates, efficiency rebates and new hire incentives.

One example of this is the Arlington Community Development Corporation (ACDC) where the organization teams up with local lenders to provide discounted blended interest rates, making the acquisition of startup capital a little bit easier. They also serve as a conduit for obtaining technical resources for everything from business planning to marketing to grant submission.

ACDC, Citizens State Bank and Kingbrook Rural Water recently joined forces with the Arlington Community Daycare to help fund a much needed expansion project that will allow for up to 20 additional children at the facility. This project also provides



retail and residential rental space, creating passive income and making the daycare much more sustainable long term.

"This daycare expansion project is the poster child – forgive the pun – for rural economic development," said Jason Uphoff, executive director of ACDC. "Not only does it fulfill a critical service in the community, it provides for 14 jobs and more than 40 kids that represent 26 families. Each of those families is a rural utility user."

ACDC provided low interest financing and help with grants; Kingbrook Rural Water provided a \$5,000 grant through the CoBank Sharing Success Grant program and Citizens State Bank further matched the grant with an additional \$5,000.

"The daycare expansion could not happen without the support of the community in the form of grants, donations and volunteer effort," continued Jason.

Another example is the Heartland Consumer Power District (Heartland), which provides electricity to several regional communities. Among several of their incentive programs are 'free' electricity for new or expanded users, energy efficiency rebates and new hire cash payouts. Especially for the entrepreneur these incentives are highly important.

"Organic growth is going to be a key component in the future development of our rural communities," said Casey Crabtree, Director of Economic Development for Heartland. "Heartland offers unique incentives to assist our customer communities in attracting new businesses as well as encouraging existing businesses to expand. Our HELP Fund, Energy One Incentive and Growth Incentives often provide the extra support a business needs to start up or expand."

ACDC teamed up with Heartland to help a local business owner in Arlington expand his business. Garth Johnson, owner of

Johnsonville Sprayfoam, recently built a 6000 ft² shop on the south side of Arlington. This new facility will allow Garth to operate year round and provide new services like preparing ice-fishing houses – it may also lead to additional employment in the future.

"I couldn't ask for a better group to work with. ACDC is one stop shop, easy," remarked Garth on the loan application process.

ACDC provided low-interest capital for expansion and Heartland will provide energy rebates and reduced cost electricity. Passively, the County also helped this new development by providing a multi-year scaled tax abatement for the new building.

Each new job has a direct economic effect in terms of revenue and consumption. From the 2010 census data for Kingsbury County we find that, of the 1345 employees in the county, the average annual wage was \$34,385. That is the dollar impact and it implies numerous things but most importantly an employed citizen is tethered to the community by a dwelling. A home means utility consumption, creating two users out of one: the employee and the citizen.

Economic development in rural areas is a team effort that starts with the entrepreneur but is helped along the way by economic development corporations, municipalities, local utilities, county commissioners, planning districts and state agencies. Everyone pulling on the oar in the same direction keeps us moving forward, and we need to stay focused on searching for ways to grow our organizations, to ensure we aren't falling behind.

The argument can be made that the future of long-term continued rural water growth is directly tied to economic development, and expansion of rural communities can play a direct role. The successful and innovative programs, such as those previously mentioned, are a step in the right direction toward answering the question, "where do we go from here?"

GEOLOGY & SOUTH DAKOTA WATER RESOURCES

Part Two

By: Martin Jarrett, Big Sioux Community Water System, and Jay Gilbertson, East Dakota Water Development District

South Dakota has a diverse geologic history. Hard, crystalline rocks like granite and quartzite are found in the central core of the Black Hills and in quarries near Milbank, Mitchell and Sioux Falls. These and similar rocks underlie all of the state and form the foundation on which all other materials rest. Layered rocks, which can be seen ringing the Black Hills and extending east to the Missouri River valley (and beyond), record periods when the state was covered by great oceans that swept over the landscape. Lastly, covering most of the state east of the river are deposits left behind when glaciers repeatedly advanced across what is now the northern United States. While each geologic unit is different, they all share a common trait - they each have a direct connection to the drinking water resources that we utilize today. This is the second of a series of articles in which these connections will be explained and explored.

Layered rock aquifers

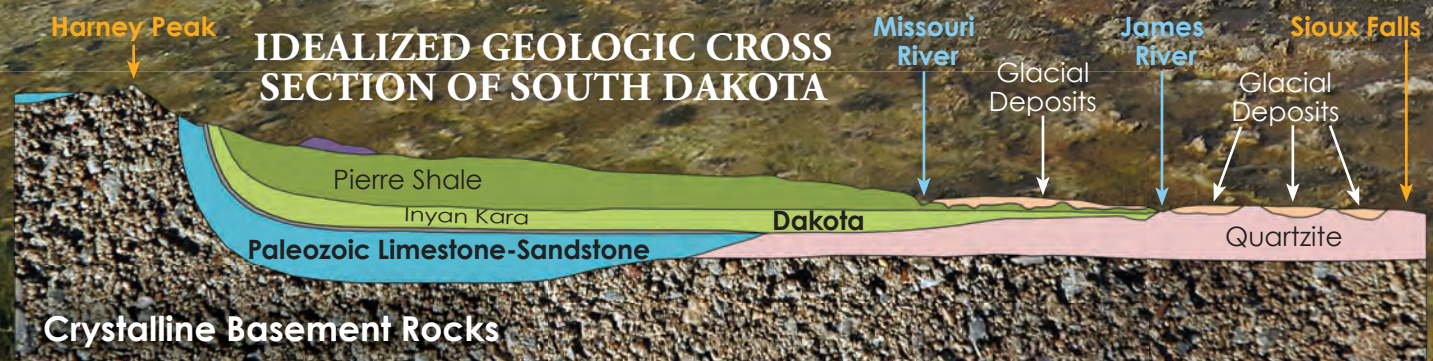
Overlying the crystalline rocks that form the foundation ("basement") of the state are a series of layers of sandstone, shale and limestone that were deposited during times when great oceans covered South Dakota. The oldest of these deposits (the Deadwood sandstone) was laid down around 500 million years ago, with progressively younger layers forming until the uplift of the Black Hills started about 65 million years ago. The geologic record for this period is not continuous, with breaks/gaps in the record (unconformities) representing times when the area was above sea level and subject to erosion.

The uplift of the Black Hills was significant for two reasons. First, erosion of the rising land mass generated a tremendous amount of sediment which spread out across western South Dakota. Great blankets of sandstone and siltstone were laid down by

ivers and streams emanating from the uplift. These rocks can be best observed in Badlands National Park. Second, and most importantly from a ground water standpoint, the uplift brought to the surface portions of the rock layers that would otherwise have been buried beneath hundreds to thousands of feet of younger rocks. These layers form concentric rings around the crystalline core of the Hills. Because they are now exposed at the surface, water can enter those older rock layers, creating aquifers that extend across much of the state.

Within this great pile of layered rocks, two rock types in particular tend to make good, productive aquifers. The first group are those rocks that are composed primarily of sand and pebble sized particles, collectively known as sandstone. In many instances, the spaces in between the individual sand grains (porosity) that make up the rock, although very small, are large enough to allow the easy passage of water (permeability). These units were deposited in near-shore, shallow water environments where wave action and/or currents kept finer particles in suspension, allowing only the coarser, sand-sized particles to accumulate.

In the area immediately around the Black Hills, sandstones in the Deadwood and Minnelusa Formations are a source of water. The Inyan Kara aquifer, made up of sandstones of the Lakota, Fall River and Newcastle Formations, is a primary target for wells drilled across much of western South Dakota. Comparable sandstones, collectively referred to as the Dakota aquifer, extend to the eastern border and into Minnesota and Iowa. Because of its widespread occurrence, the Inyan Kara/Dakota aquifer has often been the water source of last resort (and sometimes only) resort for much of the state. In southwestern and northwestern areas of the state, sandstones within the post-Black Hills uplift sediments are also significant resources.





Boxelder Creek loss zone at Custer Gap.



Doty Spring along Boxelder Creek (Dr. Perry Rahn, SDSM&T)



Dakota Formation exposure near North Sioux City.

The other general class of layered-rock aquifers are units composed of carbonate rocks (limestone and dolomite). In contrast to sandstones, these rocks form in environments far distant from any land-based sediment sources. They are composed of carbonate minerals derived from the shells of minute marine organisms, like algae and foraminifera. The shells of such organisms collect on the sea floor and eventually are cemented and recrystallize into solid rock.

Carbonate rocks have very limited natural porosity and permeability. As in the older crystalline rocks, most water storage and movement within them takes place within and along cracks and fractures. However, many carbonate minerals are quite soluble when exposed to weakly acidic water, so over time small cracks can grow into substantial passage ways. Examples of this passage formation can be readily seen at Wind Cave National Park and Jewel Cave National Monument. Limestones of the Pahasapa Formation, known as the Madison aquifer, are the best example of this type in the Black Hills. Limestone units within the Minnelusa Formation are also highly productive.

Ground water movement is most often talked about in terms of distances traveled in months or years. In contrast, water can move through solution passage ways in limestone in a matter of minutes or hours. When Spearfish Creek, Boxelder Creek and many other Black Hills streams cross over the Pahasapa Limestone, a portion of the flow is lost as it quickly sinks into the ground and enters the aquifer. During periods of relatively low flow, such as in late summer or fall, all of the water in these streams can be lost, disappearing over a few hundred feet.

Over much of South Dakota, the geologic materials found at the surface are composed of very low permeability materials. The Pierre Shale in particular overlies nearly all of the layered rock aquifers discussed above, making it very hard for rain water or snow melt to enter (or leave) these rocks. However, because of the uplift of the Black Hills, portions of nearly all of these units

are exposed, providing an opportunity for water to recharge (enter and fill) these aquifers. The elevation of the recharge areas is generally higher than the aquifer in any other part of the state, and shale and other impermeable layers confine the water to these layers. As a result, the water in them is considered confined, and often under considerable pressure. Wells drilled into these units can provide some relief to this pressure, and the water level in the well will rise above the top of the rock layer. This is referred to as an artesian well. In some cases, the water will actually rise to the land surface, producing a flowing artesian well. In places where the overlying impermeable rocks are broken by joints or faults, water may escape through them to rise to the surface as artesian springs.

Early wells drilled into the Dakota aquifer in the James River valley sometimes sent water 100 feet or more into the air. As more and more wells tapped this aquifer, the pressure slowly receded, but to this day there are numerous flowing Dakota wells across eastern South Dakota. Similar flowing wells can occur when drilling into other layered rock aquifers, including the Lakota, Fall River, Minnelusa, and Pahasapa formations. The cover image is of an uncontrolled flowing well in the Madison aquifer near the Belle Fourche Reservoir.

Numerous communities and individual farms and ranches continue to rely on these layered rock aquifers. The Pahasapa Formation/Madison aquifer provides water to Rapid City and many other communities around the Black Hills, as well as regional water systems in the area. Farther east, the Inyan Kara/Dakota aquifers have been the most common target in areas where other options simply do not exist. Because of its widespread occurrence, the Inyan Kara/Dakota aquifer has often been the water source of last resort (and sometimes only) resort for much of the state. In eastern South Dakota, only a few communities still rely on these units as a primary source.

Next time: The legacy of the ice ages.

24 HOURS WITHOUT WATER

By Jay Jorgenson, Manager, TM Rural Water District

According to United States Geological Survey the average person in the US uses 80 to 100 gallons of water each day. Now, I know what most people reading this will say, "There is no way that I use that much water!" If you utilize less than that amount each day, keep up the good work conserving this precious resource and please encourage others to do the same. Let's take a look at what a day without water would look like from my perspective.

Typical day with one exception, without prior notice, the test subject (me) will have to endure a full 24 hours without access to any water whatsoever but will be allowed a maximum of two canned carbonated beverages to keep dehydration at bay during the task. The test subject was asked to keep an informal record of how the day progressed. The following is a copy of this record.

Jay Jorgenson 🤪 feeling adventurous. September 15 at 5:03pm · 🌐

Came home to this interesting note on the door. Guess we will be living the next 24 hours without water...

42 8 Comments

5:00 AM

Arrived at home and found a letter taped to the front door labeled "Attention Test Subjects." I opened the envelope and read a message that informed me that in the interest of writing an article titled, "24 Hours Without Water," for the next 24 hours I would not have access to any water. Hmmmm, couldn't the individual writing this story give me a little more notice before throwing this curveball at me? Oh well, such is life. I can make do for a day without water. I walked into the house, and asked my wife if she had seen who had taped the letter to our front door and she described a person that looked a lot like me; maybe I have a doppelganger out there somewhere. I informed her about what the letter had said as she made her way to the sink to wash her hands in preparation of making supper before it sank in that we didn't have and wouldn't have access to any water for the next 24 hours. Let's just say this was not received well by my better half as I quickly realized that she had laid out the

fixings for spaghetti for our evening meal. I don't know about other people but one of the more difficult choices my wife and I deliberate about each night is what to have for supper and now spaghetti has been taken off the menu.

- *As much as one gallon of water is used each time you wash your hands.*
- *Anywhere from half a gallon to two gallons of water are needed to cook noodles depending on the amount you are cooking.*

6:00 AM

Decided to grill hamburgers instead and dressed them with pickles, some good stout onions and cheese, yum; problem solved. We were able to clean our hands with some Purell but needed something to wash down the burgers with. There was one Pepsi in the fridge and that was my wife's, so I had to resort to an old can of Coors Light with a born on date of 2013 in order to wash my meal down, let's just say it was past its prime.

- *Hand sanitizers are good but they are not considered a replacement for hand washing. If hands have visible dirt or other gylth on them, sanitizers won't do the full job of cleansing your hands.*
- *High levels of ca°eine in some sodas may lead to dehydration. Ca°eine is a natural diuretic and causes your body to excrete uid through urine.*
- *" ere is water in the beer to hydrate, but the process of the liver breaking down the alcohol causes dehydration.*

Jay Jorgenson 🤪 feeling hungry. September 15 at 6:15pm · 🌐

Kind of hard to make spaghetti without water. Guess it's cheeseburgers and onions tonight.

20 6 Comments

7:00 AM

Piled the dishes in the sink that we couldn't wash along with the ones from breakfast that we didn't have time to wash in the morning. The beer went through me pretty quick so had to use the little boy's room which afterward I remembered I couldn't flush. Flashback to the days when we had a limited amount of water in the cistern and had to abide by the rule of, if it's yellow

let it mellow, if it's brown flush it down. Here's hoping the bowels can hold up for the next 24 hours!

- *Washing dishes by hand takes between 8-27 gallons of water depending on how efficient you are at hand washing dishes. (I am not very efficient or proficient at washing dishes, just ask my wife.)*

 **Jay Jorgensen** 😞 feeling lazy. September 15 at 6:15pm · 🌐

No water means I won't be doing dishes tonight!



👍 8 2 Comments

- *An average toilet in the US uses 3 gallons per flush. Newer models use as little as 1.6 gallons per flush.*
- *Concentrated, dark, yellow urine is a first sign of dehydration. It typically occurs when blood pressure levels fall and the kidneys attempt to store water instead of expel it from the body.*

10:00 AM

Getting ready for bed; couldn't take a shower and I am starting to get ripe after a long day at work. In order to compensate for not being able to shower or a sponge bath I rolled on an extra layer of deodorant before adding to the yellow water already in the toilet. Another couple pumps of Purell to sanitize my hands and eat a little toothpaste to kill off the onion breath from supper and climbed into bed. Only 19 hours left!

- *Inefficient shower heads can use as much as 5 gallons per minute. Water saving shower heads reduce this to 2 gallons per minute. An average shower length of 10 minutes can use between 20 and 50 gallons of water. (When my kids were still at home I had thought about installing a timer to keep them at 10 minutes and then it would go to full cold water after that. My wife said no.)*
- *Brushing your teeth can use as much as one gallon of water if you don't turn off the water between wetting your toothbrush and rinsing.*

2:00 AM

Woke up with a headache I am guessing is caused by some slight dehydration as I usually have at least four glasses of water between

the time I get home and when I go to bed. Got some aspirin and worked up just enough spit in my mouth to swallow them down because I didn't want to wash it down with another one of those ancient beers. Went back to bed.

- *When you become dehydrated your brain tissue loses water causing your brain to shrink and pull away from the skull. This triggers the pain receptors surrounding the brain, giving you a headache. Dehydration also causes your blood volume to drop which in turn lowers the flow of blood and oxygen to the brain.*

6:00 AM

Time to get up after a restless night of sleep. My mouth tastes horrible; probably not such a great idea to add that stout onion to my burger the night before. I look at myself in the mirror and notice I need a shave, oh well, will have to wait. Laundry didn't get done last night and I was out of socks so had to put on a dirty wrinkled pair, thank goodness I had a clean pair of underwear

Put on another layer of deodorant and smear a little toothpaste in my mouth, I feel nasty.

 **Jay Jorgensen** 😞 feeling dirty. September 15 at 6:15am · 🌐

Can't wash clothes without water. Great, I'm out of clean socks!



👍 🤢 🙄 20 8 Comments

- *While shaving your face you can use as much as one gallon of water if you leave the water running at a slow flow. Leg shaving for the ladies can take significantly more if done in the shower with the water running.*
- *Washing machines can use as much as 40 gallons of water per load of laundry. Newer front load washers use as little as 25 gallons per load.*

7:00 AM

Posted a sign on bathroom door, "Enter at Own Risk." Sat down to have some breakfast and opted for toast. Could really use a good stiff cup of coffee right now as my mouth is as dry as the toast I am eating and I could use a little caffeine to wake up. My wife and I both sit a little further away from each other at the table to keep the smell of our opposing extra layers of deodorant from burning our eyes.

- *If left too long, the smell from an unflushed toilet can infiltrate the whole house and even soak into the clothing of the occupants.*

...continued on page 13

RURAL WATER & Crossword & Word Scramble Contest

Harvest

\$100 Grand Prize

SCRAMBLE ANSWER

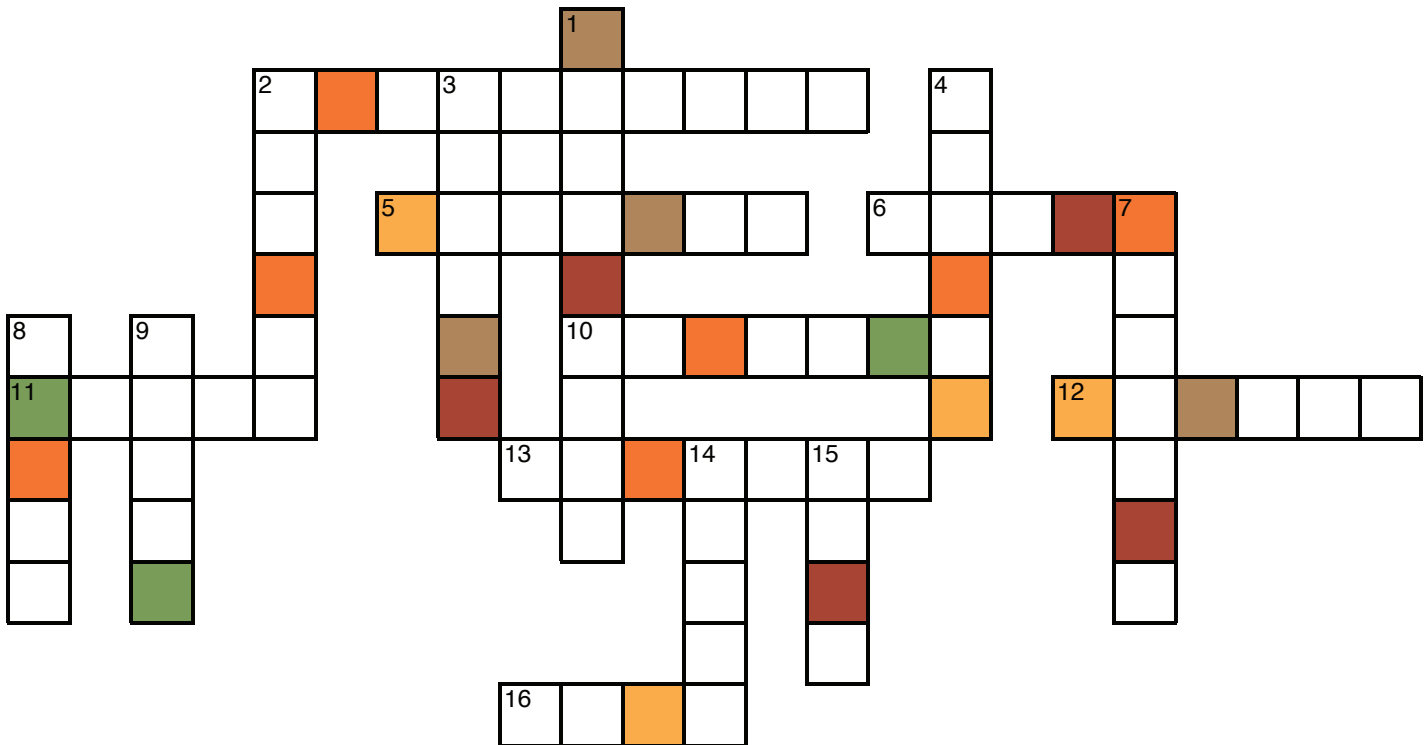


ACROSS

2. Orchard beverage (2 words)
5. Tractor-drawn excursion
6. Crunchy, brittle, or fresh
10. Harvester
11. Squirrel snack
12. Bobbing goals
13. Outdoor blaze
16. Under a quilt, say

DOWN

1. Hay dummy
2. Harvest season
3. Fall ground cover
4. Thanksgiving roast
7. Carved in October
8. Native corn
9. Squash, for example
14. Hazy skies
15. Leaf mover



RULES

Use the colored squares in the puzzle to solve the word scramble above. Call your Rural Water System (See Page 2 for contact information) or enter online at www.sdarws.com/crossword.html with the correct phrase by October 10th, 2016 to be entered into the \$100 drawing.

Online Entries - go to: www.sdarws.com/crossword.html

Only one entry allowed per address/household. You must be a member of a participating rural water system to be eligible for the prize. Your information will only be used to notify the winner, and will not be shared or sold.

Congratulations to Darrell Sheridan who had the correct phrase of "think outside - no box required" for July 2016.

Jay Jorgensen 😞 feeling disgusted.
September 16 at 7:02am · 🌐

This just happened.



👍 🤢 🤨 16

4 Comments

8:00 AM

Showed up for work and can't get rid of this headache, stopped at the store on the way here and picked up a soda pop. After drinking that I am even thirstier for a drink of water, coffee or ice tea. It's going to be a long day.

Jay Jorgensen 😞 feeling sick.
September 16 at 8:15am · 🌐

Breakfast of Champions.



👍 🤨 12

2 Comments

12:00 PM

Time for lunch but I am not hungry. The toast I ate for breakfast is just sitting like a lump in my stomach waiting for some water to help digest it. I think the soda I drank in the morning dehydrated me even more as the last time I went to the bathroom was early in the morning before coming to work. Can't wait until this day is over.

- *Water and other liquids help to break down food so that your body can absorb the nutrients. If you are not properly hydrated you will have a hard time digesting your food.*

4:30 AM

What a terrible day, couldn't concentrate because of the headache and was just lethargic all day. I have daydreamed all day about a cool refreshing drink of water, a nice cleansing shower and to brush my teeth.

- *Fatigue is yet another symptom of dehydration.*

5:00 AM

My wife pulls into the driveway the same time as I do and she looks as miserable as I feel. The test is over and we once again have access to all the water we want. We do rock, paper scissors to see who gets to take the first shower, of course I lost.

- *Rock-paper-scissors is a zero sum hand game usually played between two people, which is based on luck and is a game I normally lose.*

Jay Jorgensen 😞 feeling defeated.
September 16 at 8:02am · 🌐

Rock beats scissors. I guess I can let her shower first.



👍 ❤️ 8

2 Comments

Alright, maybe I exaggerated a little, and gave too much information (TMI), but all kidding aside, I would hate to go for a full week without access to a clean reliable water source. Counting all the times that we flush toilets, wash dishes, take showers or baths, stave off dehydration, and brush our teeth, etc., we all need to realize that we shouldn't take for granted how much of an important part water plays in our everyday lives.

A healthy human being can last several weeks without food but only 3 to 5 days without clean drinking water. We all assume that water will always be there when we need it. Please do your part in protecting and conserving this vital natural resource so it will always be there for present and future generations.

"Imagine a Day Without Water" campaign, is an outreach program from the Value of Water Coalition. This campaign was created to help remind people how a safe and reliable water supply is essential to daily life and to bring about discussion of the importance of maintaining and protecting water resources and infrastructure in our area.

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:

- Rural Water System of the Year
- Rural Water Manager of the Year
- Rural Water Office Person of the Year
- Rural Water Operations Specialist of the Year
- Municipal Manager of the Year
- Municipal Office Person of the Year
- Municipal Operations Specialist of the Year
- Carroll Anderson Memorial
- Friend of Rural Water
- Spirit of Rural Water
- 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

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



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WATER MATTERS



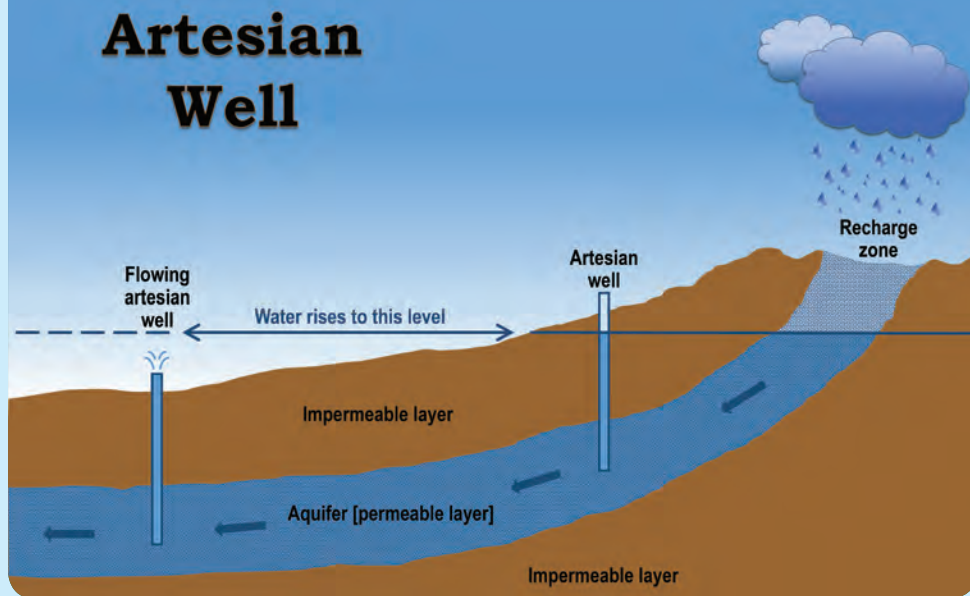
Artesian Wells

For over 100 years, a 1,300-foot deep flowing well has helped fill Capitol Lake in Pierre. In addition to a steady supply of warm 90° water, it also releases small amounts of natural gas. At one time used to heat the State Capitol Building, the gas until recently was lit and flames could be seen dancing atop the gushing waters. This is perhaps the most well known example of an artesian well in South Dakota.

An artesian well is one in which water will rise, under natural pressure, above the top of the water bearing layer (aquifer). In some cases, the pressure is enough to lift the water all the way to the land surface, creating a flowing artesian well.

Artesian wells are typically found where a permeable rock layer, such as sandstone, receives water along its outcrop at a level higher than the level of the surface of the ground at the well site. At the outcrop, the water moves down into the aquifer (water-bearing layer) but is prevented from leaving it, by impermeable rock layers (such as shale) above and below it. Pressure from the water's weight (hydrostatic pressure) forces water to the surface in a well drilled down into the aquifer.

In South Dakota, there are several wide-spread artesian aquifers, such as the Madison and Dakota aquifers. In most cases, water enters these aquifers in and around the Black Hills, but they can extend as far as the state's eastern border and still display artesian conditions. Wells drilled into these aquifers, at times thousands of feet deep, can have water rise to the surface



in substantial quantities and under considerable pressure. Before widespread rural electrification, this natural artesian pressure provided access to otherwise inaccessible water. The residents of a small Sanborn County community thought enough of their well to name a town after it (Artesian!).



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 East Dakota Water Development District
 132B Airport Drive • Brookings, SD, 57006
 (605) 688-6741 • <http://eastdakota.org>