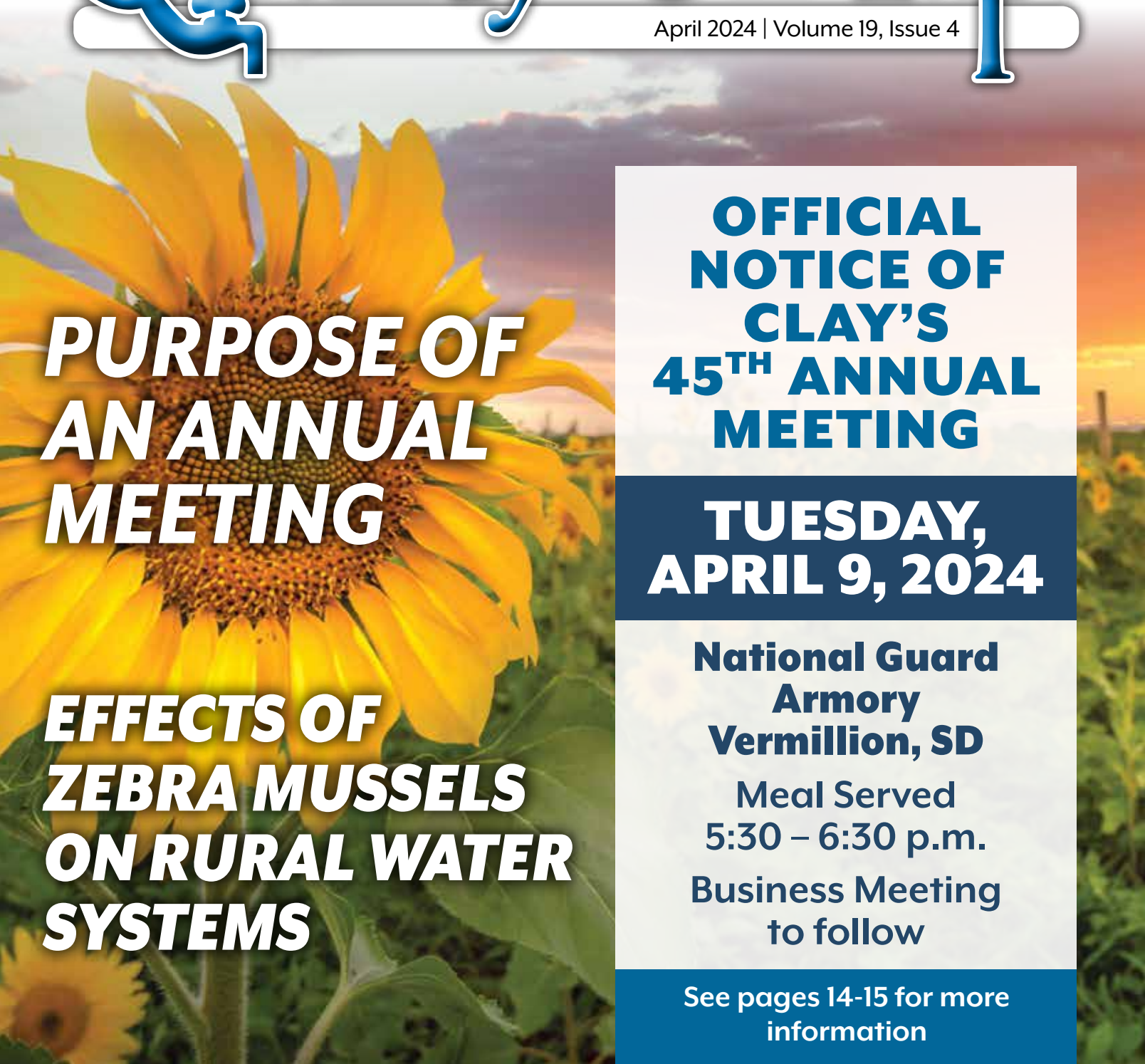
CRWS

Clay Rural Water System, Inc.

# Quality On Tap!

April 2024 | Volume 19, Issue 4



## PURPOSE OF AN ANNUAL MEETING

## EFFECTS OF ZEBRA MUSSELS ON RURAL WATER SYSTEMS

## OFFICIAL NOTICE OF CLAY'S 45TH ANNUAL MEETING

**TUESDAY, APRIL 9, 2024**

**National Guard Armory**
**Vermillion, SD**

Meal Served
5:30 – 6:30 p.m.

Business Meeting to follow

See pages 14-15 for more information

# FROM THE MANAGER

**Steve Muilenburg**
**Manager, Clay Rural Water System, Inc.**

Clay Rural Water System has gotten off to a fast start here in the first quarter of 2024. Things are moving quickly, and we are getting ready for what looks to be, another very busy summer. We plan to pick up where we left off on Phase I, which consists mainly of new pipelines and storage reservoirs for the water treatment plant and distribution system. The mainline portions of Phase I have been completed and are in service. We now will be going to each individual service connection and hooking them up to the new line and disconnecting from the old. We also have one Pressure Reducing Vault (PRV) to install as part of the project. Two GSR's (Ground Storage Reservoirs) and a new booster station will be the final components of the project. Bids were received in mid-February for the construction of the new booster station and one of the GSR's. After careful consideration of the bids, the CRWS board of directors elected not to award the bid to any of the contractors. It was decided that changes would be made to the scope of work to be completed along with extending the timeline for substantial completion. By making these changes, and sending these out for bids again, we are confident more competitive bids will be submitted. We are hopeful that this will allow us to stay on budget as we continue towards the completion of this project.

One other order of business will be to finalize a funding package for the new water treatment facility, which is Phase II. This will be located next to the existing Wakonda plant. The staff and the engineers have been working diligently with the Department of Agriculture and Natural Resources to secure some additional grant funds to help offset the costs associated with this new water treatment facility. The preliminary design process of the new water treatment plant has started, and plan designs are anticipated to be completed this June. We hope to get this out for bids by late summer of this year with bids to be awarded later on in the fall.

We also have one project to finish that was started last fall. This is to relocate water lines within the right of way and on private property near the I-29 and 300th street overpass for the Department of Transportation. Portions of this work were completed last fall, and we plan to finish the remainder of the work prior to road construction starting this spring. There will also be various service moves and a good number of additional users to be installed during the construction season this year.

CRWS has a lot going on this year and we will continue to update our customers as much as possible as we move forward with these projects. We do, however, encourage you to get the latest updates at our 45th annual meeting that will be held on April 9th. More information on this event can be found on the following pages in this issue of *Quality on Tap*. We sure hope you can attend and join us for a great meal and the latest updates happening with Clay Rural Water System.

Sincerely,

Steven Muilenburg, Manager

CRWS
Clay Rural Water System, Inc.

## BOARD OF DIRECTORS

**Randy Huot**, President
**Randy Ronning**, Vice-President
**Patricia Manning**, Secretary/Treasurer
**Mark Bottolfson**, State Director
**Josh Wendling**, Director
**Tim Irwin**, Director
**Ken Kessler**, Director
**Cody Merrigan**, Director
**Jerry Buum**, Director

## STAFF

**Steve Muilenberg**, Manager
**Donna Henriksen**, Office Manager
**Leanne Brown**, Accounting
**Pam Lunning**, Controller
**Rob Ganschow**, Chief Treatment Plant Operator
**Andy Ganschow**, Chief Distribution Operator
**Phil Iverson**, System Operator
**Lane Severson**, System Operator

## CONTACT INFORMATION

30376 SD Hwy 19
Wakonda, SD 57073
Phone: (605) 267-2088
Fax: (605) 267-2085
email: office@clayruralwater.com

## MISSION STATEMENT

***The mission of the Clay Rural Water System is to provide high quality water service to the consumers of the corporation at the lowest possible cost consistent with sound business practice.***

## Quarterly Calendar

**MARCH 26**

Monthly Board Meeting, 7:00 p.m., System Office

**APRIL 9**

45th Annual Meeting, Armory in Vermillion, 5:30 p.m.

**APRIL 22**

Monthly Board Meeting, 7:00 p.m., System Office

**MAY 27**

Office closed for Memorial Day Holiday

**MAY 28**

Monthly Board Meeting, 7:00 p.m., System Office

**JUNE 25**

Monthly Board Meeting, 7:00 p.m., System Office

## LEAK REWARD

Members who report a water leak on one of the system pipelines will receive a $50 leak reward. With over 1,350 miles of pipeline in the distribution system, members can play a key role in assisting system personnel in locating water leaks.

CRWS
Clay Rural Water System, Inc.

## 45TH ANNUAL MEETING
Tuesday, April 9, 2024

All registered members will receive a $10 water credit, information on the 2023 financials, and updates on the New Chapter Project.

**DOOR PRIZES WILL BE AWARDED!**

**National Guard Armory**
**603 Princeton Street**
**Vermillion, SD**

5:30 PM – Heck's Dakota Style BBQ Meal Served

6:30 PM – Business Meeting

## TRIVIA CHALLENGE

Three random names will be chosen from all callers that answer these trivia questions correctly. Each winner will receive a $10 water credit. The three winners in the last issue were: Ranah Sample, Cynthia Anderson, and Donna Foster.

1. **"What bird is often associated with Spring in North America?"**
   A. Robin B. Oriole C. Blue Jay
2. **"In what decade did 'Spring Break" start?**
   A. 1950's B. 1930's C. 1970's
3. **"What is the main spring allergy trigger?"**
   A. Mold B. Dust mites C. Pollen

## Do We Have Your Number?

Changed phone numbers lately? Dropped your landline? If so, please make sure and let the water system office know. We periodically need to call members for water outages, scheduled maintenance, etc., and quite often we find we do not have a current phone number.

You can reach us at **605-267-2088** or via email at **office@clayruralwater.com**.

## PAYMENT OPTIONS

**We offer a variety of ways to pay your water bill:**

1) Cash, check, or money order
2) Automatic bank deduction – no charge to customer
3) Online – www.clayruralwater.com – click on Customer Portal (fees do apply)
4) Credit/Debit Cards – fees apply

**Call our office for more details on any of these options at 605-267-2088.**

# DIRECTOR DAVE REIFF RETIRES FROM BOARD OF DIRECTORS

At their December 18, 2023 Board Meeting, the Clay Rural Water Board of Directors said farewell and thank you to long-time Board member, Dave Reiff. Dave has been a representative of District III for the last nine years; being elected for the first time to the Board in March of 2015 and served three, 3-year terms. Dave, and his wife Lynn, reside in rural Jefferson and are enjoying retirement. Thank you, Dave!

***President Randy Huot presenting outgoing Board member, Dave Reiff, with a recognition plaque.***

# DISTRICT ELECTIONS RECENTLY HELD

***Josh Wendling Family***

On Friday, March 1st, Clay Rural Water System held their District Elections via teleconference. Per System Policy, if only three candidates are running for the three open positions, the winners can be declared by the District Election Board via teleconference.

In District I, Patricia Manning of Beresford, was re-elected for her fourth and final term. In District II, Cody Merrigan of Vermillion, was re-elected for his second term. In District III, Josh Wendling of Jefferson, was elected for his first term.

Josh currently works for C&D Technologies out of Horsham Pennsylvania as the National Account Manager for their stationary Telecom division. He has been married to Tiffany for 25 years come this August; she is an educator at Dakota Valley Schools where she teaches and coaches High School Cross Country. They have a 10-year old daughter, Briel, who attends 5th grade at Dakota Valley Middle School. When asked why he wanted to serve on the CRWS Board, he replied, "I feel that serving on the board allows me to give back to my community in a different capacity. As a board member I want to be part of a group of decision makers and help influence the current and future shape of the organization." Josh and his family live in the Wynstone Development near McCook Lake. Welcome Josh!

# ZEBRA MUSSELS INVADE SOUTH DAKOTA WATERWAYS

*Tanner Davis, Aquatic Invasive Species Coordinator*
*South Dakota Game, Fish and Parks*

Zebra mussels are a small invasive mollusk (clam) that originated in Eastern Europe and first arrived in the U.S. in the mid-1980s. Zebra mussels were first found in the Lake St. Clair near Detroit, MI and since have spread throughout the Mississippi River drainage (Missouri, Arkansas, Tennessee, and Ohio Rivers). Populations also exist in the Western U.S.. Adults range in size, anywhere between ½ inch to 2 inches and can rapidly spread under the right conditions. Larval zebra mussels, called veligers, can spread by water transfer and veligers are so small they are invisible to the naked eye which adds to their invasiveness and ease of incidental transfer. Adults will attach to hardy surfaces and vegetation and for this reason, South Dakota Game, Fish & Parks enforces recreationalists to stay Clean. Drain. Dry. between waterbodies to help slow the spread. Always make sure to pull all plugs on your watercraft and don't transport any water, vegetation, mud or other organic matter from one body of water to the next. Below are the list of impacted waters in South Dakota.

## History of initial positive detections of Zebra Mussel

**2014** **Lewis and Clark Lake**

**2015** **Missouri River below Gavins Point Dam**

**2015** **McCook Lake**

**2018** **Lake Yankton**

**2019** **Lakes Sharpe and Francis Case**

**2020** **Lake Cochrane, Kampeska, Pickerel and Dahme Quarry**

**2021** **Lake Mitchell**

**2022** **Enemy Swim, Blue Dog, Clear Lake, South Rush and Pactola Reservoir**

**2023** **James River/Sand Lake Refuge, Roy Lake, Big Sioux River, Bigstone Lake, Lake Oahe**

Please visit **sdleastwanted.sd.gov** for more information regarding AIS regulations, news/updates, maps, frequently asked questions, media gallery of AIS, and to report any potential AIS you may have found on our citizen monitoring page.

*Photo By: Sam Stukel*

# THE EFFECTS OF ZEBRA MUSSELS ON RURAL WATER SYSTEMS

Zebra mussels (Dreissena polymorpha) 1st discovered in South Dakota in Lewis & Clark Reservoir in 2015 are invasive freshwater mollusks that have spread rapidly across various water bodies. Zebra mussels have been found in many bodies of water in South Dakota, such as the Missouri River, Big Sioux River, Blue Dog Lake, Lake Mitchell, Sand Lake National Refuge on the Jim River, Pactola Lake, and many more. Zebra mussels are small, fingernail-sized mollusks with distinctive zigzag stripes on their shells. They are highly adaptable and can thrive in a wide range of environmental conditions, making them formidable invaders. Zebra mussels are filter feeders, extracting phytoplankton and other particles from the water column, which can lead to competition with native species for resources. The spread of zebra mussels is facilitated by their ability to attach to various structures, including boats, docks, and water intake structures. Once established in a water body, they reproduce prolifically, with each female capable of producing hundreds of thousands of eggs per year. Their larvae, called veligers, can be transported over long distances by water currents.

Zebra mussels have had profound ecological impacts on invaded ecosystems. Their dense colonies can outcompete native species for food and space, leading to declines in native mussel populations. The increased water clarity resulting from their filter feeding can promote the growth of harmful algae, negatively affecting fish populations and disrupting food webs.

The economic consequences of zebra mussel invasions are significant. They can clog water intake pipes, leading to increased maintenance costs for industries and municipalities. Furthermore, the decline in native fisheries and alteration of ecosystems can have long-lasting economic repercussions.

Several strategies have been employed to control and manage zebra mussel populations. Physical methods, such as the use of barriers and underwater mats, aim to prevent the attachment of zebra mussels to structures. Chemical methods, including the use of molluscicides, have been employed, but their environmental impact raises concerns.

These infestations can cause significant problems in water systems, including clogging water intake pipes. Chemical treatment is one of the methods used to control zebra mussels in water intakes. Several chemicals can be effective in treating water to prevent or mitigate zebra mussel infestations. It's important to note that chemical treatment should be done carefully, considering potential environmental impacts and the safety of other aquatic life.

## Here are some chemicals commonly used for the chemical treatment of water intakes for zebra mussels:

**CHLORINE:** Chlorine is a powerful disinfectant and is often used for controlling zebra mussels. It can be applied as a gas or in various chemical formulations. However, its use requires careful monitoring to prevent harm to non-target organisms and ecosystems.

**QUATERNARY AMMONIUM COMPOUNDS (QACS):** QACs, such as polyquat or benzalkonium chloride, are chemicals that disrupt the membranes of zebra mussels, leading to their mortality. These compounds are often used as part of a rotation strategy to prevent resistance.

**COPPER-BASED COMPOUNDS:** Copper is toxic to zebra mussels and is commonly used in antifouling coatings on boat hulls and water pump intake screens. Copper sulfate is a chemical option for treating water intakes, but its use needs to be carefully managed due to potential environmental concerns.

**POTASSIUM-BASED COMPOUNDS:** Potassium-based chemicals, such as potassium chloride, can be effective against zebra mussels.

**PEROXIDE-BASED COMPOUNDS:** Hydrogen peroxide is an oxidizing agent that can be used to control zebra mussels. It is generally considered less harmful to the environment than some other chemicals, but its effectiveness may vary.

It's crucial to consult with experts, environmental agencies, and follow state regulations before implementing any chemical treatment. Additionally, regular monitoring is essential to assess the effectiveness of the treatment and minimize potential negative impacts on non-target species and the overall ecosystem. Integrated pest management approaches, combining chemical treatment with physical methods and other control strategies, may provide more sustainable solutions for zebra mussel control in water intakes.

According to Matt Hansen of Hawkins Chemical. "Earthtec QZ is what the majority of water plants/dams are using on the Missouri River. It is the only approved molluscicide in the state of South Dakota and on the Missouri River. It is also NSF 60 certified, and EPA registered. Plants are feeding 1 PPM dose using peristaltic/ diaphragm pumps on manual mode or connected to SCADA. Plants have been feeding out of drums/totes and bulk tanks. Tubing is usually run by a diver from the intake building, down to the intake through PVC pipe to keep weighted to the ground in front of the intake screen. Based on management plan, some plants feed EarthTec QZ year around, turning down the dose in the wintertime to .5 PPM for a maintenance dose. When the water temp drops below 40 degrees Fahrenheit, it discourages colonization."

*Zebra mussels cling to an intake valve from a water system in South Dakota.*

# THE PURPOSE OF AN ANNUAL MEETING

Annual meetings are pivotal for Rural Water Systems. These meetings provide the consumers with a time to come together and listen to the system's year in review, hear about future plans and projects, and help make important decisions. These meetings offer transparency, accountability, and communication between the Board of Directors and the customers. The purpose of the meeting is to show financial transparency, strategic decisions, regulatory compliance, and the election of board members.

At the meeting, financial statements for the previous year are presented. This shows the consumers financial responsibility and shows the financial health of the system. Many of the rural water systems have their Auditor, Treasurer or Accountant give a report at the meeting on the financial statements and go over the overall financial status of the water system.

Strategic discussions are also reported on, which can include plans for upcoming projects and potential challenges that may arise. Many times, the system engineer will give updates on the status of the distribution system, current or ongoing construction projects. This keeps the consumers well informed and can let them ask any questions about the direction or goals of the system. This open proactive approach allows for timely investment in the water system, reducing the risk of unexpected breakdowns and service disruptions.

Members of the rural water systems will have the opportunity to vote on the election of board members during the annual meeting. This democratic process allows them to have a say in the governance of the company and ensures leadership aligns with their interests.

Regulation compliance will also be presented at these meetings. These regulations are crucial for the functioning of the system. These will be reviewed, discussed and the consumers will be shown the requirements needed to keep health and safety standards.

Annual meetings are the cornerstone of effective governance and sustainable operations for the rural water system. These gatherings, whether it be an open house, an afternoon or evening meeting in a district of a water system, or a drive through as some had during the pandemic, are mandated by the by-laws of the system. Every water system's annual meeting may look different, but they facilitate community engagement, communication, planning, compliance, and democratic elections of the leaders. By actively participating in annual meetings, you can contribute to the success and longevity of your water systems, ensuring access to clean and safe water for generations to come.

# RAPID VALLEY SANITARY DISTRICT/WATER SERVICE

Neslted in the Black Hills of South Dakota, Rapid Valley Sanitary District–Water Service stands as a testament to community vision and dedication. Established in 1962 by local citizens, this organization was born out of the necessity for a safe drinking water supply in an era where many relied on shallow wells.

## Early Challenges and Innovations:

The journey began with a humble start, marked by challenges. Initial attempts at well construction faced setbacks due to poor production and high radium content. However, undeterred, the team persevered. In 1990, an underground gallery was installed along Rapid Creek to harness surface water, signaling a commitment to innovation.

## The Merger of 1994:

A pivotal moment arrived in 1994 when the Sanitary District and Water Service merged, forming a quasi-governmental entity – Rapid Valley Sanitary District–Water Service. This strategic union aimed at optimizing customer service and operational efficiency.

## Infrastructure Growth and Technological Advancements:

Over the years, Rapid Valley has evolved with the times. Infrastructure upgrades, new water and sewer main projects, and the addition of microfiltration units showcased a commitment to staying ahead in the ever-changing water industry.

In 2010, the addition of a third microfiltration unit, along with a Trojan ultra-violet system, catapulted the treatment capacity from two to three million gallons per day. This not only exceeded Environmental Protection Agency standards but also positioned Rapid Valley to serve neighboring districts.

## Looking to the Future:

Rapid Valley remains a beacon of forward thinking. In 2009, a 1.85 million-gallon tank was added, and in 2013, a .256 million-gallon Aqua store tank bolstered storage capacity to 3.61 million gallons. Annual project plans ensure continuous improvements, with a booster station added in 2009 for future expansion.

Looking toward sustainability, Rapid Valley is pilot testing ceramic membranes for water treatment. Early results suggest increased production capacity, higher recovery rates, and lower operating costs, paving the way for the long-term success of water treatment initiatives.

## Community Collaboration:

Serving approximately 3,900 connections, Rapid Valley is not just a water provider but a vital community partner. Collaborating with the expanding Rapid City, the district emphasizes high-quality service and anticipates the needs of its residents.

For over 60 years, Rapid Valley Sanitary District–Water Service has been a guardian of water quality, adapting to challenges and embracing innovations. As they continue to pilot test new technologies and plan for the future, Rapid Valley remains at the forefront of the water industry, ensuring safe and sustainable water for generations to come.

RAPID VALLEY
SANITARY DISTRICT
WATER-SERVICE



## DIRECTORS:

**Chairman** – Andy Fitzgerald

**Vice Chairman** – Bob Phillips

**Secretary** – Connie Olson

**Treasurer** – Diana Nelson

**Director** – Shirley Haines

**Director** – Jennifer Battles

**Director** – Carrie Wheeler

**Director** – Eric Krebs

## STAFF:

**General Manager** – Rusty Schmidt

**Field Operations Supervisor** – David Flint

**Office Team Lead** – Sara Bender

**Administrative Clerk** – Kathy Graff

**Administrative Clerk** – Samantha Faatz

**Service Technician** – Mike Chrobak

**Service Technician** – Nate Broom

**Service Technician** – Tyler Volk

**Service Technician** – Garret Whipple

## STATISTICS:

**Hookups:** 3,771

**Miles of Pipeline:** 70

**Water Source:** Rapid Creek,
Interconnection with Rapid City

**Counties Served:** Pennington

# RURAL WATER CROSSWORD & WORD SCRAMBLE CONTEST

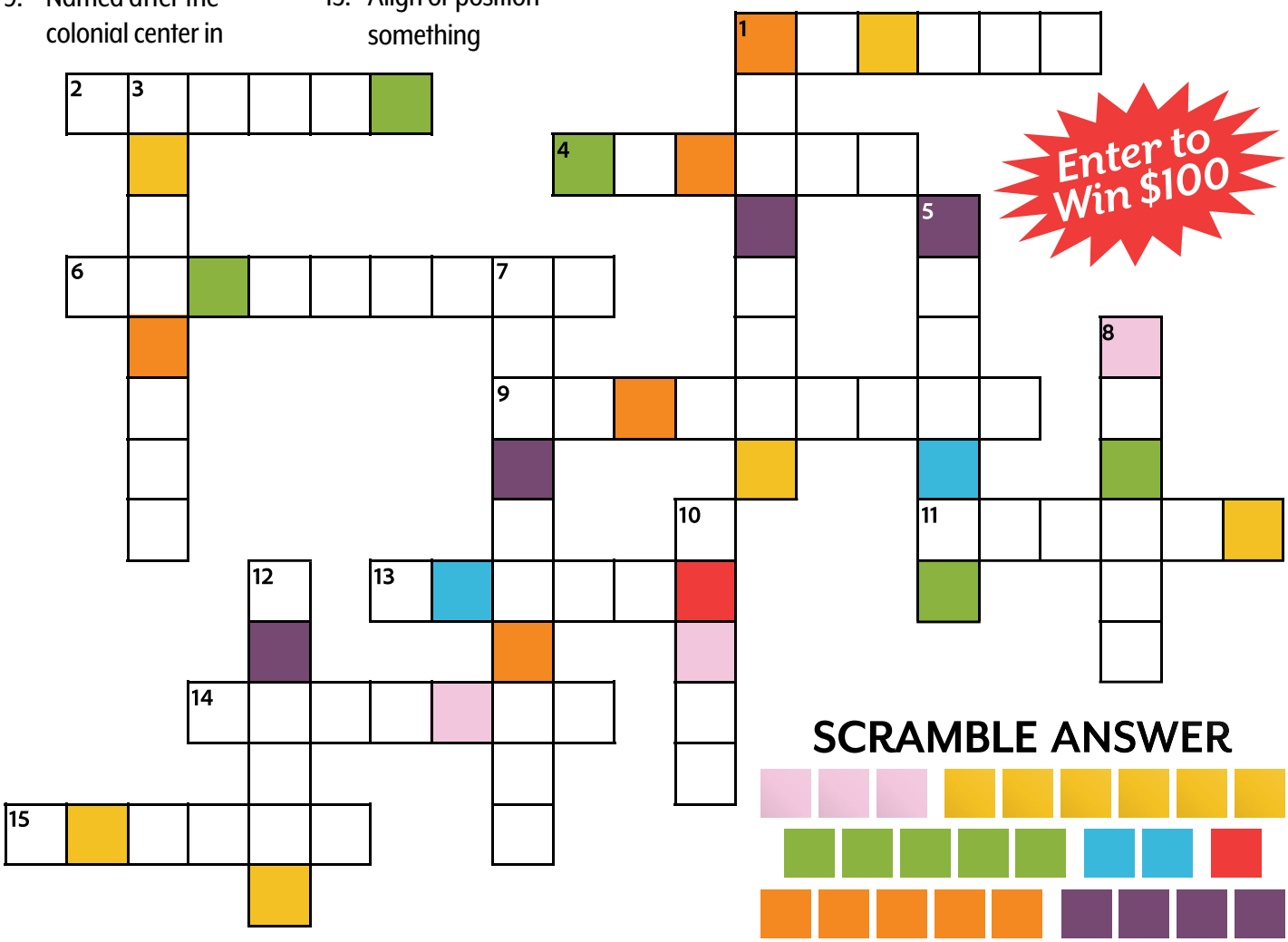
## SMALL TOWNS OF SOUTH DAKOTA

### Across

1. Pinnacle or peak
2. Thieves
4. Beverly Cleary heroine
6. British director of classic thrillers
9. Named after the colonial center in Virgina
11. Named after a much larger city in Texas
13. Named after Austrian capitol
14. Stackable canned chip
15. Align or position something

### Down

1. Highlander country
3. Dependence on or trust in someone or something
5. Similar name to Black Panther kingdom
7. German head of government
8. Chief manservant
10. George Michael Song
12. Ring around the sun




### SCRAMBLE ANSWER



**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 April 15, 2024 to be entered into the $100 drawing.

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 Don & Lura Kirkpatric with West River/Lyman-Jones who had the correct phrase of "Everything Comes Back to You" for January 2024.**

# AQUATIC INSECTS

**Are you ready to explore the amazing aquatic insects that call South Dakota home? Grab your virtual magnifying glass, and let's dive into the fascinating world beneath the surface of the state's ponds, rivers, and streams!**


## 1. WATER STRIDERS - THE POND SKATERS:

Imagine gliding effortlessly on the water's surface like a tiny superhero. That's exactly what water striders do! These insects have long legs that help them skate on ponds and streams. They use the surface tension of the water to stay on top and even catch prey like mosquitoes with lightning-fast reflexes.


## 2. DRAGONFLIES - THE AERIAL ACROBATS:

Meet the daredevils of the insect world - dragonflies! These colorful acrobats zip and zoom through the air, performing incredible mid-air stunts. But did you know they spend most of their life underwater as nymphs before transforming into the dazzling flyers we see above the water?


## 3. DAMSELFLIES - GRACEFUL FLYERS OF THE WATERWAYS:

Damselflies are like the ballerinas of the insect world. With their delicate bodies and graceful flight, these colorful insects add a touch of beauty to South Dakota's ponds and marshes. They spend their youth as nimble nymphs in the water, and when ready, transform into stunning aerial acrobats.


## 4. MAYFLIES - THE SHORT-LIVED BEAUTIES:

Mayflies might not have a long life, but they sure know how to make it count! These delicate insects are famous for their short adult stage, sometimes lasting only a day or two. They dance in the air, showcasing their stunning colors before leaving their eggs in the water, starting the cycle all over again.


## 5. CADDISFLIES - NATURE'S ENGINEERS:

Caddisfly larvae are like little architects of the water. They collect tiny pebbles, bits of plants, and even pieces of wood to create protective cases around themselves. These cases act like underwater homes, keeping them safe until they transform into graceful adults.


## 6. BACKSWIMMERS - THE UPSIDE-DOWN SWIMMERS:

Backswimmers are like the gymnasts of the insect world. They swim upside-down, using their long legs to paddle through the water. These clever insects are skilled hunters, preying on other smaller aquatic creatures. Watch out for their shiny bodies as they zip around in search of their next meal!

## WHY ARE THEY IMPORTANT?

Aquatic macroinvertebrates are like water detectives. Scientists use them to investigate the health of lakes and streams. Different types of these tiny creatures can tolerate various conditions, such as water temperature and pollution levels. By studying which macroinvertebrates are present, scientists can determine if the water is clean and healthy or if there might be some issues that need attention.

These little creatures are also the favorite snacks of fish! Fish rely on aquatic macroinvertebrates as an important part of their diet. So, not only do these tiny heroes keep our waters in check, but they also provide a tasty treat for our finned friends.

Next time you're near a stream or pond in South Dakota, take a moment to appreciate the incredible world of aquatic macroinvertebrates. They may be small, but they play a big role in keeping our waterways healthy and vibrant. Happy exploring, young scientists!


# Annual Drinking Water Quality Report
# Clay Rural Water System, Inc.
*January 1, 2023 – December 31, 2023*

## Secretary's Award

**The Clay Rural Water System has supplied 20 consecutive years of safe drinking water to the public it serves and has been awarded the Secretary's Award for Drinking Water Excellence by the South Dakota Department of Agriculture and Natural Resources. This report is a snapshot of the quality of the water that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards. We are committed to providing you with information because informed customers are our best allies.**

Clay Rural Water System, Inc. serves more than 4,550 customers an average of 575,000 gallons of water per day out of the Wakonda plant and we serve more than 1,377 customers an average of 176,000 gallons of water per day out of the South Union plant. Our water is groundwater that we produce from local wells. The state has performed an assessment of our source water and they have determined that the relative susceptibility rating for the Clay Rural Water System public water supply system is medium while the Clay RWS/South Union water supply system is low.

**For more information about your water and information on opportunities to participate in public meetings, call 605-267-2088 and ask for Steve Muilenburg.**

## Additional Information

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

## Contaminants that may be present in source water include:

- ***Microbial contaminants***, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants***, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides***, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants***, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- ***Radioactive contaminants***, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants can be obtained by calling the Environment Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Clay Rural Water System public water supply system is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://*www.epa.gov/safewater/lead*.

## Detected Contaminants

The tables on page 15 list all the drinking water contaminants that we detected during the 2023 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 – December 31, 2023. The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

# 2023 Clay Rural Water Quality Test Results

## Wakonda Source (EPA ID 0626)

| Substance | 90% Level | Test Sites > Action Level | Date Tested | Highest Level Allowed (AL) | Ideal Goal | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Copper | 0.0 | 0 | 09/15/21 | AL=1.3 | 0 | ppm | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. |
| Lead | 3 | 0 | 09/15/21 | AL=15 | 0 | ppb | Corrosion of household plumbing systems; erosion of natural deposits. |

| Substance | Highest Level Detected | Range | Date Tested | Highest Level Allowed (MCL) | Ideal Goal (MCLG) | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Barium | 0.006 | | 11/15/21 | 2 | 2 | ppm | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits. |
| Chromium | 0.9 | | 11/15/21 | 100 | 100 | ppb | Discharge from steel and pulp mills; erosion of natural deposits. |
| Fluoride | 0.69 | 0.38 - 0.69 | 01/10/23 | 4 | <4 | ppm | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories. |

## South Union Source (EPA ID 2185)

| Substance | 90% Level | Test Sites > Action Level | Date Tested | Highest Level Allowed (AL) | Ideal Goal | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Copper | 0.5 | 0 | 08/10/22 | AL=1.3 | 0 | ppm | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. |
| Lead | 3 | 1 | 08/10/22 | AL=15 | 0 | ppb | Corrosion of household plumbing systems; erosion of natural deposits. |

| Substance | Highest Level Detected | Range | Date Tested | Highest Level Allowed (MCL) | Ideal Goal (MCLG) | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Arsenic | 1 | | 06/06/22 | 10 | 0 | ppb | Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes. |
| Barium | 0.004 | | 06/06/22 | 2 | 2 | ppm | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits. |
| Chromium | 0.55 | | 06/06/22 | 100 | 100 | ppb | Discharge from steel and pulp mills; erosion of natural deposits. |
| Fluoride | 0.79 | 0.54 - 0.79 | 02/08/23 | 4 | <4 | ppm | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories. |
| Haloacetic Acids (RAA) | 1.67 | | 08/29/23 | 60 | 0 | ppb | By-product of drinking water chlorination. Results are reported as a running annual average of test results. |
| Total trihalomethanes (RAA) | 13.0 | | 08/29/23 | 80 | 0 | ppb | By-product of drinking water chlorination. Results are reported as a running annual average of test results. |

## Lewis & Clark Regional Water System (EPA ID 2288)

| Substance | 90% Level | Test Sites > Action Level | Date Tested | Highest Level Allowed (AL) | Ideal Goal | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Copper | 0.0 | 0 | | AL=1.3 | 0 | ppm | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives. |
| Lead | 0 | 0 | | AL=15 | 0 | ppb | Corrosion of household plumbing systems; erosion of natural deposits. |

| Substance | Highest Level Detected | Range | Date Tested | Highest Level Allowed (MCL) | Ideal Goal (MCLG) | Units | Major Source of Contaminant |
|---|---|---|---|---|---|---|---|
| Arsenic | 5 | | 10/31/22 | 10 | 0 | ppb | Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes. |
| Barium | 0.015 | | 10/31/22 | 2 | 2 | ppm | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits. |
| Fluoride | 1.81 | 0.58 - 1.81 | 12/26/23 | 4 | <4 | ppm | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories. |
| Nitrate (as Nitrogen) | 0.3 | | 10/23/23 | 10 | 10 | ppm | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits. |

### TERMS & ABBREVIATIONS USED IN TABLES

**Action Level (AL)** – the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow. For Lead and Copper, 90% of the samples must be below the AL.

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLGs as feasible using the best available treatment technology.

**Maximum Contaminant Level Goal (MCLG)** – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Running Annual Average (RAA)** – Compliance is calculated using the running annual average of samples from designated monitoring locations.

### UNITS

**ppm** – parts per million, or milligrams per liter (mg/l)
**ppb** – parts per billion, or micrograms per liter (ug/l)

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# WATER MATTERS

## HOW WATERFALLS WORK

According to the dictionary, a waterfall is "a cascade of water falling from a height, formed when a river or stream flows over a precipice or steep incline." Such a dry, academic description might well provide a workable technical definition, but it does little to convey the beauty of such features that have drawn the attention of people for ages. Waterfalls, both large and small, are the focal points of many national, state and local parks and scenic areas, ranging from the massive Niagara Falls along the St. Lawrence River to the modest Minnewissa Falls at the Pipestone National Monument 50 miles northeast of Sioux Falls.

In many cases, waterfalls form when fast-moving water passes over hard, resistant rock that transitions into softer, more easily eroded material. The harder capping rock is preserved (or eroded much more slowly), while the softer rock is quickly worn away. As a result, a step (geologists call it a nick point) develops in the river or stream, over which the water "falls." Over time, the harder rock will also be eroded, and the waterfall moves slowly upstream. Chunks of the more resistant cap rock are often visible at the base of the waterfall. Roughlock Falls and Spearfish Falls along Little Spearfish Creek in the Black Hills are two good South Dakota examples of this type.

In other cases, the ledge over which the water "falls" is the result of a break in otherwise fairly uniform rock. Over millions of years, forces within the earth have created faults and fractures in the Sioux Quartzite, which is found across parts of southeastern South Dakota. These breaks have left behind a fairly irregular surface on the quartzite. When modern day rivers and streams flow across this surface, waterfalls and cascades develop where there are sharp transitions. The Falls of the Big Sioux River are an example, and led to the development of our states largest community. Rock Rapids, Iowa, got its name in a similar manner.

Next time you come across a waterfall, see if you can figure out just why it is there, but only after admiring what is taking place.

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