

MIDWEST ASSISTANCE PROGRAM

SOURCE

Your source for community solutions

ONE STEP CLOSER

MAP Helps Mead County
Residents with Their
Dream of Clean Water

STAY UPDATED

Understanding the Revised
Total Coliform Rule

NITRATE LEVELS **A Growing Concern** **for the Midwest**



www.map-inc.org
660.562.2575
map@map-inc.org

MAP Board of Directors

Linda Salmonson, Chair, Estelline, SD
Richard Hunsaker, Vice Chair, Carroll, IA
Gary Smith, Topeka, KS
Galen Wiser, Wayne, NE
Matt Donnelly, Gallatin Gateway, MT
John Woodwick, Mankato, MN
Dorothy Overfield, Cody, WY
Richard Cavender, Rolla, MO

MAP Administration

Michael Brownfield, Executive Director
Christina Fierros, Program Director
Kerri Jewett, Executive Assistant

MAP Field Staff

Christopher Jewett, Field Manager
David Dirks, MO
Joe Dvorak, SD,
Phillip Fishburn, KS
Jason Gorr, MN, Tribal
Kristina Hartley, MO
Gregg Hinrichsen, NE
Jan Kittay, SD
Glen Lueck, ND
Callie McIntosh, MT
Joshua Myers, WY
Marty Ostransky, NE
Harold Reynolds, NE
Pete Smith, MN, Tribal
Scott Thompson, IA
Jordan Vandal, MN
Christia Wienecke, MO
Erinn Zindt, MT

Letter from the Executive Director

Welcome to Maryville, MO, home of Northwest Missouri State University and the 2013 Championship Bearcat football team!

Last July, MAP moved its central office to Maryville. After setting up, organizing, and getting acquainted with the new headquarters, our team was finally settled in by October.

Since that time, we have increased staffing throughout our nine-state region to 21 and we continue to grow. The work our team does in water, wastewater, and solid waste for small rural communities and tribal areas in the Midwest is ongoing, and needed now more than ever.

Much of our water and sewer infrastructure in Small Town Rural America is old – some very old. Our staff is working diligently to help identify the issues and find solutions by working with USDA RD, EPA, the state agencies, and local governments.



Maryville is an excellent central location for the MAP headquarters, due to its quick accessibility from our major project sites. I suspect we will be here a long time, serving the small communities and villages with infrastructure, water systems, funding assistance, training programs, and other contributions that help them thrive.

Mike Brownfield
Executive Director
Midwest Assistance Program

Working Together in Rural America

I've been facilitating community meetings recently and the first questions we ask is, "Why do you CHOOSE to live here?" Overwhelmingly the answer is about the people. We value the fact we can rely on and look out for each other.

The next question is, "What do you want to PRESERVE in your community?" We identify places, things and attributes we VALUE about our place – our community assets. The next question is, "What do you want to BUILD in your community? The list ranges from the practical – good schools, streets and infrastructure – to the more complex – creating jobs, retaining young families, housing development, tourist attractions. It also identifies what is missing – a local café that's open for breakfast, a library, playground equipment, the big softball tourney we used to host, or businesses that used to thrive in the vacant storefronts on Main Street.

The final question is, "What do you want your ROLE to be in preserving the past and building for the future?" Most people say they are willing to help out. A few say they are willing to step up and lead, but virtually no one says Catalyst.

A catalyst is what every community needs – a person or group of people to serve as connectors. We are great at lending a helping hand at harvest time when a neighbor has a family emergency. We also have a strong pioneer heritage of self-sufficiency. We don't like admitting we need help finding answers. But shared responsibility can be powerful motivator – I no longer have to go it alone! I have partners! We can work together to improve our town, and we can attract others to invest in our vision!

It's important, in fact it's often essential, to reach out beyond community boundaries for support. The mystery is in identifying who to contact. This is one of the things MAP does best. We connect communities with resources and provide technical expertise, especially when it comes to water, wastewater and solid waste infrastructure. We are proud to serve rural America and help connect resources.

Linda Salmonson
Chair, MAP Board of Directors

"OMAHA, OMAHA, HUT-HUT!"

CHRIS JEWETT

Peyton Manning and the Broncos aren't the only ones barking out "Omaha" of late. Midwest Assistance Program (MAP) has audibled themselves, and will conduct a staff meeting in Omaha, NE from February 26-27, 2014. With the staff increasing from nine to twenty-one since the last meeting, held last June in Denver, CO, MAP management felt the need to hold a consolidated meeting.

Staff will be arriving from all nine states serviced by MAP with the intentions of reviewing and teaching old policies and procedures, as well as several new ones added to the MAP playbook.

Increased standardization, efficiency, and productivity continues to be a priority of the management team.

With the unique challenges of an organization spread over a nine state region, it is imperative that all levels of the MAP operation are synchronized in action and thought to remain productive and relevant. The rapid and significant changes



Front Row left to right - Callie McIntosh, Jan Kittay, Pete Smith, Michael Brownfield, Chris Jewett, Glen Lueck, and Erinn Zindt. **Back Row left to right** - Joe Dvorak, Gregg Hinrichsen, Scott Thompson, Kerri Jewett, Chris Fierros, Josh Myers, David Dirks, Kristina Hartley, Jason Gorr, Jordan Vandal, and Marty Ostransky. **Not shown:** Phillip Fishburn, Harold Reynolds, and Christia Wienecke.

in MAP over the past nine months in staff size, productivity and management practices have added to these challenges. Regardless of what challenges present themselves, it is clear that MAP is prepared to meet them at all levels with professional and competent staff, and meetings like the one in Omaha will only ensure success and quality technical assistance for years to come.



PAST & PRESENT – Dannebrog, NE

During a recent follow up conversation with the Village of Dannebrog, NE MAP staff was told that since the installation of new water meters and the replacement of both water distribution and transmission lines, the system has operated much more efficiently. Water loss in the system has taken a dramatic drop and, with the adjustments to the rates, the system is operating in the black.

The Village Clerk indicated that the community has stayed largely stable regarding population and businesses – Dannebrog remains a quiet little town and a good place to live.

The village is presently in the process of planning a meter replacement and upgrade project since it has been nearly 20 years since MAP assisted with the original project.

New Staff Hires



JOSH MYERS has been solving problems and managing operations in water and sewer projects for 15 years. In his time at MAP, he has worked on funding assistance for sewer projects, set up operating maintenance manuals, and provided operator training to personnel, all motivated by a passion for finding opportunities to assist other people.



JAN KITTAY holds over 20 years of water treatment plant operations and management experience. In addition to providing technical, managerial, and financial assistance to rural communities, she works with federal, state and local agencies. Jan currently holds Class IV Water Treatment and Class II Water Distribution Certificates from the State of South Dakota.



DAVID DIRKS has spent more than 19 years in solid waste systems planning, recycling, and education projects. While he primarily focuses on the financial and managerial side of assisting communities with water and wastewater issues, he holds operator's licenses in both wastewater and drinking water and has taught classes in DW Distribution Operator Certification.



ERINN ZINDT worked as an Environmental Health Specialist in Bozeman, MT for 10 years providing management, evaluation, communication, and education services focusing on water, wastewater, and other environmental and public health topics. She earned her B.S. in Microbiology and Environmental Health and is a Certified Operator-in-Training (Water Treatment Class 1B) as well as a Registered Sanitarian with the State of Montana.



GLEN LUECK worked as a city supervisor for 25 years, managing water, wastewater, and more. Certified as a Grade 2 in water treatment and a Grade 1 in water distribution, wastewater collection, and wastewater treatment, Glen focuses on Rural Development and helps auditors with financial reporting. His experience includes rate studies for small town utilities, income surveys, hiring and compliance assistance, and emergency response planning.



JORDAN VANDAL brings years of technical, financial, and managerial experience in assisting a wide range of communities with water and wastewater infrastructure needs. Dedicated to providing essential services to rural communities, his work revolves around facility development, permit compliance, Emergency Response Plan and Vulnerability Assessments (ERP/VA), Utility Ordinance review, project funding on state and federal levels, and primacy/funder liaison. He holds a B. S. in Biology with an emphasis on fisheries and watershed sciences.



CALLIE MCINTOSH offers 14 years combined water and wastewater experience through work at water plants and on water rights. Her financial and managerial assistance, along with operational and maintenance assistance, supports MAP's involvement with income surveys, emergency response plans, and policy and procedural updates. Callie holds a B.S. in Environmental Health where she studied environmental water quality.



SCOTT THOMPSON holds 25 years of experience in sales and business management and served two terms as the mayor of Rushville, Illinois. His involvement in community development has focused on finance and management projects that support rural towns with water and wastewater issues. Scott earned an M.S. in Community Development in 2012 with postgraduate work in Public Organizations, Statistics, and Research Methodologies.



MARTY OSTRANSKY has first-hand experience in the water and wastewater systems of small towns. He worked as the village maintenance man and operator for two villages in Nebraska, maintaining well, water, and wastewater systems. Currently, Marty is preparing to provide operator and board trainings with MAP on water and wastewater plant issues.

Minnesota's Unsewered: An Environmental Water Quality & Public Health Issue

BY JORDAN VANDAL

photo credit: Callie McIntosh

While the majority of folks driving in rural Minnesota tend not to think twice about the states “cross-road” or farm communities as they pass through, many of the residents who call it their home are what our state primacy agency may consider “unsewered.”

To better understand unsewered communities, the Minnesota Pollution Control Agency’s (MPCA) 2008 Unsewered Report defined an unsewered area as having five or more dwellings on lots typically less than one acre in size and wastewater problem “needs” identified as: a community straight pipe, individual straight pipes sewage surfacing in yards, poor soils, small lots, other, and reason unknown/development.

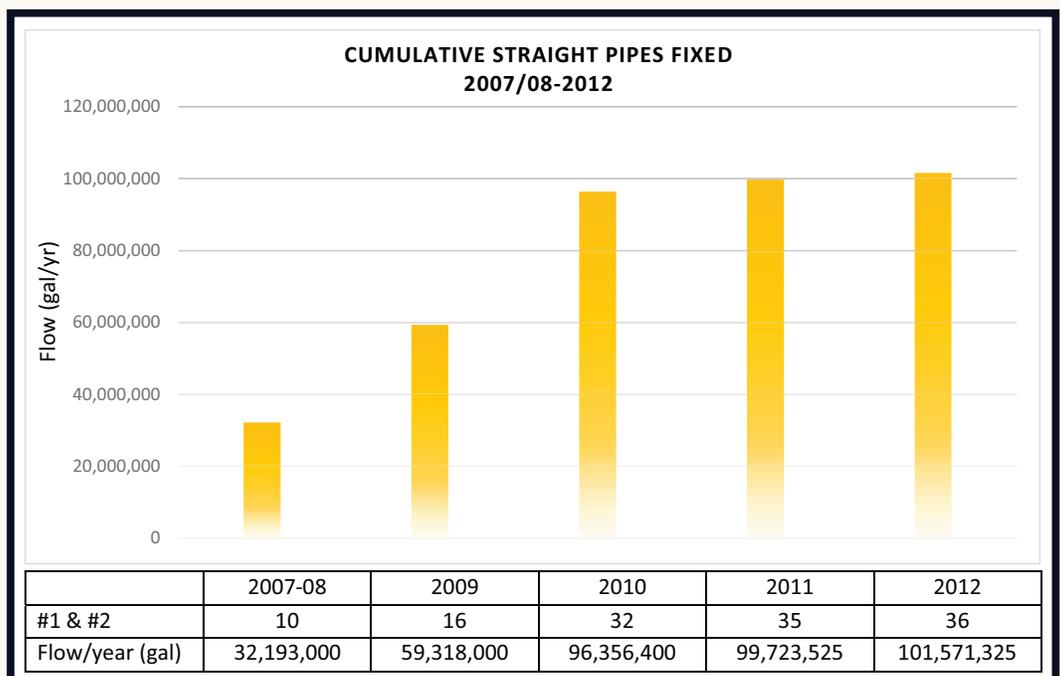
While issues had been previously identified, it was at this time the MPCA placed the highest priority and agency initiative on identifying, engaging and working with straight-pipe communities to resolve this serious environmental and public health threat. The report identified 100 communities in the state which were considered as such.

The 2012 Small Community Report provided initiative updates on types and number of communities resolved, and further identified community straight-pipe (#1) and individual straight-pipes (#2) with estimated raw sewage now being properly treated.

To date, unsewered communities have resolved these issues via regionalization, conventional treatment, cluster-mound SSTS and ISTS, and utilizing individual and municipal management and local government units such as townships, counties, or quasi-governments as Sanitary Sewer District or Subordinate Sewer Districts.

Additionally, the 2012 Small Community Report identified that partnerships between various stakeholders including, but not limited to, SWCD’s, townships, counties, economic development commissions, various non-profits, and local, state and federal funding programs as being a primary reason for the success the program has had. Furthermore, Minnesota has implemented a variety of programs and funding options for these unsewered communities which often face unique and sometimes challenging decisions when attempting to develop affordable solutions and options.

While most people have a difficult time understanding the importance of properly treated wastewater, the removal of contaminants, and the necessary capacity development and funding programs, these provide solutions to maintain safe ground water and surface waters. It should be noted that the state of Minnesota and its stakeholders have forged ahead, learning from the past and attempting to pay it forward to others seeking the very necessary and real need for safe drinking water and treatment of wastewater.



Small Rural System Clerks: UNDERESTIMATED PROFESSIONALS

BY CHRISTIA WIENECKE

Small rural systems typically consist of a board, a certified operator, and a clerk. In general, the clerk position is seen as the least demanding of the three with the shortest list of required proficiencies. Clerks, however, need to possess specific knowledge and skill sets to fulfill their position and support the rest of the staff.

Placing individuals in this station based on factors other than proper knowledge and experience has had to become commonplace, with salary, demographics, remote locations, and even poverty contributing to this dilemma. The lack of high-performing local, state and federal mandatory financial procedures has a significantly detrimental effect on this arrangement's successful sustainability.

The most evident problem in hiring clerks is the lack of a job description. A common misconception is that the job consists of acting as cashier: writing checks, making deposits, and serving customers. This is not only a gross underestimation, but sets up the clerk and the community they serve for frustration and setbacks.

Once job expectations are clarified, strengths and weaknesses can be defined. The following bookkeeper/operations clerk description of duties is an excerpt from the RCAP publication, "The Big Guide for Small Systems: A Resource for Board Members", appendix F7, page 128.

Operational duties include:

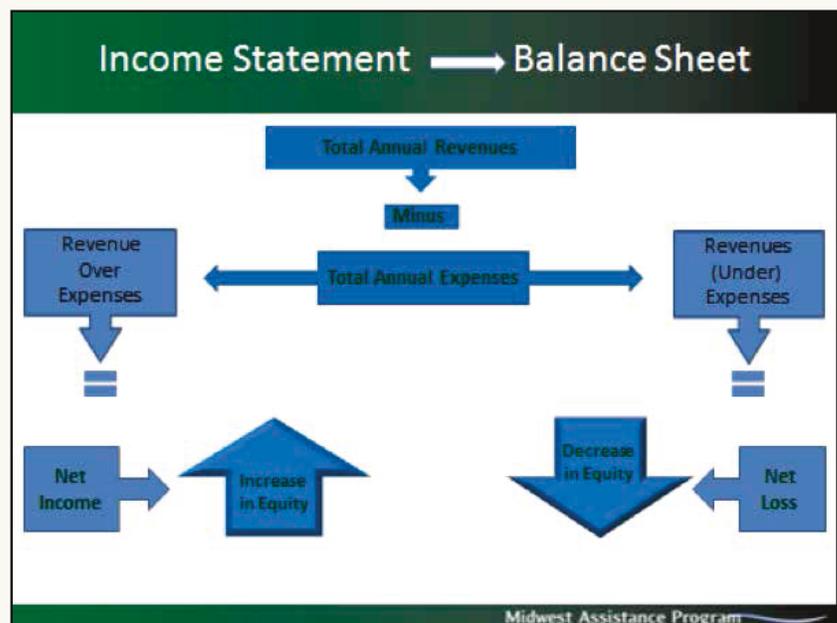
- Maintains general and special account ledgers in a standard, double-entry chart of accounts for the classification of all assets, liabilities, expenses, revenues and other accounting transactions.
- Maintains check registers, cash receipt journals, monthly disbursement and collections summaries, and reconciles monthly bank statements.
- Prepares checks for board signature.
- Maintains and prepares payroll, including federal, state and local withholding taxes.

- Prepares bills, receives payment of water bills, and posts payments to accounts; makes change and prepares monies for deposit; prepares shut-off notices, bills, and other materials for mailing. Prepares and submits to the board of directors those checks requiring board signature.
- Prepares monthly financial reports providing the current month's revenues and expenditures; actual year-to-date revenue and expenditures; projected 12-month revenues and expenditures versus budgeted revenues and expenditures; net gain or loss for the month and year-to-date; beginning and ending balances for all operating and reserve accounts; and a summary of all past-due accounts.
- Accepts applications for new service, transfers or termination of service; maintains individual customer accounts.
- Provides information and assistance to customers with questions or complaints, or refers customers to proper person.
- Performs general office duties, such as ordering office supplies, answering correspondence, maintaining correspondence files, and other clerical tasks as assigned by the supervisor.

Performance of these responsibilities is a necessary and vitally important part of providing safe and cost-effective water and wastewater services to rural towns and communities.

Midwest Assistance Program (MAP) recognized that a solution was needed and began the process of defining a focused, methodical approach to address the issue. The result was a training and workshop program designed to give clerks the necessary tools to successfully fulfill their obligations. "Group" trainings were conducted – receiving positive reviews and providing measurable results, the participant interaction added immensely to the quality of the training, and requests for the training are continually received from both districts and communities. Five concepts are covered in detail:

1. Elements – Definition of the elements needed to perform financial procedures. For example, Revenues, Expenses, Assets, Liabilities, and Equity. Few individuals can define these terms without some form of exposure to accounting and business operations.
2. Relationships – Demonstration of how these elements interact to create useful information as a management tool. Without this



This graphic is an example of one demonstration of the concept "Relationships"

understanding, it is similar to having a group of ingredients, but lacking the recipe.

3. Practical Application – Creation of an Income Statement, Balance Sheet, and Cash Flow Statement.

4. Expected Results – How to utilize the resulting information in a meaningful manner, for example, discovering harmful trends or a negative cash flow and encouraging action rather than reaction.

5. Resources – A multitude of helpful informational resources are provided. These include, but are not limited to local, state and federal agencies, reliable websites, and publications. This is crucial to promote independence in resolving negative issues, and strengthening the positive aspects of operations.

Comments and suggestions are always welcome and have proven beneficial. Many clerks felt that “beginner” and “seasoned” clerk trainings would allow for a pace based on participant’s experience. MAP’s trainings and workshops are dynamic; they are modified as needed, and these modifications are currently in the works. Current presentations include “Clerk’s Responsibilities – Creation and Concepts of Financial Statements,” “Clerk’s Responsibilities – Budget Process,” “Clerk’s Responsibilities – Preparation for an Audit,” and “Clerk’s Responsibilities – Implementing Internal Controls Through Policies and Procedures.”

Although the focus is primarily the clerk’s responsibilities, board members, operators, and other staff are welcome to attend. Due to the fact that all activities within a small system are integrated, the information is extremely useful to the entire staff.

Imparting the knowledge and skills for meeting expectations to clerks improves operational performance and compliance, while instilling efficiency, confidence and independence, the ultimate goal.



What is the Importance of a Capital Funding Plan?

–CALLIE McINTOSH –

As it gets harder and harder to find available grant funding for public water and wastewater facility upgrades, it is very important that systems start looking forward to their future and put together a capital improvement plan.

A capital improvement plan is a projected plan, usually covering 5-10 years of needed improvements that you will be making to your system along with a financial plan on how you project to pay for these improvements. A financial estimate for each year and where you will be getting the sources of financing should be included in this plan so that when the time comes to replace a high service pump, inspect and clean a storage tank, or replace an old distribution line, you will have a plan and financing in place to complete the job.

The plan looks at the system’s future needs and growing system demands. Some items to include in a capital improvement plan are replacing worn out equipment, water testing costs, building maintenance, adding new distribution lines, and operating costs.

A good place to start when developing a capital improvement plan is to look at the most recent sanitary survey completed by your local or federal agency for your system. The sanitary survey will give you an idea on the condition of your system and what potential or existing problems your system may have.

When completing a capital improvement plan there are seven major cost components you should focus on: administrative, water and wastewater source, pumps and equipment, your water and wastewater treatment plant, storage facilities, distribution and transmission, and equipment. It’s important when completing a capital improvement plan that you identify the maximum dollar amount that your system can afford putting into these upgrades before looking at alternative funding sources.

To determine how much money your system can put towards needed upgrades over a five year period your system will have to look at expenses, revenues, and reserve balances. When completing a capital improvement plan it is very important to prioritize the most necessary replacements from the replacements that are not as critical and urgent.

Once your system has identified your capital improvement needs, estimated the costs of those needs, determined the financial resources, and prioritized your needs, you will then need to put together a timetable of project costs and the amount of money your system has available each year for these upgrades.

Capital improvement planning is very important and helps ensure an efficient plan for the future.



ADDRESSING NITRATES IN PUBLIC & PRIVATE WATER SUPPLIES

- BY SCOTT THOMPSON -

For the past two years, the state of Iowa has been subject to moderate and severe drought conditions. Not only does drought have the potential to impact surface and underground water supply volumes, but drought intensifies the concentration of nutrients in water supplies. Increasing nutrient levels pose the potential to force water utilities to incur increased water treatment costs, most often passed onto the consumer.

The most common nutrients found in water supplies are nitrates. Nitrates are typically found in fertilizers applied in agriculture and make their way into the public water supply through runoff into surface water sources, and occasionally in underground water sources.

Nitrate levels in public drinking water sources are becoming a growing concern in rural areas of the Midwest. According to the US EPA, high nitrate levels pose a serious threat to the health of young children under one year of age. Symptoms of nitrate toxicity in children include shortness of breath and blue baby syndrome.

The acceptable level (MCL) for nitrates in drinking water is 10 milligrams per liter (mg/L). In 2013, nitrate levels were as high as 24 mg/L in the Raccoon River and 17.87 mg/L in the Des Moines River. These elevated levels can require utility operators to employ additional methods to reduce the nitrate levels to acceptable MCLs.

In a recent conversation with Adam Schneider of the Iowa Department of Natural Resources, I learned there are options

for operators of public water supplies who face elevated nitrate levels in their public water supplies. One of the more common methods to overcome the high levels is dilution. This can be done through the blending of water from multiple sources. Another, more costly measure would be to integrate a nitrate removal facility at the treatment plant. Both options could pose increased cost burdens to small utilities who are already struggling with finances. Currently, at least in Iowa, there are no specific public financing programs to assist water utilities facing nitrate issues.

Private water systems face similar challenges with nitrates. Private well owners can take preventative steps to reduce nitrate levels. These steps including the understanding ground water flows prior to drilling and modifying fertilizer application around the well area. Private septic systems can also negatively impact water quality and should be investigated if nitrate levels are elevated.

Even if Iowa's drought levels decrease in 2014, the threat of nitrates in our water is not going away anytime soon. It is an issue to which we should continue paying particular attention. In the upcoming months, I will continue to research the issues of nutrients in water supplies, work to gather the solutions implemented by operators in overcoming these issues, and share them with you, in future articles.

If you have nitrate treatment success stories, and would like to share your success with others, please contact me at sthompson@map-inc.org.

BRINGING CRITICAL TRAINING TO REMOTE, RURAL OPERATORS

JASON GORR

Often times, when State Certified Water and/or Wastewater Operators think of training, they think of the big 3-day type events held in large communities or metropolitan areas. They include very large venues, class sizes, and often tours and entertainment in the evenings. These styles of events definitely have their place. They allow trainees to network with numerous other operators, sales people, primacy agencies, and industry leaders often introducing new innovations, rules, and equipment.

But one thing I've found in my career with Midwest Assistance Program is that people, although often interested in other's woes or stories to some degree, they are naturally most concerned with what's going on in THEIR own systems and want a remedy ASAP.

Generally in the small communities we work with, there are often limited budgets, staff size, and time. When the drive distance to the nearest conference is more than a reasonable day's drive, is only offered once a year, or not necessarily all that helpful in remedying the immediate issues, it may not be the best fit. By attempting to congregate operators with similar needs and interests, and having the events held in the target communities most in need, we can really be much more effective in reaching those who need it most.

It is surely optimum in a large training event to set the day and site on the calendar in January or even the year prior, with agenda's pretty much set in stone months ahead as well. In smaller, more informal events we can basically cater a tailor-made presentation to best suit those who requested it, often on as short a notice as a 30-60 days if there is an urgent need. By selecting nearby venues such as fire halls, libraries, or community centers we can also keep the costs down for our funders (primarily government agencies, aka tax dollars...). This allows us to get the most trainings and services for the limited amount of funds.

Depending on the class scope and venue capabilities I like to see trainings run from 6 to 30 people. Often this really allows for more options and can allow for other useful training techniques to be utilized such as: 'hands-on' labs, field courses, tours, and demonstrations. We've also found that in these settings folks don't seem as intimidated and come out of their shells to ask trainers and



photo credit: Callie McIntosh

Technical Assistance Providers for additional help and follow-up visits, and more informal settings promote better class interactions, questions, and limit distractions when done properly. Of course, the typical Power Points are used (as with most modern trainings), but to be most effective at conveying knowledge to adult trainees, other techniques are proven to be needed as well.

Many often agree they like to also learn from some of their fellow trainees from neighboring or similar community systems. When the lines of communication are properly encouraged, the learning and exchange of assistance often carries over while out on break or lunch, perhaps even building into future contacts between operators.

When our Staff does a good job of selecting topics, locations, dates, and contacting those who need the trainings the most, we all benefit. Overall I believe a large number of small sized training events properly distributed being critical to rural systems remaining in compliance and therefore keeping our nation's drinking water safe and of the highest quality.

For questions on finding or sculpting the most effective training event for your system, I recommend looking on www.map-inc.org and finding the Field Staff in your state or contact our Central Office for more assistance.

Thinking Outside the Basin: Lagoons Still Viable?

KRISTINA HARTLEY

The federal Clean Water Act of 1972 requires that all states review their water quality standards every three years in order to determine whether current standards should be revised. Referred to as a triennial review, the State of Missouri's Department of Natural Resources (MDNR) submits changes in regards to regulations to the EPA and, upon approval, continuously implements new standards and changes to its Water Protection Program.

Once these changes are instituted, utilities are subjected to finding solutions to lower the toxicity level in their effluent discharge as requirements for renewing their National Pollution Discharge Elimination Standards (NPDES) permit dictates every five years.

All too often, small utilities serving up to 1000 people are the communities hit hardest with new regulations. Those that may qualify for federal or state funding often don't have the resources to pay back the loan without implementing an unreasonable user rate. It is not uncommon to see a PER (Preliminary Engineering Report) with a 1 to 2.5 million dollar price tag for 67 to 175 connections.

Midwest Assistance Program has been working with regulators and loan providers to find proven, alternative solutions to overblown wastewater projects that have a 35 year pay back and only 3 years before effluent perimeters possibly change again.

An option available to systems with lagoons failing to meet current effluent standards is upgrading the lagoon to meet MDNR permit limits.

Rehabbing municipal lagoons for system sustainability is a viable option that must not be overlooked. Affordability in construction and the ability to adapt to additive technologies while staying in compliance is what the utility provider is seeking. Rehabbing municipal lagoons seems an obvious place to start, but has been often overlooked as technology was new and not as profitable a solution for plant designers as a mechanical plant.

The following is a number of proven technologies to upgrade lagoon systems, including those that use earthen based lagoons as biological reactors with internal or exterior clarifiers and return and waste air sludge.

Sequencing or sequential batch reactors (SBR) is an activated sludge treatment process that can be used in either a two cell lagoon or a lagoon with baffle curtains for application. The influent wastewater fills the lagoon, mixing with biomass that has settled from the previous cycle. Air, generally through fine diffused bubblers, is added to the mixed liquid to encourage aerobic bacteria growth and subsequent nutrient waste reduction and nitrification. Mixing and aeration stop to allow settling, and supernate is discharged in a decant cycle. An SBR can also be easily converted into a multi SBR system, extended where aeration system and clarifiers can be added.



Submerged Attached Growth Reactor, SAGR® is designed to allow for cold water nitrification, making it a feasible solution for post lagoon treatment application in cold climates, while offering BOD and TSS polishing in addition to total coliform, fecal coliform and e-coli removal. Effluent from the SAGR® is suitable for direct discharge in many cases and suitable for UV disinfection where lower total fecal coliform and E-Coli levels are required. The SAGR® consists of an aerated stone bed, wastewater flows and is treated through the substrate. Insulating mulch on the surface prevents ice formation, allowing the system to treat the wastewater that is near freezing. Where upgrades are required and space is limited, the SAGR® can often be installed within the layout of an existing lagoon treatment system.

The above referenced are but two of the many feasible options for utilities with lagoon treatment systems. It is important to stop subjecting our communities to unrealistic projects and look to the sensible and sustainable future.

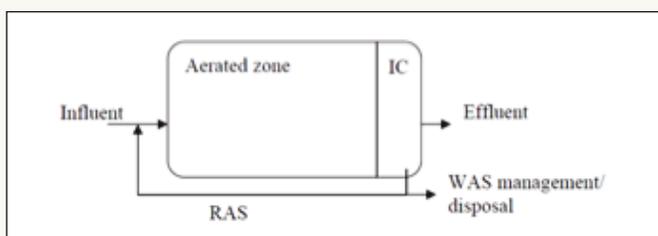


Figure 1- Typical internal clarifier configuration

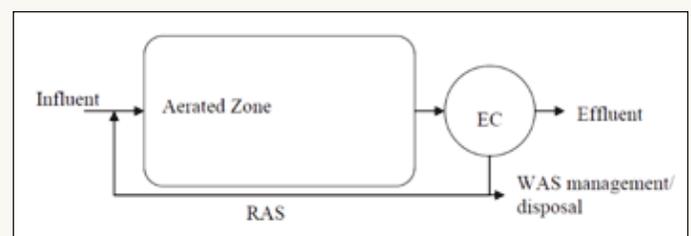


Figure 2- Typical exterior clarifier configuration



FRACK TO THE FUTURE

North Dakota Communities Facing Overload Gain Aid from MAP

GLEN LUECK

North Dakota's current oil boom has created an economic impact with new business and development. As companies flock to rural communities, they bring with them an influx of workers. While some temporary housing is provided for employees through crew camps often known as "man-camps," small towns quickly find themselves playing host. Even with new construction, workers move in to any place they can park a camper and trailer, leading some small towns to nearly triple in size within a year.

Although the population increase drives down unemployment metrics, the infrastructure implications are significant. Most small towns aren't prepared for the rapid growth and the pressure it places on water, wastewater, and solid waste facilities.

Wastewater treatment facilities often face the largest strain due to hydraulic fracturing, or "fracking" - an oil and natural gas extraction process. While most national focus is on whether or not the practice causes groundwater or soil contamination, a more recently recognized effect of fracking is its serious impact on the infrastructure of small towns and communities near drilling sites.

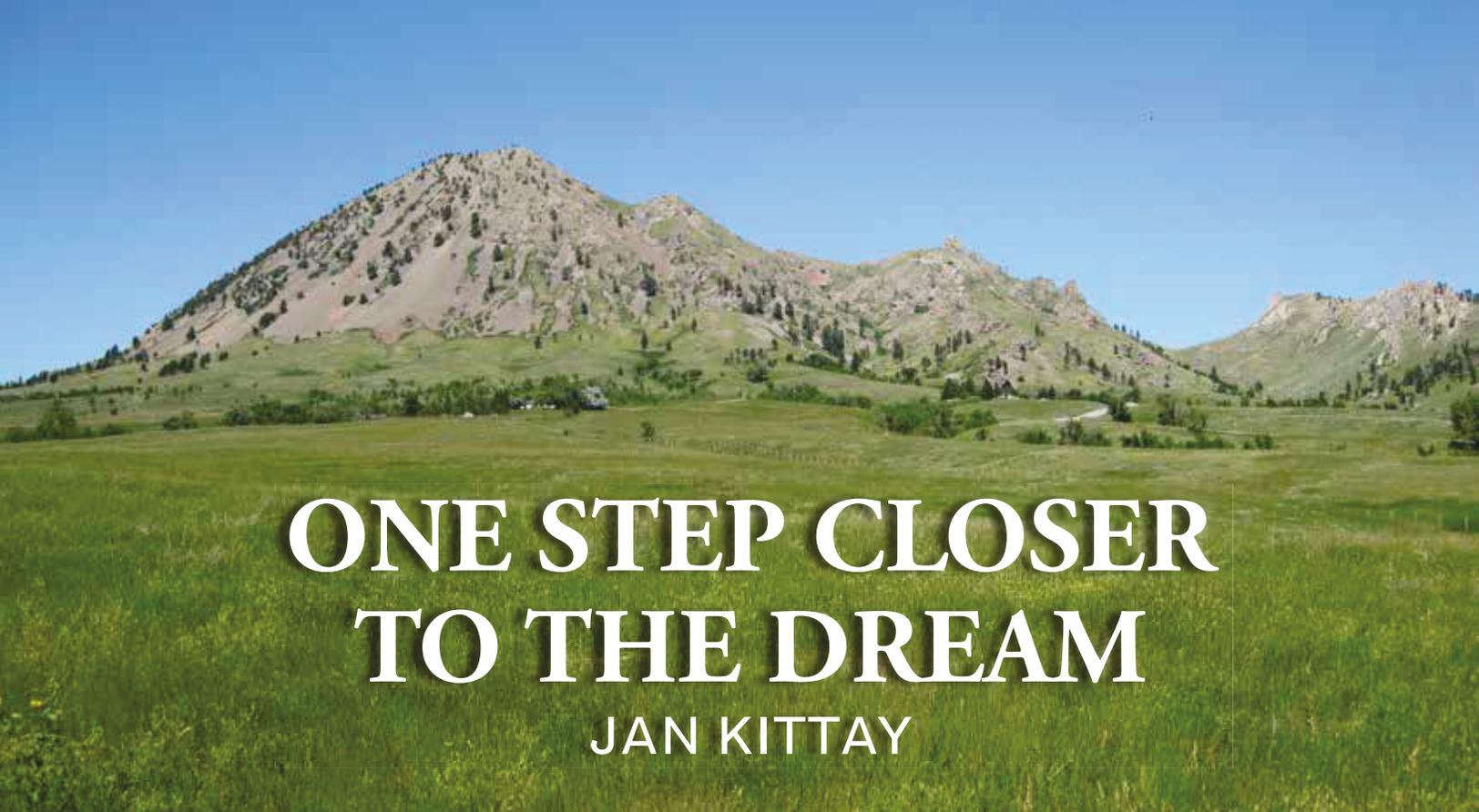
The fracking process uses a vast amount of liquid; while the initial water needed is generally trucked in to the oil fields by the drilling companies, the resulting wastewater is disposed of and treated locally. Lagoon systems, the primary treatment method of nearby towns, have a minimum of 180 days of

holding and are often simply not designed to satisfy the increased volume of wastewater from an extended rapid increase in population.

Affected cities in North Dakota have been working on expanding their systems, but the infrastructure growth is still far behind population growth. Harsh winters further limit construction as work can only take place 6-7 months out of the year. Unfortunately, there is little help - leaving the community with cleanup and even penalties from the State Health Department.

While state regulations work to address this problem, the catch-up process is slow and tight-knit communities often try to handle matters on their own. Faced with overloaded systems, penalization, and poor funding, these rural towns are turning to the Midwest Assistance Program.

MAP was created to provide small communities with solutions that address immediate crises and create response plans for the future. In North Dakota, MAP experts offer training and assistance in managerial and financial operations for communities while crafting a custom strategy for infrastructure recovery. When a community contacts MAP and qualifies for aid, MAP works with city officials and auditors on everything from choosing and implementing ideal wastewater systems to operator training and hiring reputable engineers - all at no cost.



ONE STEP CLOSER TO THE DREAM

JAN KITTAY

At the corner of Highways 79 and 34 outside of Sturgis, pickup trucks hauling water tanks are a common sight. With little access to clean drinking water, many western Meade County, South Dakota residents piece together their water supply. “People fill up 1000 gallon cisterns which may last for a week. If it is for livestock, they might do this daily or twice daily,” said Matthew Oedekoven, the project engineer. Droughts have dried up streams and ponds further straining shallow groundwater wells and forcing some to sell their herds. When there is water, it is of poor quality and “livestock won’t eat and drink as much, which affects their health,” said Bruce Weyrich, a Bear Butte Valley (BBV) Water System board member who keeps about 150 head on his ranch east of Sturgis.

The Bear Butte Valley Water, Inc. was established in the spring of 2009 as a nonprofit corporation in order to bring high quality water to the residents of Meade County. The Bear Butte Valley Regional Water System will replace the patchwork of tanks, cisterns, and gallon jugs of drinking water and help stabilize the local economy.

On January 16, 2014, the dream of fresh water for residents in Meade County moved one step closer as the official ground breaking was held for the Bear Butte Valley Water, Inc.

State Director for Rural Development Elsie Meeks joined Jacqueline M. Ponti-Lazaruk, USDA Rural Development Assistant Administrator for the Water and Environmental Program (Washington, DC), to announce a water and environmental loan to Bear Butte Valley Water, Inc. in the amount of \$2,917,000 and a grant of \$2,000,000. The State of South Dakota Board of Water and Natural Resource is providing additional funding through a \$1,500,000 grant and USDA Natural Resources Conservation Services (NRCS) is also providing significant funding through its Environmental Quality Incentives Program (EQIP) to provide water for livestock.

“The federal funding will assist Bear Butte Valley Water Inc. in forming a rural water system that will serve ranchers and rural residents in Meade County,” said Meeks. “The development of a central rural water system will enhance the quality of life in the area and facilitates sensible and sustainable economic development.”

The project’s construction activities will include 140 miles of distribution pipeline, water storage facilities, and all associated appurtenances that will be necessary to meet domestic water needs of the customers within the system. When the project is complete, the project will cover approximately 320 square miles and serve 225 locations with a

deep, dependable well drawing water from the Madison Aquifer.

Members to be served also include approximately 28 customers who signed up under the NRCS EQIP which will provide water to about 6,000 head of livestock.

The system is also anticipating serving residents in the Whitewood Creek Superfund Site in South Dakota. The Whitewood Creek Superfund Site consists of an 18-mile stretch of Whitewood Creek from the Crook City Bridge to the confluence with the Belle Fourche River. More information on the Whitewood Creek Superfund Site can be found at www2.epa.gov/region8/whitewood-creek.

Well construction is set to start in the spring of 2014 with the distribution line and system components beginning in the summer of 2014. The projected completion date is slated to be December 2015.

Neal Rowett, Board President of Bear Butte Valley Water, Inc. and lifelong resident of the area stated, “A dependable, safe water supply has been a dream of the people in this area since the first settlers. I am glad I am here to see the dream realized. This water system will provide relief to all those home owners forced to haul water to their homes.”

Integrated Asset Management for Small Systems

PHILLIP FISHBURN

Drinking water and wastewater utilities have three categories of assets. These are the physical assets, the people associated with the system, and the product that is delivered or provided. Imagine a three legged stool with each leg being one of these classes of assets-if one leg fails, the whole system could fail.

Integrated Asset Management (IAM) concentrates on keeping all three asset groups functioning properly. This involves integrated planning. Through adopting a series of steps and processes needed to maintain basic system functions on an ongoing basis. This includes operations, management, maintenance and repair, refurbishment of assets, and provisions to replace infrastructure, and further considerations:

- (a) Consumer regulatory and public expectations (legislative, environmental).
- (b) Outcomes focused on maintaining service standards to meet expectations, protecting against external risks to service, and gaining the funding needed to attain both.
- (c) Managerial responsibility for sustaining service.
- (d) Recognition that the product and the people involved are assets of the system-IAM draws upon applicable techniques in the management, engineering, accounting and human resources to strengthen.

The goal is to maintain the performance level of each asset as long as possible to realize its maximum life value. An asset that meets performance standards for 20 years instead of 15 years will give more total useful life value.

Customer and regulatory expectations become the basis by which performance standards for the system and for assets are set. For example, regulatory standards require a

certain level of disinfectants to be present in water samples. If levels are not acceptable, it may indicate the chlorination equipment is not performing to acceptable standards. Similarly, if customers want to have 50 p.s.i. of water pressure, but instead the system delivers 25 p.s.i, the customer performance expectation is not met. This may indicate a pump needs refurbishing. Failure to receive a customer bill or to respond timely to a complaint is a service expectation.

An affordable balance using measures to maintain serviceability and to protect against risks that can jeopardize service must be found.

Maintaining serviceability involves actions that maximize the ability to deliver service. This entails plans for maintenance, proper operation, performance monitoring, management functions, strengthening human capacity, and the upkeep of assets. Planned management includes internal efforts that promote proper system performance. For example, exercising valves annually helps maintain their life long serviceability. This also includes having quality workers to run the system and giving them the time to do so, as well as knowing when an asset must be replaced or repaired and setting funding aside in a reserve account to pay for it in the future.

Risk management planning involves the things that can be done to minimize asset failure, and to reduce the impact of asset failure. Examples include an electrical generator to keep power service going when there is an electrical power outage, having property loss insurance, identifying a backup

operator, or using measuring and monitoring to find a potential equipment failure.

IAM notes even the best plans will not work if they are not fully funded or if human resources is not given enough time to execute plans. Planned management allows a utility to identify what operational, fiscal, and administrative functions must be done and how much to budget for to achieve the full execution of plans. This entails managers finding an affordable balance is between risk management measures and the practices required to maintain serviceability so customer and regulatory expectations are met.

Planned management articulates how you will care for your system now and in the future. Knowing what you need to be doing and needed to lessen risk impact allows you to determine how much it will cost to do so, and enable you to establish a budget. Systems using reactive management (fix and pay as you go) have difficulty budgeting as they often under fund for the upkeep and care of their system that eventually cause compliance problems, frequent staff turnover, and equipment prematurely failing.



Update on the “Revised Total Coliform Rule

GREGG HINRICHSEN

photo credit: Callie McIntosh

The long awaited and much anticipated revision to the Total Coliform rule is nearly complete. But before we see what changes are in the revision, let’s start off with a little history review of the Total Coliform Rule.

The Total Coliform Rule (TCR) was initially published in 1989 and became effective in 1990. The rule set health goals (Maximum Contaminant Level Goals, or MCLGs) and legal limits (Maximum Contaminant Levels, or MCLs) for the presence of total coliform in drinking water. The rule also details the type and frequency of testing that water systems must undertake.

The 1996 amendments to the Safe Drinking Water Act required the Administrator to review and revise, as appropriate, each national primary drinking water regulation at least every 6 years. EPA published in its National Primary Drinking Water Regulation (NPDWR) Review its decision to revise the TCR in July 2003. EPA published the final rule revisions to the 1989 TCR in the Federal Register February 13, 2013

So how will this new revision affect our water utility? When will it begin? What are the changes?

First let’s review the basic current design of the TCR (Total Coliform Rule). The rule was established to 1) Determine the integrity of the distribution system. 2) Evaluate the effectiveness of treatment. And 3) Signal any possible presence of fecal contamination.

Regular monitoring of the water system for coliform bacteria is used to determine the success of these objectives. In addition public notice is required to be made for violating the MCL and or monitoring and reporting violations. Repeat and additional routine sampling may be required based on sampling results. All additional routine and additional samples count toward calculating MCL compliance.

Now that we’ve seen what the basis of the current rule is, let’s take a look at where the rule is headed.

The Revised Total Coliform Rule is set to begin on April 1, 2016. Here are the main provisions set forth in the revised rule.

Routine Sampling

1) Total coliform samples must be collected by PWSs at sites which are representative of water quality throughout the distribution system according to a written sample site plan subject to state review and revision.

2) For PWSs collecting more than one sample per month, collect total coliform samples at regular intervals throughout the month. Ground water systems serving 4,900 or fewer people may collect all required samples on a single day if samples are taken from different sites.

3) Each Total Coliform (TC) – Positive sample must be tested for E. Coli. If any positive total coliform sample tests positive for E. coli, then the E. coli positive sample

results must be reported to the state by the end of day that the PWS is notified.

4) If routine sample is TC+, repeat samples are still required. Within 24 hours of learning of the TC+ routine sample, at least 3 repeat samples must be collected and analyzed for total coliform. Repeat samples need to be collected, one at the original site, one five service connections upstream, and one five service connections downstream.

5) If any repeat samples are TC+, the TC+ sample must be tested for E. coli. Any repeat samples that test positive for E. coli must be reported to the state by the end of the day the PWS was notified. The PWS must collect another set of repeat samples, unless an assessment has been triggered and the PWS has notified the state.



The next change in the RTCR addresses the assessment and corrective actions provision in the rule. The RTCR requires PWSs that have an indication of coliform contamination (TC+, E. Coli+, or performance failure) to assess the problem and take corrective action. There are two levels of assessment based on severity or frequency of the problem.

Assessments and Corrective Actions
Purpose of Level 1 and 2 assessments:

- 1) To find sanitary defects at the PWS including, defects that could allow pathways for entry of microbial contamination and defects that indicate failure (existing or potential) of protective barriers against microbial contamination.
- 2) Guidance on conducting an assessment can be found at www.water.epa.gov/lawsregs/sdwa/tcr/regulation_revisions.cfm
- 3) Deadlines for completing the corrective actions when defects are identified are set by one of the following time frames: No later than the time the assessment form is submitted to the state, which must be within 30 days of triggering the assessment, or within state-approved timeframe which was proposed on the assessment form.
- 4) Level 1 assessments are performed by the PWS. Once a level 1 assessment is triggered, the PWS has 30 days to complete and submit the report.
- 5) Level 2 assessments must be performed by a state approved entity. The PWS is responsible for ensuring the assessment is conducted. The level 2 assessment must be completed and submitted to the state within 30 days of the assessment being triggered.

These are the major provisions of the Revised Total Coliform Rule. Take a look and see how they will affect your system.

For a complete look at the new rule, go to www.water.epa.gov/lawsregs/rulesregs/sdwa/tcr/regulation_revisions.cfm

Stage 2 Disinfection Byproduct Rule Review

PETE SMITH

The Stage 2 Disinfection Byproduct Rule (Stage 2 DBPR) was put into effect on January 4, 2006 to increase public protection by reducing the potential risk of adverse health effects associated with disinfection byproducts (DBP's) throughout the distribution system.

Since the discovery of chlorination byproducts in drinking water in 1974, numerous toxicological studies (studies on the health effects from exposure to high dosages contaminants usually involving animals in a lab) have been conducted. These studies have shown several DBP's to be carcinogenic in laboratory animals (e.g., bromate, certain trihalomethanes and haloacetic acids). Some disinfection byproducts have also been shown to cause adverse reproductive or developmental effects in laboratory animals.

However, there is considerable uncertainty involved in using the results of high-dose, toxicological studies of some byproducts occurring in disinfected drinking water to estimate the risk to humans from chronic exposure to low doses of these and other byproducts.

The Stage 2 DBPR builds on the Stage 1 DBPR by focusing on monitoring for and reducing concentrations of the two classes of DBP's – Total Trihalomethanes

(TTHM) and Five Haloacetic Acids (HAA5). Monitoring locations as well as the calculations of Maximum Contaminant Levels (MCLs) are going to be the most notable changes. The Stage 2 DBPR will now base TTHM and HAA5 compliance on a locational running annual average (LRAA) calculated at each monitoring location. The MCLs for these are TTHM .080 mg/L and .060 mg/L for HAA5s.

The Stage 2 DBPR will affect all community water systems (CWSs) and all nontransient noncommunity water systems (NTNCWSs) that either add a primary or residual disinfectant other than Ultraviolet Light.

Systems should have already completed an Initial Distribution System Evaluation (IDSE) by July of 2010, which would identify locations to monitor DBPs for Stage 2 DBPR compliance as well as the Stage 2 DBPR Compliance Monitoring Plan by October 1, 2013. All systems must begin with rule requirements to determine compliance with the operational evaluation levels for TTHMs and HAA5s by July 2014.

For additional information on the Stage 2 DBPR visit the EPA website at www.epa.gov/safewater/disinfection/stage2 or contact your local state drinking water representative.

SOURCE

Midwest Assistance Program, Inc. Central Office

303 N. Market St., Suite 2.
Maryville, MO 64468
Email: map@map-inc.org
Website: www.map-inc.org

Source Mission:

To provide information for the clients of the Midwest Assistance Program so they better understand the programs and services MAP offers to help them improve their communities and tribal associations; and to showcase the expertise of MAP employees.

MAP Source is published by:

Brandography, LLC
837 Glenwood Ave.
Minneapolis, MN 44405
www.brandography.com

 **FIND US ON FACEBOOK!**

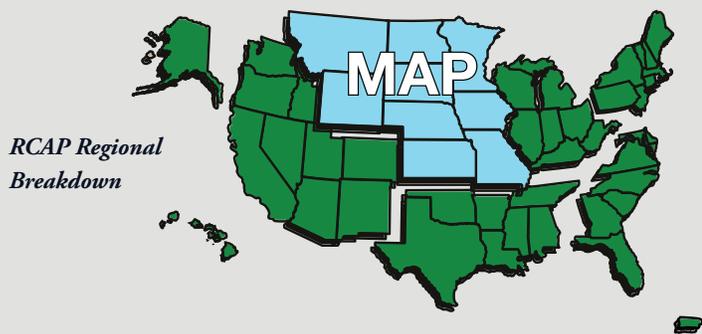
MAP Source is funded through a grant from the HHS/Office of Community Services and prepared by the Midwest Assistance Program, Inc. It is part of the EPA Drinking Water Technical Assistance & Training Program, an RCAP network project. Material not otherwise attributed was written or redacted by the editor.

MAP is an equal-opportunity lender, provider and employer. Printed with soy-based ink on recycled paper.



Midwest Assistance Program, Inc.
303 N. Market St., Suite 2.
Maryville, MO 64468

The Midwest Assistance Program (MAP) is a member of The Rural Community Assistance Partnership (network). RCAP is made up of a total of six regional partners including MAP.



MAP has been helping communities and tribal nations meet their infrastructure and development needs through information, resource management, expertise and technical assistance since 1979. MAP provides solutions to more than 400 such communities each year in Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North and South Dakota and Wyoming. Through individualized support from MAP staff, residents are given the knowledge and tools to revitalize their communities. MAP staff members live in the communities served and have a deep commitment to the strength, vitality, and future of rural America.



#GS10F0025T

Contract Holder
Contract 0123456789

Midwest Assistance Program has been designated and approved vendor by the General Services Administration, which means:

- MAP is already a GSA-approved contract holder
- Agencies can bypass the full request-for-proposal process and come directly to MAP
- Less delay getting projects underway

MAP is the first member of the RCAP network to receive this designation.