

# HOOOSIER PIPELINE

WINTER/SPRING 2021



The official publication of the Alliance of Indiana Rural Water



**INSIDE:** SPRING CONFERENCE | WATER LOSS AUDITS | WINTERIZING YOUR UTILITY

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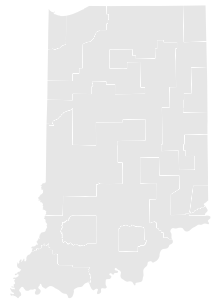
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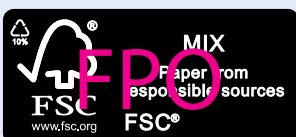
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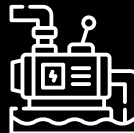
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Tom Speer  
Alliance Board President

## So Many Challenges – So Many Reasons to be Thankful

**G**reetings Alliance members and Happy New Year. Finally, 2021 is here. Let's all hope that it will be better than 2020! I'm sure we can all agree that 2020 was a major challenge for all of us. We had to change our entire way of thinking and doing things for nearly an entire year. Fortunately, our Alliance staff stepped up to that challenge.

If you missed our virtual/live Fall Conference, you really missed out. There were many sessions held and ALL of them were live – absolutely no pre-recorded classes. I was amazed that it went as well as it did, but our Alliance staff had it all under control. Yeah, there were a few issues here and there, but it was a great event. Again, I want to thank all of the Alliance staff for all their hard work in putting this event on. I would also like to extend a big THANK YOU to the vendors who participated in the "Brown Bag Lunch" sessions and for the sponsorships.

By this time, you should have received your copy of our calendar that notes all of the trainings available in 2021. If high rates of COVID-19 infection persist, we will continue to provide trainings virtually. Hopefully the pandemic will soon be over and we can get on with trainings in person. Either way, we are here to provide you with the continuing education units (CEUs) you need in order to keep your certifications up to date. Please check your calendar for dates and training topics that may interest you.

Finally, I'd like to extend a THANK YOU to Dave Seacat of Ramsey Water for his nine years of service on the Alliance Board of Directors. We greatly appreciate the dedication and hard work he has put into helping lead the Alliance to where it

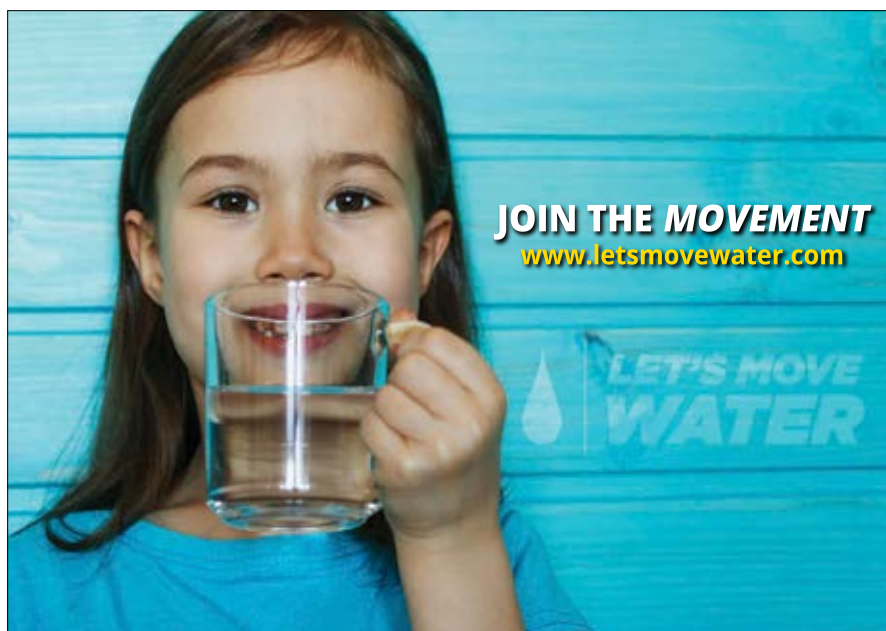
**"I sincerely hope to see all of you at our French Lick Conference in May...  
LIVE AND IN PERSON."**

is today. Our best wishes to Dave as he moves on to the next journey.

In closing I want to thank all of you for your continued support of this great association. This is YOUR association. We are here to serve you. If you have

issues or suggestions, please let us know. We will do what we can to help. I sincerely hope to see all of you at our French Lick Conference in May...  
LIVE AND IN PERSON.

Be safe, be well. ★



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Connie Stevens  
Executive Director

## Something to Smile About

The good news is... I'm sure 2021 is going to be a better year. I know that everyone is weary of the 2020 COVID-19 pandemic and I really thought that would be **completely** behind us by now. But we have learned a lot about our capacity to survive a pandemic, and many of us have learned what is "truly important."

So, let's move on to 2021 and what to expect for the water/wastewater industry. First, although this legislative session will be conducted a little differently in response to the need for social distancing, it will still go on. Because this is a budget year, a longer session is planned, one that will go well into May. Top priorities are redistricting and the budget. Budget-wise, more attention will be given to COVID-19 issues and to funding education. Yes, other issues will be discussed, but likely not given as much attention as they may need. To my knowledge, this is nothing concerning for water or wastewater utilities (this should make you smile with relief).

Next, water audits still need to be done each year. This is a habit to which all utilities need to adhere. These water audits will help with budgets, sustainability, and opportunity for future growth. The manager, system operator, and clerks (or whoever is in charge of financials) should be working together on this. If your utility is not already used to this routine, keep working on it. It will get easier each time and will be a very useful tool. We have four people that can help you with this (it should make you smile that we have your back).

Is anyone retiring from your utility this year or next? If so, what is the

plan for transitioning? You must have a plan if you want things to continue to function well and meet permit and customer expectations. The Alliance of Indiana Rural Water has training to meet your needs in almost every area of water/wastewater utilities, not to mention an excellent Water/Wastewater Apprenticeship program. We currently have a training schedule for 2021 and will likely be adding more items as the year goes on, depending on your requests. Please don't hesitate to contact us if you have a specific topic on which you would like to receive training. We will be holding both in-person and virtual training (these options should make you smile).

After having to cancel most of our events last year, we are very excited to hold our in-person events this year. We missed seeing all of you! We are especially looking forward to the Spring Conference in French Lick. In hopes of buying a little more "safety time," we have scheduled the conference for May 19 and 20. We are planning to have our best conference yet, with great classes, speakers, networking, fun times and of course great raffle prizes! (Are you smiling yet?)

The outdoor, Operator Expo's will be held in June, in Huntingburg in the south and Akron in the north. Of course we plan on having the hog roast and plenty of food. Then there is the Leadership Summit in Bloomington and the Fall Conference in Fort Wayne in October. Expect good training, great networking and good times. (I guarantee lots of smiles during these events.)

Lastly, I want to encourage you to keep on smiling – maybe even try a laugh or two. It's true that laughter

is strong medicine. It draws people together in ways that trigger healthy physical and emotional changes in the body. Laughter boosts the immune system, lowers stress hormones, decreases pain, relaxes your muscles, and prevents heart disease. Not only does it bring joy and zest to our lives, but it eases anxiety and tension. You and I know that we need that now, more than ever. So, if you know of any good jokes or funny stories, please share them. We all need to laugh. ★

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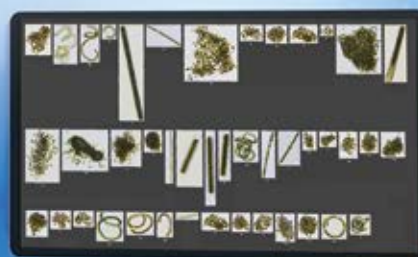


**Application Deadline: February 28, 2021**

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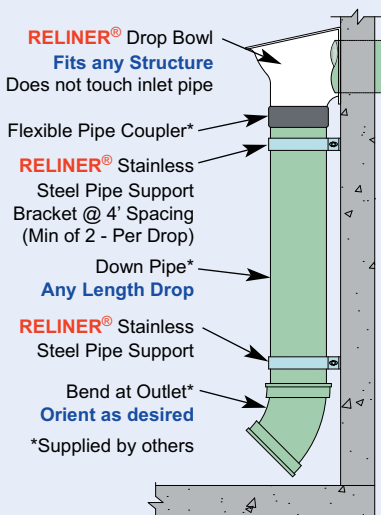
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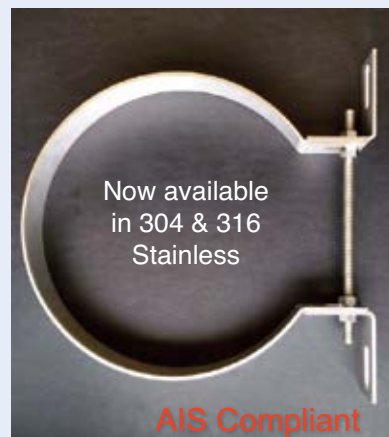


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With over **100 years of experience** in the industry, we bring a high level of expertise and knowledge to every project; ensuring that the job goes smoothly and that our customers get the right equipment the first time. S & K Equipment Company provides only the highest quality product and the most trusted brands in the industry to ensure our customers get the quality and durability that they deserve.

S & K Equipment also offers a full service and repair department with on-site mobile services available. Through our network of partners, we can handle just about any service job that is required in the water and wastewater industries; from start up and training services, to complete pump reconditioning. We can service all major brands and in all sizes. Whether it is a small dewatering pump or massive flood control equipment, no job is too small or too large. We can also offer on-site maintenance and repairs, annual service contracts, equipment removal, and station reconditioning.

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# 2020 AWARD NOMINATION FORM



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Recognizing the outstanding contributions of rural water & wastewater professionals is one of the highlights of the Alliance's Annual Spring Conference. Each year the Alliance of Indiana Rural Water presents awards in recognition of outstanding performance.

**Award winners in each category will be honored on Wednesday, May 19th during the Awards Luncheon.** Please take advantage of this chance to recognize someone for a job well done! To assist the Alliance Awards Committee in selecting deserving individuals, please fill out the form below; attach additional pages if necessary.

**Nominations must be received by February 19, 2021.**

**Please select ONLY ONE:**

☐ Water System Operations  
Specialist of the Year

☐ Wastewater System Operations  
Specialist of the Year

☐ Steward of the  
Environment Award

☐ Manager of the Year

☐ Administrative Professional of the Year

Nominee's Name: \_\_\_\_\_

Job Title: \_\_\_\_\_ Shirt Size (Circle One): S M L XL 2XL 3XL

System Name: \_\_\_\_\_

Nominator: \_\_\_\_\_

Email & Phone Number of Nominator: \_\_\_\_\_

1. How long has nominee been employed with system?
2. What are the responsibilities of the nominee in his / her current position?
3. What is / are your primary reason(s) for nominating him / her for this award?
4. Please indicate what type of training the nominee has received:
5. Please list awards or certificates the nominee has received:
6. What contributions has the nominee made to the improvement of his / her system?
8. Will the nominee be attending the conference? ☐ Yes ☐ No  
One award in each category will be presented. You may nominate one person per form.  
(Please copy this form and submit one for each person you wish to nominate.)

**Send to:** [alliance@inh2o.org](mailto:alliance@inh2o.org) OR Fax: 317-736-6676 OR P.O. Box 789, Franklin, IN 46131

**Nominations MUST be received by March 31, 2021 to be considered.**

\*The Alliance reserves the right to publish names and photos of all awards winners in future publications.



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## WHO WE ARE

The Alliance of Indiana Rural Water is a non-profit membership association of over 800 water and wastewater systems and related professionals and is the leader in on-site technical assistance and training for Indiana's rural utilities.



## OUR SPECIALITY

The Alliance's Professional Development & Training Department offers specialized training on topics such as operations, treatment, regulations, maintenance, operator certification and management skills in both an online and classroom format. Professional training provides opportunities for operators to upgrade their skills and improve the quality of their service. All courses are approved by IDEM.

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# Scholarship Application

(Please Print or Type)

## A. Personal Information

Name: (Last) \_\_\_\_\_ (First) \_\_\_\_\_ (MI) \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

## B. Member Information *(Applicant must be a dependent child of a system employee of a water or wastewater voting utility)*

Utility Name: \_\_\_\_\_

Employee Name: \_\_\_\_\_

Applicant's relationship to employee: \_\_\_\_\_

## C. High School Information *(Transcript must be submitted with application)*

School Name: \_\_\_\_\_ Graduation Date: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

GPA: \_\_\_\_\_ SAT Score (total): \_\_\_\_\_ Class Rank: \_\_\_\_\_ out of: \_\_\_\_\_

**Attach a typed list of school and community activities, awards and honors, and other special recognition you have received during the last four (4) years**

## D. Work Experience – *(Describe any work experience during the last four (4) years)*

---

---

## E. College / University Information *(Applicant must be enrolling as a first-year college student)*

School Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Please indicate: \_\_\_\_\_ 4 Year College/University  
\_\_\_\_\_ Vocational/Technical School  
\_\_\_\_\_ 2-Year Community/Junior College  
\_\_\_\_\_ Other, Specify: \_\_\_\_\_

Major Course of study: \_\_\_\_\_  
*(Priority will be given but is not limited to water/wastewater related studies)*



## F. Financial Information

Please indicate which of the following income ranges matches your gross family income:

\_\_\_\_\_ Under \$30,000    \_\_\_\_\_ \$30,000 - \$50,000    \_\_\_\_\_ \$50,000 - \$70,000    \_\_\_\_\_ Over \$70,000

If you are receiving other known financial aid/scholarships, please itemize by name and amount.

Name: \_\_\_\_\_ Amount: \_\_\_\_\_

Name: \_\_\_\_\_ Amount: \_\_\_\_\_

Name: \_\_\_\_\_ Amount: \_\_\_\_\_

If there are any family circumstances that influence your need for financial assistance, please describe:

\_\_\_\_\_  
\_\_\_\_\_

## G. Essay

On a separate page in 250 words or less. **(Please type)**

Write a brief essay on your goals as they relate to your education, career, and future plans.

## H. Certification

In submitting this application, I certify that the information provided is complete and accurate to the best of my knowledge. False information will result in revocation of any scholarship granted.

Applicant's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Parent's/Guardian's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## OFFICIAL RULES

This scholarship will be made to defray the cost of educational expenses at an accredited institution of higher learning approved by the Alliance of Indiana Rural Water. Disbursement of the money will be made upon presentation of proof of enrollment (transcript or invoice.) Scholarship money will be paid directly to the scholarship winner. Applicants must be a first-year college student enrollee and cannot have received a prior scholarship from the Alliance of Indiana Rural Water. Applicant must also be a citizen or legal resident of the United States, a resident of the state of Indiana and a **dependent child of a SYSTEM EMPLOYEE of a water or wastewater voting utility.** (*Utility Board members' dependents are not eligible*). In order to be eligible, applicant must complete the application form in its entirety and return it to the Alliance by the entry **postmark deadline, January 31, 2021.** Scholarship recipients will be selected based on the number, length of commitment and quality of leadership in school and community activities, awards, honors, academic records, career goals, work experience and financial need. **Application must be signed by both applicant and parent/guardian before submission.** Applicants will be evaluated on a comparative basis at the sole discretion of the committee. All decisions are final. Application materials and decisions of the committee shall be confidential. Acceptance of scholarship constitutes permission to use recipient's name and/or likeness for purpose of promotion. No transfer of scholarship is permitted. Applicant must plan to attend an accredited school in the fall of 2021. Recipients will be notified by mail. Family members of employees of the Alliance of Indiana Rural Water and/or members of the Board of Directors are not eligible.

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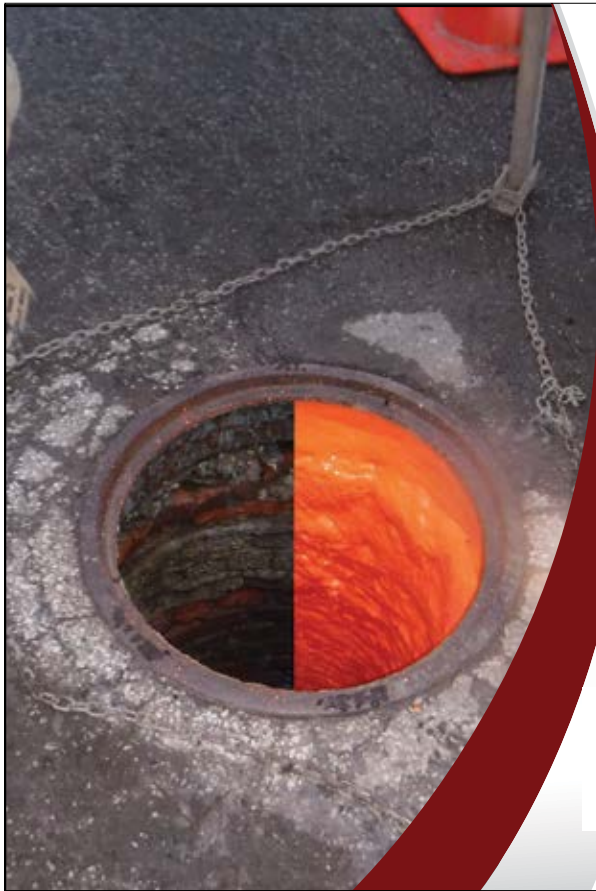
**OR Email application, transcript(s), & essay to:**

**(must be received by January 31, 2021)**

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- ☐ Completed application
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- ☐ Academic transcript
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BY KEVIN WENZEL  
WASTEWATER CIRCUIT RIDER

# Washington DC

With all eyes on Washington DC this fall because of the election, I started thinking about other things that have to do with Washington DC. With all the people that live there and visit the city, they must have a huge wastewater plant. So, one night while sitting in my chair I decided to google it. To my surprise they had a really good website. And, I was right. Their wastewater plant treats 300 million gallons a day of sewage.

300 MILLION! With a 1.5 billion peak flow. That is the largest wastewater plant in the world!

The plant is called the Blue Plains Advanced Wastewater Treatment Plant (WWTP). It is operated by the District of Columbia Water and Sewer Authority. The plant sits on 153 acres and has 1.6 million customers. Five million people live within the Potomac watershed that the plant treats. That covers two counties in both Maryland and Virginia.

The plant opened in 1937 as primary treatment for the local sewage. Back then there were no ammonia or phosphorus limits. Advanced treatment was added in the 1970s and the 1980s. Since the effluent that leaves the Blue Plains WWTP discharges into the Potomac river, the plant is under stringent permit limitations. The flow also ends up in Chesapeake Bay, which is the largest estuary in the United States. In 1987, the Chesapeake Bay agreement was formed to help with diminishing crabs, oysters, and shellfish. The Chesapeake Agreement was established to help stop the decline of water quality in the bay. Hence, all communities that discharged their waste or stormwater into rivers that ended up in the bay were put under stringent permit limitations.

The plant at Blue Plains uses primary and secondary treatment, as well as denitrification, multimedia filtration, and chlorine/dechlorination during the treatment process. A BNR process ensures nitrogen limits are met. In its digesters, the plant uses a thermal hydrolysis process to generate about 10 megawatts of electricity, which are used to cut its external electricity needs by a third. The sludge is land applied in nearby farming communities.

I encourage everyone to go the Blue Plains Advanced WWTP website to read about this amazing plant and all our apprentices to watch the virtual tour. The eight-minute video runs through the treatment process and is very educational. ★

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BY CHAD REYNOLDS,  
WATER CIRCUIT RIDER



# WATER LOSS AUDITS NOW A REQUIREMENT

**W**ater loss audits have been around and performed for years. States like California, Georgia, Tennessee, Wisconsin and Texas to name a few were the first to make water loss audits a requirement. Indiana has now decided to follow suit. Is it a good thing? Some might argue that this is just one more “to do” item to be thrown onto their list of requirements, a list that seems to continue to grow. But many utilities have already been performing water audits in some form long before the requirement set forth in August 2020. Why? Because there is value in knowing where your utility may be losing revenue from water loss and a water audit is how you can determine that.

What is a water loss audit? Simply put, in easily understood terminology, it's the difference between the water pumped or (supplied) versus the water consumed or billed. So, let's say your utility pumped 25 million gallons through the treatment process a year, yet your billing department says the consumers consumed 20 million gallons that same year. Therefore, you suffer a 20% loss. We now call this non-revenue water instead of unaccounted for water. This is and has always been water that is non-billed; therefore, no payment was received. Where did this water go? How can I be losing so much water, when I have no leaks anywhere that are surfacing? Water audits are the first step in trying to figure these questions out.

The average percentage of loss across the state is around 15%. Aging infrastructure, old meters, not calibrating master meters, stolen water, flushing hydrants and not metering, firefighting and unmetered utility offices are just a few areas where utilities can find unaccounted for water.

Imagine if you have 100 leaks across the city and all of them are just one gallon a minute. They would be very hard to detect, if not nearly impossible. Do the math: this is 6000 gallons an hour being lost and not billed. Now if that volume were spread over just a handful of leaks, more than likely they would all show themselves. This brings us to real losses and apparent losses. Real losses are a physical loss in water such as leaking tanks, connections (meter or main line) and main breaks. Apparent losses are unauthorized consumption, customer metering inaccuracies, and data handling errors, whether it be during gathering readings or the billing process.

We are all in this together and, in the water world, we are all here to help one another. Someone with more knowledge or experience is always a phone call away. This could be the

neighboring town in some cases. When was the last time you had your master meter calibrated and how often do you check meters in the system? This is an easy process and could very much help in determining if there is a problem in the field. Meters are the primary source for the revenue. If they are off then it affects the return coming back. If you think there is a leak, but not surfacing, start out by checking storm lines and pulling samples from catch basins. As we all know, if the sample turns pink, we have to go upstream and try and find the problem. Yes, there has been lots of hair pulled and some has even turned gray over the Water Loss Audit. It's for our own good and for our communities. If we can find the leaks or fix metering inaccuracies, then the rates can stay at a better place and customers stay happy. A happy place makes for a happy face. ★

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BY GORDON MEYER,  
CIRCUIT RIDER



## WHAT'S NEXT FOR THE WATER LOSS AUDITS?

Now that the year 2020 has passed and the Water Loss Audit for the year 2019 has been completed, validated and sent to the Indiana Finance Authority (IFA), there is no need to worry about it until the year 2022 when the next audit is due, right? Sorry, even though a completed one does not need to be validated and sent to the IFA it is required that each system still do a Water Loss Audit for the year 2020.

This audit will help you to continually look at your system to see where you can improve your validity grade scores for the validated 2021 audit, which will be due August 1, 2022. By doing the

“Think of the annual Water Loss Audit as a useful tool in the operational and financial aspects of your water system and not as a burden that needs to be completed each year.”

audit each year, the previous years' audits can be used as guides to see where improvements need to be made to increase the score the following year.

By using the audit software Grading Matrix, you can identify steps to increase the validity score, such as:

- Having the production, import and export meters flow tested for accuracy and the electronic instruments calibrated each year.

- Selecting a random 10% of customer meters to test for accuracy each year.
- Planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Meter Infrastructure (AMI) in one or more pilot areas.
- Using electronic recording keeping such as Geographical Information System (GIS) and asset management system to store and manage data used to measure the length of mains.
- Having a well-managed computerized information management system and using routine periodic field checks and internal system audits to identify the number of active and inactive service connections.
- Gathering pressure data by using gauges or dataloggers at fire hydrants and buildings when low-pressure complaints arise, and during fire flow tests and system flushing.
- Having a reliable electronic, industry-standard cost accounting system in place, and cost-tracking all pertinent water system operations to calculate the total annual cost of operating system.

There are several more ways to increase the validity score located in the Grading Matrix tab in the software.

Think of the annual Water Loss Audit as a useful tool in the operational and financial aspects of your water system and not as a burden that needs to be completed each year. This will bolster your ability to provide safe drinking water and reliable customer relations, supporting your ability to remain a viable service now and in the future. ★

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BY SHERRI WINTERS,  
WATER PROGRAMS DIRECTOR



## MORE ABOUT WATER AUDITS

**T**his is in conjunction with the article written by Circuit Rider, Gordy Myer in this publication. His article points out that the water audit should be used as a tool for improving your water system, asking yourself, 'where is all my water going?' and 'how do I know I have good information to begin with?' and he is correct.

I can't emphasize enough that completing a water audit takes collaboration between the billing office and operator(s). So I'm going to write about some of what we (the three circuit riders and me) have observed during this first year of mandated water audits and validations.

For the most part, utilities have done a great job compiling the information needed to properly complete water audits. There have been a few glitches along the way but nothing that couldn't be overcome with a little persistence and patience. Since Gordy's article focuses more on the information needed to complete your water audit, I'll focus a little more on validations.

When a validator shows up, it goes much more smoothly if you have all of your documents available for them to review. For instance, know your total number of gallons produced, total operation costs (line item is great), and total amounts billed – gallons and monetary – to name a few. Have documentation available with report name and the page(s) where this information can be found. Make yourself available throughout the validation in case there are questions from the validator or clarification is needed.

You should make sure your operating pressure isn't just a guess, but have some actual readings to use for averaging i.e., leaving the plant,

at the tower(s), within the distribution system. Figuring out your static pressure at a storage tank isn't difficult. You can use the level of water height and either divide by 2.31 or multiply by 0.433. It is recommended that if you don't have a system to log pressures, that you at least document the pressure with daily readings to give yourself a range or baseline. Doing things like this enables you to have a better grade and demonstrates that you are constantly aware of pressure differentials, etc. Don't speculate based on what you think it is on a most days. That cannot be verified by a validator.

When providing your total number of active and inactive accounts, don't guess. Many billing software reports will have that information. Occasional field checking can confirm the validity of those reports.

If you don't get regular reports from the fire department with estimates of water used during fires or other activities, it's ok! Just begin a process where you can obtain that information in the future. The same goes for hydrant flushing. Use hydrant flow information and the amount of time the hydrant was open during flushing. Estimates used with known data are better than nothing at all! It can and will reduce what looks like actual water loss.

I won't go into meter testing (master and customer) but if you don't have a program, launch a policy to do create one. If you purchase or sell (import or export on the audit), ensure you have a clearly written contract that spells out who is responsible for the testing of meter(s) at the point of entry to or from your water system. If it is spelled out and isn't your utility's responsibility, hold the other utility accountable.

All in all, everyone has been doing a good job with this new mandate. It will get easier and hopefully clearer, over time, as to the benefits of this audit to your utility become more apparent. Use the audit as the tool it is meant to be. Eventually, the entire state will benefit from all of this information.

I obviously didn't cover everything. Be sure to read Gordy's article for other helpful tips. As always, if you need assistance, just give us a call at 888-937-4992 or 317-789-4200. ★

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BY DEE DEIG,  
ENERGY EFFICIENCY  
CIRCUIT RIDER

# Understanding Demand Charges on Your Utility Bill and How It Affects You



## What are demand charges?

Your monthly electricity bill has two parts: 1) Energy charges – for the total amount of electricity you use 2) Demand charges – for “peak usage.” How are demand charges calculated? Demand charges are based on the highest 15-minute average usage recorded on the demand meter within a given month. If your facility tends to use a lot of power over short periods, your demand charges will comprise a larger part of your bill. If you use power at a more consistent rate throughout the month, your demand charges will generally be a smaller part of your bill.

## Why do demand charges exist?

Demand charges cover electric utilities’ fixed costs of providing a certain level of energy to their customers. Energy costs are the variable-costs portion (charges by kWh). The challenge is that utilities have to maintain enough capacity to

satisfy all their customers’ energy needs at once (e.g., a hot day in July when every customer runs their AC). Utilities have to maintain enough power plants to supply all that energy at once, and this requires them to keep a vast array of expensive equipment on constant standby, including transformers, wires, substations, and generating stations. This capacity is extremely expensive to build, and demand charges help pay those costs. Demand charges are also a means of encouraging customers to 1) reduce power usage during peak hours and 2) shift their usage from peak to non-peak hours. This way, utilities can levy higher charges on customers with more variable loads and pass the savings on to customers with more consistent loads.

## Who pays demand charges?

Demand charges usually apply to commercial and industrial customers

that pay time-of-use rates and at certain bill sizes. Utilities usually install a demand meter once a customer reaches a certain demand level consistently, e.g., 2000 kilowatt-hours per month for four consecutive months. Once demand billing begins, it does not end until monthly energy consumption has gone down consistently, e.g., dropping to less than 2000 kilowatt-hours per month for 12 consecutive months. All 50 states have demand charges, although the charges vary by state. Demand charges also vary by season, with charges generally higher in summer than in winter.

## Why worry about demand charges?

Demand charges make up a significant portion of commercial and industrial customers’ total electricity costs, typically between 30 and 70%. Demand charges are increasing across the US, even while energy prices are decreasing. Several trends are at work here and will continue to keep demand charges high. First, as the grid ages and requires more maintenance and infrastructure updates, the resulting costs are passed along to ratepayers. Other factors include the strong growth of solar energy. Solar power generation causes greater sensitivity to peak loads because cloud cover impacts efficiency; hence, grid loads will become increasingly volatile.

To understand more and what you can do about your demand charges, contact me and see if I can help. ★

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# WINTERIZING YOUR WATER UTILITY



BY DONALD PAPAI

**F**irst and Foremost, I am so grateful and blessed to be back. Thank you to everyone for the warm welcome. Now let's talk about something cold, like WINTER.

For us old timers I'm going to sound like a broken record player and for our younger operators I'm not too sure they even know what a record player is?

## Preparing your water utility for "Winter"

I am pretty sure most, if not all, of you already have this covered, but I bet there might be a few things you missed, so let's get started.

### Well Houses

- Make sure all vents and windows are closed and insulation put back.
- Make sure the heater is in working order. Just don't flip the breaker and call it a day. Make sure the unit turns on.
- If you have heat tape on water lines and its older than 3–4 years you might want to just replace it. Be sure to plug it in.
- Backup power supply whether it's a generator or LP motor – make sure it's been serviced.

### Water Plant

- Change the filters in your furnace.
- Close all vents and windows.
- Water and drain lines under cabinets – make sure if they have heat tape on them that you note "the age of the tape." Make sure everything is plugged in.
- Change your set points for your towers to "Winter Mode."

### Chlorine Room

- Check and check again that the heater is working.
- Verify that vents and windows are closed and insulation is put back.
- Make sure water lines are wrapped.
- For the heat tape, check the "age of tape." Plug everything in.
- Make sure you have enough chlorine on hand.

### Booster Stations

- Same instructions as for the well houses.

### Water Towers

- Check control units whether at the base of the tower in a cabinet, or in a pit.
- Make sure little heater blocks are working
- Verify that the water lines are wrapped.
- Check heat tape (age, plug everything in).
- If you are lucky enough to have mixers make sure they are mixing.
- If your controls are in a pit, make sure your sump pump is operational and the discharge area is free from debris so that the water can drain away.
- If you have an altitude valve on one of your towers, make sure it is operating properly, along with the sump pump.

### Hydrants

- For problem hydrants, use a hand held or battery-operated pump and pump them out.
- Out of service hydrants need to be repaired. Remember people are heating their home usually with some sort of flame.

### Valves

- For Areas in your system prone to (I don't want to say it too loud) water main breaks, make sure the valves are clearly marked.

### Leak Equipment

- Pumps are all serviced and ready to go.
- Hoses are clean and free of leaks
- Hand tools are clean and in a central location
- Power tools are clean and serviced
- Repair clamps are in stock. Make sure you have at least one for every size main in your system.

### Customers

- Remind your customers that freezing temperatures are on their way
- Water meters in garages need to be protected from freezing.
- Garage doors need to be kept closed. Make sure when entering or exiting that your garage door closes and stays closed.
- If your meter is in a pit, keep area clear of snow so the meter reader can get your reading. (Yes, there are still systems out there that don't have radio reads.)

In closing, I'm sure I've forgotten many things specific to your system, but now that ole man winter is nipping at your nose, I'm sure you'll take care of them.

*(\*A cold weather tip for those of you on the "Dark Side." If you have rectangular clarifiers, make sure your heater is working on your chain drive, you know what happens if it isn't.) ★*

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# What Does the Future of Operator Training Look Like?



BY KELLY STRAIN,  
OFFICE ADMINISTRATOR

Looking back over 2020, it is obvious that COVID-19 has impacted our personal and professional lives in so many ways. Our social interactions with friends and family seemingly ceased overnight and our interactions with our work friends and colleagues fared no better. The opportunities we used to have to meet with others working in our industry for networking and sharing knowledge and experiences were mostly cut off. Conferences were cancelled, in-person training sessions were cancelled and small group collaborations were cut off in an attempt to mitigate the risk of spreading disease among our communities.

Our communities depend on you, as frontline workers, to continue providing safe drinking water and to ensure that wastewater effluent is returned to the environment properly. This expectation doesn't change during a pandemic, in fact the need for these services probably increases. It is imperative to us at the Alliance of Indiana Rural Water that we do all we can to assist you in achieving these goals. At the same time, we are also committed to assisting you with meeting your other obligations such as your continuing education requirements for your operator certifications, which didn't go away just because of COVID-19.

We were all required to make adjustments and move out of our comfort zones a little to make this happen. We are lucky that we live in a time of technical advancements and that programs such as Teams, Zoom, Webinar Ninja, etc. exist and are so easily accessible to the general public. You no longer have to have an Engineering degree to know how to operate these programs. All you need is a PC, an internet connection and yes, lots of PATIENCE.

So, we've now made the giant leap into the world of web-based training and over the last nine months we've become pretty good at it. We made it through the certification renewal cycle and were able to provide operators with ample opportunities to complete their continuing education unit (CEU) requirements via webinar training, virtual exam preparation courses and even a couple of virtual conferences. We have seen attendance at sessions rise and received feedback from many of you that you actually like the option of attending courses virtually because you aren't having to wait for classes to come close to you or you don't have to drive an hour each way just to get to a class. You are maximizing the hours in your day by attending a class from your office so you have time to get a little work done before or after, or check labs

during a lunch break. These are positive results of the "new" webinar trainings and many of you have expressed that you don't want to see this option go away altogether.

We know there are also those of you who still prefer attending classes in-person. The face-to-face interaction with your colleagues gives you much more opportunity for networking and sharing experiences and this is something that virtual trainings will never be able to replace. We miss seeing you all in-person and value this as well. We don't ever anticipate a time when we are virtual only. However, as we look ahead to what the future of training looks like for our association and our industry, we believe some of the changes that have taken place over the last nine months will be with us long-term (as, unfortunately, so might COVID-19). What you can expect to see in 2021 is a combination of virtual webinar trainings and some in-person training courses. We will continue to distribute in-person courses, conferences and expos throughout the state each year so that, if you are hard-core in-person-only individual, you'll have the opportunity over the next three years to obtain your CEUs this way. However, if you like the flexibility of webinars and want to incorporate that into your training, you'll have plenty of opportunities to earn your CEUs that way too.

Alliance of Indiana Rural Water is here for you. We want to continue to provide training that assists you in performing your jobs and introduces you to new advancements in our industry. We want to be your training provider of choice and we hope that you've been pleased with our efforts to continue to provide the training you require in spite of the challenges we've all faced. With your support we will continue to do so. Stay safe and thank you for all that you do for your communities. ★

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# Well, Well, Well



BY TOBY DAYS,  
SOURCE WATER SPECIALIST

One day a farmer's donkey fell down into a well. The animal cried piteously for hours as the farmer tried to figure out what to do. Finally, he decided the animal was old, and the well needed to be covered up anyway; it just wasn't worth it to retrieve the donkey.

He invited all his neighbors to come over and help him. They all grabbed a shovel and began to shovel dirt into the well. At first, the donkey realized what was happening and cried horribly. Then, to everyone's amazement he quieted down.

A few shovel-loads later, the farmer finally looked down the well. He was astonished at what he saw. With each shovel of dirt that hit his back, the donkey was doing something amazing. He would shake it off and take a step up.

Pretty soon, everyone was amazed as the donkey stepped up over the edge of the well and happily trotted off!

## Moral

Life is going to shovel dirt on you, all kinds of dirt. The trick to getting out of the well is to shake it off and take a step up. Each of our troubles is a stepping stone. We can get out of the deepest wells just by not stopping, never giving up! Shake it off and take a step up.

It is also important to properly abandon wells that are no longer in use. Wells that are not properly abandoned can be a liability to your drinking water sources and your water treatment system. Step up and educate your local landowners on the importance of proper well abandonment. It's one less shovelful of dirt you have to brush off when trying to supply safe drinking water to your customers and you might save a donkey too!

The Indiana Department of Natural Resources maintains over 400,000 records of water wells drilled in Indiana. In addition, there have been over

70,000 oil and gas wells drilled in Indiana. There are estimated to be thousands more undocumented wells drilled in Indiana, too. Can you say swiss cheese? That's a lot of holes being drilled into and through the aquifers that many Hoosier rely on for their drinking water. Of the 70,000 oil and gas wells, its estimated that only 5,000 of these wells are currently being used and its unknown how many of the water wells are currently in use. So, what happens to these wells that are no longer in use?

## What is an abandoned Well?

A water well is considered abandoned if:


- The original purpose and use of the well have been discontinued for more than five years.
- The well is in such a state of disrepair that using it to obtain groundwater is impractical or a health hazard.

Wells that are no longer being maintained represent a huge risk to the environment and human safety by providing a direct route for pollutants and toxins to reach the aquifer. As a

result, the 1988 Indiana water well drilling statute (IC 25-39) requires abandoned wells to be sealed at the surface or plugged with impervious materials. Details of the actions that must be taken to plug or seal wells are based upon the date the well was abandoned.

As you connect new customers to your water system and talk with other landowners within your Wellhead Protection Areas, it is important to inform property owners on their responsibility to properly abandon their old well if they no longer intend to use it. For more information on properly abandoning wells, check out the Alliance of Indiana Rural Water's brochure on well abandonment (<https://www.inh2o.org/Portals/36/Documents/SourceWater/Plugging-Abandoned-Well-Brochure.pdf?ver=2018-01-11-162533-110>).

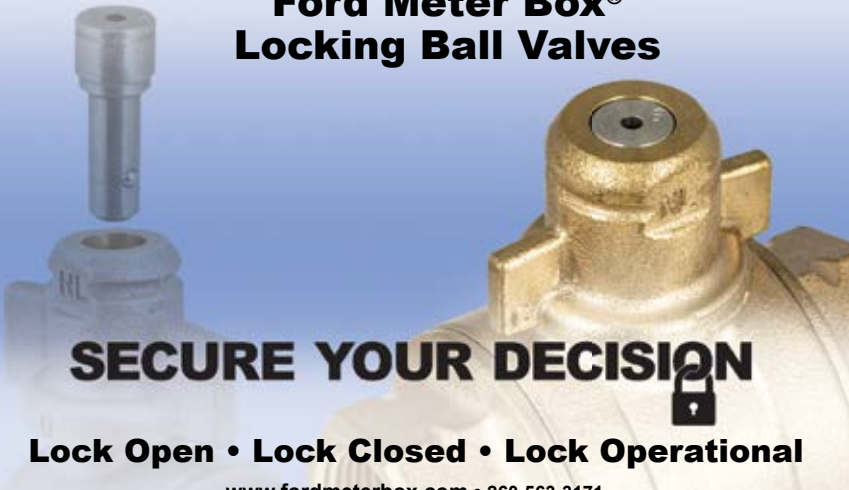
Send a request to [alliance@inh2o.org](mailto:alliance@inh2o.org) for copies of this brochure to be sent to you. This is a great resource to give property owners to educate them on the importance of properly abandoning wells. ★



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# BE DISASTER RESILIENT AND READY

By Karen Edwards-Lindsey, US Environmental Protection Agency, Office of Water, Water Security Division

**W**ater utilities today face unprecedented threats to the security and resilience of their systems from natural disasters. In Indiana, drinking water services can be disrupted by floods, tornadoes, and severe storms which can impact people, property, and critical infrastructure. Indiana is also home to numerous community water systems, many of which are small or rural water systems serving a population of 3,301–49,999. Rural water systems serve as a critical lifeline for public health and the community at large. While any natural disaster can be overwhelming, you can take steps to prepare your utility and community in advance.

## **America's Water Infrastructure Act – Section 2013 Requirements**

One of the first steps is to conduct a detailed assessment of your risks. If you have not completed or updated your risk assessment already, you may be required to do so under the *America's Water Infrastructure Act* (AWIA). Section 2013 of the Act requires Community (drinking) Water Systems (CWSs) serving more than 3,300 people to develop or update a Risk and Resilience Assessment (RA) and Emergency Response Plan (ERP). The law includes the components that the RAs and ERPs must address and establishes deadlines by which water systems must send a certification of completion to the United States Environmental Protection Agency (US EPA).

The certification deadlines are based on system population size reflected in the Safe Drinking Water Information System (SDWIS) as of the law's date of enactment on October 23, 2018. Systems serving a population 100,000 or greater were required to certify completion of the Risk and Resilience Assessment no later than March 31, 2020. Systems serving population sizes of 50,000 to 99,999 must certify



completion no later than December 31, 2020, and systems serving populations of 3,301 to 49,999 must certify no later than June 30, 2021.

Within six months of certifying completion of the Risk and Resilience Assessment, water systems must also certify completion of the ERP. AWIA requires systems to consider factors such as monitoring practices, financial systems, chemical storage, and operations and maintenance in their RAs. For the ERP, AWIA requires utilities to include items such as strategies and resources to improve resilience, and procedures to lessen the impact of malevolent acts or natural hazards. See the following webpage for more information and details about AWIA: <https://www.epa.gov/waterresilience/americas-water-infrastructure-act-risk-assessments-and-emergency-response-plans>.

## **AWIA Compliance Resources**

The US EPA has developed a suite of tools to help you comply with AWIA. The first tool is the Vulnerability Self-Assessment Tool (VSAT) Web 2.0. This

Tool is a risk assessment application for water, wastewater, and combined utilities of all sizes. Using VSAT Web 2.0, water systems in Indiana can assess their vulnerabilities to both man-made and natural hazards and evaluate potential improvement opportunities to enhance their security and resilience. See <https://www.epa.gov/waterriskassessment/conduct-drinking-water-or-wastewater-utility-risk-assessment>. Small CWSs serving greater than 3,300 but less than 50,000 people can conduct a RA using the Small System Risk and Resilience Assessment Checklist – <https://www.epa.gov/waterresilience/small-system-risk-and-resilience-assessment-checklist>. CWSs serving 3,300 or fewer people are not required to conduct risk and resilience assessments under AWIA. EPA recommends, however, that very small CWSs use the checklist or other guidance to learn how to conduct risk and resilience assessments and address threats from malevolent acts and natural hazards that threaten safe drinking water.



A second resource developed to help CWSs conduct a RA is the Baseline Information on Malevolent Acts for Community Water Systems. This document assists CWSs in identifying the types of malevolent acts that could impact them and assist with estimating the threat likelihood of such acts. See <https://www.epa.gov/waterriskassessment/baseline-information-malevolent-acts-community-water-systems>.

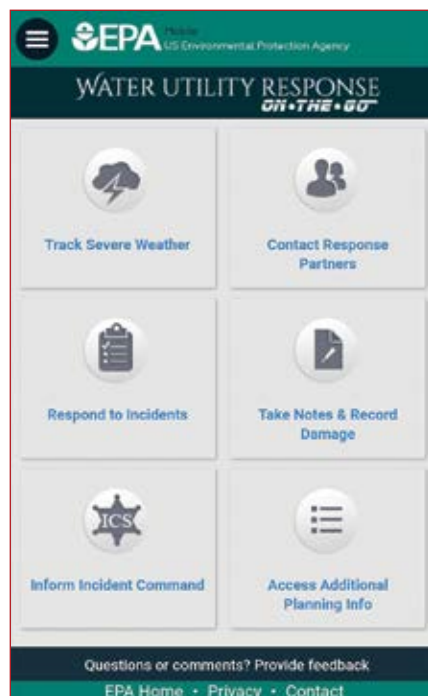
The US EPA also developed a resource to help CWSs comply with the AWIA ERP requirement. The ERP Template and Instructions describe strategies, resources, plans, and procedures utilities can use to prepare for and respond to an incident, natural or man-made, that could disrupt essential water services. The resource features a blank ERP template that can be easily accessed and modified by utility personnel to meet their own water system needs. See <https://www.epa.gov/waterutilityresponse/develop-or-update-drinking-water-utility-emergency-response-plan>.

#### Other Resources

After completing an RA and ERP, utilities can further explore how to lower risks and increase efficiency of response with US EPA's tools and resources. The Hazard Mitigation Guide for Natural Disasters provides examples of mitigation projects

for flooding as well as for other disaster scenarios that Indiana water utilities might face and includes information on eligibility for funding such as federal grants or loans. The Water Utility Response On-The-Go (Response OTG) Application is an interactive tool allowing you to respond in real time from the field, track severe weather, contact response partners, identify actions to take and inform incident command. You can learn more about both tools at: <https://www.epa.gov/waterutilityresponse>.

The US EPA provides regular updates on water security and resilience resources that will help water systems meet their requirements to comply with AWIA. To learn more, visit [www.epa.gov/waterresilience](http://www.epa.gov/waterresilience) or join the *What's Going On* newsletter email list by contacting [WSD-outreach@epa.gov](mailto:WSD-outreach@epa.gov). With the help of the additional free water resilience resources, you can continue working toward providing safe and reliable services to customers during emergencies. ★



# THE FUTURE OF WATER IS INNOVATION

By Mike Chambers

**W**ater utilities' budgets have been squeezed by residents who are unable to pay their bills because of unemployment, but must have water to practice good hygiene and fight the global pandemic. As another wave of infections threatens the country, we must brace ourselves for the possibility that businesses may be restricted and, with them, water utility revenues.

What's next? A lot of work – and even less money with which to do it.

Despite having a smaller customer base, rural utilities must meet the same standards as larger utilities, while having fewer financial and people resources and higher operational cost per capita. All these concerns compound the challenge of an aging infrastructure. The oft-cited American Society of Civil Engineers (ASCE) report card gives our overall infrastructure a dismal D+, our water systems a D and our wastewater systems a D+. Clearly, there is work to be done, including in Indiana. The ASCE estimates that our state will need to invest almost \$15 billion dollars into our drinking water and wastewater systems over a 20-year span.

State legislators understand that our infrastructure challenges need to be addressed, so they passed legislation that will disperse \$20 million annually – 40% earmarked for smaller communities – to water systems. However, at that rate of spending, it would take 750 years to make all the improvements we currently need.

The state legislators aren't the only ones who have realized that Indiana's water systems need to be updated. In October, the US Environmental Protection Agency (EPA) announced \$55 million in state revolving fund loans for drinking water.

According to the Water Main Break Clock, in North America, there are an estimated 850 daily water main breaks. Many of those breaks are attributed to cast iron mains corroding because of

chemicals that are either added to the water through treatment, leech into the water from piping in older homes or are inadvertently added to the water through ground water contamination or infiltration. Cast iron is especially prone to this, and many utilities have moved to using ductile iron to reduce corrosion. Unfortunately, cast iron was a popular choice when many systems were first constructed.

The American Water Works Association has advised that mains installed between the late 1800s and the 1950s are in need of replacement. That is expected to cost \$1 trillion over the next couple of decades. Our aging infrastructure has not gone unnoticed by the average American. Your residents are aware of the dangers of deferring maintenance, especially after two dams failed and flooded nearby communities in Michigan.

Not only are your residents aware of the problem, but they support seeking a solution. A Value of Water Campaign poll shows 84% of voters want state and federal leaders to support an overhaul of our water and wastewater infrastructure specifically, with 80% noting that rebuilding our infrastructure is extremely or very important. Among those polled, 73% supported investment in water infrastructure, despite the estimated \$1.27 trillion price tag.

The future of rural water must be innovative, creative, collaborative and efficient. The sharing of information between rural water utilities and public-private partnerships (P3s) are among the tools you'll need in order to continue providing safe drinking water and sanitation to your residents.

Indiana is leading the way with innovation. South Bend's combined sewer system was aging and had never been built to convey the amount of wastewater it was being asked to handle. Every time it rained, the overstressed system would overflow into the Saint Joseph River, dumping roughly 200 million gallons of wastewater into

the waterway and causing *E. coli* levels to spike. Under a 2011 consent decree with the EPA, the estimated cost to address the CSO was roughly \$1 billion – or \$10,000 for every man, woman and child living in the community.

To address this, the community installed data sensors in the system to determine where blockages occurred and where the system was being overwhelmed. The data helped utility officials determine where controllable valves and movable weirs would have the most impact. This, paired with investment into green infrastructure, cost \$6 million, with maintenance and data collection costing less than \$300,000 annually. Even better, overflows have been reduced to 5,000 gallons only 60 or 70 times a year and the *E. coli* numbers have dropped by 84%. The city now estimates that it will only cost another \$200 million to bring the system into compliance.

One of the largest costs water utilities of all sizes face is the energy bill – in order to provide clean water and treat wastewater, immense amounts of electricity go toward powering water and wastewater treatment plants. While energy efficiency processes and other power-saving methods will help you nibble at the edges of that bill, it still is likely a large part of your operational costs.

So why not generate your own power? As solar arrays and battery storage become more affordable, having decreased 82% in price over the past decade, more water utilities are looking at incorporating solar energy and defraying their own costs. Solar gardens can start out small and be scaled to need and budget. They also can be incorporated in new and innovative ways, including using floating solar facilities on water reservoirs or providing bee and butterfly habitats. They can reduce costs and earn water utility energy credits when a sunny day produces excess energy.

In addition, subsidizing your energy usage not only reduces your energy bill, but it makes your plant more resilient –

during a power outage, fail-safe measures will have an additional redundancy.

Beyond traditional renewables, wastewater itself can generate power, and some see a future where a wastewater plant won't only generate its own power and heat, but provide excess power to the energy grid. Sludge produces methane, and, if treated then broken down in an anaerobic digester, sludge can produce biogas that can replace natural gas as an energy source – even fueling your fleet. Sludge-to-energy also reduces your need to dispose of the solid sludge.

The EPA requires that sanitation sewers and stormwater sewers be separated to reduce combined sewer overflows. Anyone operating a utility well knows the problems that can occur when a heavy storm causes these combined sewers to begin backing up into their residents' homes.

Green infrastructure is more cost effective, requires less maintenance, and is installed more quickly than grey infrastructure – it's much easier to create retention ponds and rain gardens than to place large-bore pipes in the ground – and it is also much more visible to your residents. Planting trees not only improves natural drainage, but can also improve the property values of nearby residents' homes, something they will surely appreciate. Most green infrastructure is dual purpose, and many communities have utilized their parklands as green infrastructure.

Green infrastructure also makes utilities more resilient and mitigates flooding and air pollution. Studies have explored green infrastructure's ability to filter water and improve the quality of groundwater. Green infrastructure can naturally remove nutrients, sediment, metal and trace contaminants and recharge groundwater.

However, even the most inexpensive improvements must be financed. One funding source is the federal government's *Water Infrastructure Finance and Innovation Act (WIFIA)*, which provides long-term, low-cost loans for improving energy efficiency at water treatment and wastewater plants; desalination, aquifer recharge, alternative water supplies and recycling

water; and drought prevention, reduction and mitigation.

At the state level, states match federal funding through the Clean Water and Drinking Water State Revolving Funds. However, these funds are limited, often requiring large matches communities don't have and leaders are getting creative by looking at all available sources of funds, from the traditional to the alternative.

At the local level, there are the always reliable general obligation or revenue bonds, which can be paid off through collected taxes or fees added to ratepayers' bills. Infrastructure debt also can be remediated through taxation, through a local option sales tax, a special purpose tax that is not limited to residents, but also includes those who work or vacation in your community. However, this may be accompanied by a cut in state aid or competition from nearby communities to lower their taxes to lure shoppers.

In addition, public-private partnerships are available – in return for taking a portion of the risk by providing upfront funding, a private entity would be given a later consideration, such as tolls or collecting fees from ratepayers. P3s allow communities to stretch their budgets with private dollars while considering the entire cost of a project, including maintenance. They also can help projects cut through red tape and increase the likelihood it is on-budget and on-time. Some entities are considering "P4s," or public-public-private partnerships, in which multiple agencies work with a private partner, leverage existing partnerships.

As our infrastructure continues to erode, changes must be made to allow for innovative solutions. Community leaders need more flexibility options and fewer obstacles in order to address this mounting problem.

*Mike Chambers, BA, Communications California University of Pennsylvania, works with municipal leaders and presents to leaders across the nation. Since joining HomeServe in 2009, he has helped improve program offerings through feedback from partners and developed many programs around the eastern states. ★*



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# How Silver Creek Water Corporation Improved Water Quality in Their Storage Tanks

*Kasco NSF61 Certified Mixer improves chlorine residual, odor reduction, and eliminates thermal stratification during the summer months.*

By Scott Ham, Lucy Allen and Thom Tackman

The Silver Creek Water Corporation (SCWC) (<https://silvercreekwater.org>) performed a 15-month self-enacted, or *How-We-Did-It-Ourselves*, case study to determine the water quality in their tanks. The goal of the study was to use simple testing techniques to determine if tank mixing does improve water quality to the customer tap.

## Introduction

SCWC is in Sellersburg, Indiana, and many of the residents' work in nearby Louisville, Kentucky. SCWC purchases water from Indiana-American Water Company and does not treat the water supplied to them. The SCWC is governed by a Board of Directors who take great pride in their facilities and their desire to supply high-quality water to their customers.

The water distribution system consists of five water storage tanks and four water booster stations along with 155 miles of distribution piping.

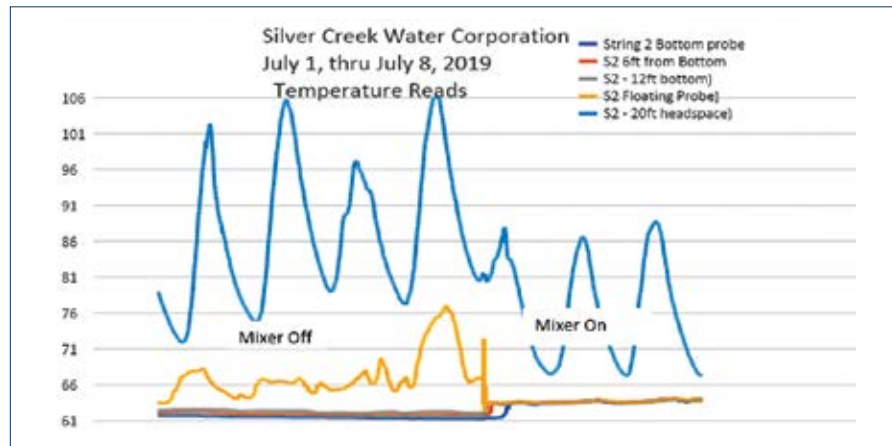


Figure 1. Temperature readings.

The water storage tanks vary in size and volume ranging from 151,000 gallons in a standpipe tank to 2.2 million gallons in an in-ground concrete tank. Water is supplied through two-meter vaults.

Maintaining a chlorine residual to the customer tap has not been a major issue, but there have been times when the chlorine residual would change, especially in the summer months.

Disinfection by-products have never exceeded State and Federal standards; however, they did seem to rise and fall for reasons unknown at the approved sample points.

## Improving Water Quality in The Water Storage Tank

Scott Ham is the Corporation Water Manager at SCWC. After observing these changes within the water tank, he wanted to understand *why* water quality was changing in the distribution system and what he and his team could do to minimize those changes.

During an annual water conference, a SCWC board member came across the Kasco booth and asked Scott to look at the Kasco CertiSafe Active Mixer.

Scott had previous experience with active and passive mixers as both were installed and operating in two of the five water storage tanks. The Kasco team reviewed the application and recommended to Scott's team a  $\frac{3}{4}$  hp, 120-volt Kasco CertiSafe floor mount mixer with a control panel. Temperature probes were provided at no cost by Kasco so that temperature profile testing could be completed. The overall easy installation of the mixer made the testing phase manageable for Scott's team.



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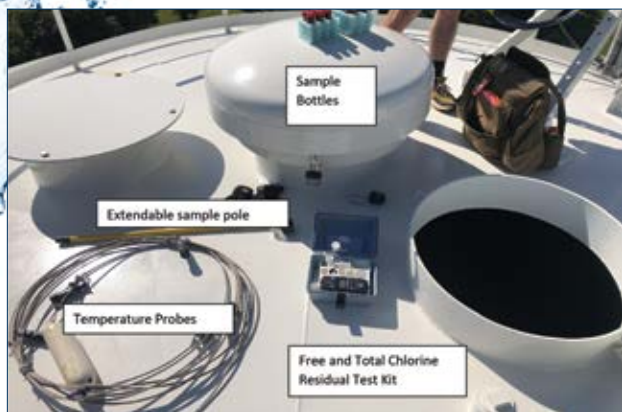
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**Figure 2.** The **second step** was to determine what testing equipment was required.

### Testing Mixer Performance

SCWC Team installed a mixer in the new Fairview Knob 2.2-million-gallon water tank. The mixer, power cable, and control panel arrived a few days after the order was placed, and with help of a local electrician, the mixer was installed through the center vent of the storage tank. Installation was easy and completed soon after.

A few weeks after installation, a temperature string supplied by Kasco arrived and was installed in the tank hatch away from the mixer. The test ran for several weeks and the mixer was turned on and off during the test period to see the results. During the temperature testing, chlorine odors were readily apparent when the mixer was off and were not detectable when the mixer was running (see **Figure 1**). Additional reading is available on the Kasco website related to chlorine odors and what they are telling you. See <https://kascomarine.com/blog/what-is-your-nose-chlorine-residual-telling-you>.

In March 2020, Kasco team members Lucy Allen and Thom Tackman visited with Scott to discuss additional testing at the 2.2 MG Fairview Knob Tank during a second round of tests. The next test would be expanded and would include both chemical and thermal stratification along with sampling and testing for disinfection by-product formation.

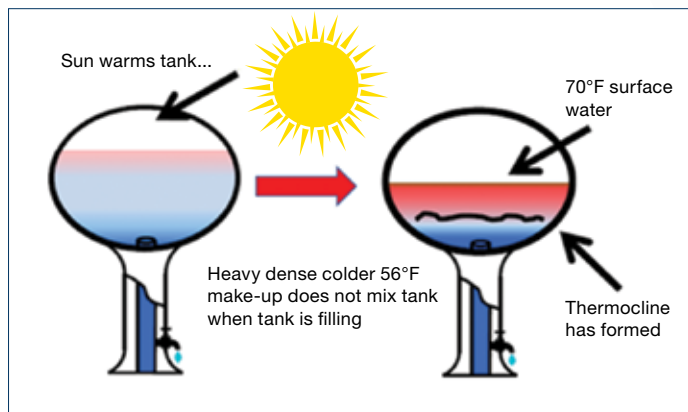
**Step one** of the tests was to make sure that all the corporation safety standards were met, so staff members were first trained on climbing the elevated storage tanks to make sure they had the proper training and safety gear. The **second step** was to determine what testing equipment

was required and to locate a lab to run TTHM and HAA5 samples. The samples were pulled from the top and bottom of all five reservoirs. The **third step** was to coordinate the tank sampling with the temperature probe testing and document the readings.

Testing began in June and was completed in August of 2020. SCWC Team documented the results of their chlorine residual and temperature testing and with help from a neighboring laboratory the TTHM and HAA5 samples were tested. The test results showed that the two tanks with active mixers had similar free and total chlorine residuals in both the top and bottom of the tanks regardless of water age. The water temperatures were nearly the same in the top and bottom of the tanks and

disinfection by-product levels were very close in both the top and bottom of the tanks (See **Figure 2**). In short, the active mixers were meeting their intended purpose and also influenced lower air temperatures in the headspace of the two tanks.

The testing results in the tanks *without the active mixers* tested quite different. The temperature difference varied by more than 10 degrees from the top to the bottom of the tanks and little or no measurable chlorine residual was tested at the top of the tank (see **Figure 3**). SCWC operators were quite surprised by the chlorine results measured at the top of the tanks and completed multiple tests to verify the residual results. TTHM and HAA5 results were even more revealing.



**Figure 3.** Tanks without active mixers.

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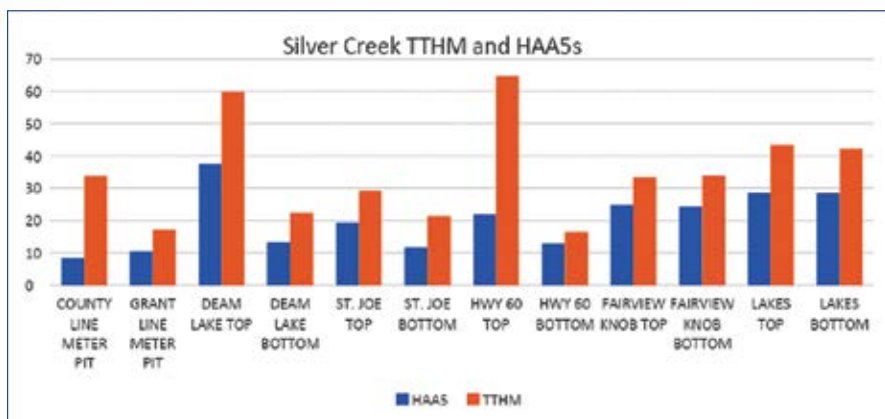


Figure 4. TTHM and HAA5 data.

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While all of the tanks had been thoroughly cleaned and inspected within the past 12 months, the disinfection by-product levels were three times higher in the top of the tanks as compared to samples taken from the bottom of the tanks. Test results concluded that TTHMs and HAA5 levels were much higher in the top of the tanks when not actively mixed (see **Figure 4**).

### Active Mixing to The Rescue

Based on testing conducted by SCWC Team, the Board of Directors approved the purchase of three additional Kasco CertiSafe active mixers. When work is completed, all five of the water tanks will have active mixers with an equipment cost of less than \$10K per tank.

Scott Ham has a motto that he freely shares, *"Don't tell me what I can't do, but rather let me show you what we will do together!"* The SCWC Team has successfully demonstrated Scott's *"We Can Do It Together Attitude"* by completing the equipment installation and testing as a Team. The data they collected clearly shows the benefits of active mixing. Their efforts have provided a cost-effective water quality improvement solution at the customer's tap, using simple testing techniques.

### About the Authors

**Thom Tackman** is a certified operator in both Arizona and Missouri and has spent the last 47 years as a college level instructor specializing in water operator certification review, disinfection, and regulatory requirements. He is an experienced manager, author, presenter, educator, and mentor. More recently, he has spent time working nationally in sales positions for the water and wastewater industries, focusing on chemical feed equipment, water quality analytic equipment, and mixing technologies. Thom was awarded Arizona Operator of the Year in 1995 and presently serves the Florida AWWA Top-Ops co-chairman.

**Lucy Allen** is the Business Development Manager for Kasco Municipal Product line. She has been working in the water industry for the last 12 years in application engineering and sales in water quality chemical feed equipment, water analytic equipment and mixing technologies. ★



# AWIA COMPLIANCE

## Risk and Resilience: What You Need to Know and Where to Find Resources

Passed in 2018, *America's Water Infrastructure Act* (AWIA) requires community water systems to file a 'risk and resilience' assessment with the EPA. Within six months of the assessment, water systems must develop an emergency response plan. Links to the process, certification requirements, and resources can be found at [www.epa.gov/waterresilience/americas-water-infrastructure-act-risk-assessments-and-emergency-response-plans](http://www.epa.gov/waterresilience/americas-water-infrastructure-act-risk-assessments-and-emergency-response-plans).

### Who Must File a Risk and Resilience Assessment?

Any community water system that serves more than 3,300 persons is required to file an assessment and emergency response plan. While a community water system is defined as any drinking water utility that consistently serves at least 25 people or has 15 service connections year-round, only those serving 3,300 people are impacted by this requirement.

### When Do I Need to File?

The due dates for both the assessments and the plan are dependent upon the size of your service population.

Service Population	Risk and Resilience Assessment	Emergency Response Plan
≥ 100,000 people	March 31, 2020	September 30, 2020
Serving ≥ 50,000 and ≤ 99,999	December 31, 2020	June 30, 2021
Serving ≥ 3,301 and ≤ 49,999	June 30, 2021	December 30, 2021

### Continuing Requirements

Every five years, your utility must review your risk and resilience assessment and adjust if needed. You then must recertify your assessment with the EPA. Within six months of recertification of your risk and resilience assessment, you must review your emergency response plan and revise if necessary.

### Is There a Form or a Standard I Must Follow?

The short answer is no. Your utility's assessment and plan must meet all the criteria in AWIA Section 2013(a) and (b), but the AWIA does not require that you use any particular standard, tool or method for conducting your assessment or developing your plan. Please be aware that your risk assessment and emergency response plan need to include assessments accidental emergencies (chemical leaks, equipment malfunctions), natural disasters, and changing conditions (flooding or drought from climate change, for example), as well as malevolent acts of sabotage, both on your physical assets and your cyber-control systems.

The lack of a hard and fast standard recognizes the need for these assessments and plans to be flexible and tailored to each utility's needs. However, there are some guidance documents that can act as a road map to the development of these documents. The AWWA has developed *J100-10 Risk and Resilience Management of Water and Wastewater Systems* to guide utilities in their assessments, available for purchase here: [www.awwa.org/store/product-details/productid/21625](http://www.awwa.org/store/product-details/productid/21625).

### Establishing Priorities, Determining Strategies, and Finding Funding Sources

The EPA's *Resilient Strategies Guide* will help you identify possible priorities to evaluate and strategies to fortify your assets based on your utility type (it includes wastewater/stormwater as options, in addition to drinking water), your utility size, and state. The Launch Guide button is at [www.epa.gov/crwu/resilient-strategies-guide-water-utilities#](http://www.epa.gov/crwu/resilient-strategies-guide-water-utilities#), which will take you to the guide launch page at [www.epa.gov/crwu/resilient-strategies-guide-water-utilities#/utility-information?utilityname=&region=101&utilitytype=4&utilitysize=1315](http://www.epa.gov/crwu/resilient-strategies-guide-water-utilities#/utility-information?utilityname=&region=101&utilitytype=4&utilitysize=1315).



### Malevolent Acts: A New Concern

The risk for terrorism and potential sabotage must be taken seriously. The EPA has designed a guide to assist in this aspect of risk assessment and plan development, entitled *Baseline Information on Malevolent Acts for Community Water Systems*. This guide provides step-by-step assessments for different utility types and threats. The link to the EPA's site is [www.epa.gov/waterriskassessment/baseline-information-malevolent-acts-community-water-systems](http://www.epa.gov/waterriskassessment/baseline-information-malevolent-acts-community-water-systems), which includes the link to the document PDF at [www.epa.gov/sites/production/files/2019-07/documents/baseline\\_information\\_malevolent\\_acts\\_508\\_072519.pdf](http://www.epa.gov/sites/production/files/2019-07/documents/baseline_information_malevolent_acts_508_072519.pdf).

### Risk Assessment for Extreme Weather

If extreme weather is a major risk for your utility, there is an assessment tool that will help you project current and long-term conditions. CREAT has interactive maps to help evaluate your area and integrates with the resilient strategies guide at [www.epa.gov/crwu/creat-risk-assessment-application-water-utilities](http://www.epa.gov/crwu/creat-risk-assessment-application-water-utilities). This resource also helps identify strategies and, in some cases, funding sources for implementation.

### Don't Forget Chemical Safety

One of the asset categories identified is 'the use, storage or handling of chemicals.' The example cites chlorine as a chemical of concern for uncontrolled release. Maintaining a chlorine residual is key to the safety of your water, and maintaining safe chlorine handling practices is also critical to the safety of your employees and surrounding populations.

### Your Communities Depend on You

You know your water is literally the life-giver to your community. The economic and physical health of your communities are only as stable as the water source you provide. Thorough risk assessment and emergency planning is critical to maintaining your utility and the welfare of your community.

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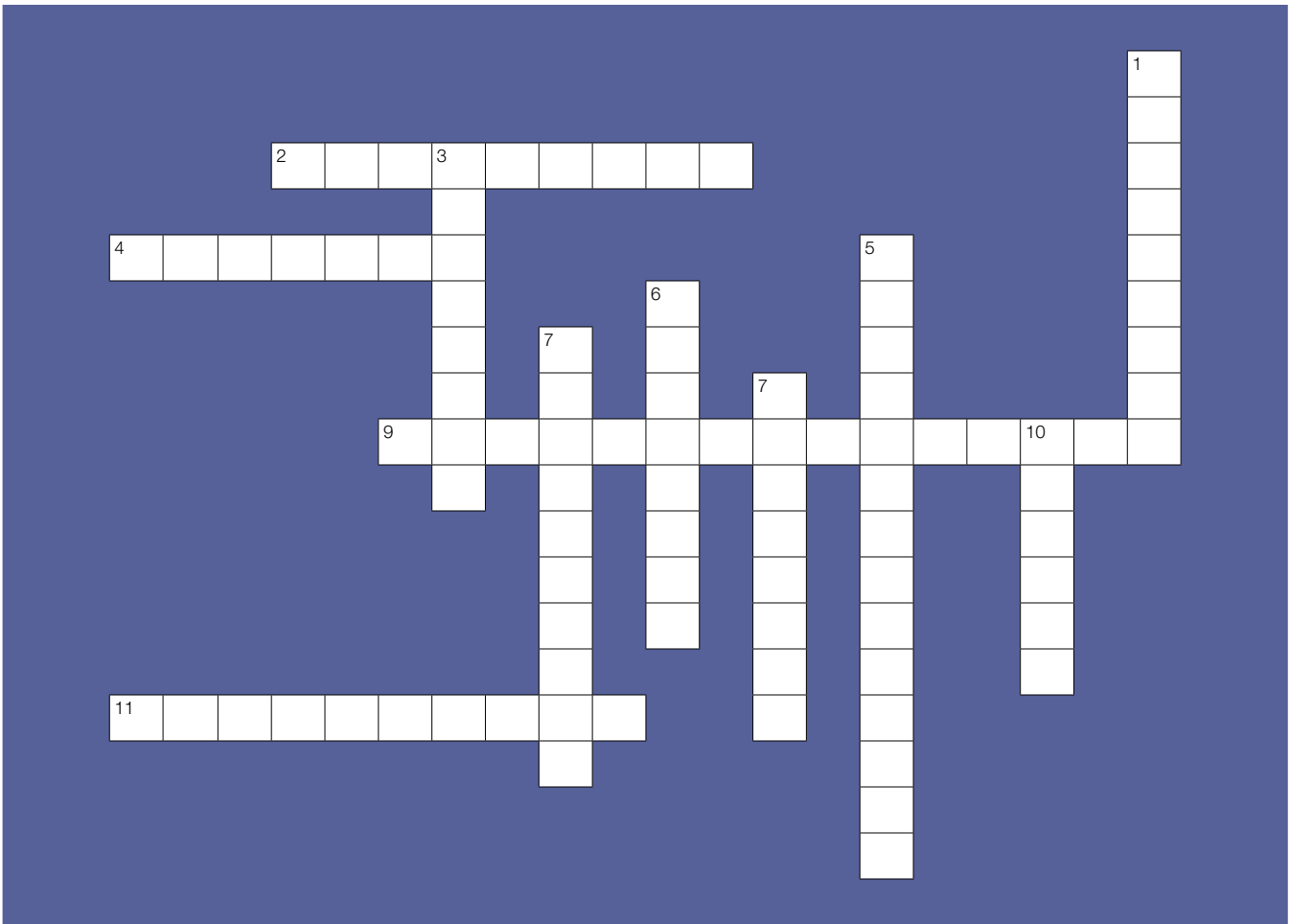
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# Wastewater Treatment



## ACROSS

2. The amount of cloudiness of a normally clear liquid due to the suspension of solid particles.
4. Life or natural processes that require an environment with oxygen.
9. The amount of molecular oxygen in water.
11. A separate sewer that carries rain and melted snow from street runoff.

## DOWN

1. The biological decomposition of organic matter in sludge by anaerobic or aerobic microorganisms in the wastewater.
3. Single-celled microscopic organisms that may be used in a variety of biological treatment processes.
5. Microscopic animals and plants of simple cell structure that feed on the wastes in wastewater to remove organic pollutants.
6. Wastewater flowing into a treatment process or treatment plant
7. The used water and solids that flow to a treatment plant.
8. The process of adding air in wastewater treatment to provide oxygen for microorganisms and to keep solids in suspension.
10. Oily or fatty matter.

ACROSS  
2. TURBIDITY 4. AEROBIC 9. DISSOLVED OXYGEN 11. STORM SEWER  
DOWN  
1. DIGESTION 3. BACTERIA 5. MICROORGANISMS 6. INFLUENT 7. WASTEWATER 8. AERATION 10. GREASE

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Just wanted to send a quick note to say "Thank You" to Toby from all of us for visiting the county and meeting with the group yesterday. It was easy to see that you bring an immense amount of encouragement, enthusiasm and expertise to the project.

We certainly appreciate your willingness to assist in getting the water supply for the Town of Poseyville back to being consistently safe drinking water. We look forward to working with you in the future in the endeavors.

The only thing that would have made the meeting more than it was, would have been for Janet and Chris to attend... and for "you" to bring the promise of unlimited funding tagged to address and resolve water quality issues.

*Greg Knowles, County Executive Director,  
US Department of Agriculture*

Just a short note to thank you and members of your staff for the opportunity to be at the conference. As always, it was a pleasure to be among rural water friends.

Please extend my thanks to your staff who are always very accommodating and extend the hand of Hoosier hospitality.

*Pete King*

I just wanted to send a short thanks for Dave Adkin's help and knowledge yesterday at Switz City and Worthington. He is a great mentor! He answered all my questions, helping me to understand these plants that I wasn't so familiar with.

Thanks for helping all us operators!

*Wendy Sexton*

Thank you for supporting our community with scholarship opportunities. The scholarship application process has been a good experience for me.

Boiler up!

*Owen Seward, Flora, IN*

I am writing you this letter on behalf of the Town of Clay City to convey my deepest appreciation for all the help and support your staff has provided for our town over the last several months. Dave Adkins has made a few visits now, to address different issues we were having. Each time he has been on sight he has not only helped us tackle the problem at hand, but also offered advice and expertise in areas we had not considered. He has helped with line locates, leak detection, and all sorts of operational concerns. On his recommendation we installed timers on our digesters, which has saved the city a considerable amount of money each month on our electric bill. We could not be happier with the service he has provided, and we hope that Alliance continues to offer this much needed assistance for years to come. I would also like to touch on the fact that Kelly Gardner continues to keep me updated on training opportunities, and other information that is extremely helpful. It's very obvious to me that the staff at Alliance truly care about the small utilities of Indiana and strive to help those utilities in any way they can, and I don't want that to go unnoticed.

*Jake Tiefel, Town of Clay City  
Wastewater Operator/Water Apprentice*

Congratulations, Connie Stevens, on your recognition as a leader in your field!

I enclose an article from Water Board 2019. We had a nice discussion at our Board meeting yesterday morning at Brown County Water.

*Pete King*



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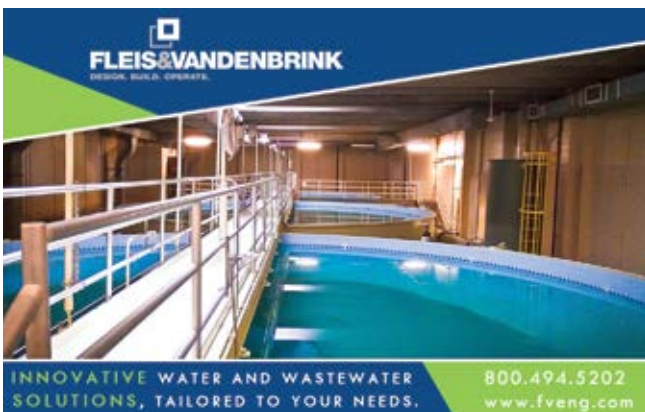
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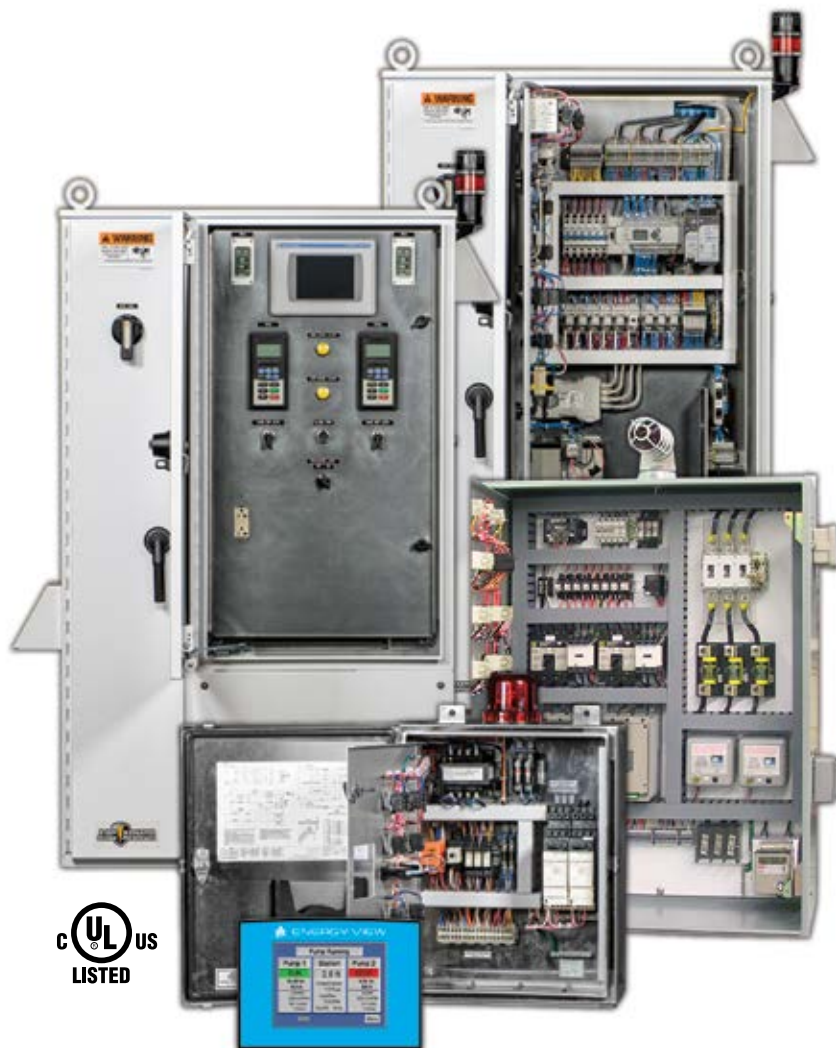
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