



MOUNTAIN STATE WATER LINE

A Publication of the West Virginia Rural Water Association

Spring 2022

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- ◆ Preventing and Controlling Blue-Green Algal Blooms
- ◆ Time Management Skills to Keep Your Sanity
- ◆ Simple Steps to Sourcedwater Protection

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Spring 2022

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West Virginia Rural Water Association, WVRWA, is a non-profit organization of rural and small publicly owned water and wastewater systems. The vision of the WVRWA is to be the recognized leader and respected voice for water and wastewater systems. The mission or purpose of WVRWA is to provide and promote the highest level of utility service, technical assistance, training, and advocacy for all West Virginia water and wastewater systems.

WVRWA is affiliated with the National Rural Water Association.

President's Message



As I pen this article, the warmth of spring is overtaking the cold of winter, which, for many of us, means a reduction in cold weather-related water main breaks. We were fortunate this year, as we had a relatively mild winter, which aids in limiting those emergency repairs. I hope all of our member utilities survived the winter with limited problems and that, if you had the need, you contacted your circuit rider to provide any assistance that you may have needed. It is important that you engage with the circuit rider in your area, as they can provide a wide level of assistance for your utility, when needed.

I would like to express my personal gratitude and appreciation to the WVRWA staff for their dedication to the water and wastewater operators across the great State of West Virginia, as those operators work to provide their ratepayers with the most life sustaining services a community can provide its citizenry.

With the need to make significant improvements to critical water and sanitary sewer infrastructure in West Virginia and across the nation, the recent Infrastructure Bill will provide additional funds over the next 5 years through the Clean Water SRF and Drinking Water SRF programs,

and others. These programs will specifically provide funds to find and remove lead service lines, as well as needs relating to emerging contaminant issues. It is my understanding the funds available for some of these programs are to be distributed as grants or principle forgiveness loans. Most of us have not experienced this level of grant funding availability during our careers.

In addition to these funds, the recently approved Omnibus Bill provided earmarks for several projects across the State. We congratulate those communities that were fortunate enough to have their projects funded and we hope your projects are successful.

Having said all that, it is also imperative we all understand that due to supply chain issues, unprecedented material cost increases and a limited contractor work force is causing the cost of most projects to be much higher than they would have been 2 years ago. Even with the increased cost, we must take advantage of the available funds to improve the water and wastewater infrastructure of the State of West Virginia. In recent conversations with lawmakers in Washington DC, it was apparent they are very willing to discuss these issues and work to mini-

mize the impact and to maximize the benefit of the additional infrastructure funds made available by the Infrastructure Bill.

It is also important that we express our appreciation to Senator Manchin and his staff for providing WVRWA with a 6.34 million dollar earmark for workforce development in the Omnibus Bill. WVRWA staff and Board members will be working diligently over the next few months to develop and finalize plans to maximize the use of these dollars to increase participation in the apprenticeship program and provide a pool of qualified operators to deal with the operator shortage that is currently occurring and will likely get worse over the next few years, as a significant number of licensed operators become eligible to retire.

I wish you all luck in designing and taking projects to bid to make those necessary improvements in your communities. Let us all work hard to improve our systems while continuing to provide our ratepayers with the level of service they deserve.

Let us all be careful, stay safe, and look out for your fellow employees as you perform your specific daily functions.

Respectfully,
Eric Bennett, WVRWA President ■

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WVRWA has teamed up with SunCoast Learning Systems, Inc. to bring online computer-based water and wastewater training to operators throughout the state. Through WVRWA Online Learning, you now have the freedom to learn from home, the office, or your local library. Training can be accessed directly from your personal computer using your internet connection.

Water and wastewater operators registering for e-Learning courses will have a menu of courses from which to choose. We are constantly adding and updating courseware to reflect changing industry needs and regulations. For more information, you can visit www.wvrwa.org or contact the office at 800-339-4513. Some of the available courses are shown below.

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From Your Executive Director

What's Happening on the Federal Front with Water and Wastewater!

Saturday March 12th 2022, at midnight, marked the adjournment of the 2nd Session of the 85th West Virginia Legislature.

Many bills were introduced that would shape the way publicly owned utilities would do business, positive and negative. Many didn't make it over the finish line, but a few did.

For the most part, it was a successful session for our Association. Our Legislative team had many meetings with legislators to educate and inform them as to what is important and just, for our members to have the resources and financial assets they need in order to function and do their day-to-day best.

On the National level, it is very important that we express our appreciation to our U.S. Senior Senator Joe Manchin, and his staff for providing our Association with the largest, to date, earmark to any State Rural Water Association in history. WVRWA was awarded a 6.34-million-dollar earmark for workforce development from the U.S Division of Labor. WVRWA staff and Board will be working hard over the next 6 months to develop and finalize plans to best utilize these funds, as it will have a huge impact on workforce development and the operator shortage here in our state.

In late March, a delegation from WVRWA, made up of Eric Ben-

nett, President; Brian Shade, Vice-president; Jason Myers, Board Member; Alan Haught, WV's member on the National Rural Water Association Board; and myself, attended the National Rural Water Association Water Rally 2022 in Washington, DC. Over two days, we were able to visit both Senators, Joe Manchin and Shelly Moore Capito and Congressman David McKinley. All of our visits were filled with talk of the positive impact the bipartisan infrastructure bill will have on much needed infrastructure improvements in WV.

These are unprecedented and exciting times we are experiencing, and I want to wish everyone the best with their projects. ■

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Preventing and Controlling Blue-Green Algal Blooms

What are algal blooms? Most algae are safe and are a natural part of aquatic ecosystems. However, some algae can produce toxins that can be damaging to humans, domestic animals and livestock that drink or come in contact with the water, as well as to organisms living in the water. Blue-green algae (also known as cyanobacteria) are the only group of algae to be toxic in freshwaters. They are microscopic bacteria living in water and are capable of photosynthesizing, which is why they are often called algae. Though microscopic, when they form colonies and accumulate together, they can become visible to the naked eye. Blue-green algae can produce potent liver and neurotoxins as well as skin irritants. However, not all blue-green algae are toxic and even toxic species are able to float and can, sometimes, be seen as green scums on water, or they just color the water green.

What causes algal blooms? Freshwater algal blooms occur when there is a combination of suitable environmental conditions including nutrients, temperature, light, turbidity, and stable conditions. Nutrients encourage the growth of blue-green algae. The process of nutrient enrichment in a waterway is called eutrophication. The main nutrients contributing to eutrophication are phosphorus and nitrogen. Runoff and erosion from fertilized agricultural areas, erosion from banks, river beds, land clearing (logging), and sewage effluent

are the major sources of phosphorus and nitrogen entering waterways. Phosphate attaches to sediments. When water is low in dissolved oxygen, sediments release phosphate into the water. This encourages the growth of algae. Blooms of blue-green algae can also occur when the concentration of nutrients is fairly low, but blooms are more frequent when the concentration of nutrients is high. Blue-green algal blooms usually develop during warmer months of the year when the water temperature is higher and there is increased light. Temperatures of 77 degrees are optimal for the growth of blue-green algae. At this temperature, blue-green algae have a competitive advantage over other types of algae. Blue-green algae populations are diminished when they are exposed to long periods of high light intensity, but have optimal growth when intermittently exposed to high light intensities. Blue-green algal cells contain gas vesicles that can be inflated or deflated. By using their gas vesicles, blue-green algae are able to regulate their position within the water and, therefore, regulate their exposure to light. Low turbidity allows more light to penetrate the water, creating optimal growth conditions for blue-green algae. Blue-green algae prefer stable water conditions with low flows, long retention times, light winds, and minimal turbulence.

The presence of blue-green algae may lead to water quality problems in potable water supplies, such as

taste and odor problems. When algae die, they can clog filters used for water treatment. Some species are capable of producing toxins. An emerging cyanobacterial toxin is cylindrospermopsin. Cylindrospermopsin has been detected in water bodies worldwide. A major issue with this toxin is when the source water is treated with copper sulfate, the cyanobacterial cells break up, releasing large amounts of the toxin into the water. Conventional water treatment has the ability to remove cyanobacterial cells, thus, removing intracellular cyanobacterial toxins through the coagulation process. However, a portion of these toxins are extracellular and it is this portion that is generally resistant to removal by coagulation, flocculation, sedimentation, and filtration. Copper sulfate is the most widely used algicide in the industry. Toxins produced by blue-green algae can pose a risk to humans. Toxins can damage the liver and neurological system of both humans and animals and, in severe cases, can cause death.

There are a range of measures that can be used in the prevention and control of blue-green algal blooms. Having a management strategy to manage blooms and water management, education, awareness, research, and knowing what type of algae is in your water is essential. Algal blooms in lakes and reservoirs can be dealt with by using a number of management strategies. One method is artificial

destratification. Artificial destratification involves increasing the circulation of water that circulates between the shallower and deeper layers of the reservoir. This can be achieved by introducing a plume of bubbles near the bottom of the reservoir by installing a propeller or impeller in or near the dam wall. A circulation pattern is set up that reduces the differences in temperature, oxygen, and nutrients between the top and the bottom waters. Artificial destratification can reduce algal growth by reducing the sediment phosphorus load available to the water column and so starving the algae of nutrients and by mixing algae deeper into the water column and starving them of light. Another method of controlling algal blooms

is to use an algicide, such as copper sulfate. Using algicides to control algal blooms is not an effective long-term solution to algal problems and should only be used in emergency cases. Risks associated with using copper-based algicides include mass release of toxins from algal cells, accumulation of copper in the sediments, growth of blue-green algae that are resistant to the algicide that may cause greater water quality problems, and if you use copper based algicide test for copper residuals at the treatment plant. Algae can be removed from water through a number of treatment methods, including conventional treatment. The most reliable method of algal toxin removal is using activated carbon filtration. This

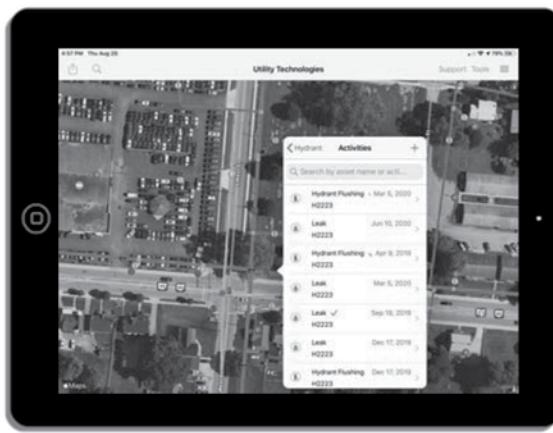
approach uses either powered activated carbon, which can be added intermittently whenever the need arises, or granular activated carbon filters.

Only a few methods of preventing and controlling algal blooms were discussed in this article. There are other methods available, including one using ultrasonic waves. Do your homework to determine what method works best for your water source and type of algae. Utilities that use an algicide and experience problems at the treatment plant, such as decreased detention time and shortened filter runs, usually aren't treating the source with the correct dosage or not treating the source often enough throughout the summer. ■

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By Daniel Vestal, ARC Specialist

Investing in Appalachia's Economic Future

The West Virginia Rural Water Association (WVRWA) has many informative programs that



assist our member and non-member systems in all aspects of the drinking water and wastewater utilities throughout our great state. WVRWA has excelled in water and wastewater training and tries to execute training sessions, including operator certification training in different areas around the state to accommodate utilities and to cut down on travel expenses.

In December of 2020, WVRWA was awarded a program from the Appalachian Regional Commission (ARC) with a goal of developing and improving Appalachia's infrastructure to make the region economically competitive. The purpose of this project is to provide specific, targeted technical assistance, training, financial, and managerial assistance to the public water and wastewater utilities within all 55 counties of West Virginia, paying special attention to counties that the ARC considers "Distressed" and "At-Risk" due to the economic situations of these certain counties.

This program will help reduce non-revenue water loss and wastewater Inflow & Infiltration (I&I). These failings of our industry have led to severe service interruptions throughout the nation and are especially hard on customers and systems during our harsh winter conditions.

Loan servicing, rate, and financial assistance will provide utilities with valuable assistance, which provides the state with assurances on the investments made on infrastructure projects in the region. Through the involvement with WVRWA's apprenticeship program, systems statewide can address the ageing workforce that our utilities currently face. It is estimated that more than 50% of the nation's water and wastewater operators will retire within the next 10 years.

The benefits that are produced from this program will include better managed utilities, assurances on infrastructure investment, more efficient water and wastewater systems, cost and system savings from reduced water loss and I&I, more appropriate rate structures, and well-trained personnel. WVRWA will continue

to work side by side with the WV Public Service Commission, WV Department of Environmental Protection, and the WV Bureau for Public Health to publicize these efforts through on-site technical assistance, printed, and electronic means.

The Appalachian Regional Commission has renewed this program with the West Virginia Rural Water Association for another year. Your ARC Specialist for WVRWA is Daniel Vestal. You can give him a call at 304-667-7659 or send him an email at dannyvestal@wvrwa.org for any water or wastewater assistance needs.

On a side note, at the time of writing this article, spring is ONLY 23 days away, YAY! All you operators, don't forget about your CCRs. Unfortunately, don't forget to get started on the new Lead & Copper Revisions. October 2024 will be here before you know it. If this is your year to renew your license, make sure you get all your WVRWA training classes in well in advance. Thanks for reading my article, God Bless, and have a great rest of your winter. ■



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Emerging Contaminants

Emerging contaminants could become one of the more troubling aspects of the water and wastewater treatment industry over the next few years. It is starting to become clear that they are a potential health problem for people in our communities. Emerging contaminants refer to many different chemicals, including **pharmaceuticals, personal care products, household cleaning products, agriculture and lawn care products, and now PFAS compounds.** These chemicals are very hard to treat and will present quite a problem if we would ever have to remove them. At this time, most of our water and wastewater plants will remove some of the emerging contaminants, but not nearly all of them. Depending on the contaminant and the type of treatment plant we have, they will remove anywhere from almost nothing to about 95%. Getting any of our existing plants to remove more than 95% would be a stretch and a lot of them will not even touch that kind of removal.

A lot of the contaminants we have had to deal with in the past, such as heavy metals, etc., we were able to find the source and prevent them from coming into the system by eliminating them at the source. With some emerging contaminants, particularly pharmaceuticals, that is going to be impossible to do. It would be easy if the main source of the pharmaceuticals was people throwing them in the garbage or

flushing them. Many publications on the subject do suggest that this is the main way pharmaceuticals get into the environment. In my opinion, this is not the case. When a person uses a pharmaceutical, the body only uses about 10% of that drug. The rest of that drug is discharged into the water when we go to the restroom. Obviously, it would help some if pharmaceuticals were taken back to the drug store or turned into a “take back program” for proper disposal. However, I am afraid that people using the pharmaceuticals to treat their medical issues is the main source.

Another chemical compound operators may have to deal with in the future are PFAS compounds. These PFAS compounds are known as the “Forever Chemical.” They never break down and, once they are in our bodies or in the environment, they are next to impossible to remove. These chemicals have been linked to certain health problems, including high cholesterol, a suppressed immune system, infertility, and certain cancers. Research is ongoing with these chemicals to determine how much of them the body can tolerate and how to best remove them from the environment. About 5000 of these PFAS compounds have been identified. The good news is PFAS are no longer being added to products and haven’t been for several years. The bad news is many of them are still out there because they do not break down.

A lot of the emerging contaminants can be treated with some of the advanced technologies that are available to water and wastewater systems. Some of these advanced technologies include systems, such as reverse osmosis, nanofiltration, and carbon filtration. A couple other tertiary treatment options for treating the emerging contaminants is ozone and activated carbon. A couple of the big problems are:

1. No single drinking water or wastewater technology has proven effective in removing every contaminant. We may well need to use several different treatment processes for different contaminants.
2. Most water and wastewater plants are not equipped with any of these advanced technologies so if we have to treat these emerging contaminants, most systems will require an upgrade.

Emerging contaminants are a problem that concern me as we go into the near future. In my opinion, the water and wastewater industry is going to have to remove some of these at some point in the future. How many of them we will have to remove and to what degree remains to be determined. Let’s just be sure that if our legislators start talking about a **law** on these emerging contaminants, that we, as water and wastewater professionals, **talk to our representatives** before a law is passed and hope they pass something we can work with. ■

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Time Management Skills to Keep Your Sanity

Wondering how you're going to catch up with all the work you have to do?

"It seems like the more I do, the more I have to do". In a lot of ways, this statement is true; however, with proper time management, you won't be overwhelmed. This subject is more important now than any other time in history for West Virginia water operation specialists. As all the Chief Operations Specialists in the state know, the responsibilities with new regulations are the most time-consuming in recent history. All large tasks can be handled and completed by following a few good time management procedures.

Don't let your time get jumbled up like this clock!



1. Leave your "work tasks" at work

When you leave the workplace, use your time at home to love the people that mean the most to you. After all, isn't that the reason you go to work anyway? Spend time with the family or do what makes you happy.

2. Go to bed early and sleep a full night

A full night's sleep is very important to your health and your efficiency/productivity at work. Technology can help you understand if you are getting a good, full night's sleep. My Fitbit watch gives me a Sleep Score and I strive to make a "70" every night. Let's face it, "70" is a passing grade.

3. Stop multitasking and create productive habits

Productivity is what we strive for and multitasking is the most unproductive habit people have. Habits are things we are conditioned to do automatically. You probably have the habit of brushing your teeth in the morning. If you use a timeclock, you may go straight to it when you get to work. Try to create other productive habits like spending 1 hour on the new service line data collection process at a certain

time of the day. Work on one task at a time and try to create an environment where you won't be disturbed for important and time-sensitive tasks. Just because you're in the office doesn't mean you have to answer the phone. That's what we have voicemail and other employees for. Getting messages and returning calls can be a scheduled task during the day.

4. Plan your time and set attainable goals

A to-do list is a wonderful way to make sure you get tasks done. Pay attention to any tasks that seem to get left on the list for an extended period. These items should not be ignored for any reason. They should either be removed from the list or delegated to another person so it gets done. If you delegate it out, let the other person take care of it and don't get caught up in the details of what they do to finish the task. If a goal is attainable, it shouldn't stay on your list very long. All to-do lists should be updated every seven to ten days.

5. Group similar tasks together and do your least favorite task first

When you look at the to-do list and see that one task that you despise, start on it first. You will probably find yourself working harder to get that one out of the way than any other task on the list. When you get to check it off the list, you won't feel so bad about looking at the list any longer. Grouping similar tasks on your list can sometimes lead to completing two or more tasks in a given period because the focus and concentration levels will be similar. Those types of tasks make you feel good about your accomplishments for the day. Who doesn't want to feel good about their workday accomplishments?

6. Create an organizational system and track your time

If you have an “organized chaos” type of desk, maybe it’s time to clear the clutter. Taking 2 – 4 hours to make yourself more productive is worth the work. Find a place for the keys to hang out for the day while you work instead of laying them on the desk. Organize the writing utensils and make a place for the folders to be stored within reach. Keeping a clear place to write on current documents should not be looked at as the place to throw everything down. Maybe an incoming documents basket would help with that problem. Below is a good example of a well-organized desk.

If you don’t audit or take a good look at what time you spend on tasks throughout the day, you may never know about those hidden destructive habits that may be destroying your time. Maybe you spend a little too much time on Facebook or in the break room reminiscing. There are several time management apps online to help you get a handle on your time.

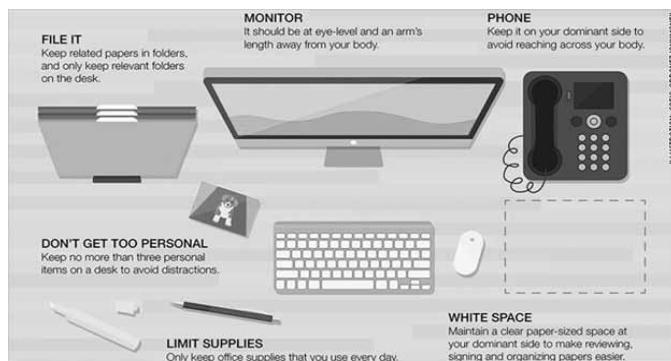
7. Just say no

Most systems have a couple of people who can do just about anything they’re asked, but they’re always the busiest. Those people need to understand when and how to say NO. Telling everyone, YES just to please them can

and will be detrimental to your health. You don’t have to say NO and be blunt about it. You can check your schedule and get back to them. Take your time and make sure the task is aligned with your job description. If you must say NO for any reason, just say it and get on with your task at hand. Don’t overthink it and let it affect your productivity.

Some people might say I wrote this article backward, but I started with the most important aspect or benefit to **Time Management**, Your Health and Your Family. By getting your time under control, you will find it not taking as long to finish tasks.

WORK SMARTER, NOT HARDER, AND YOU WILL ACHIEVE THINGS BEYOND YOUR WILDEST DREAMS, both in your job and personal life. ■





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Apprenticeship

HWVRA now offers an apprenticeship program for water and wastewater operators. This program is a time-based program with 4,000 hours of OJT hours and 288 hours of RTI training. The program incorporates the WVBPH requirements to become a class II water or wastewater treatment operator. Once an apprentice finishes the program, they will receive a nationally recognized U.S

Department of Labor certificate that is honored across all 50 states. This is just a certificate stating they completed the training for water or wastewater operator specialist II, but it is NOT the license. In this program, the apprentice will complete three Sacramental manuals and four online courses through SunCoast Learning.

There are now 26 active apprentices in the program. The classes

start in January and July of every year. The first group of apprentices are projected to graduate in July of 2023, which means they have completed the required curriculum assigned by the Workforce Development Coordinator throughout the two-year program.

If you or your system is interested in the program please check it out at wvra.org or contact myself at 304-704-0507. ■

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- Low construction costs and available contractors are not guaranteed to last.



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By Jerry Dotson, Sourcewater Specialist

Simple Steps to Sourcewater Protection

Iart of the sourcewater protection process is public education. In fact, citizen groups and individuals who are passionate about conservation and protection of water resources may be a valuable asset in protecting your drinking water source. Some areas where public education can be helpful include household hazardous waste, proper medicine disposal, and septic system maintenance.

A lot of pollution can be prevented by teaching residents to properly dispose of potential sources of contamination. Chemicals should not be poured down the drain, on the ground, or into storm sewers. Some should not even be thrown into the trash. Those practices can contaminate both ground water and surface waters. Wastes such as used motor oil, pesticides, leftover paints, mothballs, flea collars, household cleaners, and medicines should be disposed of through proper means. The best place to start is the product label. Always follow the label's instructions for use, storage, and disposal of these materials. Keep chemicals in their original container with the label intact so that they can be

identified. Never mix leftover chemicals; doing so could cause dangerous reactions.

Check with your local environmental, health, or solid waste agency for more information on disposal options. If your community does not have year-round collections for these items, see if there are designated days for special collections. Some areas have special days where potential contaminants may be dropped off at a central location. If your community does not have any collection options, some local businesses may accept certain products for recycling or disposal. For instance, used motor oil can usually be dropped off at an auto parts store or local garage. Battery retailers like Lowes and Home Depot often collect used batteries. Also, remember that empty containers that held household hazardous wastes may contain some residual product and should be handled and disposed of with care.

Another strategy is to use options other than hazardous chemicals to perform some tasks. The chart below provides some alternatives:

Drain Cleaner	Use a plunger (or plumber's snake) or boiling hot water.
Glass Cleaner	Mix one tablespoon of vinegar or lemon juice in one quart of water. Spray on and use newspaper to dry.
Furniture Polish	Mix one teaspoon of lemon juice in one pint of mineral or vegetable oil and wipe furniture.
Rug Deodorizer	Liberally sprinkle carpets with baking soda. Wait at least 15 minutes and vacuum. Repeat if necessary.
Silver Polish	Boil two to three inches of water in a shallow pan with one teaspoon of salt, one teaspoon of baking soda, and a sheet of aluminum foil. Totally submerge silver and boil for two to three more minutes. Wipe away tarnish and repeat if necessary.
Mothballs	Use cedar chips, lavender flowers, rosemary, mints, or white peppercorns.

Lawn and Garden Chemicals:

Limit the use of pesticides and fertilizers, and always follow the directions, especially for dosing instructions. Many pesticides and fertilizers contain harmful chemicals that can contaminate groundwater and run off into surface waters.

Septic Systems:

Properly maintain your septic system. Inadequately treated household wastewater can contaminate groundwater. This poses a hazard to drinking water and the environment. Bacteria, viruses, and chemicals can be released into the environment from poorly maintained septic systems. Household septic systems should be inspected every three years, at a minimum, by a qualified septic service professional. Local professionals may be found through the National Onsite Wastewater Recycling Association (NOWRA) website. Septic systems should be pumped every three to five years depending on the household size and volume of waste generated. Alternative systems, such as aerated systems that have mechanical components should be inspected every year. Septic systems should not be used to dispose of left-over food items. The extra loading will require more frequent pumping of the system.

Another component of the septic system is the drain field. The drain field must also be maintained to provide optimal treatment and prevent septic system failure. First, proper maintenance of the septic tank will prevent solids from carrying over into and clogging the drain field. Also, parking vehicles or driving over the drain field can cause damage that will prevent it from working properly. If trees are planted near the drain field, they need to be planted at the appropriate distance to keep roots from growing into your septic system. And roof drains, sump pumps, or other sources of water should be kept from the drain

field to ensure they do not bog down the system with excess water and prevent it from working properly.

The toilet is not a trash can. Only human waste and toilet paper should be flushed down a toilet. Cooking grease and oil, baby wipes or wet wipes, feminine hygiene products, condoms, dental floss, diapers, cigarette butts, coffee grounds, cat litter, fish tank residue, paper towels, pharmaceuticals, and household chemicals should never be disposed of through the toilet.

Medication Disposal:

When medication is flushed down the toilet, they enter the environment. Either into groundwater or surface water, depending on the sewer system receiving them. Either way, there is a great potential for these medications to contaminate drinking water supplies. Pharmaceutical take-back collection programs are the best means of disposal for both over-the-counter and prescription medications. They offer environmentally conscious means of disposal for unwanted medicines. If you cannot locate a pharmacy with such a program, contact your local law enforcement agencies to see if they collect unwanted medicines. You can also check the US Drug Enforcement Administration (US DEA) website <https://www.dea.gov/takebackday> for information on their drug take back day and to find take back dates and locations in your area.

For more information about conservation and source water protection see the USEPA website <https://www.epa.gov/sourcewaterprotection/how-can-you-help-protect-source-water>. If individuals make a point of exercising care and caution in dealing with chemicals, septic systems, and medicines, the cumulative effect can be huge. Educating your customers can prevent major contamination issues in your drinking water source down the road. An ounce of prevention is worth a pound of cure. ■

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- Energy efficiency projects to lower costs and improve sustainability
- Disaster recovery or other emergency loans available

Contact your State Rural Water Association or National Rural Water Association for help with the application process.

For More Information:

Applications, information and forms can be downloaded from the NRWA website, www.NRWA.org/loans.

Email applications to:
nrwarwlf@nrwa.org

Or mail to:
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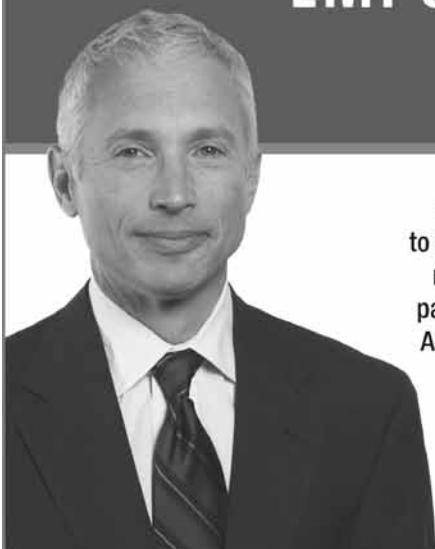
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By Shane Altizer, Water Circuit Rider

Creating Your Own Map Using Google Earth Pro

Did my previous article spark some intrigue in creating your own maps for your system? I have had a few systems ask me how to draw their own maps on Google Earth, so I thought it would be best to expand on my previous article to give you some details on how to create your mapping system yourself. I will try to give step by step directions that you can follow even if you don't know much about computers.

Step 1: Download Google Earth Pro

Search for Earth Pro and click on the google link and then scroll down and click "download earth pro on desktop." After it downloads, open the program and get familiar with navigating the map. You can navigate with the on-screen buttons to the right of the screen or use your mouse to click and drag, and the wheel on the mouse to zoom in and out. You can search for your address or city to get to the area you want to start creating your map easily.

Pictured here is Earth Pro and the system map I created. I broke the system up into sections using the white lines to make it easier to find an area. Inside each section, I added the water lines, valves, hydrants, meters (not pictured), and leaks. I color coded the water lines based off the size. The leak information shows pictures and gives details about line depth and what was done to fix the leak. I also located and took pictures of the valves to make them easier to find in the future. On

the left of the picture, under places, you can see I added folders for each section to keep it clean and easy to find what I wanted to see.

Step 2: After downloading and opening Earth Pro, you need to fix some options to make it easier to use. Turn off the layers (bottom left of the picture) that get in your way. I personally like the roads and borders on. Then at the top, click on tools, options, then navigation. Under navigation click "do not automatically tilt while zooming."

Step 3: Start drawing your map. In the picture, you can see two buttons circled in red above the map. Those are the only two buttons you need to use. The first is a placemark for adding fixed point locations such as valves and hydrants and the second is a path for adding your water lines.

Click on the path button and a box will open. You can change the name to anything you'd like; I named it the size and type of line (ex. 6"CI for 6-inch cast iron). In the description, write anything you know about the line. Under the style, color tab change it to whatever color and width you'd like and you're ready to draw the line. To draw the line, just click on the map wherever you want to start the line and then click at another location and it will draw the path. You can make as many paths as you want to create the water line. If you make a mistake, you can hit delete on the keyboard to delete the previous path. Click "OK" in the box once you have finished

drawing the line to save it.

Next, click on the placemark to add valves or any other location specific item you want to add. It will open another box; delete the name and click on the pin to the right of the name. Change the icon, color, and size to whatever you'd like and hit OK. If you have a picture of the item you are adding you can click "add local image" and insert the picture there. Then click and hold on the icon on the map and move it to the desired location. Once you have the icon where you want it, click "OK" in the box to save it.

Step 4: Print the map. If you want a map to have in the field, it is possible. Click "file," "save," and "save image." Then zoom in to the section you want to print. You can click "map options" to turn off the legend or map title if you'd like, or click on the untitled map to name it. To edit the legend, click on it then you can click the checkmarks to remove items or double click the words to change them. After you are done editing, click "save image" above the map and save it like you would any document. Print out the pictures you saved and place them in a binder.

It is a simple process to create your map, but it does take time. The great thing about creating your own map is you can continually add information. The operator at Rainelle, where I created the map, is still adding leak and line information as he gets it. Create your map now and future operators and field workers will be grateful and your system will be

better for it. If you'd like more help getting one started, I am happy to come to your system and help you wherever you are in the state. Call or text: 304-660-8644 or email: shahealtizer@wvrwa.org. ■





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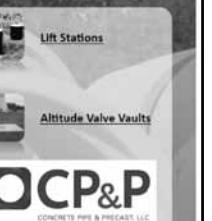
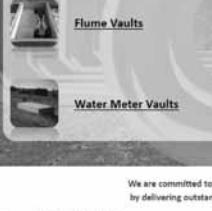
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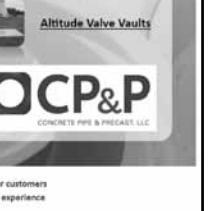
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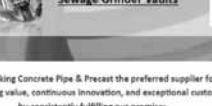
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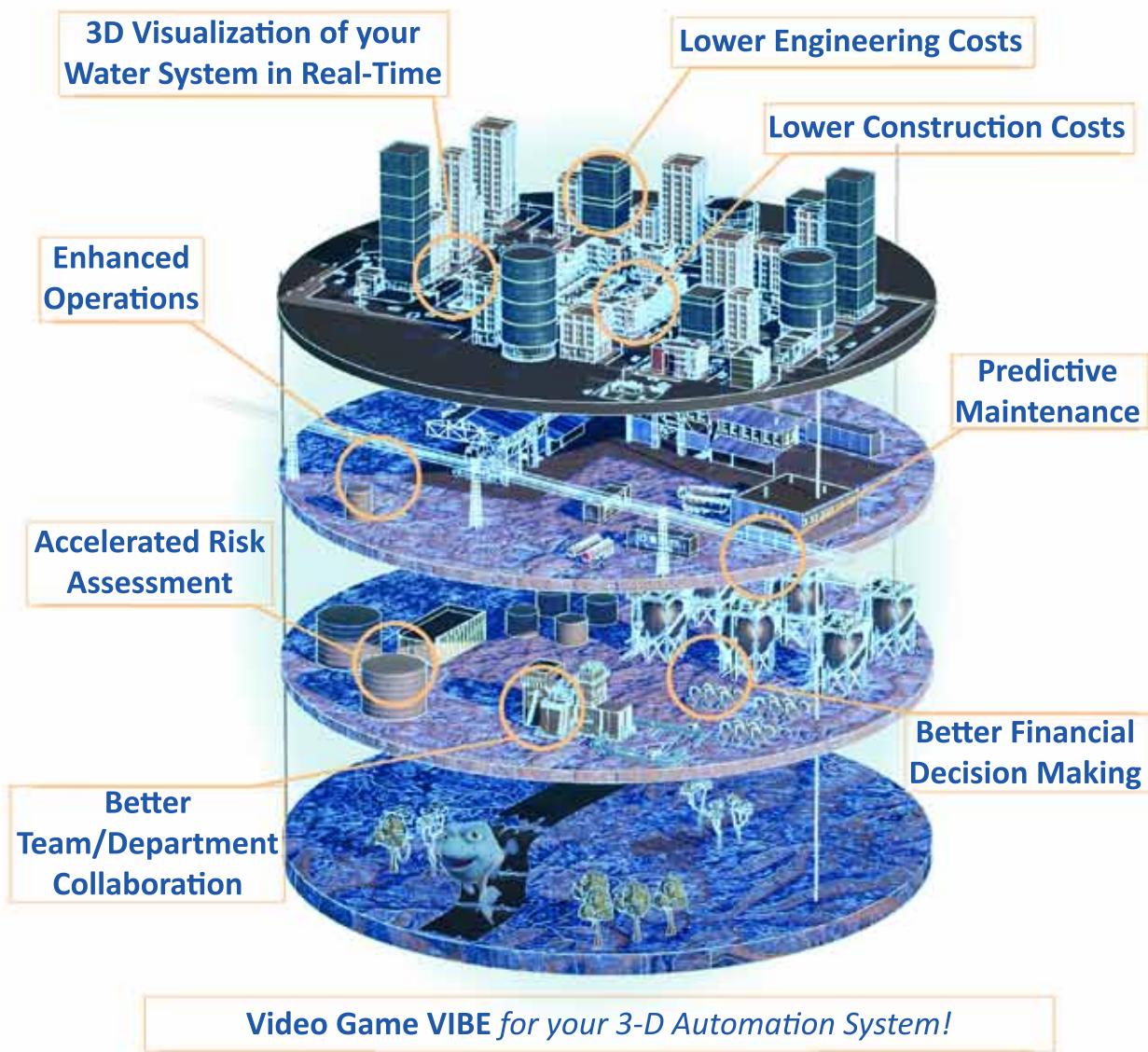
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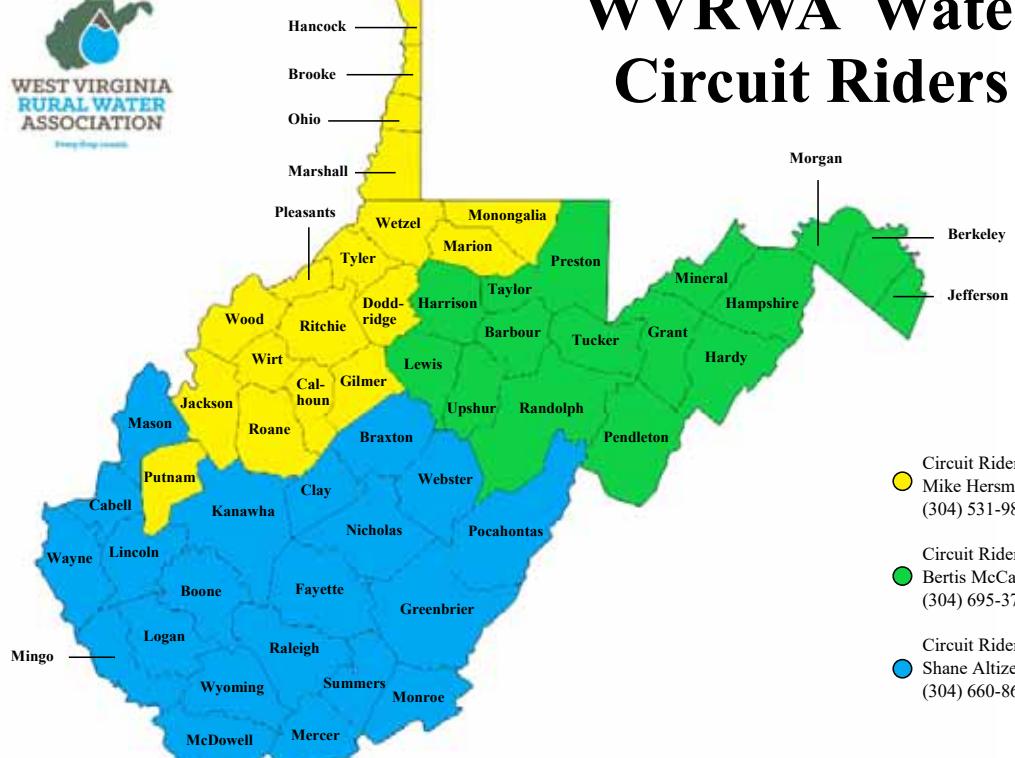
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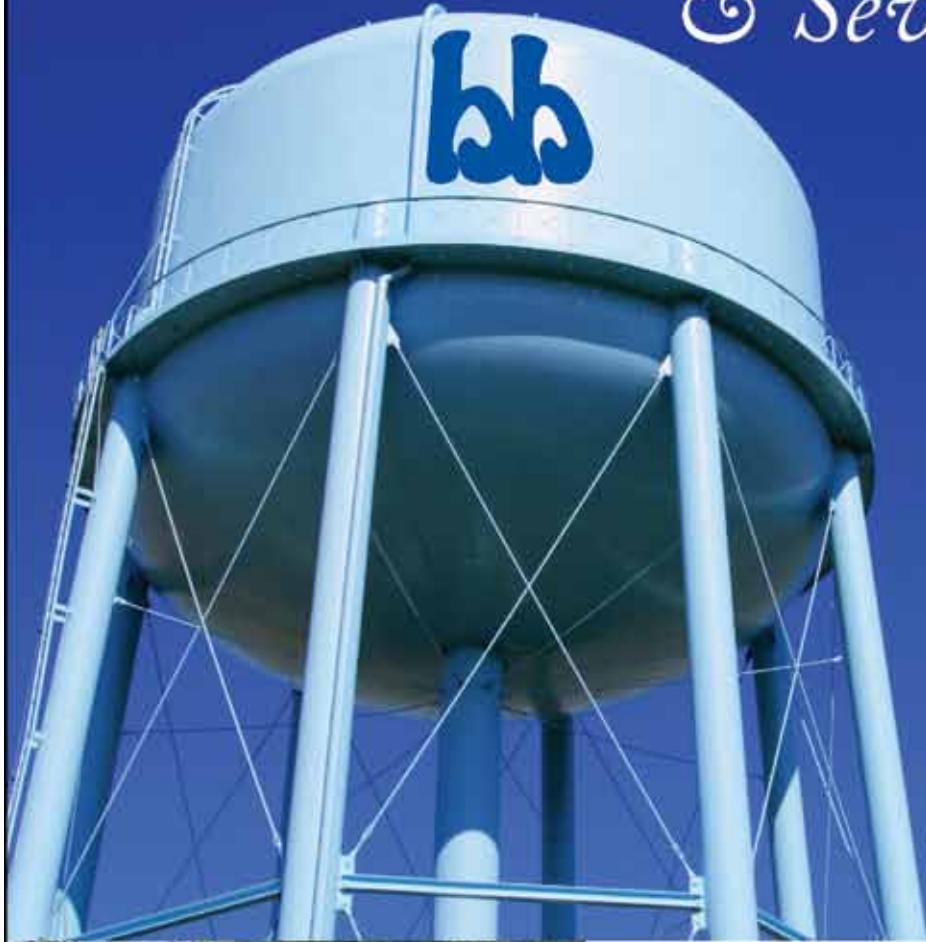
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Recently, WVRWA published its new e-Newsletter, *News Droplets*. *News Droplets* provides information on new programs and benefits, training classes, conference, legislative news, and much more. If you are currently not receiving *News Droplets*, but would like to, please send your name and email address to connect@wvrwa.org to be added to the mailing list.

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Don't Miss Out

Each year, the West Virginia Infrastructure & Job Development Council (WVIJDC) accepts applications to determine the distribution of funds set aside in programs created to assist water and wastewater systems across the state. In recent years, these funds have continued to increase and eligibility requirements are changing on both the state and federal levels to take into accountability the continually changing impact of the current financial burdens on both systems and their customers.

With these changes, you may be eligible for fundings that you would have been denied in the past. Eligibility is determined by a number of factors with focus being on disadvantaged areas and those with violation and compliance issues. With so many different sources available, it is likely there is something out there for you.

Submitting an application for funding review is easy. Start by speaking with your local officials, city councils, and boards and get your engi-

neers and other financial advisors involved to help establish estimated costs, feasibility, and studies for proof of necessity.

Many questions can be answered by visiting their website at <http://www.wvinfrastructure.com/>. Here, you can reference the project center for instructions on the entire project process. Applications and forms are also available with detailed instructions on the submittal process.

Financial and Engineering documents related to West Virginia Clean Water State Revolving Fund (CWSRF) can be found at <https://dep.wv.gov/WWE/programs/SRF>. Here, you will find the most recent Intended Use Plan and Annual Report for the current funds, as well.

Questions about any of these programs and many others can also be answered by contacting the following:

Katherlyn Emery
katherlyn.d.emery@wv.gov
304-926-0496 ext. 43830

John Giroir

john.giroir@wv.gov
304-926-0499 ext. 43836

Jefferson Brady

Jefferson.e.brady@wv.gov
304-926-0499 ext. 43875

"Don't leave money on the table." We have all heard it a hundred times, but that just may be what you are doing if you are not taking the time to look into these opportunities. Start the conversation with your council and ask questions. As our systems continue to age and environmental and financial factors continue to impact us all, the need for assistance will only continue to increase.

I am available if there is anything I may be able to help with, from helping to start the conversation or help finding the best source to answer your questions. Feel free to reach out to me anytime.

Beth Fletcher, WVRW Wastewater Technician; Call/Text 304-771-4081; elizabethfletcher@wvrwa.org ■

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8	9				3	7		
	6		1					5
		3	7		6			4
3			2					9
		6	9		4	5	3	
	9				8			
1								2
	4	8				9		
7			6		5	1		

The aim of the canonical puzzle is to enter a numerical digit from 1 through 9 in each cell starting with various digits given in some cells (the “givens”). Each row, column, and region must contain only one instance of each numerical. Completing the puzzle requires patience and logical ability.

Answers can be found on page 38.



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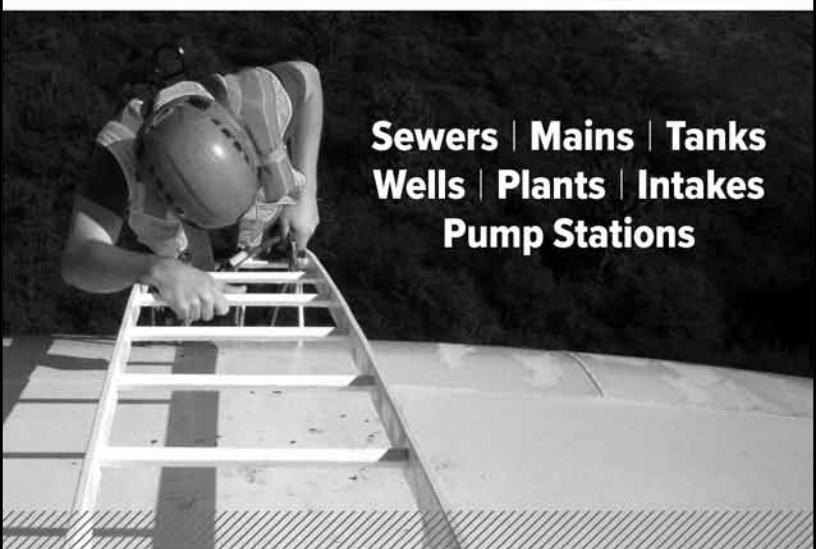
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4	6	7	1	8	9	2	3	5
1	2	3	7	5	6	9	8	4
3	8	6	2	4	5	1	7	9
2	7	1	6	9	8	4	5	3
5	4	9	3	7	1	8	2	6
9	1	8	5	3	7	6	4	2
6	5	4	8	1	2	3	9	7
7	3	2	9	6	4	5	1	8

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commercial customers, while Wastewater Treatment Operators must ensure that water discharged meets specific parameters that will not endanger humans, wildlife, and the environment. Both Operators must ensure that treatment processes meet federal, state, and local regulations. Operators carry a weighty responsibility in their daily jobs. Most Operators take this responsibility seriously and do their jobs with pride and integrity. Unfortunately, there have been Operators who have broken this code of professional ethics. Their neglect has led to job termination, jail sentences, and even the loss of human life.

Jay Niday, former Superintendent of an Iowa Wastewater Plant, used fraudulent testing procedures so that the plant would always pass fecal, TRC, and E.coli test results. On typical operation days, chlorine was fed at less than 3 gallons per minute, but on test days, chlorine was fed between 70-120 gallons per minute. At this time, fecal and E. coli samples would be pulled. After sampling, chlorine would be turned down in

order to get a low residual and the TRC sample would be taken later in the day. This intentional mishandling of sampling procedures continued for approximately fours years. Niday also trained other Wastewater Operators to sample in this manner. Niday's neglect cost him his Operator license, over \$8,000 in fines, six months in prison and two years' probation.

Robert Baker, Water Operator in New Jersey, was responsible for collecting 15 bacteriological samples for his local municipality. Per the Sampling Site Plan, seven locations were to be tested the first half of the month and eight locations were to be tested the second half of the month. Baker was caught pulling multiple samples from the same location and falsifying the Chain of Custody to indicate that the Sampling Site Plan was followed. After pleading guilty to violating the Safe Water Drinking Act, Baker is permanently banned from public employment in the state of New Jersey and spent one year in prison.

Day-to-day activities in water and wastewater treatment provide ample opportunities to fudge a number, tamper with a sample, or falsify documents. The nature of the Operator's work is somewhat invisible – the general public takes for granted the availability of safe drinking water and sanitary services – until something goes wrong. In certain circumstances, cutting corners or

just outright lying, could go undetected and have no public health consequences - until something goes wrong.

Things went really wrong in the small community of Walkerton in Ontario, Canada. Neglectful Water Operators caused thousands of people to become ill and ultimately seven people died. Stan and Frank Kobel, brothers and licensed Water Operators, knowingly sent water into the distribution without treating the water with chlorine or any other disinfectant. This led to an E. coli outbreak throughout the town of 5,000 people. Residents began getting ill, prompting investigations to track down the source of sickness. Despite the increase in reported illnesses, the Kobel brothers continued to deny that there was anything wrong at the water plant. Negligence and deceit caused the death of seven people, including an infant and young children. There is no cost or time that can equate to the loss of human life.

Operators: Thank you for respecting the trust of the public that relies on you each and every day. You are truly essential. If you find yourself in a situation where you feel pressured to make decisions that compromise the high standards that come with your profession, please reach out for help. There are resources available to support you in doing the right thing, even when no one is watching. ■



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Phone: (304) 472-3350

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WVRWA Associate Members - Spring, 2022

*Associate Member • **Sponsoring Associate Member
*** Sustaining Associate Member

***Pleasants Construction, Inc.**

24024 Frederick Road
Clarksburg, MD 20871
Phone: (301) 428-0800
See Our Ad Page 20

Laboratories

***Pace Analytical**
225 Industrial Park Road
Beaver, WV 25813
Phone: (800) 999-0105
See Our Ad Page 32

***Preiser Scientific**

94 Oliver Street
St. Albans, WV 25177
Phone: (800) 624-8285
See Our Ad Page 37

Services and Products

****Advanced Rehabilitation Technology**
525 Winzeler Drive, Unit 1

Bryan, OH 43506
Phone: (419) 636-2684
See Our Ad Page 32

****American Cast Iron Pipe/ American Flow Control**

2257 Clairmont Drive
Suite 220-222
Pittsburgh, PA 15241
Phone: (412) 721-9509
See Our Ad Page 3

***Ampstun Corporation**

P.O. Box 784
Richmond, KY 40476
Phone: (888) 252-4784
See Our Ad Page 5

****Appalachian Software, Inc.**

44 Amber Way
Scott Depot, WV 25560
Phone: (304) 757-1260
See Our Ad Page 16

***Aquafix, Inc.**

P. O. Box 8682
Madison, WI 53708
Phone: (608) 729-6617

***Aulick Chemical Solutions, Inc.**

111 Patton Ct.
Nicholasville, KY 40356
Phone: (859) 881-5422
See Our Ad Page 17

***Benchmark Construction Co., Inc.**

P. O. Box 1018
Hurricane, WV 25526
Phone: (304) 881-1735
See Our Ad Page 15

***BissNuss, Inc.**

7 Court Street, Suite 260
Canfield, OH 44406
Phone: (330) 533-5531
See Our Ad Page 17

***Buchanan Pump Service & Supply Co., Inc.**

P.O. Box 827
Pound, VA 24279
Phone: (276) 796-5473
See Our Ad Page 17

*****CITCO Water**

4034 Altizer Avenue
Huntington, WV 25705
Phone: (800) 999-3484
See Our Ad Page 29

***Concrete Pipe & Precast, LLC**

194 Deep Meadow Drive
Fishersville, VA 22939
Phone: (540) 487-5445
See Our Ad Page 24

***Consolidated Pipe & Supply Co., Inc.**

907 Honeybranch Industrial Park
Debord, KY 41214
Phone: (606) 298-0333
See Our Ad Page 38

***Core & Main**

2825 Fairlawn Ave.
Dunbar, WV 25064
Phone: (304) 768-0086
See Our Ad Page 16

***DAS Group**

3251-C Old Frankstown Road
Pittsburgh, PA 15239
Phone: (724) 327-8979
See Our Ad Page 15

***DN Tanks, Inc.**

672 Main Street, Suite H
Harleysville, PA 19438
Phone: (717) 521-7595
See Our Ad Page 37

***Dorsett Technologies, Inc.**

100 Woodlyn Drive
Yadkinville, NC 27055
Phone: (540) 494-0833

*****Extreme Endeavors**

1063 Hickory Corner Rd.
Philippi, WV 26416
Phone: (304) 457-2500
See Our Ad Page 26

***Fehr & Cuda Sales, Inc.**

P.O. Box 127
Greensburg, PA 15601
Phone: (724) 838-9394
See Our Ad Page 15

***Forberg Smith Process Solutions**

800 Old Pond Rd., Suite 705
Bridgeville, PA 15017
Phone: (412) 257-1551
See Our Ad Page 37

***Ford Meter Box**

13222 Fairview Road
Newark, OH 43056
Phone: (740) 319-4772
See Our Ad Page 15

***Frey Municipal Software**

40 North Grand Avenue, Suite 303
Fort Thomas, KY 41075
Phone: (859) 441-6566
See Our Ad Page 6

***Gilson Engineering Sales, Inc.**

535 Rochester Road
Pittsburgh, PA 15237
Phone: (304) 342-0012

***Golden Equipment Co., Inc.**

P.O. Box 873
Mars, PA 16046
Phone: (800) 242-1494

***H&S Controls**

1747 Country Club Road
Grafton, WV 26354
Phone: (304) 265-4433
See Our Ad Page 15

***HACH**

712 Creekstone Ridge
South Charleston, WV 25309
Phone: (304) 374-1490

***Hymax/Mueller**

201 Ralston Road
Richmond, VA 23229
Phone: (352) 789-9649
See Our Ad Page 37

***JABO Supply Corporation, Inc.**

5164 Braley Street
Huntington, WV 25705
Phone: (304) 736-8333

***Maryland Biochemical Co., Inc.**

712 Tobacco Run Drive
Bel Air, MD 21015
Phone: (800) 771-7252
See Our Ad Page 33

WVRWA Associate Members - Spring, 2022

*Associate Member • **Sponsoring Associate Member
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***Master Leak Technologies, LLC**

100 Home Road
Hatboro, PA 19040
Phone: (267) 236-6184
See Our Ad Page 15

***John P. Place, Inc.**

90 Clairton Boulevard
Pittsburgh, PA 15236
Phone: (304) 343-2607
See Our Ad Page 6

***Tepco-Trombold Equipment Co., Inc.**

P.O. Box 897
Mars, PA 16046
Phone: (724) 625-4260
See Our Ad Page 6

***Valtronics, Inc.**

P.O. Box 490
Ravenswood, WV 26164
Phone: (304) 273-5356
See Our Ad Page 32

*****Master Meter, Inc.**

101 Regency Parkway
Mansfield, TX 76063
Phone: (937) 902-4663
See Our Ad Page 25

*****Precision Pump & Valve Service,**

Inc.
P.O. Box 7027
Charleston, WV 25356
Phone: (304) 776-1710
See Our Ad Page 10

***Thompson & Litton**

726 Auburn Avenue
Radford, VA 24141
Phone: (540) 633-1897
See Our Ad Page 35

***Vermeer of West Virginia**

5900 MacCorkle Avenue
St. Albans, WV 25177
Phone: (304) 768-5965
See Our Ad Page 35

***McWane Ductile**

2266 South 6th Street
Coshocton, OH 43812
Phone: (330) 260-9292
See Our Ad Page 6

***ProSource Water Products, Ltd.**

14680 Pleasant Valley Road
Chillicothe, OH 45601
Phone: (888) 772-5478
See Our Ad Page 6

***Tri State Industrial Coating**

Contractors Alliance
512 33rd Street
Parkersburg, WV 26101
Phone: (304) 546-1909
See Our Ad Page 15

***Warren Pump & Supply**

1551 Jackson Avenue
Huntington, WV 25704
Phone: (304) 429-6723
See Our Ad Page 24

***Mid Atlantic Storage Systems, Inc.**

1551 Robinson Road
Washington C.H., OH 43160
Phone: (740) 335-2019
See Our Ad Page 32

***Quality Water Services, LLC**

160 John Street
Weston, WV 26452
Phone: (304) 452-9883
See Our Ad Page 20

***United Systems & Software, Inc.**

P.O. Box 547
Benton, KY 42025
Phone: (800) 455-3593
See Our Ad Page 6

***Water Development Authority**

1009 Bullitt Street
Charleston, WV 25301
Phone: (304) 414-6500
See Our Ad Page 37

***Miss Utility of West Virginia**

206 Berkeley Street
Charleston, WV 25302
Phone: (304) 345-3959
See Our Ad Page 16

***Sequoyah Software**

8415 Easley Place
Leawood, KS 66206
Phone: (314) 210-8922
See Our Ad Page 6

***U.S. Pipe & Foundry Co., Inc.**

2247 Maiden Lane
Roanoke, VA 24015
Phone: (540) 353-7425

***W.C. Weil Company**

P.O. Box 7144
Charleston, WV 25256-0144
Phone: (304) 776-5665
See Our Ad Page 32

****National Road Utility Supply, Inc.**

P.O. Box A
Valley Grove, WV 26060
Phone: (304) 547-0101
See Our Ad Page 30

***Service Pump & Supply Co.**

P.O. Box 2097
Huntington, WV 25721
Phone: (304) 429-6731
See Our Ad Page 5

*****USA BlueBook**

3781 Burwood Drive
Waukegan, IL 60085
Phone: (800) 548-1234
See Our Ad Back Cover

***Utility Solutions, Inc.**

327 Curtis St.
Delaware, OH 43015
Phone: (740) 369-4300
See Our Ad Page 16

***Nexbillpay, LLC**

P.O. Box 19688
Birmingham, AL 35219
Phone: (800) 639-2435

***Shafer, Troxell & Howe, Inc.**

97D Monocacy Blvd.
Frederick, MD 21701
Phone: (301) 682-3390

****Utility Technologies, LLC**

1054 Monroe Rd., Suite 105
Lebanon, OH 45036
Phone: (513) 488-1940
See Our Ad Page 8

***Pittsburg Tank & Tower Co.**

P.O. Box 913
Henderson, KY 42419
Phone: (270) 826-9000
See Our Ad Page 37

***State Equipment Inc.**

P.O. Box 3939
Charleston, WV 25339
Phone: (304) 776-4405
See Our Ad Page 6

WVRWA Welcomes New Members



Associate Member
Frey Municipal Software
Sequoyah Software



NON-COMMUNITY MEMBERS

Big Bear Lake	Peterkin Camp & Conference Center
National Radio Astronomy Observatory	Valley Vista Adventist Center

AFFILIATE MEMBERS

Ashland Scenic Campground	Newell Company
Global Capital of World Peace	Twin Falls State Park
Mettiki Coal (WV) LLC	

INDIVIDUAL MEMBERS

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Timothy Bennett	Matt Dawson	Kevin "Ricky"	Danny Kirk	Matthew Stanley	Louis Wooten
Ron Byrnside	Mark Dearman	Hamrick, Jr.	Patricia Lee	Paul Stover	Gary Young
Kennon Chambers	Dwayne Duffield	Michael Hawranick	Michael O'Brien	Shawn Thompson	
John Cobb	Samme Gee	Joshua Hunt	Richard Ohalek	Calvin Upton, P.E.	
Steve Cornwell	Michael Giannini	John Inghram	Caitlyn Preast	Doug Urling	

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