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RURAL WATER
ASSOCIATION**

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MOUNTAIN STATE WATER LINE

A Publication of the West Virginia Rural Water Association

Fall 2022

In This Issue

- ◆ **The Root of the Problem**
- ◆ **Small Steps Toward Sustainability**
- ◆ **Pressuring Washing Tanks**

WEST VIRGINIA RURAL WATER ASSOCIATION



Fall 2022

Articles and Features



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NRWA™

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

Clean drinking water and safe wastewater treatment are vital to the health and safety of all West Virginians. West Virginia Rural Water Association (WVRWA) strives to protect the quality of life in West Virginia by working hard to make sure drinking water and wastewater utilities in this great state have what they need to allow their communities to thrive. An integral component of this effort is ensuring that rural water systems are represented at the all levels of government. It is hard for


small WV utilities to have a voice to be heard on important issues that impact their ability to provide quality service to rural WV. As a result of hard work of the legislative team, WVRWA has a strong presence in state and federal government. WVRWA has earned the respect of many lawmakers and has a superior working relationship with many of them when it comes to fighting for what is right. You can rest assured that your association has already begun working on important issues, and will

be working hard looking out for your interests in this upcoming legislative session beginning in January 2023.

During the 2023 legislative session (date to be scheduled later), "Water Day at the Capital", will be held to allow you to gather at the State Capital and visit with your elected officials that represent your districts. This special day gives you an opportunity to share your concerns and ideas with the people that make the laws.

Have a great Fall! ■

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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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Basic Environmental Chemistry	10	Water/WW	\$180
Small Water Systems I	5	Water	\$100
Chlorinator Systems & Chemical Handling	10	Water/WW	\$180
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By Todd Grinstead, Executive Director

From Your Executive Director WVRWA Members Services

The Water on the Mountain 2022 Annual Technical Conference was held in August at the Snowshoe Mountain Resort. Fun times were had by all with the many exciting events; golf outing, picnic, awards, competitions, training classes, and ever important networking with your fellow water and wastewater professionals.

At the opening session, we heard from Mr. Ryan Thorn, WV State Director of USDA Rural Development. As well as presentations of various awards that were given to some deserving professionals in our industry.

Election of officers was held at the Board Meeting during our event. Eric Bennett, President; Brian Shade, Vice-President; and Porter Robertson, Secretary/Treasurer were all re-elected as your board leadership.

At the banquet, we heard encouraging words from West Virginia Legislature, Speaker of the House of Delegates, the honorable Mr. Roger Hanshaw, acknowledging the hard work and dedication of water and

wastewater professionals in this state.

“Rural Water Family Feud” was played for the final time. It was such a good time filled with fun and laughter! It appeared everyone had a great time. There is new and exciting entertainment planned for the 2023 Conference.

We are so very proud of the hard work and dedication of every professional within our industry. Many were recognized for their outstanding achievements during the “Awards of Excellence” presentation.

Office Manager of the Year: Donna Moore, Greenbrier PSD No. 2

System Manager of the Year: Dina Foster, Pea Ridge PSD

Water Operator of the Year: Guy Wyatt, Ravencliff-McGraw-Saulsville PSD

Water System of the Year: City of Moundsville

Wastewater Operator of the Year: Jackie Bailes, Craigs ville PSD

Wastewater System of the Year: Oak Hill Sanitary Board

Every year, the Association se-

lects two college students to receive a \$1,000 scholarship each, to help with the cost of achieving their education. This year, the recipients of the WVRWA Scholarships were:

Jenna Lynn Rice, Wheeling, WV

David Robert Kapp, Point Pleasant, WV

Also, we were very excited to announce that Water on the Mountain 2023 will be held at the beautiful Oglebay Resort in Wheeling, from August 13th-16th 2023. Oglebay offers amazing lodging like the Wilson lodge and Rustic, Deluxe and Premium Cottages, a wide array of dining options, along with many exciting events for the entire family to enjoy while visiting the Resort.

Thank you everyone for making Water on the Mountain 2022 a big success, as we look forward to an even better Water on the Mountain 2023!

Rumor has it.....there might be a miniature golf tournament at Oglebay on their 18-hole miniature golf course during our conference!! ■

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The Root of the Problem

No matter how big or small your home is, you want it to look nice and you want a neat and tidy landscape that is easy to take care of and will show off your home. The right number of plants make property more attractive and can improve its character and warmth, not to mention, its value. Many homeowners and builders put a great deal of thought into figuring out which plants to include in their home's landscape. However, they fail to take into account a most important question of landscaping to their property: "can any of these plants possibly enter my plumbing and destroy my water or sewer lines?"

Many plants used to beautify most outdoor home landscapes can seriously damage your home's plumbing and cause unnecessary back-ups in your system. It is very important to know which ones can be harmful before you purchase them. The right choices can prevent expensive sewer repairs in the near to distant future.

What does a simple plant used to beautify my property have to do with my plumbing and sewer lines?

The main reasons that plants end up damaging plumbing systems and sewer lines is because they

either need more space or more water than is being made available to them. Plants that need extra space for their root systems and cannot extend outward will grow downward and extend deeper into the ground where your sewer lines and plumbing are located. Likewise, some plants need a lot more water than others and will extend their roots into the cracks and crevices of your sewer and plumbing joints, which will cause a sewer blockage and breaks in the lines themselves, and even extend into the nearest manhole where it will have to be cut out, and possibly, removed by heavy machinery.

Below are some top plants that I have experienced to cause sewer line and plumbing disruptions:

1. Oak Trees - It takes dozens of years to reach maturity, but this slow-growing root system can quietly ravage a home's structure and plumbing system. The main root, known as the taproot, grows straight down into the ground to provide nutrients and moisture. As the oak tree matures, supplemental roots grow laterally and cause problems to sewer and plumbing systems,

growing up to 100 yards out from the base of the tree, the roots work their way into the cracks of your pipes and continue to spread, causing damage and blockages to the sewer and plumbing lines.

2. Willow Trees - The natural habitat of a whimsical willow tree is one that is moist and rich in nutrients. Most home yards do not have soil capable of providing enough oxygen or hydrogen for this type of tree to survive, and it will actively go looking for it at all costs. The willow is meant to be large and grand, so it truly requires a lot of land space to flourish and grow properly.

3. Holly Bushes - Due to their beauty, holly bushes appeal to many homeowners, who make the understandable mistake of planting them close to the foundation of their home. This places the plants in close proximity to sewer lines. Holly roots will grow into any crack or crevice they can find, and once inside a pipe, the roots will continue to grow and clog it.

4. **Birch Trees** - Tall, elegant, and beautiful, Birch Trees can grow anywhere from 40 to 50 feet into the air. Now imagine that a birch's root system will grow anywhere from two to three times the maximum height of the tree. You can see how planting this tree close to your home could present a huge problem. These trees need lots of room to grow and expand their roots. Not to mention how beautiful the bark is.

5. **Ivy Plants** - Ivy is one of the fastest-growing plants around. As a result, the damage it will do to plumbing can be very swift. If ivy begins to

grow near pipes, the roots will swiftly surround and obstruct them while entering any crack or crevice searching for moisture.

These plants and trees do not only interrupt sewer and plumbing, but also tend to break water lines when planted near them. They can crack and

break your home's foundation, sidewalks, and paved or concrete driveways. I'm not telling you to not plant these, but just be careful where you plant them. Do a little research online to see if what you are planting could possibly harm your property.

Thank you for reading my article and God Bless.

Reference: boboates.com ■





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Notes from the USGS Study on PFAS in West Virginia

The United States Department of the Interior's, United States Geological Survey (USGS) conducted a study in cooperation with the West Virginia Department of Environmental Protection (WVDEP), Division of Water and Waste Management, and the West Virginia Department of Health and Human Services (WVDHHR), Bureau for Public Health. The results are Scientific Investigations Report 2022-5067, titled Occurrence of Per- and Polyfluoroalkyl Substances and Inorganic Analytes in Groundwater and Surface Water Used as Sources for Public Water Supply in West Virginia. The authors are Mitchell A. McAdoo, Gregory T. Connock, and Terence Messinger. A link to the report may be found on the WVDHHR website at <https://oehs.wvdhhr.org/eed/source-water-assessment-wellhead-protection/>. This link can be found at the bottom of the page PFAS Project Links and Site Key. This will take you to an Adobe Acrobat document that has two links in blue at the top of the first page. The top link will take you to the USGS webpage where the report can be accessed as a pdf file.

In 2019, the West Virginia Legislature passed a resolution that required a statewide study to determine the existence of PFAS contamination in West Virginia source waters. PFAS (per- and polyfluoroalkyl substances) have been linked to adverse health effects in humans. These effects include low birth rates, disruption of the immune system,

and thyroid disease. The primary source of these chemicals in humans is through food consumption, but drinking water is also a source of concern. PFAS has been used in numerous industries since the 1940s and were instrumental in creating consumer products like non-stick cookware and water and stain resistant fabrics. The commercial and industrial applications are vast, with one notable use: fire-fighting foam. But that is just the tip of a massive iceberg. These chemicals have been referred to as "forever compounds" due to their stability and resistance to degradation.

The USGS collected samples at all community water systems and all daycares and schools that operate their own water systems. The raw source water samples were collected for both groundwater and surface water sites prior to any treatment. PFAS was analyzed at all 279 sites, major ions and trace elements were analyzed at 272 sites, and nutrients were analyzed at 270 sites. Twenty-four percent of the sites sampled had at least one PFAS detected, 47 of which were groundwater sources and 20 were surface water sources. Five sites exceeded the United States Environmental Protection Agency's (USEPA) lifetime health advisory for combined perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) concentrations of 70 nanograms per liter (ng/L). The higher levels were found along the Ohio River Valley and in the eastern panhandle.

Those two PFAS compounds (PFOS and PFOA) are currently on the USEPA list of Contaminants of Emerging Concern (CEC). This represents two of the thousands of PFAS compounds in that chemical family. The USEPA has been the target of much criticism for not moving more quickly to regulate PFAS compounds and establish an MCL (maximum contaminant level); however, this approach is beneficial to the water and wastewater industries. Because of the nature of these chemicals, traditional wastewater and drinking water treatment methods are largely ineffective. This time lag is allowing for research into viable means for treatment. Methods that will not increase the problem by re-releasing the compounds into the atmosphere or create worse problems through mishandling. Imagine numerous water and wastewater systems suddenly being out of compliance over-night with no reliable means to correct the problem.

Any water or wastewater system that has not begun to investigate their exposure to PFAS is behind. This report provides a great opportunity to begin. Systems with any PFAS contamination need to get up to date on their options. There is good reason to believe that the maximum contaminant level (MCL) that the USEPA will eventually establish will be lower than the current health advisory level of 70 ng/L. In June, the USEPA released new non-enforceable health advisory levels of 0.02 parts per trillion (ppt) for PFOS, 0.004 ppt for

PFOA, and first-time limits of 10 ppt for HFPO-DA, and 2,000 ppt for PFBS. The USEPA is expected to issue standards by the end of the

year. When the time comes, immediate action will be necessary to meet compliance requirements. Now is the time to get the process started

and get ahead of this problem. It is not going to go away. USGS Scientific Investigations Report 2022-5067 ■



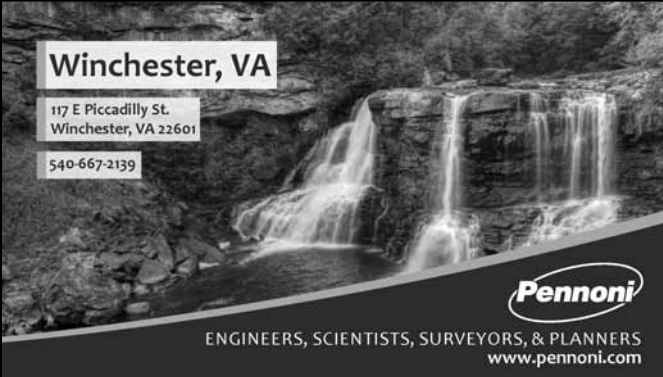
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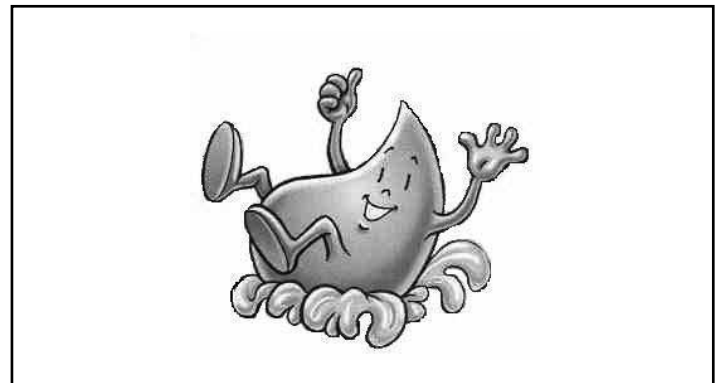
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Apprenticeship

I have now been the Workforce Development Coordinator for over a year at WVRWA. It has been a challenging, but successful year as the program started with 10 registered apprentices and has grown to 20+ registered apprentices in water and wastewater combined. Along with the registered Apprenticeship Program, I have been going to job fairs and high schools spreading the word about the water and wastewater industry.

WVRWA just started another apprenticeship class in July of 2022. This class consisted of 8 Water Systems Operations Specialist II apprentices. This class is set to graduate in July of 2024. The next class will start in January of 2023; if you or a system is interested, now is the time to start the process.

WVRWA registered Apprenticeship Program requires a mentor to be with the registered apprentice. The mentor will be selected by the utility.


What is apprenticeship?

Apprenticeship is defined as a system for training a new generation of practitioners of a trade or profession with on-the-job training and often some accompanying study.

What is a mentor?

An experienced and trusted adviser.

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



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By Jim Johnson, Wastewater Technician

Dealing with Stress in the Water/Wastewater Workplace

Ao we have stress issues in our workplaces? The short answer is yes. Sometimes, our jobs seem to demand more than we can deliver. Stress can be a problem in many workplace environments. It is believed that everyone who has a job feels the pressure of workplace stress from time to time. Unfortunately, water and wastewater workplaces are no exception to this. With having to deal with keeping water and wastewater systems in compliance and situations where everything is not going great, it can be very stressful. Stress can be a very dangerous situation. Stress is a contributing factor in about 70% of the causes of death worldwide. The workplace is one of the top places stress is believed to come from. A recent survey in the United States found that 31% of people felt stressed out after their normal workday. Stress is one of the top issues cited for an employee missing work. If we encounter too much stress, we can become overwhelmed and cannot avoid the tensions found in our job. Thus, we are unable to concentrate and become prone to mistakes. There are some things we can do to reduce stress in our work environments.

One of the best ways to handle stress may be **RESILIENCE**. This is the concept of facing an adverse situation, handling it, and bouncing back stronger than you were before. One big factor in handling stress is to determine what can be changed and what cannot be changed. If you can change or improve a situation, take the steps to do so. The next part is really challenging. If you cannot change or improve a situation, learn to change your emotional reaction to it. We will not always be able to avoid stressful situations on the job, but, often times, we can take steps to manage them.

It would be nice if workplace stress remained in our workplace. This is not usually the case; stress tends to follow us wherever we go and whatever we do. As time passes, stress becomes damaging and leads to health problems. Stress is linked to many medical issues we commonly face. It has been linked to cardiovascular disease, certain cancers, as well as the lengthening of recovery time for illness. Physical injuries and, especially, the recovery time from them have also been linked to stress. It has pretty much been proven that stress causes anxiety and depression. Depression is ranked as one

of the leading factors in loss of production in the workplace. Prolonged stress and depression lead to burnout and is one of the leading reasons employees seek employment elsewhere. Obviously in our line of work, it can take a long time to train an employee to the certification level we need, so the loss of an employee can be a big deal, as it costs us a lot of time.

Some of the leading workplace stress factors are:

1. Difficult co-workers
2. Unclear expectations
3. Conflicting job requirements
4. Long work hours with new regard for work/life balance
5. Low wages
6. Long commutes
7. Increased workload
8. Limited opportunities for growth and advancement
9. Being pushed into advancement
10. Not being kept informed
11. Changing technology

In most cases, it's a combination of these that lead to extreme stress levels. Some people can often do well in highly stressful situations, while others do not do so well.

Some ways of managing stress include tracking your stressors.

Keep track of some situations that has caused you stress over a several week period and document how you handled it. You are trying to find patterns as to how you react. Try to develop more healthy and positive responses to stress. Try to avoid unhealthy choices and choose things such as exercise, getting outside, or enjoying friends. Good sleeping habits are also essential. Try to only talk about work about thirty minutes a day while off work. This would include checking emails and such while off. We need a chance to de-compress and get rid of some stress. Do something that is fun for you, such as going for a walk, listening to music, or reading. I like spending time with my pet.

Some Tips to Prevent Stress:

1. Realize mistakes are made

and, sometimes, you are the one that makes them. Also realize an employee will make mistakes at times and permit yourself or an employee to make a mistake from time to time.

2. Use routines as often as possible; it may get boring, but if it actually works well, don't change it.
3. After work, do activities that interest you to help you recharge.
4. Put a deadline on your task to keep time from slipping away.
5. Consider events that trigger stress and come up with a plan to lessen the impact or prevent it from happening altogether.
6. Don't always strive for per-

fection. Sometimes, it's ok to be sufficient. If you set standards you can't meet, sometimes, it leads to procrastination and burnout.

Whether you are the employer or employee, try to make your workplace as low stress as possible. Sometimes, stressful situations are unavoidable. We need to try to keep them to a minimum. Obviously, different things are stressful to you than they are to the next person. Try to figure out what is stressful for you and see if that stress level can be reduced. Try to see what is stressful for your employees and co-workers and help keep them out of these situations. We usually work in small groups in the water and wastewater industry, so we should be able to help each other a little. ■



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Small Steps Toward Sustainability

Sustainability in public water and wastewater systems is becoming more of a concern than it ever has been. With aging infrastructure, cost of construction, replacement equipment, and the overall cost of operations, most small and rural systems are struggling to provide the best service possible with a reasonable cost to its customers. Plants that have been in service for 20, 30, or even 40 years without any upgrades are having problems meeting their permit requirements. These requirements are also getting more stringent and are putting a strain on plants to satisfy their permits.

Sustainability in wastewater is always looking toward the future and what we do now to help get there. There are several things that planning, operational efficiency, short term and long-term plans that will help achieve the objective. While major changes can be extensive, and not necessarily cost effective at the current time, other small changes are more affordable and will set you on the way to be more sustainable.

One of the most popular and least expensive starting points that I have seen is to simply change out

the lighting at the plant to high efficiency LED lighting. This small project, which can be relatively inexpensive, doesn't have to be done all at one time, should be achievable to most systems. Not only will you get better lighting, you will see a drop in the electric bill upon implementation. Another high-power cost, and usually high maintenance item are lift stations pumps. VFDs on lift stations can help with both of these issues. Providing less power cost and less wear and tear on the equipment. This may also help the station discharge piping because of the constant on/off cycling for a smoother startup.

Other small projects that help are annual painting around the plant, both inside and out. Sealing concrete tanks, caulking joints to keep water out of cracks in the concrete, and rust inhibitors on metal before you paint.

One of the biggest areas I believe that helps sustain the equipment is a good preventative maintenance program. I realize this can be monotonous and overlooked if other things are going on; however, I do believe, and I have seen, that greasing, changing the oil, switching lead pumps

and blowers on a routine basis helps tremendously on the longevity of plant equipment. As well as keeping the areas of the plant neat, clean, and well ventilated that are more prone to come in contact with hydrogen sulfide such as the headworks will extend the life of the equipment.

The public appearance of a treatment plant should always be in good order. The location of the plant is in the public eye, a well-maintained yard, driveway, buildings, parking lots, and handrails painted every year can go along way when the next rate increase is needed. Not to mention that this also goes a long way on inspection day.

Anything big or small that can help be more sustainable is worth the effort. It may not seem like it now, but it only takes small things to get started and will, hopefully, lead to a better future for your system.

In the coming months, I will be stopping by your system to introduce myself and may schedule an Assessment in the future. If I can be of any assistance, please call contact me at (304)531-4304 or email: shawnstrain@wvrwa.org. ■



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



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Pressuring Washing Tanks

A pristine golf course hosting a tournament. A state-of-the-art racetrack holding a big race. A company welcoming high-ranking officials from overseas. These are all three situations where the hosts want to deliver a good impression to their visitors. Now imagine at each of these places that the tallest structure is a dingy, dirty elevated tank. How might that affect the image the owners are trying to project?

Most elevated tanks are architectural fixtures in their communities. They are usually both the tallest structures and bear the town's name. So, the elevated tanks often act as billboards – and grimy or dirty billboards could reflect poorly on what they are advertising.

Whether entertaining VIPs or just wanting to make a good overall impression, it can be a solid investment to have tanks pressure washed from time to time. Much like pressure washing homes or fences, knocking the dirt and bacteria off a steel tank can help preserve its paint system and potentially prolong a tank's life.

Pressure washing removes dirt buildup on a tank's exterior. As the tank is pressure washed, observe whether any paint is flying off or if any rust spots were undetected under the grime. Corrosion occurs when there are voids in the paint system. A new paint job may be warranted if there is any corrosion.

Birds love to nest in lofted areas, so water towers make appealing homes for them. If there are a lot of

fowl around a tank, expect there to be plenty of their fecal matter. As anyone with a vehicle knows, bird droppings are extremely acidic and can eat through paint and eventually steel if left unaddressed. This same principle applies to steel tanks. Much like a car needs to be



washed off from time to time, so does a tank – although less often than vehicles.

Elemental exposure depends on location and the environment. Tanks located in or near wooded areas might be subjected to sticky sap. Those built near the ocean will be peppered with corrosive salt water.

Tanks along the Gulf Coast or oceans might be covered in salt since they are near saltwater. Saltwater is highly corrosive on steel. Pressure washing a tank and knocking off the salt water can help preserve the steel's integrity and help prevent corrosion.

The farther south tanks are located, and depending on the paint used, the structures can be plagued by extensive mold and mildew. High humidity causes tanks to sweat and provides a breeding ground for mold and mildew.

Tanks in buildings might be better hand-washed or brush-washed if the need arises. Tanks in buildings do not have to deal with rainwater, but, if they are inside a factory area with a lot of grime, they might need to be washed from time

to time. If they do, it's better to either hand wash or brush wash the tanks since the force of a pressure wash water stream will probably be too powerful for inside a building.

Tank's interiors can also be pressure washed. If there's sediment sitting on the tank floor or shell walls, it has accumulated over time. Pressure washing the tank takes the sediment away and prolongs the tank's lifespan by helping protect the interior paint system.

Pressuring washing a tank's interior can also improve the water clarity. Dirty water is cloudy water. If an ROV or dive inspection is being performed and the water is too murky, the inspectors won't be able to identify certain tank components. They might not even be able to complete the inspection.

Interior pressure washes do require the tank to be drained. But the tradeoff is that more accurate inspections can be performed, and washing off the grime can lengthen the life of the paint system.

Pressure washing, like painting, can also be done on a schedule.



That way tank owners can budget accordingly. Whether tank owners want to make a good first impression, or protect their tank's expensive

paint job, pressure washing might be a cost-effective option to consider. ■



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About The Program

The NRWA Rural Water Loan Fund (RWLF) is a funding program specifically designed to meet the unique needs of small water and wastewater utilities.

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- Reasonable interest rates
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- Pre-development (planning) costs for infrastructure projects
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- Energy efficiency projects to lower costs and improve sustainability
- Disaster recovery or other emergency loans available

Applications, information and forms can be downloaded from the NRWA website at nrwa.org or by scanning the QR Code above. For help, please call 1.800.332.8715 or email nrwarwlf@nrwa.org.



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Planning Ahead

Water Operation Specialist “John Doe” was a plant operator of a small town who fixed leaks, read meters, ran the plant, mowed grass, and any other job that the town required. John was an operator who had pride in the water industry, and loved the work he did. However, because he had so many work responsibilities, he rarely had time to think about the future and plan for potential problems. John didn’t keep many parts on hand or maintain equipment adequately, and he only fixed leaks if they were what he considered bad leaks. One day, the system had multiple issues that changed the way John managed the job.

John came into work one morning expecting a normal, somewhat easy day, but that day was anything but normal. John turned his pump on, but nothing happened. He had no backup pump because it hadn’t been maintained. As he was looking for a solution to that problem, he got a call about a bad water leak. John sent his workers to assess the leak and repair it, but the leak was on the bottom of a hydrant. The thrust block had moved, and the hydrant blew off the line because it had no mechanical connections. They turned the valve off, but it blew off as well. The only valve to stop the leak shut down 50% of the system, but because John had no pump to produce water, they had to shut it off. John had no parts to fix the hydrant, half of his customers without water, and no way to pump

water. The worst part was that John had 3 leaks in the half of the system that still had water. John had put those leaks off to do other jobs that weren’t as important. Those leaks were now draining his tank because he wasn’t able to pump. John then realized he could have prevented most of those issues or fixed them quickly had he planned ahead and focused on his system rather than the odd jobs the town asked him to do.

Planning ahead is extremely important in this industry. While you will never be able to be prepared for every possible scenario, you can be prepared for the most common problems that occur. Planning ahead is crucial in preventing major emergencies in your system.

Leaks

Finding and repairing leaks is something every system has to deal with. It’s not easy to plan ahead for leaks, but there are things you can do to help find and repair them quickly. Keeping track of your daily pumping is one of the easiest ways to know if you have a leak. Another way to know is to fill out a water loss report regularly. Being aware of the leak is great, but actively finding and repairing it, no matter the size, is the most important part. Call your local circuit rider or send your crew out to find the leak as soon as possible to prevent an emergency situation where your system is running out of water.

Parts

Brass fittings, repair clamps,

pipe, couplers, meters, and any other part you may need are not as easy to get as they use to be. Some brass fittings and meters are up to 30 weeks wait time. Keep track of your parts and keep them in stock as much as possible. Write down the part used and date it was used on and, in the future, you will be able to have an idea of how many you use each month. If the part is on a 10 month back order and you use 2 a month, then try to keep 20 in stock. Don’t get caught without commonly used parts simply because you didn’t think ahead.

Equipment

Your pumps and motors, trucks, and heavy equipment all take maintenance. You may be responsible for maintaining all or some of your equipment, but it is vitally important to perform the required maintenance. Oil changes in vehicles and equipment are a standard practice, but keeping them clean can be just as important to keep them lasting and running properly. Grease your equipment regularly. Run your backup pumps to insure they are working. Schedule your maintenance so you don’t forget because it’s easy to overlook routine maintenance when you have so much to think about. Ensuring your pumps, motors, and equipment are working properly can greatly reduce your emergency situations.

Bottom line, don’t get caught in a major emergency like John Doe just because you didn’t take the time to plan ahead. ■

Bob Rodecker **John McGhee** **Cindy Wilson**

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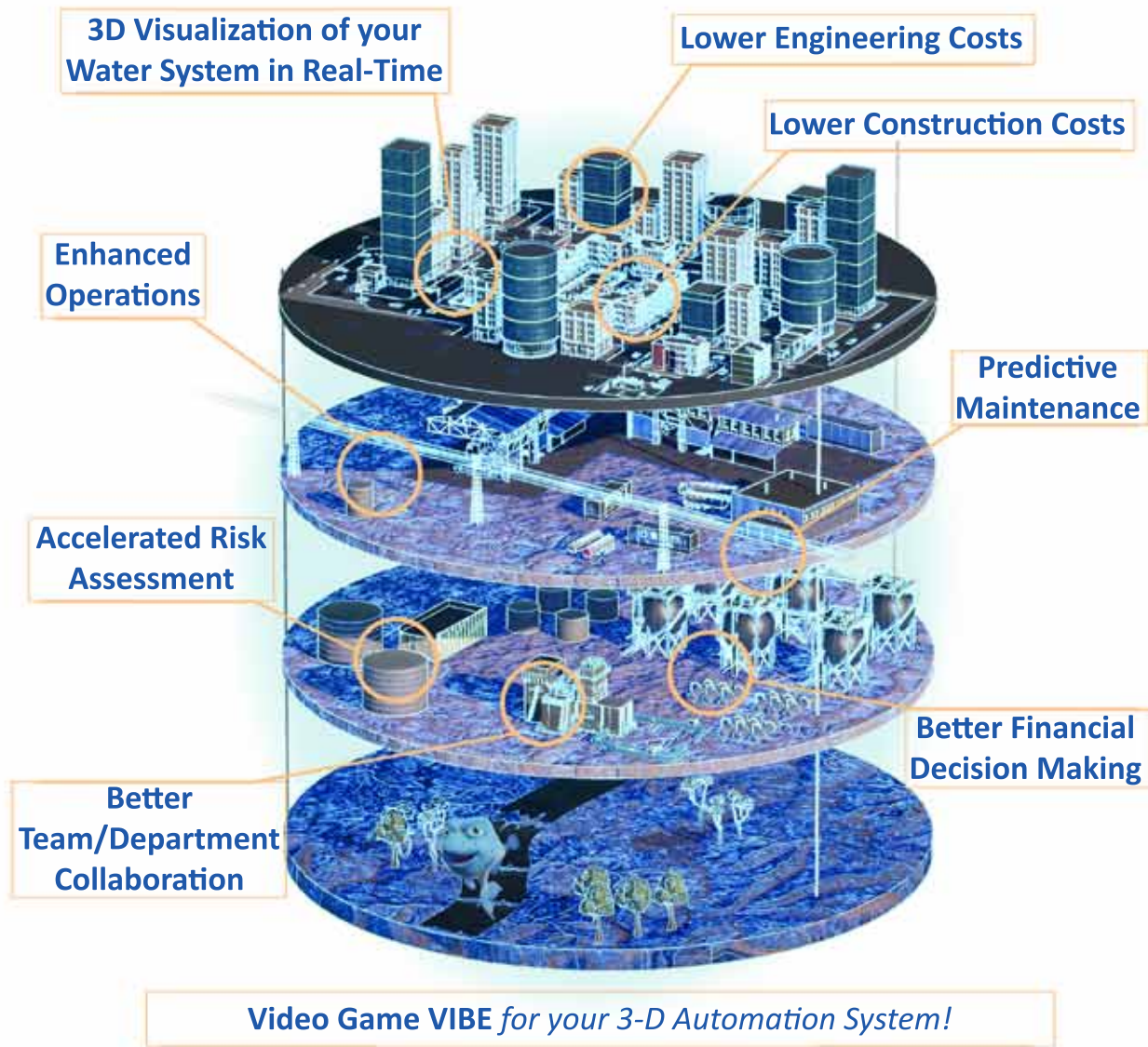
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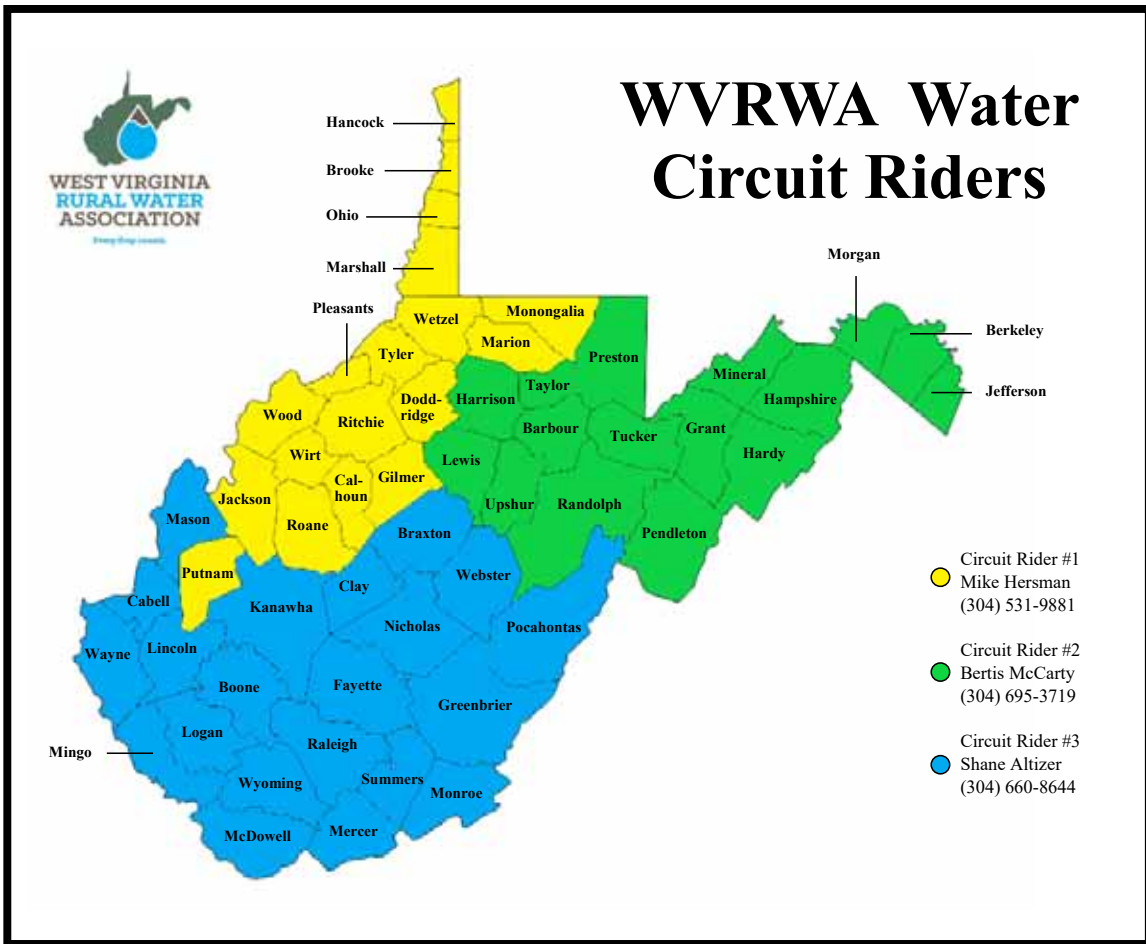
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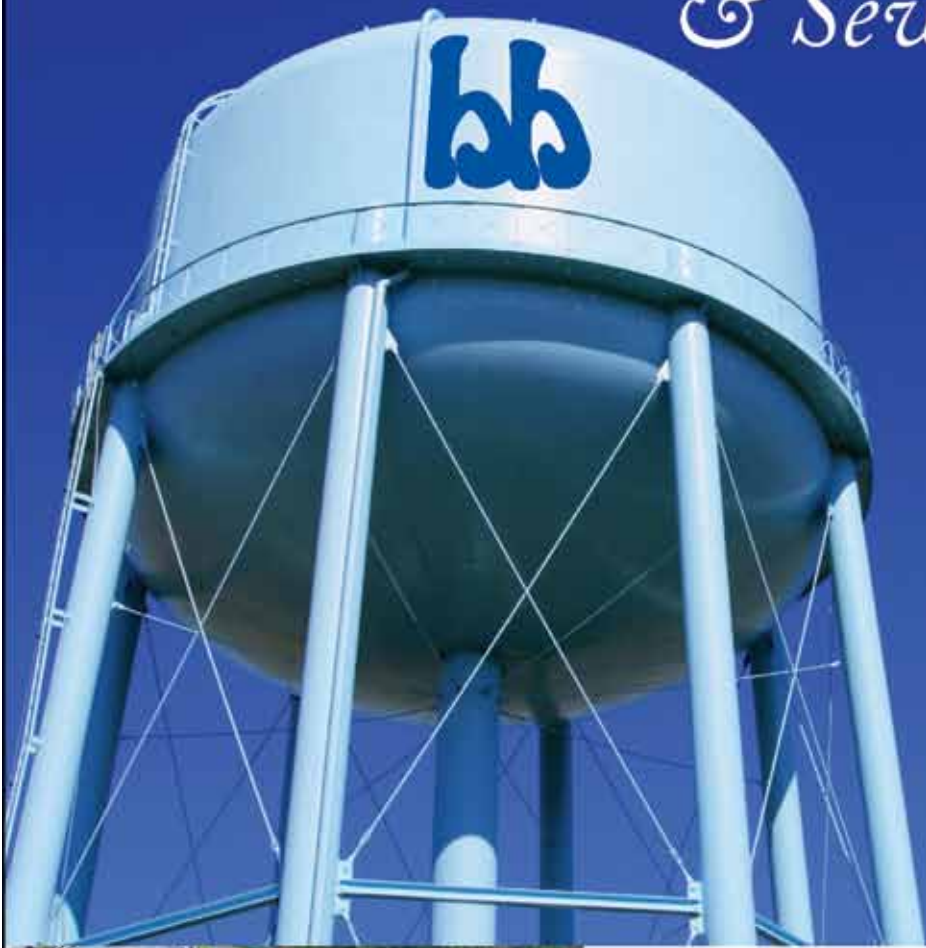
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SUDOKU PUZZLE

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

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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Marie L. Prezioso
EXECUTIVE DIRECTOR

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Answers to Sudoku Puzzle

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



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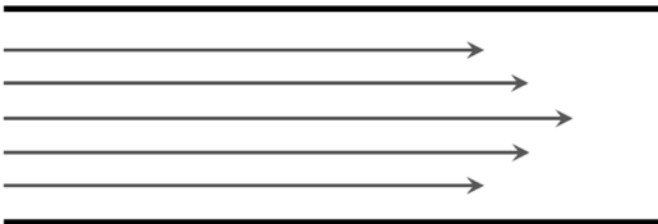
Friction Loss

Friction in water could be described as the resisting force caused by the layers of molecules sliding against each other during movement.

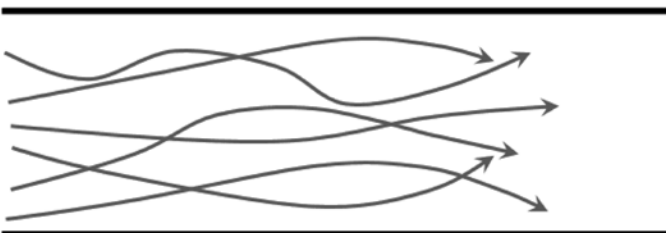
The faster the water moves through a pipe, the lower the pressure gets, which affects the volume available for use.

Fluid flows through a pipe in three specific ways.

1. Laminar Flow: could be characterized as water particles following smooth paths in layers, with each layer moving smoothly past the adjacent layers with little or no mixing. At low velocities, the water tends to flow without lateral mixing, and adjacent layers slide past one another like playing cards.

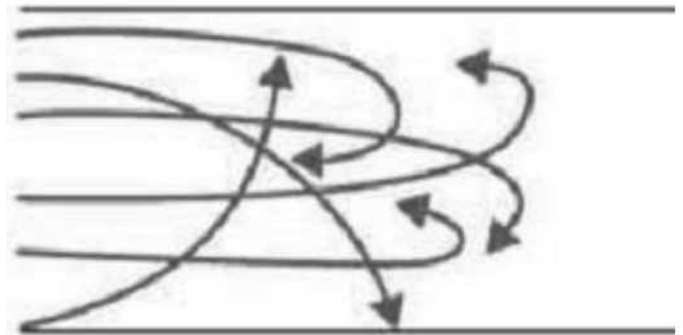


2. Wavy or Stratified Flow: could be characterized as water particles following irregular paths and flowing in the same direction. At medium velocities, the water starts mixing layers similar to the way multiple flags would wave in the wind.



3. Turbulent Flow: could be characterized as fluid

particles following irregular paths with some flowing in different or opposite directions. At high velocities, the water layers get a little chaotic and can fight against each other while trying to get to the open end of the pipe.



If a person wants to, they could use the Darcy-Weisbach formula below

$$P = 0.000216 \left(\frac{fL\rho Q^2}{d^5} \right)$$

P = friction loss (psi)
 f = friction factor
 Q = flow (gpm)
 d = pipe diameter (inches)
 L = length of pipe (ft)
 ρ = density of fluid (lb/ft³)

Or the Hazen-Williams formula

$$P = \frac{4.52Q^{1.85}}{C^{1.85}d^{4.87}}$$

P = friction loss per foot of pipe (psi)
 Q = flow rate (gpm)
 d = internal pipe diameter (inches)
 C = Hazen-Williams coefficient

to calculate friction loss for any given pipe.

This would be the most accurate way, but I like simple charts like the one below.

The chart below could be used as one of the tools to help size a service line.

This is a Friction Loss article, but I wouldn't want you to forget about the elevation while working sizing lines.

Keep in mind that most residential water meters will flow at a maximum rate of 20 gallons per minute (GPM) and regulators max out around 75 psi.

I believe every water system should set its standard for the length of the pipe based on the diameter and the pressure available at the meter.

EXAMPLE:

The water system, based on recorded pressures, will have around 60 psi at the new meter setting and the home will be located about 240 ft away from the meter.

The system has a policy in place that requires the customer to install the proper size line so the calculated pressure loss would not be any greater than 35% below the static pressure at the meter with a 10 gpm flow rate.

A little math tells us.....

35% of 60 is 21 psi. 60 minus 21 is 39psi. That's the

minimum pressure you want them to have at the home.

The chart above tells me a 3/4" line will lose 20 psi in 100 ft. (That disqualifies a 3/4" line). A

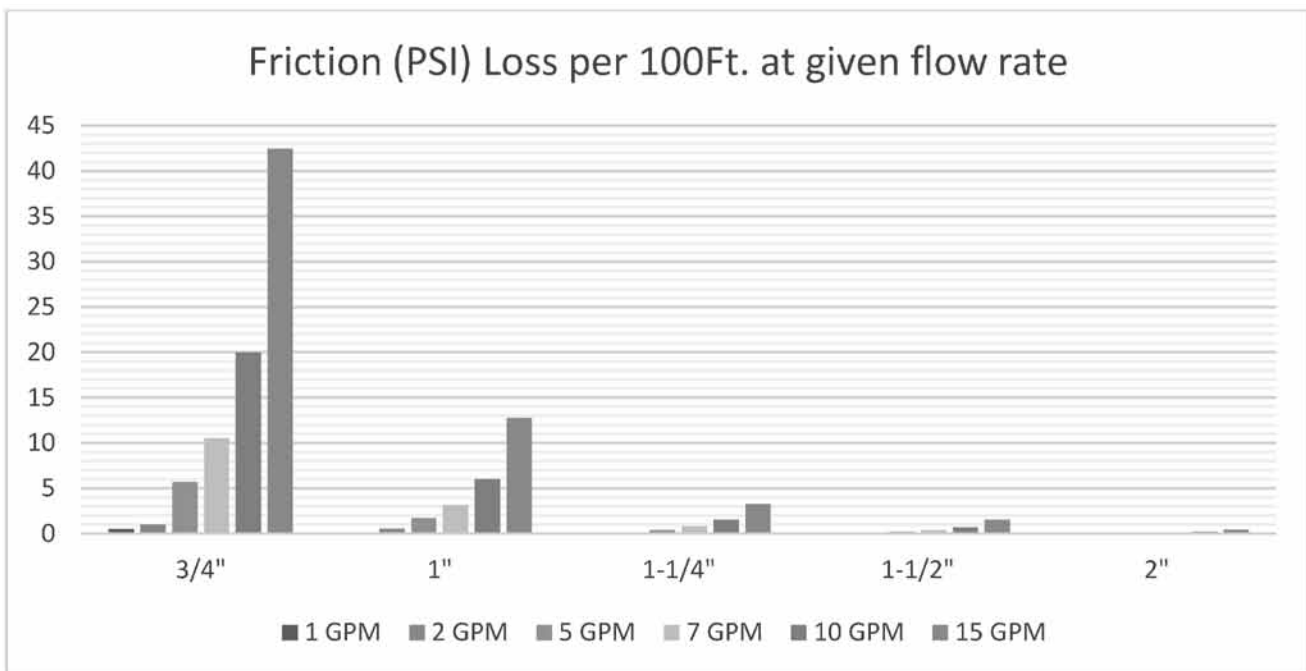
1" line loses 6 psi in 100 ft. $6 \times 2.4 = 14.4$ psi loss. This would be the size line required for the customer to install.

If a 3/4" line is installed and the customer would try to use his water hose while the washer was running, thereby using about 10 gpm, the pressure would have been 12 psi. I just wonder if they would call about that problem???

The question you need to ask yourself when setting up this policy is "How much pressure is enough at a customer's home"?

You could make up a spreadsheet to do a couple of quick calculations and use them in your determination of whether you could serve the home or not with potable water. They could be used to size the line and give a recommendation in writing as to what they will need to use for their service line. The calculations would take into account the elevation change from the meter to the top floor of the home and the distance the home is from the meter.

REMEMBER..... Often the small things nobody sees will bring the results everybody wants. ■



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By Heather Somers, 2% HELP Training Specialist

Operators: Add Another Task to Your Job Descriptions – Public Relations Specialist

Themist, Mathematician, Environmentalist, Protector of Public Health, Equipment Operator – just to name a few. Water and Wastewater Operators in our great state have many hats to wear, but Public Relations Specialist is one that you may not consider adding to your resume. Many Operators are on the front lines dealing with the public, answering questions from decision makers in your community, and dealing with multiple agencies that effect your daily activities.

The Public Relations Society of America formally defines PR as “a strategic communication process that builds mutually beneficial relationships between organizations and their publics.” Let’s break down this definition and how it practically applies to the role of an Operator.

“Strategic Communication Process”

This phrase traditionally refers to communications such as dialog, body language, and digital forms of communicating. All of this is true, but here are other ways that Operators communicate:

Housekeeping

I recently taught a class in a maintenance shop with multiple large

signs that said “WASH YOUR TRUCK.” While this may seem like a menial task, utility vehicles are a reflection of the employees and services offered by the water or wastewater department. A clean vehicle shows pride and care that, hopefully, translates to other areas of work. Most trucks are easily recognizable in the community, keeping them clean and maintained will help foster confidence and good will with the public that sees the vehicles every day in the system.

The same theory applies to housekeeping at treatment plants, pump stations, and water tanks. Mowing and weed eating can keep Operators busy this time of year, but having well maintained facilities reflects the utility as a whole. Imagine going out for dinner and, once you arrive at the restaurant and get out of the car, trash is all over the parking lot, there are knee high weeds all along the sidewalk, and the windows of the restaurant are filthy. I would be hesitant to sit down and eat a meal there, much the same way customers may be hesitant to drink the water coming from a neglected plant.

Handling Customer Complaints

Customer complaints can vary

widely from customers that swear they “could never use that much water” (we have all heard that one!) to true water quality concerns. Regardless of how important we believe a complaint may be, all customer concerns should be handled with urgency, fairness, and professionalism. If a customer’s issue was not immediately resolved, follow up to be sure that actions the utility took satisfied the customer. Always be sure to document the complaint and the resolution with specific details and dates. Not only does being respectful and thorough with each customer situation establish rapport with the public, it also helps satisfy regulatory agencies.

“Build mutually beneficial relationships between organizations and their publics”

Consumer Confidence Report

The CCR was recently due for water systems in our state. As long as the CCR reflects accurate and complete data from the previous year, it is good to go out to customers. Consider adding more information to this required report that celebrates what the utility got right for the year.

Even if there were issues, the utility has an opportunity to accentuate

the positive. Explain the negative in a positive way – If your system had a contamination event and subsequently issued a boil water order. The CCR is a place to explain how the system caught the event, protected the public by issuing the boil water order in a timely fashion, and how the system corrected the event. A system might also include information on how they are attempting to prevent these contamination events in the future. When done in a thoughtful and constructive way, this can turn a negative (contamination/boil water order) into a positive (the system is protecting the public). It is also a way to brag about what went right in the system, so don't be afraid to boast with facts and sincerity. If

the system has a history of volitions in the past or other factors that have created a bad image, then explain current improvements and plans to keep doing better in the future.

Monthly Reports

Reports may be the bane of existence for some Operators, but they are important and absolutely required. Reports are a way to communicate to both regulatory agencies AND the public what is happening in a water or wastewater system. Submitting accurate, on-time results via the proper method will benefit the utility in two ways. First, it satisfies whichever agency requires the report and will reveal any problems the system may be having.

Second, reports will be made available to customers for their right to know requirement. There are many duties that Operators are tasked with, but timely, error-free results are a high priority.

You probably don't hear it enough – but thank you for all of the hats you wear. Juggling all of these responsibilities is challenging and trying to prioritize tasks can be a daily struggle. As you manage your work load, try to consider the importance of public relations and how to incorporate practices into the important job you do. ■

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Thank You Letters

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Clerk/Recorder: Brenda Evans

September 19, 2022

West Virginia Rural Water Association
100 Young Street
Scott Depot, WV 25560

To Whom It May Concern;

The Town of Elizabeth would like to take this opportunity to say a huge thank you to WV Rural Water and especially Mr. Daniel Vestal & Mr. Jim Johnson for the service they provide to this Municipality.

In the past week Mr. Vestal & Mr. Johnson came to Elizabeth twice to assist us with camera work and do smoke testing in our sewer system. WV Rural Water has been instrumental on numerous occasions to guide us in locating sewer taps, finding obstructions, as well as identifying I & I issues within our system. Small systems such as ours cannot afford the equipment that WV Rural Water has in their arsenal to assist us, as we strive to provide the best possible services to our community we are happy to have an ally in WV Rural Water. We have utilized your services for both water and wastewater and feel this is a very valuable service that is a great benefit to us.

I would also like to take a moment to recognize Mr. Vestal & Mr. Johnson on their knowledge, expertise and willing attitude when it comes to helping small systems such as ours. It is always a pleasure to work with these gentlemen.

Again thank you for the service and your time.

Brenda Evans

Brenda Evans

Chief Operator

Dale Clark

Dale Clark

Field Supervisor

Town of Elizabeth

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July 28, 2022

West Virginia Rural Water Association
100 Young Street
Scott Depot, WV 25560

To Whom It May Concern;

The Town of Elizabeth would like to take this opportunity to say a huge thank you to Rural Water and especially Mr. Jim Johnson for the service they provide to this Municipality.

This week Mr. Johnson came to Elizabeth twice to assist us with some camera work in our sewer system. He has been instrumental on numerous occasions to guide us in locating sewer taps as well as identifying I & I issues within our system.

Mr. Johnson is to be commended on his knowledge, expertise and friendly, willing attitude to help small systems such as ours.

We use your services for both our water and wastewater systems, this is a very valuable resource to small departments such as ours and we would be lacking without the services you provide.

Again thank you for the service and your time.

Brenda Evans

Brenda Evans

Chief Operator

Dale Clark

Dale Clark

Field Supervisor

City of St. Marys

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September 28, 2022

West Virginia Rural Water Association
100 Young Street
Scott Depot, WV 25560

Dear Mr. Grinstead:

I would like to take this opportunity to thank the West Virginia Rural Water Association's circuit riders. On two different occasions in the last two months the City of St. Marys, has needed assistance. In August of 2022, the city of St. Marys, completed a water extension project to our AG Barn used by Pleasants County FFA students. For this project we laid 4,580 feet of water line using stick pipe.

We charged the system and then found we had a leak. We fixed two leaks that we found, but a leak persisted. After we had spent countless hours searching for this leak, I contacted the WVRWA to see if they could help. They sent me to Michael Hersman, registered circuit rider #1 for the WVRWA. Mr. Hersman came to St. Marys, and searched the water line extension until he found the leak, "free of charge," may I add. Mr. Hersman then sat down with the public works director and our water operators explaining that he had marked a section of line where he believed it was leaking.

When I called Mr. Hersman, he was quick to set up a date when he could come to St. Marys. Michael spent most of the day with us and was very polite and considerate of our work environment. He was professional at all times.

I will and have recommended the services that WVRWA has to offer to other municipalities. Once again thank you Michael Hersman and the WVRWA for your assistants in this matter.

Sincerely,

Mark E. Dearman

Mark E. Dearman
City Manager, St. Marys, WV

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August 12, 2022

West Virginia Rural Water Association
Attn: Todd Grinstead
100 Young Street
Scott Depot, WV 25560

Dear Mr. Grinstead,

I wanted to reach out and let you know how appreciative we are to WVRWA and the services you provide. More importantly I would like to express my sincere gratitude to Bertis McCarty and Shane Altizer.

We reached out to Bertis, who was more than helpful to assist us in performing a test on a master meter located at our water plant. He spent the better part of a day at our facility and we really appreciated him being here and sharing his knowledge and skill with our team.

Bertis then offered additional services of tank inspection and came back along with Shane to perform the inspection. Other than a small "bee" incident all went well and they were able to perform the inspection on all three of our water storage tanks!

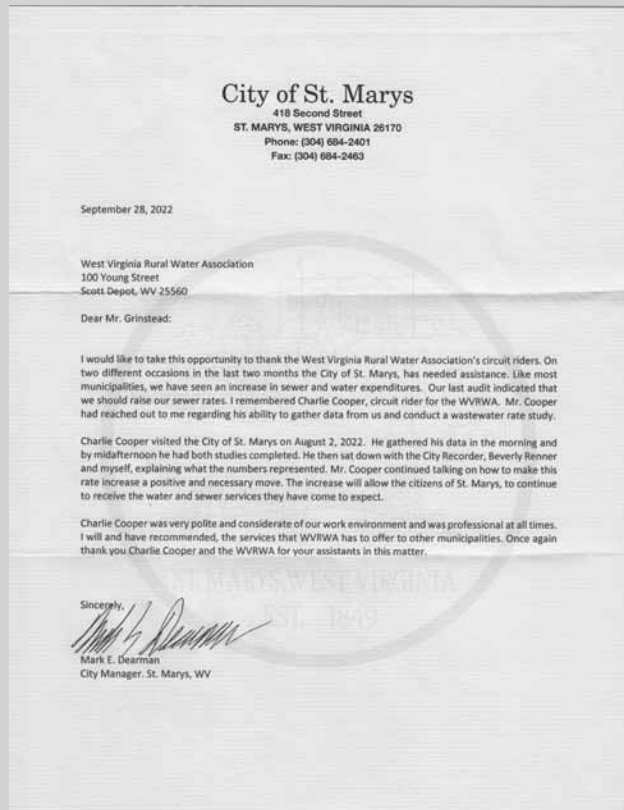
I just wanted to express to you what a good crew you have, which I am sure you already know and thank you and your staff for the work you do with assisting utilities such as ours around the state.

Our Sincere Thank You!

Kimberly Mayne
Kimberly Mayne, General Manager
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Our Circuit Riders provide training and technical assistance to operations specialists, water utility managers, and boards. On-site help is available upon request when a system needs it.

- Leak detection and water audits
- Sampling and testing
- System troubleshooting
- CCRs



Our Source Water Protection Specialist provides on-site help for systems to assess, delineate sources of water, and reduce/eliminate the potential of contamination.

- Source water protection plans
- Emergency response plans
- Measure well draw downs
- Perform TV inspection of wells



Training is available to obtain continuing education hours (CEHs) for license renewals.

As part of this training endeavor, training videos have been developed to help bring about compliance with safe drinking water regulations and to enhance system operations.

Videos and study material are available upon request.



Our ARC Specialist provides technical, training, financial, and managerial assistance for water and wastewater systems in economically distressed Appalachian counties.

- Asset management plans
- Rate analysis
- Leak detection
- Preventing inflow & infiltration (I&I)



Our Wastewater Technicians provide assistance to enhance and maintain financial sustainability of wastewater systems through technical support and/or training.

- Smoke testing and camera inspections
- Nitrogen problems
- Solids handling
- Compliance issues



Our Energy Efficiency Technician provides assistance to rural and small community water and wastewater utility systems to help in becoming more energy efficient.

- Evaluates energy needs, consumption, and costs
- Recommends measures to reduce energy consumption
- Identifies potential funding sources for improvements



Our EPA Water Technical Assistance Specialist provides training and technical assistance to water systems that struggle to achieve compliance with regulations.

A key priority is assisting small systems with their technical, managerial, and financial capacity to achieve long-term sustainability and resiliency.

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We would like to give a special thanks to all of our current and former Board Members and Staff who have helped shape WVRWA.

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David Foster	Erica Johnson	Grover Moore, Jr.	Mary Smith	

VOTING MEMBERS

Adrian PSD	East View PSD	Lubeck PSD	Rainelle
Alderson	Eastern Wyoming PSD	Lumberport	Raleigh County PSD
Alpine Lake Public Utilities	Eleanor	Mannington PSD	Ravencliff-McGraws-Saulsville PSD
Arthur Dale Water	Elizabeth	Marlinton	Ravenswood
Athens	Elk Valley PSD	Marshall County PSD #2	Red Sulphur PSD
Belington	Elkins	Marshall County PSD #3	Reedsville
Belmont	Elkins Road PSD	Marshall County Sewage	Richwood
Benwood	Ellenboro	Mason	Ridgeley
Berkeley County PSSD	Enlarged Hepzibah PSD	Mason County PSD	Ripley
Berkeley County PSWD	Fairview	Masontown	Rivesville
Berkeley Springs Water	Farmington	Matewan	Romney
Bethany Sanitation Board	Fenwick Mountain PSD	Meadow Bridge	Ronceverte
Beverly	Flatwoods-Canoe Run PSD	Middlebourne	Rowlesburg
Big Bend PSD	Follansbee	Midland PSD	Rupert
Bingamon PSD	Fountain PSD	Mill Creek	Salem
Bluewell PSD	Frankfort PSD	Milton	Salt Rock Sewer PSD
Bradley PSD	Franklin	Mineral Wells PSD	Shady Spring PSD
Bradshaw	Gauley River PSD	Monongah	Shinnston
Branchland-Midkiff PSD	Gilbert Water	Monumental PSD	Short Line PSD
Bridgeport	Gilmer County PSD	Moorefield	Southern Jackson PSD
Brooke County PSD	Glen Dale	Moorefield Regional Wastewater	Southwestern Water PSD
Buckhannon	Glenville	Morgantown Utility Board	Spencer
Burnsville	Grandview Doolin PSD	Moundsville Sanitary/Water	St. Albans MUC
Cairo	Grant County PSD	Mount Hope	St. Marys
Caledonia Heights	Grant Town	Mount Hope Water Association	Stonewood
Cameron	Grantsville	Mountain Top PSD	Sugar Creek PSD
Canaan Valley PSD	Greater Harrison PSD	Mt. View Water Assoc.	Summersville
Carpendale	Greater St. Albans PSD	Mt. Zion PSD	Summit Park PSD
Cedar Grove	Green Valley-Glenwood PSD	Nettie - Leivasy PSD	Sun Valley PSD
Central Barbour PSD	Greenbrier County PSD #1	New Creek Water Assoc.	Taylor County PSD
Central Boaz	Greenbrier County PSD #2	New Haven	Tennerton PSD
Central Hampshire PSD	Hammond PSD	New Martinsville	Thomas
Century Volga PSD	Hamrick PSD	Newburg	Tri County Water Assoc.
Chapmanville	Hancock Co. PSD	Northern Jackson County PSD	Triadelphia
Charles Town	Hardy County PSD	Norton-Harding-Jimtown PSD	Tunnelton Municipal
Chester	Harman	Nutter Fort	Tyler Co. PSD
Chestnut Ridge PSD	Harpers Ferry	Oak Hill Sanitary Board	Union
Clarksburg Water Board	Harrisville	Oakland PSD	Union PSD
Clay County PSD	Hillsboro	Oakvale Road PSD	Union Williams PSD
Clay Municipal Water Works	Hodgesville PSD	Paden City	Valley Falls PSD
Claywood Park PSD	Hughes River Water Board	Page-Kincaid PSD	Village of Beech Bottom
Clinton Water Assoc.	Hundred-Littleton PSD	Parkersburg Utility Board	Village of Bethlehem
Clover PSD	Huntington Water Quality Board	Parsons	Vienna
Coalton	Huttonsville	Paw Paw Municipal	Wardensville
Colfax PSD	Huttonsville PSD	Paw Paw Rt. 19 PSD	Washington Pike PSD
Cool Ridge Flat Top PSD	Ice's Run PSD	Pea Ridge PSD	Wayne
Coolfont Mountainside Assoc.	Jane Lew PSD	Pendleton Co. PSD	Webster Springs PSD
Cottageville PSD	Kanawha Falls PSD	Pennsboro	Welch
Cowen PSD	Kanawha PSD	Petersburg	West Hamlin
Crab Orchard-MacArthur	Kenova Municipal	Phillippi	West Milford
Craigsville PSD	Keyser	Piedmont	West Union
Culloden PSD	Kingwood	Pine Grove	Wetzel County PSD #1
Danese PSD	Lavalette PSD	Pineville	Wheeling
Davis	Leadsville PSD	Pleasant Valley PSD	White Oak PSD
Davy Municipal Water Works	Lewisburg	Pocahontas County PSD	White Sulphur Springs
Denver Water Assoc.	Lincoln PSD	Preston County PSD #1	Williamstown
Doddridge County PSD	Little Creek PSD	Preston County PSD #4	Winfield Sanitary Board
Downs PSD	Logan	Preston County Sewer PSD	Worthington
East Bank	Logan County PSD	Putnam PSD	

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***Lowe & Associates, PLLC**

1156 South Main Street
Milton, WV 25541
Phone: (304) 743-5573
See Our Ad Page 35

***Piper Sandler & Company**

405 Capitol Street, Suite 613
Charleston, WV 25301
Phone: (304) 343-7102
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ATTORNEYS

***Bowles Rice, LLP**

600 Quarrier Street
Charleston, WV 25301
Phone: (304) 347-1100
See Our Ad Page 11

*****Jackson Kelly PLLC**

500 Lee Street, E., Suite 1600
Charleston, WV 25301
Phone: (304) 340-1000
See Our Ad Page 4

***Jenkins Fenstermaker, PLLC**

325 8th Street
Huntington, WV 25701
Phone: (304) 523-2100
See Our Ad Page 32

****Kay Casto & Chaney, PLLC**

707 Virginia Street, E
Charleston, WV 25301
Phone: (304) 345-8900
See Our Ad Page 24

*****Steptoe & Johnson, PLLC**

P.O. Box 1588
Charleston, WV 25301
Phone: (304) 353-8000
See Our Ad Page 34

INSURANCE

*****Bill Bailey Insurance Agency, Inc.**

701 Highland Avenue
Williamstown, WV 26187
Phone: (304) 375-4900
See Our Ad Page 31

*****Bray & Oakley Insurance Agency, Inc.**

P.O. Box 386
Logan, WV 25601
Phone: (304) 752-6850
See Our Ad Page 41

****Hayes Insurance Agency**

202 Union Square
Marietta, OH 45750
Phone: (740) 373-2347
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CONSULTANTS

****Burgess & Niple, Inc.**

4424 Emerson Avenue
Parkersburg, WV 26104
Phone: (304) 485-8541
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***Cerrone & Associates, Inc.**

97 14th Street
Wheeling, WV 26003
Phone: (304) 232-5550
See Our Ad Page 24

***Chapman Technical Group**

200 Sixth Avenue
St. Albans, WV 25177
Phone: (304) 727-5501
See Our Ad Page 38

****Crews & Associates, Inc.**

69 Clay Street, Suite 202
Morgantown, WV 26501
Phone: (304) 292-6600
See Our Ad Page 22

***Dunn Engineers, Inc.**

400 South Ruffner Road
Charleston, WV 25314
Phone: (304) 342-3436
See Our Ad Page 10

*****E.L. Robinson Engr. Co.**

5088 Washington Street, West
Charleston, WV 25313
Phone: (304) 776-7473
See Our Ad Page 12

****Gwin, Dobson & Foreman, Inc.**

3121 Fairway Drive, Suite B
Altoona, PA 16602-4475
Phone: (814) 943-5214
See Our Ad Page 32

****Herbert, Rowland & Grubic, Inc.**

829 Fairmont Road, Suite 201
Morgantown, WV 26501
Phone: (304) 284-9222
See Our Ad Page 14

*****Hornor Brothers Engineers**

P.O. Box 386
Clarksburg, WV 26302
Phone: (304) 624-6445
See Our Ad Page 42

***Potesta & Associates, Inc.**

7012 MacCorkle Avenue, SE
Charleston, WV 25304
Phone: (304) 342-1400
See Our Ad Page 37

****RK&K**

159 Plaza Drive
Keyser, WV 26726
Phone: (304) 788-3370

***Rockacy & Associates, Inc.**

2528 Thrush Road
Charlottesville, VA 22901
Phone: (800) 836-1011
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***S & S Engineers, Inc.**

501 Eagle Mountain Road
Charleston, WV 25311
Phone: (304) 342-7168
See Our Ad Page 35

***Stantec Consulting Services, Inc.**

320 Southview Drive, Suite 102
Bridgeport, WV 26330
Phone: (304) 816-5199

***Stiffler, McGraw and Assoc., Inc.**

1731 N. Juniata Street
Hollidaysburg, PA 16648
Phone: (814) 696-6280
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****The EADS Group, Inc.**

250 Scott Avenue
Morgantown, WV 26508
Phone: (304) 212-5927
See Our Ad Page 38

*****The Thrasher Group, Inc.**

600 White Oaks Blvd.
Bridgeport, WV 26330
Phone: (304) 624-4108
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CONTRACTORS

***Breckenridge Corporation**

P.O. Box 247 Brickyard Road
Buckhannon, WV 26201
Phone: (304) 472-3350
See Our Ad Page 38

***Pleasants Construction, Inc.**

24024 Frederick Road
Clarksburg, MD 20871
Phone: (301) 428-0800
See Our Ad Page 5

Laboratories

***Analabs, Inc.**

P.O. Box 1235
Crab Orchard, WV 25827
Phone: (304) 255-4821

***Pace Analytical**

225 Industrial Park Road
Beaver, WV 25813
Phone: (800) 999-0105
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***Preiser Scientific**

94 Oliver Street
St. Albans, WV 25177
Phone: (800) 624-8285
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Services and Products

***120Water**

250 S. Elm Street
Zionsville, IN 46077
Phone: (317) 507-2024
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****Advanced Rehabilitation Technology**

525 Winzeler Drive, Unit 1
Bryan, OH 43506
Phone: (419) 636-2684
See Our Ad Page 33

****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 10

***AMS**

1127 Judson Road, Unit 233B
Longview, TX 75601
Phone: (844) 475-8343

****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

***Atlantic Machinery, Inc.**

2628 Garfield Avenue
Silver Spring, MD 20910
Phone: (301) 585-7681

***Aulick Chemical Solutions, Inc.**

111 Patton Ct.
Nicholasville, KY 40356
Phone: (859) 881-5422
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***Benchmark Construction Co., Inc.**

P. O. Box 1018
Hurricane, WV 25526
Phone: (304) 881-1735
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***BissNuss, Inc.**

7 Court Street, Suite 260
Canfield, OH 44406
Phone: (330) 533-5531
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***Buchanan Pump Service & Supply Co., Inc.**

P.O. Box 827
Pound, VA 24279
Phone: (276) 796-5473
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***Carboline Global**

2150 Schuetz Road
St. Louis, MO 63146
Phone: (314) 644-1000

***Charles Morrow & Associates**

1429 Three Degree Road
Valencia, PA 16059
Phone: (412) 400-5517

*****CITCO Water**

4034 Altizer Avenue
Huntington, WV 25705
Phone: (800) 999-3484
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***Clow Valve Co.**

5908 Sodom Hutchings Road
Farmdale, OH 44417
Phone: (330) 360-4550
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***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
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***Core & Main**

2825 Fairlawn Ave.
Dunbar, WV 25064
Phone: (304) 768-0086
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***Daman Superior, LLC**

2333 Zinn Chapel Road
Reedsville, WV 26547
Phone: (304) 972-1936

***DAS Group**

3251-C Old Frankstown Road
Pittsburgh, PA 15239
Phone: (724) 327-8979
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***Diamond Maps**

7018 Buffwood Ct.
Brownburg, IN 46112
Phone: (317) 939-6941
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***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

***Dutchland, Inc.**

160 Route 41
Gap, PA 17527
Phone: (717) 442-8282
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185 Industrial Parkway, Suite G
Branchburg, NJ 08876
Phone: (908) 722-7774

***Edmunds GovTech**

301 Tilton Rd.
Northfield, NJ 08225
Phone: (609) 645-7333

***EnviroScience, Inc.**

5070 Stow Rd.
Stow, OH 44224
Phone: (330) 414-6552

*****Extreme Endeavors**

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Phone: (304) 457-2500
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***Fehr & Cuda Sales, Inc.**

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Phone: (724) 838-9394
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***Ferguson Waterworks**

698 Middletown Rd.
White Hall, WV 26554
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13222 Fairview Road
Newark, OH 43056
Phone: (740) 319-4772
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***Fortiline Waterworks**

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Concord, NC 28027
Phone: (704) 788-9800

***Frey Municipal Software**

40 North Grand Avenue, Suite 303
Fort Thomas, KY 41075
Phone: (859) 441-6566
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***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
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***HACH**

712 Creekstone Ridge
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***Hymax/Mueller**

201 Ralston Road
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Phone: (352) 789-9649
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*****JABO Supply Corporation, Inc.**

5164 Braley Street
Huntington, WV 25705
Phone: (304) 736-8333
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***Maryland Biochemical Co., Inc.**

712 Tobacco Run Drive
Bel Air, MD 21015
Phone: (800) 771-7252
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***Master Leak Technologies, LLC**

100 Home Road
Hatboro, PA 19040
Phone: (267) 236-6184
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*****Master Meter, Inc.**

101 Regency Parkway
Mansfield, TX 76063
Phone: (937) 902-4663
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***McWane Ductile**

2266 South 6th Street
Coshocton, OH 43812
Phone: (330) 260-9292
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***Mid Atlantic Storage Systems, Inc.**

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

***Miller Environmental, Inc.**

320 S. 17th Street
Reading, PA 19602
Phone: (610) 376-9162

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

P.O. Box A
Valley Grove, WV 26060
Phone: (304) 547-0101
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***Neptune Technology Group**

1600 Alabama Highway 229
Tallahassee, AL 36078
Phone: (334) 415-9682
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***Nexbillpay, LLC**

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

***Pennoni**

117 E. Piccadilly St.
Winchester, VA 22601
Phone: (540) 771-2091
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***Pittsburg Tank & Tower Co.**

P.O. Box 913
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***John P. Place, Inc.**

90 Clairton Boulevard
Pittsburgh, PA 15236
Phone: (304) 343-2607
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*****Precision Pump & Valve Service, Inc.**

P.O. Box 7027
Charleston, WV 25356
Phone: (304) 776-1710
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***ProSource Water Products, Ltd.**

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

***Quality Water Services, LLC**

160 John Street
Weston, WV 26452
Phone: (304) 452-9883
See Our Ad Page 5

***Romac Industries, Inc.**

21919 20th Ave. SE, Suite 100
Bothell, WA 98021
Phone: (412) 295-7167

***Sequoyah Software**

8415 Easley Place
Leawood, KS 66206
Phone: (314) 210-8922
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***Service Pump & Supply Co.**

P.O. Box 2097
Huntington, WV 25721
Phone: (304) 429-6731
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***Shafer, Troxell & Howe, Inc.**

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

***State Equipment Inc.**

P.O. Box 3939
Charleston, WV 25339
Phone: (304) 776-4405
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***Tepco-Trombold Equipment Co., Inc.**

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

***Thompson & Litton**

1105 Mercer Street
Princeton, WV 24740
Phone: (304) 425-9555
See Our Ad Page 35

***Tri State Industrial Coating**

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

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

P.O. Box 547
Benton, KY 42025
Phone: (800) 455-3593
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***U.S. Pipe & Foundry Co., Inc.**

2247 Maiden Lane
Roanoke, VA 24015
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Phone: (740) 369-4300
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***Valtronics, Inc.**

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Phone: (304) 273-5356
See Our Ad Page 32

***Vermeer of West Virginia**

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

***Warren Pump & Supply**

1551 Jackson Avenue
Huntington, WV 25704
Phone: (304) 429-6723
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***Water Development Authority**

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

***W.C. Weil Company**

P.O. Box 7144
Charleston, WV 25256-0144
Phone: (304) 776-5665
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WVRWA Welcomes New Members



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120Water

AMS

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Fortline Waterworks



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Big Bear Lake

National Radio Astronomy Observatory

Peterkin Camp & Conference Center

Valley Vista Adventist Center

AFFILIATE MEMBERS

Ashland Scenic Campground

Global Capital of World Peace

Mettiki Coal (WV) LLC

Newell Company

Twin Falls State Park

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Timothy Bennett	Mark Dearman	Michael Hawranick	Michael O'Brien	Matthew Stanley	Louis Wooten
Tom Brown	Dwayne Duffield	Joshua Hunt	Richard Ohalek	Paul Stover	Gary Young
Travis Callaway	Samme Gee	Mary Hutson	Brenton Pannell	Shawn Thompson	
Kennon Chambers	Michael Giannini	John Inghram	Caitlyn Preast	Calvin Upton, P.E.	
John Cobb	Kevin Hamrick	Ernie Jack	Andrew Reel	Doug Urling	
Bruce Darner	Kevin "Ricky"	Patricia Lee	Jason Roberts	Kistina Ward	

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