



WELL LOG

A PUBLICATION OF THE WISCONSIN WATER WELL ASSOCIATION

Summer 2022

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LETTER FROM THE PRESIDENT

By Rick Peterson, WWWA President



Greetings everyone,

Summer has fully arrived in Wisconsin, and I hope that yours is off to a good start. It sure has been difficult to have to start dealing with such extreme heat so early in the season.

In this issue of the newsletter, I'd like to start a conversation on how to get involved with the organization. We are always looking for hardworking, passionate people to get involved in the WWWA. Whether that be as a member, a Board representative, an advocate for legislation on behalf of the groundwater industry, or even a sponsor at the Annual Conference. Here are 4 ways you can become involved with the WWWA:

Be a leader!

Our Board of Directors is currently taking applications for anyone interested in serving as a Specialty Director for a two-year term. In this role, you would attend board meetings and weigh in on issues that directly affect your profession. We welcome new ideas to help best serve our member-base. The commitment of your personal time has the potential to yield incredible results for the groundwater industry.

Support the organization and get your company's name out there!

Our Annual Conference is a great way to get your company name in front of 300+ license holders in a fast-paced, family friendly conference that integrates education with an incredible amount of networking.

Share your knowledge!

We are seeking suggestions from members for Continuing Education presentation topics or individuals that are interested in giving a presentation at our 2023 Annual Conference. It is very important for our attendees to hear from the experts in various fields that contribute to providing safe drinking water.

Join, renew or reinstate your membership!

One of easiest things you could do is join the organization! For over 60 years, we have been dedicated to protecting Wisconsin's ground water – with the support of people like you. Your membership earns discounts on Continuing Education, early delivery of the *Well Log* newsletter, monthly legislative updates, and so much more!



Letter from the President continued on next page

2022 WWA BOARD OF DIRECTORS

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651-226-7508

Letter from the President continued from previous page

An organization is only as strong as those who support it. I look forward to seeing some new faces and the return of others. Together, as an organization, we will continue to improve, grow, and remain a valuable resource that industry professionals will want to continue to be a part of. If you are interested in getting involved with the organization, please email us at info@wisconsinwaterwell.com or give us a call at 855-947-9837.

I hope you all have a safe, productive, and blessed summer. 💧



Rick Peterson, Clean Water Testing
920-841-3904, rick.peterson@cleanwatertesting.com

WWWA MEMBERSHIP UPDATE

As of June 24, 2022

199 FULL MEMBERS

58 ASSOCIATE MEMBERS

6 LIFE TIME MEMBERS

EXECUTIVE DIRECTOR MESSAGE: WHERE DO YOU FIND SUPPORT AND MOTIVATION?

By Jennifer Rzepka, CAE, WWSA Executive Director

In recent years I've been finding myself interested in revisiting hobbies, projects and tasks that I've attempted in the past but didn't accomplish for some reason or another. Recently two quotes came into my life that re-energized me and have motivated me to take more chances and be more bold in trying again. It's been an uplifting and exciting time in life and I want to share it with you!

Don't be afraid to start over again. This time, you're not starting from scratch, you're starting from experience.

- Author Unknown

Character consists of what you do on the third and fourth tries.

- James Michener

While I'm sharing the specific quotes that had meaning to my personal current journey... I'm aware that we are all different human beings, and we all have different life circumstances and triggers, so **I'm also sharing the source!**

For an extra boost of support and positivity in your life, read on...

There is a speaker I've worked with many times in the past: Paul Wesslemann, the "Ripples Guy". (<https://theripplesguy.com/>) His presentations are always uplifting and inspiring. Yet one of my greatest admirations of him as a professional, is his ability to continue the communication and feelings, long after his presentations have passed, through expert and easy engagement methods.

Who doesn't need regular motivation and encouragement in their lives!? Paul has multiple books, a pod cast, has wide social media presence and is one of the most personable, memorable speakers I've ever encountered. In my 20+ year career, this speaks volumes! What hits home for me most, are

the thought-provoking quotes he shares multiple ways for free – just to continue his mission of putting continual, building, **RIPPLES** of positivity out into the world. I encourage everybody to check out these two:

DAILY TEXT

The "**Daily Splash**" is a text message that arrives at 10am daily with a brief, upbeat quote and thought-provoking comment. To sign up, simply text DAILY SPLASH to 513-436-6599. The system will ask you to disclose your name and birthdate to confirm identity, but that's kept private by Paul.

WEEKLY EMAIL

There are 30,000+ subscribers to Paul's 60-second splash of inspiration titled "**Ripples**", an e-mail that arrives every Monday morning with two upbeat quotes and something to ponder for the week. You can sign-up using the link at the bottom of his website.

I hope that everybody reading this already has some source of regular encouragement and support on a regular basis – but if you're looking for a little extra lift, consider adding these to your life.

[855-947-9837](tel:855-947-9837) / info@wisconsinwaterwell.com 💧

Sincerely,



Jennifer Rzepka, CAE
Executive Director



MOVING FORWARD TOGETHER – LOOKING AHEAD TO THE 2023 ANNUAL CONFERENCE

By Jenni Kilpatrick, Wisconsin Water Well Association



It is hard to believe that we are already halfway through 2022 – which means we have already started planning for the 2023 Annual Conference! The Annual Conference Planning Committee has been hard at work reviewing evaluation results from the 2022 Annual Conference and plans are underway to make 2023 the best educational event yet!

What are you looking forward to? What do you want to learn? The WWWA Annual Conference is one of the only local industry events that showcases problem-solving, technologies, and the latest in products for the water well industry. We want to make sure the content is what you need to help enhance your career. The Planning Committee would like to provide sessions on: 2" shallow wells, first aid and safety, pH balancing acidizing wells, flowing wells, DNR updates, pump maintenance, digging trenches – and so much more.

We are also seeking suggestions from members for presentations, and abstracts from those interested in providing your expertise in multiple areas. Please see the following page for the 2023 Call for Presentations. We would love to feature you in our program!

Water parks, a bounce house and bowling – oh my! The WWWA strives to make the Annual Conference an experience for your whole family. We understand how precious your time is, and we want you to bring your families with to have fun – all while you can obtain enough credits to maintain your license(s) for another year. Families are encouraged to attend all social events and we welcome your recommendations to make those events even more family-friendly. Our Thursday evening trade show and reception includes cookie decorating, crafts, coloring, games – and most importantly, a bounce house! Following the trade show

and reception on Thursday, the WWWA takes over all of the bowling lanes in Tom Foolery's for a night of fun and camaraderie. The 2022 Annual Conference Bowling Event had the largest attendance in history! You don't want to miss this in 2023!

Can you help us expand the silent auction and raffle? We want to have a lot of fun in 2023, while we continue raising money for helping member students pursue their continued educational journey. The 2022 Silent Auction and Raffle provided \$3000.00 in donations to the WWWA Scholarship Fund, but we can do better with your help!

Do you have an item or activity you'd like to contribute, or a connection that you'd be willing to share with the office to help expand on the already great silent auction and raffle items given away at the Annual Conference? Sporting event tickets/experiences; commemorative memorabilia; new camping/fishing/hunting/hiking equipment; cabin/B&B/lake-house vacations; unique appliances/gadgets; power-tools; shopping sprees/gift-cards; restaurant meals; Anything that you think your fellow WWWA participants would have fun bidding on will be perfect!

If you'd like to be involved with helping shape the future of the WWWA's educational offerings, experiential training events or social elements – we look forward to hearing from you soon!

Look for more information about the 2023 Annual Conference in your email inbox - in the Fall/Winter issue of the *Well Log*.

See you in January at the Kalahari Resort! 💧



2023 CALL FOR PRESENTATIONS

2023 WISCONSIN WATER WELL ASSOCIATION ANNUAL CONFERENCE

January 18-19, 2023
Kalahari Resort and Convention
Center, Wisconsin Dells
~ and ~

CONTINUING EDUCATION SESSIONS

Various locations throughout
the state

The Wisconsin Water Well Association annual conference showcases problem-solving, technologies, and the latest in products for the water well industry.

We are seeking suggestions from members for presentations, and abstracts from those interested in providing your expertise in multiple areas.

Members, please submit your suggestions for topics directly to the WWWW Office via email to info@wisconsinwaterwell.com

Potential presenters, please submit your interest no later than September 30th, 2022 to info@wisconsinwaterwell.com using the form below.

If you would like to be considered to be a speaker for the 2023 WWWW Annual Conference, please complete the following:

Company: _____

Name: _____

Address: _____

Phone: _____ Email: _____

Length of Presentation: _____

Track (choose all):

- | | | |
|---|---------------------------------------|---|
| <input type="checkbox"/> Well Driller | <input type="checkbox"/> Rig Operator | <input type="checkbox"/> Business Management |
| <input type="checkbox"/> Pump Installer | <input type="checkbox"/> Geo-Thermal | <input type="checkbox"/> Legislative/Regulatory |

Title of Presentation: _____

Brief Description of Presentation:



HEADWATER
WHOLESALE

DOING WATER WELL IN WISCONSIN



WASTEWATER



GROUNDWATER



**WATER
TREATMENT**



**LINESHAFT
TURBINE**

WATER IS ESSENTIAL. WE'RE ALL ESSENTIAL. WE'RE ALL IN IT TOGETHER.

We know it is more important than ever to continue delivering our A+ service and prices to our essential Wisconsin contractors. Headwater Wholesale provides industry experts with the best water solutions in the industry to help you get your job done on time.



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**TELL US HOW WE CAN HELP
YOU IN WISCONSIN TODAY!**

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HEAD LOSS LEADS TO DISAPPOINTING SHOWERS

It's critical to understand the impact of head loss when troubleshooting a pump system.

By Scott Tystad - Pentair

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Three critical things to consider when sizing or troubleshooting a pump are flow, head, and total dynamic head.

Dan Featherstone, a technical trainer on the Pentair customer service team, had used every trick in the book to troubleshoot a customer's pump. The ohms test showed the windings were not compromised and a voltage test showed the pump was receiving power.



Regardless, the customer still had low shower pressure, making his showers less than ideal. So, what was causing the lack of pressure?

Based on the information provided, Dan felt the pump was sized correctly for the application. After a dead-head test confirmed the pump was hitting the curve, Dan asked the customer for more information about the discharge piping. The customer recently purchased the property and had limited knowledge of the piping. While the customer started digging, Dan continued to review the numbers.

Three Troubleshooting Considerations

Three critical things to consider when sizing or troubleshooting a pump are flow, head, and total dynamic head (TDH). *Flow* is the amount of water a pump can move, typically rated in gallons per minute (GPM). *Head* refers to the distance the pump can move the water, generally stated as feet of head. *TDH* is the feet of head a pump must produce for the whole system to operate correctly and includes head losses due to elevation, pipe length, pipe size, pipe material, and pipe fittings.

While waiting for the pipe information from the customer, Dan felt confident that the culprit was in

the discharge piping. Reviewing his notes, Dan estimated that the TDH required (pipe run, head loss, and desired feet of head at the showerhead) was roughly 250 feet. The pump's head rating was 275 feet, indicating a significant head loss in the discharge piping.

Dan decided to eliminate the most straightforward explanation: an elevation change. If the customer's pipes ran up a hill, the pump would need to generate more head to overcome gravity, quickly explaining the lack of pressure in the shower. Unfortunately, the customer confirmed to Dan that there were no extreme elevation changes.

Perplexed but not discouraged, Dan turned his thoughts to all potential configurations his customer was about to uncover.

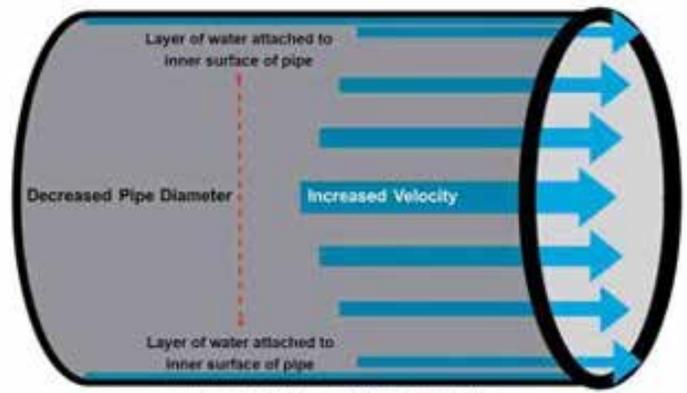


Image 1: Water velocity increases due to a decrease in pipe diameter

Figure 1. Water velocity increases due to a decrease in pipe diameter.

LOSS OF HEAD IN FEET DUE TO FRICTION PER 100 FEET OF PIPE									
1/2					3/4				
Flow U.S. Gal. Min.	Velocity Plastic ft/sec	Plastic C=140 ID .622	Steel C=100 ID .622	Copper C=130 ID .625	Flow U.S. Gal. Min.	Velocity Plastic ft/sec	Plastic C=140 ID .622	Steel C=100 ID .622	Copper C=130 ID .625
1.5	1.6	2.38	4.44	2.67	1.5	0.9	0.61	1.13	0.7
2	2.1	4.1	7.57	4.56	2	1.2	1.04	1.93	1.21
2.5	2.6	6.15	11.4	6.88	2.5	1.5	1.57	2.91	1.82
3	3.2	8.65	16	9.66	3	1.8	2.21	4.08	2.56
3.5	3.7	11.5	21.3	12.9	3.5	2.1	2.93	5.42	3.4
4	4.2	14.8	27.3	16.4	4	2.4	3.74	6.94	4.36
4.5	4.8	18.3	33.9	20.4	4.5	2.7	4.66	8.63	5.4
5	5.3	22.2	41.2	24.8	5	3	5.66	10.5	6.57

Figure 2. Example of a head loss chart.

Head Loss continued on next page

FRICTION LOSSES THROUGH FITTINGS IN TERMS OF EQUIVALENT LENGTHS OF PIPE					
Type Fitting and Application	Pipe and Fitting Material	Equivalent Length of Pipe - Nominal Size Fitting and Pipe			
		1/2	3/4	1	1 1/4
Threaded Adapter Plastic	Copper	1	1	1	1
	Plastic	3	3	3	3
90° Standard Elbow	Steel	2	3	3	4
	Copper	2	3	3	4
	Plastic	4	5	6	7
Insert Coupling	Plastic	3	3	3	3
Standard Tee	Steel	4	5	6	8
	Copper	4	5	6	8
	Plastic	7	8	9	12

Figure 3. Example of a friction loss through fittings chart.

Understanding Head Loss

Beyond gravity, understanding head loss in a piping system can be complex. It begins by understanding the correlation between velocity and friction and how each is affected by the pipe characteristics.

When water is flowing in a pipe, it constantly struggles against itself. This struggle is due to a thin unmovable layer of water that attaches to the pipe's inner surface. The layer of water effectively reduces the interior diameter of the pipe, forcing the water to squeeze into a smaller space.

As the water compresses towards the center of the pipe, the water's velocity increases (Figure 1). Velocity in a piping system is constant and is based solely on the pipe's flow rate and diameter.

While velocity does not directly cause head loss, it can directly cause other issues such as water hammer or cavitation. To mitigate issues caused by velocity, avoid velocities over 5 feet per second in the suction piping and 7 feet per second in the discharge piping.

As the velocity inside the pipe increases, there is also an increase in friction. Like how drag on a gas-powered automobile decreases the range of the vehicle, an increase in friction reduces the water's available head, decreasing the distance it can travel.

Where velocity is a constant, friction depends on several factors including pipe size, pipe material, pipe length, and pipe fittings. The correlation between velocity and friction is why larger pipes with smoother materials generally create less velocity and friction at a given flow rate versus smaller pipes with rough materials.

Today, the three most typical materials used for piping are steel, copper, and plastic (PVC or poly pipe). In general terms, plastic pipe has the least amount of head loss due to friction, and steel has the most.

Unfortunately, generalities do not correctly size or troubleshoot systems, and all the nuances can make seeking the correct values seem daunting. Further complicating matters, the internet is chock-full of technical articles and confusing calculations. Luckily, the process is not as hard as it seems. Two tools that can make calculations easier are a head loss due to friction chart (Figure 2) and a friction loss through pipe fitting chart (Figure 3).

The first valuable tool is the head loss due to friction chart.

Head loss charts are developed for different pipe materials and sizes and are available in both U.S. and metric units of measure. The charts are widely available from sources such as pump manufacturers' technical publications, hydraulic engineering handbooks, pipe manufacturers, online calculators, etc. They provide a head loss value for a specified length of pipe based on the pipe size, pipe material, velocity, and flow rate.

To use the chart, first identify the column with the desired pipe size. Next, follow the pipe size column down to find the desired flow rate, rounding up if the flow rates provided do not match exactly. Follow the row to the right with the flow rate selected to view the velocity column. Then continue following the flow rate row to the right to view each pipe material's head loss value.

Make sure to review the chart to identify how the value is measured. For example, the chart in Figure 2 states that the head loss is for each 100-foot section of pipe. Therefore, a 1/2 column of plastic pipe flowing 4 gallons per minute will create 14.8 feet of friction loss per 100-foot section of pipe.

The second valuable tool is a friction loss through fittings chart. These are also readily available and are like using a friction loss chart. A key difference with a fittings loss chart is that the values provided convert to straight-line pipe equivalents.

For example, in Figure 3, a 1/2-inch 90° plastic elbow would be the equivalent of 4 additional feet of straight pipe. In this scenario, if the straight-line pipe were 100 feet, adding a plastic elbow would increase the overall pipe length to 104 feet.

Armed with the values provided in the charts and accounting for increases in elevation, figuring head loss through the piping system is relatively easy. Rudimentary addition, multiplication, and division are all that are required.

An example to try:

- 275 feet of ½-inch plastic pipe
- Flowing 4 GPM
- One plastic ½-inch elbow
- 10 feet of elevation

Step one: Figure out the total equivalent pipe length.
275 feet + 4 feet of fittings + 10 feet of elevation = 289 feet of pipe equivalent

Step two: Divide the total pipe length by 100 feet (as specified by the head loss chart).

$$289 \div 100 \text{ feet sections of pipe} = 2.89$$

Step three: Multiply the pipe length value and the friction loss chart value.

$$2.89 \times 14.8 = 42.77$$

The value of 42.77 represents the amount of head loss in the discharge piping and must be accounted for so the system can work correctly.

Unfortunately, generalities do not correctly size or troubleshoot systems, and all the nuances can make seeking the correct values seem daunting.

For example, if the shower requires 160 feet of head, the pump must produce at least 202.77 feet of head to overcome head loss due to friction and still operate the

shower correctly. Failure to account for this head loss due to friction could lead to an undersized pump, increased energy costs and maintenance costs, or worst of all, an unhappy shower user.

Getting Answers

When Dan received the callback from the customer, his suspicions were confirmed. As the customer provided Dan with the details regarding the pipe, Dan checked off all the culprits causing the excessive head loss and low water pressure. First, the customer noted that they found a 1-inch steel pipe installed.

Culprit No. 1 – Smaller pipe diameter with rough pipe material

Second, the customer found that the pipe had several elbow fittings installed to jog around what appeared to be an old structure on the property.

Culprit No. 2 – Longer than expected pipe run and additional fittings

Using a friction loss chart and the new information provided, Dan calculated the 85-foot run to the house was closer to 130 feet after accounting for friction loss due to pipe length, materials, and fittings.

With the issue diagnosed, the customer switched to a 1½-inch plastic pipe, straightened the run, and eliminated most fittings. Then, just as Dan expected, the pump showered the customer with adequate pressure. 💧

NOW AVAILABLE!

WWWA CLASSIFIED ADVERTISEMENTS

By Hope Vandenhouten, WWWW Coordinator

As a new membership benefit, WWWW has created a Classified Ad section of the website. For FREE, WWWW members may post used equipment or surplus product on this section of the website, and all visitors to the WWWW website.

Here is the link to the Classified Ad Section: <https://wwwa.memberclicks.net/advertising-opportunities-form>

Classified Ad Details:

- Non-members may post at \$175 per posting, payment required prior to posting.
- Postings are limited to 250 words + contact information/details.
- Posts may have up to four (4) images/photos included.
- Posts are published for up to 30-days or until they're sold, whichever comes first.
- WWWW office has full editing rights on posts.
- WWWW office has full discretion of whether or not a post is published.
- Posts are intended to offload used or over purchased equipment and product.
- Posts are not intended for sale of new items. 💧

SMALL WELLS AND WATER TREATMENT SYSTEMS

Determining the right method of treatment is crucial to the life of the well.

By Michael Schnieders, PG, PH-GW - Water Systems Engineering Inc.

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Residential well with treatment provided at the point-of-entry in the home.

Water treatment efforts on residential or private wells and small community-managed groundwater systems are typically focused on aesthetic issues such as taste or discoloration, or water quality contaminants such as arsenic.

Water treatment efforts of this nature act as a barrier to harmful or undesirable contaminants that impact the delivery of clean, potable water for use and consumption.



Groundwater sources generally provide higher quality water than surface water resources, requiring fewer treatment steps. Typically, water quality challenges within a region are known at the time of construction. These challenges may include arsenic, nitrates, or other regulated contaminants.

Some issues may develop or worsen over time as the well ages, such as iron or the sediment load, or because of damage to the well, such as with coliforms.

The four basic steps of water treatment are coagulation and flocculation, sedimentation, filtration, and disinfection—typically conducted in that order in larger, municipal water treatment facilities.

For smaller well systems, the most common types of treatment are filtration, reverse osmosis, softening, and disinfection.

Filter systems remove problematic constituents by means of physical, chemical, or biological processes. Filtration is a broad category, including the removal of sand and sediment as well as protozoa and larger microorganisms. It can include a variety of methods such as gravity flow through filter media, membrane filtration, and reverse osmosis.

Reverse osmosis (RO) is in reality a multi-step filtration process that is used to remove a large majority of contaminants by pushing the water, under pressure, through a semi-permeable membrane.

Softeners use an ion exchange process for removal of chemical elements that cause hardness in water, such

as calcium and magnesium.

Softening can also remove metals and other contaminants like nitrates.

Softeners are commonly employed to reduce hard water deposits on fixtures or to extend the life of appliances and piping.

Disinfection may use a physical process or chemical additive to target the amount of bacteria present.

Ultraviolet (UV) treatment systems have a high rate of effectiveness in removing bacteria and viruses when maintained and operated correctly.

Oftentimes, different aspects of the water treatment process are put to use in tandem or in sequence to improve the quality of water at a location. Treatment may occur at the point-of-use (POU) such as a kitchen sink, or at the point-of-entry (POE) where the water source enters a residence.

Determining the Method

Sample collected from an older well for use in identifying necessary filtration.

To characterize what method of treatment is necessary or desired, the water source should be tested to correctly identify the presence of problematic constituents. Collected samples should accurately reflect the downhole environment during regular use. This is an important aspect—one that could translate into thousands of dollars if done incorrectly. Samples should be collected

at the wellhead to differentiate the groundwater from problems existing within the home's plumbing.

New wells should be sampled following development and active use. The testing should be conducted after the well has stabilized to present an accurate evaluation of the



Small Wells continued on next page

regularly produced water quality. For example, an early sample caught before development is complete may identify a higher sediment load in the water than is present after development.



In older well systems, the well should be cleaned, disinfected, and actively pumped prior to sampling. This helps to eliminate any fouling that may have occurred because of stagnation or natural ageing that has occurred.

Additionally, if any modifications are necessary, they should be completed prior to testing so that the “new normal” is referenced in the results. For example, if the well has a sump or lower blank extension, it could impart hydrogen sulfide, higher iron, or microbial contaminants that would be addressed with cleaning.

Unfortunately, there remains a great misunderstanding in the role of water testing and the definition of a contaminant. Contaminants include many harmful substances as well as many harmless constituents.

Low levels of trace minerals, metals, and salts are all naturally present in groundwater. At low concentrations, these contaminants are harmless; some may even be desirable—such as a preference for hard, mineralized water. Other contaminants are the result of industrial spills or improper disposal, and undesirable at any concentration.

It is important to differentiate the need for required testing for human health and the role of testing for water treatment and operation. For example, understanding the absence of hexachlorocyclopentadiene or pentachlorophenol in a water sample is important for classifying a new well as being free of industrial contamination, but it doesn't help in identifying hard water and properly sizing a water softener.

Generally, a full water profile is conducted before the well is approved for potable use. This data may not fully provide the needed information for water treatment or for management of the well over time. Discuss the goals of your testing with the laboratory prior to sample collection.

More Than Costs

A small treatment system for a rural community.

Selection of a treatment system should be based on more than just cost. A knowledge of the raw water quality is important, as is the understanding of the finished water and system byproducts.

For example, removal of calcium and magnesium from a water source will reduce the development of hard water deposits. However, it may also increase the corrosivity of the water. This could increase the vulnerability of appliances and old pipes to corrosion and structural decay.

Waste streams from reverse osmosis or ion exchange units can be quite concentrated with regards to their water chemistry. While this may not impact the potability of the water, it could alter the use and stability of onsite septic systems. These changes should be considered when selecting a system.

Much like a well, home water systems require routine maintenance. Also, like wells, regular and preventative maintenance of these systems is necessary to prevent impacts on water quality, reduce system failure, and help save the owner money.

Maintaining a home or small system treatment unit calls for a basic understanding of the requirements for that specific system as well as a commitment. The run-to-failure model often seen in well ownership is even more pervasive in home treatment systems unless a service company is brought in for system management.

The treatment device should be segregated from other systems and unobstructed, allowing easy access for maintenance and regular visual inspections. Flush or backwash the system as recommended and install new filter cartridges or media as necessary.

Set up a schedule to conduct routine testing to ensure the system is meeting the intended water treatment goals.

Irregular or frequent fouling of treatment systems, or a failure for them to meet the intended level of treatment, may indicate the water source has been compromised. This could be a major event or the result of natural fouling and well ageing that is more gradual.

A common example is the occurrence of iron bacteria. Iron bacteria will often migrate beyond the well and into the system, regardless of the size, impacting produced water quality. Once a filtration unit or water softener is breached, iron staining and gelatinous iron deposits can become visible in sinks and toilets.

Systems should be decided on that are cost effective, easy to operate, and meet the needs of the water resource and the owner. It is important that wells, as the raw water source, be factored into every aspect of the selection and employment of water treatment systems.

Finally, please note this article is by no means a complete guide to water treatment but more of a means of educating the industry. As with most well projects, each water source should be evaluated independently with the help of a qualified expert. 💧

KEEP 'EM TURNING TO THE RIGHT

Steps to implementing a preventative maintenance strategy in your company and why it's critical.

By Dillon Sickler - DRILLMAX

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When it comes to any drilling operation, one of the biggest headaches most can think of is unplanned downtime.

“Rig down” is a term that nobody likes to hear. “Planned downtime,” on the other hand, is something we are far too busy for. It seems every driller I talk to has well backlogs like never before.

I often hear, “I know that this is going to be an issue, but I don't have time to stop drilling.”

But not taking the time to shut down and make needed repairs before catastrophic failures inevitably will result in that “rig down” phone call.

Therefore, let's dive into developing a preventative maintenance strategy, beginning with the everyday items and developing your list for planned downtime. As much as we don't have time for any downtime, we need to understand that something small could potentially turn into a “rig down” nightmare down the road.

Developing the Checklist

First, you need to put together a daily, weekly, and monthly checklist for your rig. Make the list something that can be done first thing in the morning quickly and effectively prior to drilling, but detailed enough you could hand it to any driller and they can apply it to their rig.

To develop this list, take some time to walk around the rig and use tools such as the rig maintenance information that comes with your equipment, past knowledge you have of your machine, and knowledge your crew possess.

Your daily checklist will contain things like:

- Check all oil levels.

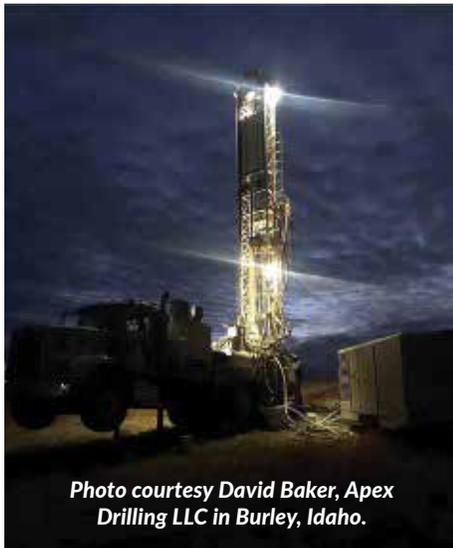


Photo courtesy David Baker, Apex Drilling LLC in Burley, Idaho.

- Grease all daily grease points.
- Do a visual safety inspection on items like cables and chains.
- Look for loose nuts or bolts.
- Inspect load path area to make sure you have no visible cracks.

If this is not the equipment you run every day, you want to make sure no safeties have been bypassed and make sure that all emergency shutdowns work as they should. Also take some time and carefully inspect all lifting devices.

Then start the rig and do a walkaround to make sure you have no leaks. It's important to note that when reviewing the maintenance documentation that comes with your equipment, you also add any items it recommends to your list.

Your weekly inspection checklist might contain things like:

- Inspecting hydraulic hoses for cracks, wires, or leaks.
- You will want to take a deeper look at things like pins, pulleys, sprockets, tophead shaft endplay, and make sure you have no leaks on any of your gear boxes.
- Checking rig hours to see if it's time for oil samples, filters, grease, or fluid changes.
- It might be good to check hydraulic pressures to make sure your pumps are building the pounds per square inch (PSI) they should be.
- Checking main function speeds to make sure the pumps are flowing what they should.

Again, you should always refer to the maintenance documentation supplied by your rig's OEM to make sure you are adding all the items to your checklist for review. They might have recommendations for monthly, yearly, or specific hourly inspections, so be sure to add them as well.

Also, it might be wise to take time to add your checklist into a computer format so you can easily print off copies.

Implementing a Process

Now that you know what to look for and where you're going to capture the issues, it's time to implement a

Keep 'Em Turning continued on next page

process in your company that ensures the parts get ordered and arrive so you can repair the rig during *planned downtime*. Remember, our goal is no rig down nightmares.

This part of the process has now become more critical than ever in our country. It wasn't too many months back you couldn't find a roll of toilet paper on the shelf. Supply chain issues like that apply to parts that go on your drilling rig too.

We need to understand that something small could potentially turn into a "rig down" nightmare down the road.

You might have a part on your rig you know is beginning to fail, but you're not too worried about it because last time you ordered it you had it the next day. The truth of the matter is that is not the case anymore and we have to start being more proactive on the parts we keep on the shelf at the shop.

We need to spend more time inspecting the rig to get parts we see starting to fail, or parts we know do fail, in order to prevent prolonged rig downtime.

Yes, it's an investment, but with lead times on some items reaching six months to a year, it's an investment you're left with no choice but to make. It's understood that having all the parts that keep your rig turning to the right on the shelf at the shop is not feasible. At that point you

would just buy a spare rig. But it's worth the time to review the items you have seen issues with in the past (the ones that could fail and be a showstopper) or you would like to rebuild soon, so it's best to get the parts on the shelf now.

Each company is different. For some, the driller is the accounts receivable, accounts payable, marketer, and purchaser. Others have a maintenance shop that purchases all the parts with a service manager who takes care of inventory and ordering all the parts.

At the end of the day, it doesn't matter how your company is set up. What matters is you put a process in place that gets the needed items from your checklist fixed on the rig or required parts for planned downtime on the shelf and ready to go.

It's worth a call to your parts supplier to review the items you have purchased in the past and items you are thinking will need replaced in the next six months or even the next year. Ask them is this on the shelf and what is the approximate lead time.

With the industry being busier than ever, workers next to impossible to find, and what seems like less hours in the day, let's do everything we can to take care of our rigs and keep 'em turning to the right. 💧

CALL FOR DRILLING SITES!

We are in the early stages of organizing an onsite, in-person, experiential type of training for attendees to get more active learning through hands-on training. Classroom training is important, but so is getting to use equipment and engaging with the experienced, experts who are handling well drilling and pump installation work in the field every day.



Wisconsin Water Well Association's

DRILL-DAYS

The WWA is seeking appropriate drilling sites for different drilling applications such as, positive displacement drilling, commonly known as mud drilling, hydro fracking, air percussion drilling, geothermal drilling, and installation of geothermal loops along with grouting practices and other technical acts can be performed by the drill rig operators and the attendees/vendor outreach. Should you have a site available, or need a well drilled on your company's property, and would be willing to demonstrate and/or loan equipment and want to be involved - let the office know as soon as you are able.

CE will be sought for these trainings, and the hope will be to conduct at least one Drill-Day event within the next year. Based on how these are received by the participants, we hope to expand on these offerings in the coming years.

TWO FORMATS ARE BETTER THAN ONE! CE HOW YOU WANT IT.

IN-PERSON CONTINUING EDUCATION

There is still time and space to register for the final In-Person CE session of 2022!

The In-Person CE Session will count for **6.0 Pump Installer; 6.0 Well Driller; 2.0 Heat Exchange Well Driller.**

The WWWWA will be following local and facility COVID guidelines that are in place at the time of the In-Person CE Sessions.

TUESDAY, OCTOBER 4, 2022

Holiday Inn & Suites Wausau-Rothschild
1000 Imperial Ave
Rothschild, WI 54474

Registration can be completed virtually online or a blank form can be downloaded and mailed in. Lunch will be provided please email info@wisconsinwaterwell.com with any food allergies.

CE SESSION COUNTS

IN-PERSON		ONLINE
2022 Annual Conference	188	188
Wisconsin Dells	132	
Green Bay	60	
Eau Claire	57	
Stevens Point	69	
Rothschild - October 4, 2022	18 <small>registered as of July 12, 2022</small>	

VIRTUAL CONTINUING EDUCATION

Registration is now open for the 2022 Virtual CE Platform! Take your CE on your own schedule with on-demand training.

Courses are broken down into hour-long segments, giving you the freedom to complete one hour individually on a rainy afternoon or do three hours of education over a weekend.

You are also able to see your completed credits in real-time and print off completion certificates immediately after finishing your course.

Pump Installer, Well Driller, and Heat Exchange Well Driller are currently being offered.

To get started sign up online and pick the courses that interest you! Check out the courses we have to offer this year below:

Drilling Deeper - Understanding the Well Compensation Fund

Jeff Beiriger, Government Relations Advisor

1.0 PIP, 1.0 WDP

Wisconsin has, for many years, maintained a Well Compensation Fund. The Fund is used by certain property owners to remediate existing wells and/or drill new wells. Behind the idea is a simple concept: Protect the State's groundwater resources. But how does the program really work? We'll look at the history and we'll look at the future of this Fund, all the while helping you to navigate the processes used to access funds for your customers.

First Aid Field Techniques

Cathy Connor, Aspirus Langlade Hospital

1.0 PIP, 1.0 WDP, 1.0 HE

Anywhere, at any time, someone may need first aid medical assistance. Would you know what to do in an emergency? This session is designed to give you tools to assist you in providing emergency care and treatment until EMS arrives or the patient is provided definitive treatment. Your role in an emergency can make the difference for a patient!

Wisconsin's High Capacity Well Program

Adam Freihoefer, Wisconsin DNR

1.0 PIP, 1.0 WDP

This session will provide attendees with an overview of Wisconsin's high capacity well application process, regulation, and technical review. The session will also cover the current state of groundwater quantity management in Wisconsin.

The Trouble with Carbonate Rock Aquifers

Eric Hiatt, UW Oshkosh

1.0 PIP, 1.0 WDP, 1.0 HE

The carbonate rocks of Wisconsin's provide opportunities to demonstrate complexities in understanding properties of these hydrologic units. This course is designed for professionals who are not geologists or experts in carbonate rocks, and it will highlight the many aspects that make carbonates unique in terms of their aquifer properties. These principles will be applied to Wisconsin's carbonate rock record.

Safety Around the Rig Tender

Matt Kouba, Kouba Drilling LLC

1.0 PIP, 1.0 WDP, 1.0 HE

Service trucks are highly important to the well drilling and pump installing geothermal process. Maintaining a high level of maintenance, along with project surroundings, is an everyday importance to the employee and the company.

Continuing Education continued on next page

So... Your Well Has a Bridge in It?

Dick Milaeger, Municipal Well & Pump

1.0 PIP, 1.0 WDP

Review of multiple projects from simple to extensive when a bridge or blockage is in a well, which will give insight to drillers, pump installers and rig operators, when they encounter such a situation.

DNR Updates

Marty Nessman, Wisconsin DNR

1.0 PIP, 1.0 WDP, 1.0 HE

Updates on the Private Water Supply Section and how they affect licensed drillers, pump installers and rig operators. Includes updates on staffing, code revisions and other relevant information.

POWTS & Wells: Keeping it Clean

Elizabeth "CeCe" Rudnicki, Wisconsin DSPS

1.0 PIP, 1.0 WDP

This presentation will cover the concept of wastewater recycling and discussion about how SPS 383 addresses methods for protecting drinking water supplies.

PFAS – Educating the Contractor and Customer

Dave Schulenberg, NGWA

1.0 PIP, 1.0 WDP

An in-depth discussion on PFAS and the role of the Contractor, Association and how to try and understand it.

Well Driller Viewer – Overview and New Features

Stacy Steinke, Wisconsin DNR

1.0 PIP, 1.0 WDP, 1.0 HE

An overview of the Well Driller Viewer and how it can help well drillers construct the best well possible for their client. The presentation will also introduce drillers to the Nitrate Penetration Layer that is being added to the viewer. The new layer is an important tool to help drillers and well owners make informed decisions when deciding how to construct a well.

Fundamentals of Dual Tube Flooded Reverse Drilling

Art Steelman, Matrix Drilling Products

1.0 WDP

Relevant to licensed drillers as it is a unique technology that is becoming more and more popular for medium to large diameter wells. It is a viable alternative to Mud Rotary and Air Rotary in many scenarios – Limits both subsurface and surface contamination – it produces a more efficient better producing well. It can be used in unstable formations where Air Rotary and Mud Rotary are not a good match. It is fast and can advance large diameter bore holes to 30-inch diameter in a single pass. It is an excellent drilling method in environmentally sensitive areas as all cutting/ contaminants are 100% contained. Many times, it can be used without bentonite or additives.

FMCSA/DOT Compliance for Carriers/Drivers

Jeff Swan, HNI Risk Services of Wisconsin

1.0 PIP, 1.0 WDP, 1.0 HE

General updates and overview of compliance for CMV drivers and employers. The attendees all either drive commercial vehicles or own and are responsible for them on a daily basis. This session will cover both safety topics as well as crucial compliance issues they must follow. This compliance is often over looked with small carriers but the ramifications of ignoring DOT rules and regulations can be devastating financially and from a safety perspective.

An exceptional opportunity for Vertical Drillers to participate in Renewable Energy

Scott M. Niesen, Wisconsin Geothermal Association

1.0 HE

This presentation will discuss: Design solutions and sizing for Vertical Geo-Exchange loops, Why Geothermal and Beneficial Electrification are a match in Wisconsin • Vertical Drillers providing reliable renewable energy for Wisconsin, and What does a HVACR Professional know about; fracture gradient, uphole velocities and viscosity - next to nothing therefore Geo-Exchange loops and Geothermal Renewable Energy is a team sport. 💧

DNR UPDATES

RECENT CEMENT INDUSTRY CHANGES AFFECTING WELL DRILLING

By Marty Nessman, Private Water Supply Section Chief

The companies that make Portland cement have switched from producing Type I Portland cement to Type IL Portland cement. The reason for the change is to reduce the carbon footprint of cement for the roads, buildings and other items constructed using cement. Current supplies of Portland Type I in stores and batch plants will be replaced by Type IL moving forward.

- What's the difference? - Type I cement has up to 5% limestone in it, while Type IL contains up to 15% limestone.
- Why is this important? - S. NR 812.11 (15) (b) requires the use of Portland cement, ASTM C150, Type I or API-10A, Class A. Type IL Portland cement does not meet ASTM standard C150, which limits the amount of limestone to no more than 5%. Portland cement meeting API-10A, Class A specifications may not be readily available in Wisconsin due to changes in cement production.
- What is the DNR's position on the changes? - The department supports reducing the carbon footprint of cement used in the construction of water wells in Wisconsin. The DNR will be submitting scope statements to create both an emergency rule and a permanent rule to change s. NR 812.11 (15) to allow the use of Type IL cement as a grouting material.
- What should you do in the meantime? - **Wells constructed with Type IL cement will be accepted by the department during the period before the emergency and permanent rules take effect as it may not be possible to construct a well with Type I or Class A cement during that time.**

The Private Water Supply section will continue to update drillers and pump installers about the emergency and permanent rules as we work through the rulemaking process.

NR 812 Rule Revision Pertaining to PVC Casing to Go into Effect August 1, 2022

Frank Fetter, Private Water Supply Enforcement Coordinator

Another revision to NR 812 is about to go into effect. New rules relating to thermoplastic (PVC) casing are set to go into effect on August 1, 2022. This rule revision is the culmination of a process that was started in May of 2019, when the Natural Resources Board directed the DNR to investigate and potentially start the process of updating NR 812 to expand the use of PVC casing for water wells.

The revised rule *does* expand the allowed use of PVC casing, but in writing the final rule, with the help of the Wisconsin Water Well Association and other well drillers, the DNR took a cautious approach. PVC casing will be allowed for the construction of *some* wells that terminate in bedrock, and cement grout will now be allowed for grouting PVC wells. Below are the main changes to NR 812 that will take effect on August 1:

- Construction of PVC cased wells terminating in *non-crystalline* bedrock will be allowed. Non-Crystalline bedrock includes sandstone, limestone/dolomite and shale.
 - » PVC casing is still prohibited for metamorphic crystalline bedrock, such as granite, quartzite, basalt, gneiss and schist.
- PVC Casing may not extend deeper than 5 feet into the top of firm bedrock.
- Cement grout will be allowed for PVC cased wells.
- While driving PVC casing is not allowed, drillers may mechanically hold down PVC casing in the upper enlarged drillhole during grouting.
- Allowed use of clamp-on and bolt-on or bolt-through pitless adapter has been expanded.
- When a problem has been identified by the DNR, the DNR may test or contract to test the well for damage or leaks through pressure testing, televising, or a comparable testing procedure.
- Driving and drilling through PVC casing is still prohibited.

For more information, contact your regional field staff, or Frank Fetter at (608) 264-6139 or via email at franklin.fetter@wisconsin.gov. 💧

LOBBYIST REPORT: GOVERNMENT RELATIONS UPDATE

By Jeff Beiriger, WWSA Government Relations Advisor



Session Statistics

This is the time of year when the focus shifts away from the legislature. With the session over, there won't be any new bills introduced and the ones that were introduced over the last two years are either law now or have died. Here are the session statistics:

- 1,198 bills were introduced in the Assembly, of which, just 85 have been enacted into law, about 7 percent. There was 1 partial veto and 72 Assembly bills vetoed by the governor.
- 1,107 bills were introduced in the Senate, of which, just 181 have been enacted into law, about 16 percent. 54 Senate bills were vetoed by the governor.
- One process that has slowed considerably during this session is the review of Executive Appointments. 292 have been received by the Senate and of those, 181 have been confirmed, leaving 111 appointments that are still in the process of being approved (or rejected).

Assembly and Senate Statistics

Another interesting statistic has to do with the legislature is the near-record number of legislators who will not be seeking reelection.

- According to data from the Legislative Reference Bureau, currently, there are 30 incumbent members who have announced they will not seek reelection to the state legislature, 23 in the Assembly and 7 in the Senate.
- Of the current sitting members of the Assembly, 78 of them came in after the 2012 election, so only 21 members who have served under Democratic leadership in the Assembly.
- After this election cycle, just 5 of the 99 members of the Assembly will have served for 6 or more terms.

Elections Are Coming – Fast!

If you don't like political advertising, now would be a suitable time to blow up your TV, cancel your newspaper and magazine subscriptions, drop your Internet service provider, and reconnect your land line for phone service. But because that's not likely, it's probably best to just brace yourself for the onslaught of advertising.

And make this part of your strategy....

While candidates talk about staying positive, study after study shows that fear sells. That means you are likely to hear the very worst statistics and out of context quotes,

and you'll see only the worst possible photos of opposition candidates, often taken with or superimposed with the politicians that people love to hate at the national level.

It's all part of a strategy. Believe it, or not, but just know that things probably aren't as horrible as you're going to be led to believe. Stay positive and stay optimistic, not in a foolish way, but to at least shield yourself a little bit from all the negative.

What's At Stake

While elections are important in every state, there are always a few that will get more attention than others. Wisconsin is, in 2022, like it was in 2016, 2018, and 2020, one of those state.

In 2016, it was a presidential election. In 2018, a race for a U.S. Senate seat and the governor's office. In 2020, another presidential race. And in 2022, it's another race for a U.S. Senate seat and the governor's office.

Democrats are hoping for a repeat of 2018, when they won both of the statewide races – senator and governor. But that was in a mid-term of a Republican presidency, which typically results in a better outcome for Democrats. In 2022, it's different. Now it's mid-term of a Democratic presidency, so history suggests Republicans will do better.

If you unpack an election, you have to look at who people were voting for and, possibly, against. Scott Walker had high negatives among many voters in 2018. Tammy Baldwin, not so much. In 2022, Ron Johnson has high negatives and Tony Evers not so much. So, if folks were motivated in 2018 to vote against Scott Walker, Tammy Baldwin was the benefactor. If folks are motivated to vote against Ron Johnson, Tony Evers will be the benefactor – along with whoever runs against Ron Johnson.

It's difficult to predict a state like Wisconsin. Our statewide elections have seen razor-thin margins of victory over the last decade, so there's no reason to expect anything different this year. The stakes are high. Republicans would love to have their person in the governor's office again to more readily approve their agenda. Democrats know that Tony Evers is the one thing that stands in the way of that happening. And while most believe that the U.S. House of Representatives will flip to

Lobbyist Report continued on next page

Republican later this year, the Senate – split evenly right now – is where all the action will be. Flipping a seat in Wisconsin is high on the Democratic wish list.

Closer to home....

Administrative Rules

NR 812 (PVC): The changes to NR 812 related to the use of PVC into bedrock have made their way through the legislative review process, been approved by the DNR Secretary, and have been sent to the Legislative Reference Bureau (LRB). If the LRB finishes its work in July, which is what is expected, then the rule will become effective on August 1, 2022.

The rule, which was originally requested by the Natural Resources Board, evolved considerably during the more than two years that it was under development. The main objections of the WWWW were removed early on, allowing the discussion to continue. Those discussions yielded more changes and, ultimately, a package that at most provides another option for drillers.

Owners of drilling businesses would do well to consider whether or not using PVC into bedrock makes sense for their business. And if they decide to use this tool, to learn everything they can about best practices before drilling wells. Like any new technique, it isn't for everyone, and it takes time to get up to speed, but we have to be safe starting with the very first well.

To that end, WWWW and the DNR are already working on a training program that can help drillers decide if this is right for them and get them up to speed with techniques combining classroom training with a field day experience. Stay tuned for more on that....

PFAS

On June 15, the U.S. Environmental Protection Agency released an updated Health Advisory Level for four PFAS compounds. The announcement reflects continued concern about the health risks associated with these chemicals and Wisconsin will be reviewing the new Health Advisory Levels to see how they line up with proposed standards in Wisconsin.

And there will be new standards in Wisconsin, at least for drinking water and surface water. The Joint Committee for Review of Administrative Rules did not object to the proposed rules, so they will be sent to the DNR Secretary and Legislative Reference Bureau for publication.

The NR Board rejected the proposed rule related to groundwater standards, so there will be no standards for the near future. A separate rules package related to groundwater standards is moving through the rules process, but it does not address PFAS.

Meanwhile, cities are looking to spend money on filtration systems for PFAS and money may be available through the federal infrastructure program passed earlier this year. And in the courts, a judge in Waukesha County ruled in April (and reaffirmed on June 7) that without approved standards, the State could not compel businesses to clean up PFAS contamination. As noted earlier, standards for drinking and surface water have been approved, but the groundwater standard, which is the one that would come into play for contaminated sites, was rejected by the NR Board.

The back-and-forth between the legislature and the DNR's regulatory authority, in the absence of specific language, has been a friction point for many years, including an issue close to our industry – the cumulative impact of high-capacity wells. That issue went to the Wisconsin Supreme Court twice and is still not fully resolved. 💧

MARKETING MATTERS: YES DAY

By Tara Schessler, In Time Creative

Have you ever caught yourself in a cloud of “NO?” You find yourself saying “NO” to everything. Can you sponsor my event? “NO.” Will you consider this new product line? “NO.” Would you like to go golfing? “I’d love to, but who will do the work? NO.” Hey boss, can we implement my new idea? “NO.”

What if we started saying YES? What if, we lifted the cloud of “NO” and started to manage business less out of fear and more out of future?

Recently our family of five re-watched a cute movie called “Yes Day.” Allison Torres (Jennifer Garner) is always saying “NO” to her three kids -- until one day the Torres family agrees to have a YES DAY. This involves parents agreeing to say yes to anything their kids want to do (with a few sensible ground rules).

P.S. I’m totally Allison! We’ve had our own version of a Yes Day with our family. It is quite liberating.

Back to business...

What if we applied a “Yes Day” to our business, our management style, to our life? Sometimes I think we say “NO” because it’s the easier option. What if we said “YES?” It could open us up to more vulnerability and risk, but it could also shine light onto so many more possibilities and options.

What if you said “YES” to that new employee’s idea? What if you said “YES” to that Ad Rep or Marketing Consultant who’s been trying to set up a meeting with you? What if you said “YES” to that new vendor who’s been knocking down your door for the past 6 months? What if you said “YES” to change? It’s hard, but that new idea, that new form of doing business could quite possibly be the thing that keeps the vibe alive and doors open for years to come.

Now, what if you said “YES” to more rest and relaxation time? What if you took a full week off? What if you didn’t work, didn’t do house projects, didn’t coordinate someone else’s schedules, just took some time for you? People who invest their own time into

themselves come back recharged and refocused. Rest and away time are so very important.

This article may seem a bit obtuse and not marketing related, but it truly is an important concept to ponder in business. Finding the positivity in what you do and opportunity in the “YES’S” could put your company on the fast track to a record-breaking year.

What can you say “YES” to today?

Bonus Business Bites:

Saying yes to opportunities to learn new marketing strategies is a huge opportunity for businesses in today’s world. The way consumers are purchasing products has changed. The way employees like to be recruited has changed. The way people consume media has changed. What are you doing to change the way you present your company and your message? 💡

Sincerely,

Tara Schessler
Local Sales Manager / Digital Sales Manager
WAOW TV 9
Wausau, WI

Have marketing questions? E-mail me anytime at tschessler@waow.com. My ideas are free!



Marketing Matters continued on next page

WILL YOU DIVE OR THRIVE IN AN ECONOMIC SLOWDOWN?

Rising markets make everyone seem like a genius.

By Charles Kile - Groundwater Digital

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The saying about rising markets and geniuses comes from the stock trading world. When asset prices keep rising, everyone who holds those assets looks and feels like they're really smart. We've had a lot of "really smart" people trading stocks and cryptos over the last couple years.

Anyone who has been around the block, though, knows trends change quickly and even the smartest people can find themselves without two nickels to rub together if they don't watch out.

I see this same mentality among business owners. When times are good, they can do no wrong. When times get tough, everyone is feeling the pinch and most seem to be caught off guard.

In this article, I aim to share some ideas that might help you spot some things you can do differently now to make sure your business thrives during not only the good times but also the bad.

Understand Your Numbers

When you don't overtly invest in marketing, it can be difficult to track the return on your investment. That doesn't mean no investment is being made. To me, marketing is any action that will bring in new customers. It can mean sending out flyers, having a website, or just doing a great job so people refer you to their friends.

The great thing about word-of-mouth marketing is that it's free, at least in terms of money. The bad thing about it is that it's not under your control. When it works, it's great. When it doesn't work, well, it doesn't work! And there's not much you can do about it.

Advertising is a form of marketing that allows you to essentially buy customers. Any business wishing to buy customers can do so in many ways. I would also argue the most important part of advertising, besides getting customers of course, is tracking the numbers.

Now I want to share a hypothetical example of a business owner named Todd. My aim is to illustrate what advertising looks like from a numbers perspective to simplify this thing called marketing and help you see how it might work for you.

Todd: A Man Good with Numbers

When measuring marketing, or advertising, the name of the game is knowing how much money you need to spend to get one customer. You should already be able to look back and figure out what the average income is from one customer based on the last 100 or even 1000 customers. If you haven't kept track, now is the best time to start.

Take this example of Todd's business. Todd gets an average of two customers per month from word of mouth. Sometimes it's three, other times it's one, so the average is two. These customers don't cost Todd anything to acquire; all he needs to do is pick up the phone when they call.

Todd's average profit from one customer is \$3000, so he makes about \$6000 per month from his word-of-mouth clients. He has the capacity to do four projects per month, however, so he has room for two more. If he could fill this capacity, he could be making \$12,000 per month in profits, so he decides to advertise to fill his capacity.

This Much In, That Much Out

Todd spends \$2000 on advertising in one month. He's been doing this for a while now and he knows that, on average, it costs him \$1000 to acquire one customer. Spending \$2000 gets him two new customers and allows him to reach his monthly capacity. These two customers bring in an additional \$6000 to his income.

Here's the math:

\$6000 from word-of-mouth customers × 2

\$6000 from advertising customers × 2

-\$2000 for advertising costs

\$10,000 income after paying for advertising

Todd's Plan for Tough Times

As you can see, Todd has figured out how to spend \$2000 on the front end of his business and get an additional \$4000 out the back end after paying his advertising costs. This is a simple example of how marketing and advertising works. Your numbers will obviously be different and figuring out exactly what they

Dive or Thrive continued on next page

are can be challenging, but it's well worth the effort.

As for Todd, he has operated his business through recessions before. He knows when times get tough, people tend to contract their spending. Businesses will often try to cut their costs as much as possible. Many will cut advertising costs.

Todd's plan is different. He knows advertising is the fuel driving his business forward and his numbers are good enough that there's room to be flexible. Even if his cost to acquire one customer goes up 50% to \$1500, he'll still profit \$1500. He can afford to spend more than most of his competitors who don't fully understand their numbers and most of who do not even advertise. When nobody else advertises, Todd will be the only one.

When Everyone Else Fires, Todd Hires

Another thing that happens when the economy slows down is that people lose their jobs. Companies go under or cannot afford to pay their employees anymore. The labor market becomes abundant with skilled workers desperate to work.

Todd has seen this happen before and is planning for it. If he can finally hire some additional good workers, he can increase his advertising budget and acquire more customers. Since a lot of his competitors will be slowing down and laying off workers, he'll do the opposite. He'll move to expand and grow.

Business will certainly become more difficult and probably less profitable, but Todd is in this for the long haul. Eventually, this economy will change trends again and come back stronger than ever. Todd's business will come out on top when the recession ends—and the core of his strategy was knowing his numbers.

The Big Ones Eat the Little Ones

One way to expand is to acquire more customers and pair them up with workers to complete their jobs. Another way is to acquire other businesses. When companies go out of business involuntarily, it can be devastating for everyone involved. Customers go without the help they need. Employees go without work. And the business owners often are left with nothing. It's a lose-lose-lose situation.

On the flip side, if there is a company ready to buy out the weaker one, it can quickly become a win-win-win situation. The customers get taken care of. The workers get to keep working. And the former business owners get to exit the equation with something to show for their years of effort and sacrifice.

Perhaps acquiring another business sounds like a distant pipe dream to you now, but things change when economies change. Being ready financially and from a business standpoint can turn a market meltdown into a market full of opportunities. After all, people are not going to stop needing water, right?

Where to Start

To someone who has never paid attention to this stuff, it can seem daunting to start now. Hopefully you've kept really good records and can spend some time going back and looking through the past performance of your business.

Finding out certain metrics can help make things really simple:

- The average value per customer (including repeat business)
- Your marketing cost per customer (total marketing spend/number of clients)
- Your average costs of goods sold per job
- Where each customer comes from (advertising, word of mouth, phone).

These numbers won't mean a lot on an individual basis because each customer and each job are different, but in the grand scheme of things, these numbers are invaluable. They help you see your business from a high-level perspective, which is what's required when navigating a multi-year recession.

These numbers are important for other reasons too. My previous article in *Water Well Journal* ("**Succession Plans and Websites**," October 2021) was about succession planning. When you understand your numbers and can convey this information to potential buyers of your business, the business becomes a lot more valuable, and it becomes possible for others to see how they might take it over.

Not knowing your numbers means you're flying by the seat of your pants. To some this is the only way to fly. But for those looking to thrive and grow during tough economic times, knowing your numbers will help you sleep better at night, unless the numbers themselves keep you up! However, at least you'll know them and can take action to improve them.

The Reality of the Situation

The thing about knowing your numbers and understanding how to drive a business forward with advertising is that it's critical to do in good times as well as bad. There's no reason to wait until times get tough to start paying closer attention to the numbers. The business leaders that do this stuff now are already crushing their competition and they will continue to do so when times turn tough.

Back in my construction days, I didn't even know this concept existed. If someone had asked me about my numbers, I wouldn't have been sure what to say. It took me a long time with a lot of trial and error to finally see how important this stuff is. Had I known this earlier, my business would likely be much more successful. I hope this article helps you be more successful. 💧

SAFETY AND GLOVES

They go hand in hand when it comes to workplace protection.

By Alexandra Walsh - Association Vision

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Workers use their hands for just about every task, and because of this fact, injuries to the hands are quite common on the job.

Keeping hands and fingers out of harm's way at work is critical. A serious injury to a worker's hands or fingers results in a huge negative impact on their ability to perform and their overall quality of life. While gloves are the most common form of PPE found in any workplace, damages to the hand are still the second leading type of injury on the job.

According to the Bureau of Labor Statistics:

- There are 110,000 lost-time cases due to hand injuries every year.
- A million workers are treated in an emergency room for hand injuries annually.
- As many as 70% of workers who suffered a hand injury were not wearing gloves.
- Another 30% of victims wore gloves, but their hands were damaged or not suited for the work task.

Common Types of Hand Injuries

Lacerations are the most common hand injuries in the workplace and are typically caused by sharp objects or tools. Often it turns out that inadequate or poor quality gloves are used doing an activity that involves a sharp tool.

For example, a glove made with Kevlar is effective in protecting the hand against a cutting or slicing motion—but a straight stab motion can still easily penetrate the glove. Caution needs to be used when using any tool that can easily penetrate the skin.

Crush injuries usually happen because of employees placing their hands between two objects or into a rotating piece of equipment. Pinch points on equipment or tools also commonly lead to crushed hand injuries.

Fractures occur when there is a sudden blow to the bones in the fingers or hands. Motor vehicle accidents often cause fractures to the hands. Another common cause of fractures is when an individual throws their hands out to catch themselves when falling.

Safe Work Practices

Best practices in occupational hand safety begin with workers using the right tools to remove their hands from the line of fire when doing a task that could result in injury to their hands or fingers. Using push sticks when operating a table saw

is a good example of a worker removing their hands from possible danger.



Other safe practices for workers include:

- Avoiding fixed open blade knives. There are safety knives that limit the length of the exposed blade. They also have a safety feature that retracts the blade when pressure is let off the handle or switch that controls the blade.
- Never putting your hand in an area where you lose sight of your hand and cannot see it.
- Never working on an energized piece of equipment. Lock and tag out the equipment to make certain there will be no unintentional start-up while you are working on the equipment.
- Always wearing the proper gloves for whatever work task you are doing. Understand the limitations of your gloves and what work tasks they are appropriate for.

Glove Protection

According to the Occupational Safety and Health Administration, if a workplace hazard assessment reveals that employees risk facing potential injury to their hands and arms that cannot be eliminated through engineering and work practice controls, employers must make sure employees wear the appropriate protection.

OSHA lists potential hand hazards such as skin absorbing harmful substances; chemical or thermal burns; electrical dangers; bruises and abrasions; cuts, punctures, and fractures; and amputations.

Protective equipment includes gloves, finger guards and arm coverings, or elbow-length gloves. OSHA advises that employers should explore all possible engineering and work practice controls to eliminate hazards and use PPE to provide additional protection against hazards that cannot be eliminated through other means.

Glove Types

There are many types of gloves available today to protect against a wide variety of hazards. The nature of the hazard and the operation involved will naturally affect which gloves to select.

The variety of potential occupational hand injuries makes selecting the right pair of gloves a challenge. It is so important

Safety Gloves continued on next page

that employees wear gloves specifically designed for the hazards and tasks found in their workplace because gloves designed for one function may not protect against a different function, even though they may appear to be an appropriate protective choice.

The following are examples of some factors that may influence the selection of protective gloves for a workplace.

- Types of chemicals handled
- Nature of contact (total immersion, splash)
- How long the contact lasts
- Area requiring protection (hand only, forearm, arm)
- Grip requirements (dry, wet, oily)
- Thermal protection
- Size and comfort.

Gloves made from a wide variety of materials are designed for many types of workplace hazards. In general, gloves fall into four groups:

- Gloves made of leather, canvas, or metal mesh
- Fabric and coated fabric gloves
- Chemical- and liquid-resistant gloves
- Insulating rubber gloves.

A poor fit is the main reason gloves are often removed before or while performing a job. If the gloves don't fit properly, they don't provide the dexterity employees need to perform their jobs.

A poor fit also compromises the protection the glove offers. When safety gloves are too big, they can get caught in tools or machinery. Jewelry such as rings do not belong on the jobsite, especially worn under gloves! They can change the fit of the glove and increase the risk of injury to the fingers.

The incorrect use of safety gloves can endanger not only the safety of the worker wearing them but even the safety of others in the area. For example, the wrong gloves incorrectly handling toxic chemicals can spread these chemicals caught on their gloves to other employees. That is why it is so vital to inspect and correctly store and care for safety work gloves.

Glove Training

Providing workers with gloves is only the first step to ensuring their hand safety. They also need to be trained in correct use of the gloves, learn why they are necessary, when they should be worn, and which types of gloves are right for which jobs.

Hand protection training should include information on how to properly wear, adjust, and remove the gloves, and should provide a clear picture of the gloves' limitations. It's also a good idea to perform a demonstration of how to spot signs of wear and tear. Training must also address proper care and maintenance, which should always be performed according to the glove manufacturer's recommendations.

Details of training on glove use and care should be recorded, noting the date (and the date of any subsequent refreshers), who conducted it, the names of participating workers, and the topics taught. These records will help safety managers keep an eye on the program's development, plan for updates, and evaluate its effectiveness.

Glove Use and Care

Here is a practical list of tips and reminders to keep in mind about wearing safety gloves:

- Work gloves should fit comfortably and never be too tight or too loose.
- The material in the gloves must be appropriate for the type of work performed and should stand up to the tasks involved.
- Workers should be provided all the relevant information pertaining to their gloves, including whether they are reusable.

If reusable, workers must know how long the gloves can be used. Chemical-resistant gloves can be reused but the choice to do so needs to take into consideration the gloves' absorptive qualities; the toxicity of the chemicals they come in contact with; and the duration of exposure, storage conditions, and temperature.

- Never wash or reuse disposable gloves.
- Keep gloves clean and dry.

When stored or cleaned incorrectly, even a brand-new piece of PPE can be responsible for debilitating injuries, making proper maintenance just as important to hand safety as the gloves' proper use

- Store gloves in appropriate conditions for their use.

Rubber-insulated gloves should be stored in a cool, dark place far from any sources of heat or steam. Nothing should be placed on top of gloves as that might distort their shape.

- Make sure backup pairs are always available in case gloves get damaged or need to be washed or dried.
- Check for holes, tears, cracks, discoloration, stiffness, and other signs of damage before each use.

A visual inspection might be enough, but sometimes depending on the type of glove, a more thorough inspection can be performed. (Filling some gloves with water can reveal pinhole leaks.)

- Replace worn or damaged gloves right away. Don't try to fix or patch them unless the glove lends itself to repairs as certified by the manufacturer.

Training and proper use and care of safety gloves not only extends their usefulness but assures they always protect workers' hands, and by extension, their livelihood. Safety practices for the hands should always fit like a glove. 💧

FALL GOLF OUTING THURSDAY, SEPTEMBER 15, 2022



Trapper's Turn Golf Club
2955 Wisconsin Dells Parkway
Wisconsin Dells, WI 53965

[MAP](#)

Schedule

11:30 a.m. – 12:15 p.m.

Registration/ Box Lunch
Driving Range

12:15 p.m.

Shotgun Start – Scramble Format
On-Course Beverages (2)
Flag Events

5:00 p.m.

Reception/Dinner (Cash Bar)
Prizes/Raffles
50/50 Coin Flip

Directions to Trapper's Turn

Hwy 12 North through Wisconsin Dells Course is on your left about a mile north of Highway 13.

Registration

\$140.00 Golf, Lunch, Dinner, Prizes

\$115.00 Golf/Lunch Only

\$ 45.00 Dinner Only

Registration deadline is September 8.

Sponsorships/Prize Donations Welcome

Well drillers, pump installers, suppliers, and other industry partners and friends are welcome!

Collared shirts and non-metal spikes are required.



**As an industry, we help people from one end of the state to the other.
Help us to reach further. Help us make this an impact across the globe, providing clean, potable water.
Proceeds from this outing help support our well projects.**

FALL GOLF OUTING

THURSDAY, SEPTEMBER 15, 2022



Trapper's Turn Golf Club
2955 Wisconsin Dells Parkway
Wisconsin Dells, WI 53965

[MAP](#)

Name	Company	Member/ Guest (circle)	Golf/ Lunch/ Dinner \$140	Golf/ Lunch \$115	Dinner Only \$45
_____	_____	M G	_____	_____	_____
_____	_____	M G	_____	_____	_____
_____	_____	M G	_____	_____	_____
_____	_____	M G	_____	_____	_____

_____ **Play** as a foursome. _____ **Place** in a foursome. Total: \$ _____

\$140.00 per person includes golf, cart, lunch, dinner, beverages (2), prizes.

Mail form and check to:	Credit Card:
WPWS P.O. Box 833 Germantown, WI 53022	Name on Card: _____ Type of Card: MasterCard Visa AmEx Disc Account #: _____ Exp. Date: _____ CVV Code: _____
Email/Fax Form & Payment:	Billing Address: _____ E-mail Address (for receipt): _____
E - jane@assocmgmtservices.com F - (888) 287-4116	

Questions? Jerry Ellis 414/640-6930 jellis@rundle-spence.com	Jeff Beiriger 414/331-2059 jeff@assocmgmtservices.com
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MUSTACHIOED MUSINGS



By Terry Farago

I was asked to start writing for the newsletter. I know I have big shoes to fill – but I will do my best.

I will start in 1985 when my parents and my wife and I went to our first WWWW conference in Oshkosh, WI. It wasn't as big of show then than it is now but we had to have dinner outside for all the members because we wouldn't all fit inside the hotel!

As we were waiting and the crew was setting up tables, my wife was asked to help. She turned to me and said, "Terry, I think you should be doing this!" and laughed. Later we found out we were asked by Wally Clark. He would occasionally look over to make sure I was doing it right. He and my wife

were laughing while he said, "a little change is good for you – it'll keep you guessing."

When it came to the vendors, Tina had a way of getting them right where she wanted. Wally was surprised at how smooth the set up would go. That's how we got started in the WWWW conferences – and the rest is history!

We've helped out for so long and I guess when you do something for so long it's kind of in your blood – kind of like well drilling. 💧

Your friend,
Terry

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INTERESTED IN JOINING THE WWA'S BOARD OF DIRECTORS? NOW IS YOUR CHANCE!

As a part of the WWA Board, you will participate in making very important decisions regarding your profession and the groundwater industry as a whole.

The Wisconsin Water Well Association's purpose is to increase the industry's knowledge and understanding of proper drilling, pump installation, and well abandonment techniques; work with the appropriate state agencies in the protection of Wisconsin's groundwater, and increase the public's awareness of the importance of and involvement in groundwater efforts.

We are currently looking for a Specialty Director who is interested in serving a two-year term.

The Specialty Director seat on the Board of Directors is open to specialty/environmental well drillers, engineers, and/or environmental scientists. This commitment is a two-year term.

General Expectations:

1. Support the Association's mission, purposes, goals, policies, and programs while knowing its strengths and needs.
2. Monitor and strengthen programs.
3. Serve actively on committees of the Board as requested by the President.
4. Attend activities and events sponsored by the Association whenever possible.
5. Ensure adequate financial resources.

Meetings:

1. Prepare for and participate in Association Board meetings and scheduled committee meetings.
2. Ask timely and substantive questions at Board and committee meetings consistent with personal conscience, convictions, and ethics, while supporting the majority decision on issues decided by the Board.
3. Maintain confidentiality of the Board's Executive sessions, and speak for the board or the Association only when authorized to do so.
4. Suggest agenda items for Board and committee meetings to ensure that significant policy-related matters are addressed.

Avoiding Conflicts:

1. Serve the Association as a whole rather than any special interest group or constituency.
2. Avoid even the appearance of a Conflict of Interest that might compromise the Board, and disclose any possible conflicts to the board in a timely manner.

If interested please email info@wisconsinwaterwell.com and we will provide the next steps! Help us continue to fight for what's good and right – Water the Wisconsin Way: Fresh. Clean. Safe. 💧

CALL FOR ADVERTISERS!

We would like to invite you to advertise in our printed *Well Log* or on our website!

Our website means opportunities for online advertising! We now have scrolling ad opportunities on all pages of our website, a full year is only \$180 to be seen on every page. Traffic on the website has been boosted due to virtual continuing education access and a contractor search tool for well-owners.

The WWWA *Well Log* circulates to 1500+ industry representatives spanning three different states (Wisconsin, Illinois and Michigan) with top articles from the DNR, marketing professionals, industry leaders and business owners.

You can request an invoice or pay now using our online form <https://wwwa.memberclicks.net/advertising-opportunities-form>. Or please feel free to call our association office 855-947-9837 for any questions or payment over the phone.

Make sure your business is viewable by industry leaders, well-owners and colleagues alike! ♦

Website Advertising

Full year \$180

Graphic must be 380 pixel by 380 pixel .jpeg file.

ADVERTISE TODAY! WWW WELL LOG ADVERTISEMENT PRICING

Full Page Advertisement

Entire Year \$1300

Single Issue.....\$475

Half Page Advertisement

Entire Year\$850

Single Issue.....\$250

Quarter Page Advertisement

Entire Year\$600

Single Issue.....\$175

To advertise, submit an article, or recognize industry members In Memorium please contact the Association office at 855-947-9837 or e-mail us at info@wisconsinwaterwell.com.

Advertising Graphic Requirements:

All ads must be submitted electronically via email. WWWA *Well Log* is designed on a Macintosh platform. Accepted software: print quality PDF files (preferred), Adobe Illustrator, Photoshop, and InDesign. Fonts and linked graphics must be included with electronic files. Minimum 300 dpi on graphics and photos. Ads not supplied properly may incur additional charges. Ads not sized properly will be scaled proportionately to fit.

Please contact our office for more information:
info@wisconsinwaterwell.com

Ad Sizes	Vertical (W x H)	Horizontal (W x H)
Trim Size	8 1/2" x 11"	
Full page (float)	8" x 10 1/2"	N/A
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Half page	3 3/4" x 10"	8" x 4 3/4"
Third page	2 1/2" x 10"	8" x 3 1/2"
Quarter page	3 3/4" x 4 3/4"	N/A

*Bleed Ads need to allow an additional 1/8" on all sides for trimming.

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David McCullough II
McCullough & Sons Inc
Forest Lake, MN

Andrew McGlynn
McGlynn Plumbing &
Pump Service
Gratiot, WI

Luke McLemore
Flint and Walling
Kendallville, IN

Randall Meidl
Meidl Water
Systems Inc.
Whitelaw, WI

Keith Meyers
Oconto Falls, WI

Richard Milaeger
Municipal Well & Pump
Waupun, WI

Kevin Miller
Miller Soil Testing LLC
Columbus, WI

Timothy Mittlestadt
Mittlestadt Plumbing
and Wells
Knapp, WI

Todd Morawetz
T& B Plumbing LLC
Mukwonago, WI

Jaromy Morgan
Butterfield Inc
Hayward, WI

Douglas Morin
Morin & Johnson
Niagara, WI

Erik Nelson
Nelson Well Service LLC
Genoa, WI

Laverne Nelson
Nelson's Plbg & Elec Inc.
Tomah, WI

John Nolan
Nolan Insurance
Agency LLC
Brandon, WI

Danny Nubbe
Mineral Service Plus LLC
Green Isle, MN

Scott O'Brien
Pentair
Eagle, WI

Kelly Oium
Oium Well Drilling &
Pump Service
Strum, WI

James Olson
Eau Claire, WI

Kevin Olson
Ken Olson Well
Drilling & Pump
Eau Claire, WI

Paul Olson
Ken Olson Well
Drilling & Pump
Eau Claire, WI

Adam Owsley
Herr Well Drilling Inc
Sullivan, WI

Jack Pagenkopf
H & N Plumbing &
Heating
Fennimore, WI

John Pelke
Pelke Plumbing & Well
Drilling Inc.
Durand, WI

Matthew Peters
Independent Plumbing
Services Inc.
Peshtigo, WI

Rick Peterson
Water Right/Clean
Water Testing, LLC
Menasha, WI

Scott Peterson

Peter Peterson, III
Lange Plumbing Inc.
Reedsburg, WI

Matthew Phelps
Midwest Well
Drilling LLC
Cornell, WI

Michael Phelps
Midwest Well Drilling &
Hydro-fracturing, LLC
Cornell, WI

Marie Phelps

Steve Pickhardt
PHE Contractors, Inc.
Randolph, WI

Michael Plautz

James Pueschner
JP Home Inspections LLC
Rhinelanders, WI

Dennis Quinnell
Quinnell's Septic & Well
Service, Inc.
Friendship, WI

Ronald Raduenz
RDR Septic and Well
Service LLC
Watertown, WI

Dennis Rasmussen
Dennis Rasmussen
Cable, WI

Richard Reinart
The Home Inspector LLC
Prairie Du Sac, WI

Matt Remington
Remington Well & Pump
Franklin, WI

Roger Renner
E.H. Renner & Sons, Inc.
Elk River, MN

Mason Rens
Municipal Well and Pump
Green Lake, WI

David Rock
Rock-Well Well & Pump
Service, Inc.
Kansasville, WI

Andrew Rogers
Rogers Pump Company
Oshkosh, WI

Thomas Roos
Roos Well Drilling Inc.
Oxford, WI

Todd Roos
Roos Well Drilling Inc.
Oxford, WI

Thomas Ruemenapp
Big Moose Home
Inspections, Inc.
Bessemer, MI

WWWA MEMBER LISTING (CONTINUED)

Jon Rush

Rush Well Drilling LLC
Black River Falls, WI

Adam Ryberg

Prime Source Plumbing
& Heating Inc.
La Crosse, WI

Wesley Salverda

Salverda Well
Forest Lake, MN

Kenneth Schaefer

Ken Schaefer Well Pump
and Water Treatment
Consulting LLC
Slinger, WI

Eric Schmidt

Advantage Plumbing &
Heating Inc.
Nekoosa, WI

Michael Schmitt

Huemann Well Drilling
Ringwood, IL

Nicholas Schouten

Tim Butterfield
Drilling Inc
Somerset, WI

Patrick Schreiner

Schreiners Plumbing &
Heating
Marshfield, WI

Nicholas Schultz

Mineral Service Plus LLC
Green Isle, MN

Joe Seep

Joe Seep Plbg & Elec Inc.
Reedsburg, WI

Ivan Semingson

Semingson Aberle
Plumbing LLC
Pigeon Falls, WI

Robert Serre

Cliff Bergin & Associates
Mequon, WI

Peter Sharpe

Neumann Plumbing &
Heating, Inc.
Howards Grove, WI

James Shepard

Martens Plumbing &
Heating, Inc.
Mukwonago, WI

Todd Sinz

T.L. Sinz Plumbing, Inc.
Menomonie, WI

Steven Slager

Central Well and Pump
Service Inc.
Brandon, WI

Randol Smart

Smart Plumbing and
Heating Inc.
Butternut, WI

Allen Smith

Bloyer Well & Pump, Inc.
South Beloit, IL

Christopher Smith

Bloyer Well & Pump, Inc.
South Beloit, IL

Steven Solofra

Solofra Plumbing and
Heating Inc.
Burlington, WI

Randy Soper

Mike's Plbg, Htg &
Elec Inc.
Pulcifer, WI

Timmy Soper

Gillett, WI

Eric Stahl

Grundfos
Rochester, MN

Steven Stahl

Stahl Plumbing
Green Lake, WI

Brian Stangret

Midwest Elevator &
Drilling Inc.
Waconia, MN

Michael Steffl

Steffl Drilling & Pump
Inc.
Willmar, MN

Todd Sticha

NDS Drilling Supply
Company Inc.
Elko New Market, MN

Kenneth Sweeney

Ken Sweeney Well
Drilling & Pumps
Franklin, WI

Russell Tallman

Joseph H. Huemann &
Sons
Ringwood, IL

Steve Tesmer

Eckmayer Inc.
Waterloo, WI

Jeffrey Thron

Mantyla Well Drilling,
Inc.
Lakeland, MN

Richard Thron

Mantyla Well Drilling,
Inc.
Lakeland, MN

Brian Van Beusekom

Ingleside Engineering &
Const
Loretto, MN

Troy Van de yacht

Leo Van De Yacht Well
Drilling
Green Bay, WI

Jim Vander Galien

Sam's Well Drilling
Randolph, WI

Tom VanDeYacht

Ground Source Inc.
De Pere, WI

Ralph Volkman

Ralph's Water
Conditioning LLC
Black Creek, WI

Trisha Vukodinovich

Aqua Well & Pump
Systems Inc
North Prairie, WI

Vern Wagner

Wagner Plumbing
Wautoma, WI

Bruce Walker

Wisconsin Well & Water
Systems LLC
Grand Marsh, WI

Mark Weber

Weber Well Drilling, Inc.
Chilton, WI

Bradley Webster

Brad Webster & Sons
Drilling Inc.
Poynette, WI

Michael Weidman

Northwoods Property
Inspections
Park Falls, WI

Glen Weigel

GW Plumbing Service Inc
Boulder Junction, WI

Steffen Wellstein

Wells, Inc.
Risingsun, OH

Alan Wepking

Wepking Pump Service,
Inc.
Lancaster, WI

David Werner

Werner Pump Service
Jefferson, WI

Michael Wertz

Wertz Plumbing and
Heating Inc.
Richland Center, WI

Anthony Weslow

Weslow Water Systems
Green Bay, WI

Brian Weslow

Weslow Water Sys Inc
Suamico, WI

Jack West

Federated Insurance
Owatonna, MN

Randy Williams

Water Well Solutions
Pewaukee, WI

Jerome Wojtkiewicz

Aqua Service
Rice Lake, WI

David Woyak

4-D Water Well And
Pump Service LLC
Hartland, WI

Thomas Wranik

Thomas F Wranik Well
Drilling, Inc
Eagle River, WI

Lloyd Wurzer

Cahoy Pump Service
Sumner, IO

Jeffery Zielieke

Zielieke Well Drilling Inc.
Campbelsport, WI

Cody Zimmerman

PHE Contractors, Inc.
Randolph, WI

John Zimmerman

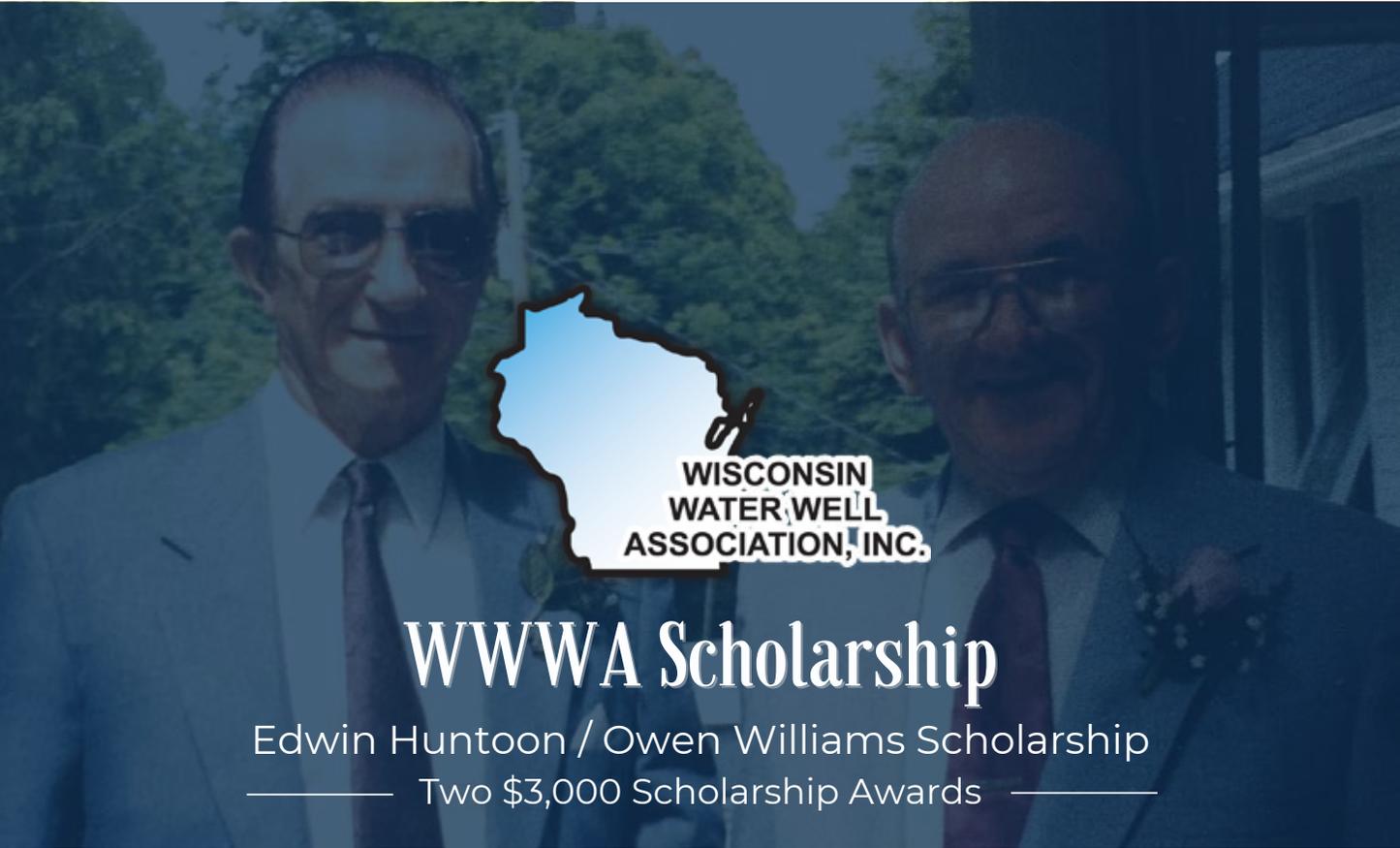
Zimmerman Pump
Boyd, WI

Herbert Zoellick

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Edwin W. Huntoon (1917-2011)

Ed Huntoon served the WWWW as Editor of the newsletter, and was a proponent of the water well industry throughout the world. He started in the industry as a driller in the rock quarries, then for the US Army during WWII and on water supply projects around the world. Ed was a licensed pump installer, master plumber, and journeyman plumber. He was the recipient of the NGWA Life Member Award in 1991, and the NGWA Oliver Award in 1995 for outstanding contributions to the groundwater industry.

Owen W. Williams (1922-2014)

Owen Williams served the WWWW as Executive Secretary, and represented the Association at many conferences, meetings, and legislative sessions. He served in the Navy aboard the USS Barb during World War II, and served as State President of the US Submarine Veterans. He devoted significant time and energy in the formation of the Wisconsin Water Well Guild. He encouraged others to “make greater strides to meet the challenge of protecting the environment.”

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WWWA SCHEDULE OF EVENTS

October 4, 2022

**Final In-Person CE Session
Rothschild, WI**

January 18-19, 2023

**2023 Annual Conference
Kalahari Resort and Convention Center
Wisconsin Dells, WI**