H_2Oregon

Winter 2026
Vol. 48, No. 1

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48th Annual Management & Technical Conference

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Jason Green , Executive Director
jgreen@oawu.net

Mike Collier, Deputy Director,
Source Water Specialist
mcollier@oawu.net

Denise Dahlberg
Accountant/Office Manager
ddahlberg@oawu.net

Brianna Howard
Office Assistant
bhoward@oawu.net

Mark Russell, Magazine
mrussell@oawu.net

Heather Davis, Apprenticeship Coordinator
hdavis@oawu.net

Tim Tice, Projects Manager
ttice@oawu.net

Scott Berry, Operations Manager
sberry@oawu.net

Heath Cokeley, Programs Manager,
Circuit Rider
hcokeley@oawu.net

Hans Schroeder, Circuit Rider
hschroeder@oawu.net

Sam Waller, Circuit Rider
swaller@oawu.net

Keith Bedell, Wastewater Technician
kbedell@oawu.net

Monty Norris, Wastewater Technician
mnorris@oawu.net

Bill Palmaymesa, Small System Trainer
bpalmaymesa@oawu.net

Jason Brooks, Small System Circuit Rider
jbrooks@oawu.net

Darrel Lockard, Small System Circuit Rider
dlockhard@oawu.net

Jerry Smith, EPA WW Technician
jsmith@oawu.net

For advertising information,
contact the OAWU office:
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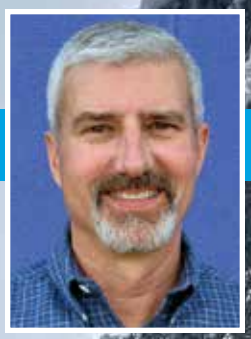
The Need for Resourcefulness



by Jason Green, Executive Director

As I read Bill Palmaymesa's End of Year Conference summary, I couldn't help but consider the word ***adaptability*** as I reflected upon the year past and the conference article. Several words and thoughts that come to mind: flexibility, resilience, being proactive - open-mindedness without losing one's foundation or direction. Adaptability is of great importance for survival, growth and innovation. Needing adaptability, we've already been placed in the vice of discomfort and have recognized, at least pulled back several layers of the importance in decisions and action. We also do not want to miss the opportunity for growth, whether this be personal growth or for/within the company or utility, and often it is both. Where there is struggle and discomfort, we must recognize there is also an opportunity to adapt and grow, to expand our knowledge and experience, increase our maturity in depth and breadth. There is a promise I recall as a young boy regarding discomfort occurring today, or testing, but later it yields good fruit. Where I must next go is, am I ready? Are we ready for the next discomforting or challenging situation. I love this concept of testing to make one stronger, better, quicker, more knowledgeable. Always ready. The challenge and the test will come. Did you do well last year? 2026 has not waited for us, and with it, challenges and possibly the most demanding tests we have yet faced.

We are thrilled to introduce Jerry Smith from the Pendleton area who will be working with small wastewater utilities, and Brianna Howard working as the OAWU Office Assistant. The Association is proud to share the below photos of the OAWU Training Center. We look forward to begin using this fabulous building in the future. The Association plans to introduce you to this addition with an open house in the Spring of 2026. Wishing you the very best in 2026!

Do You Know

by Tim Tice, Projects Manager

In our everyday approach, we regularly negotiate the day in autopilot. We are creatures of habit, yet we look to better the time, space and approach to our daily routine. Complacency, when it lives with safety, is not our ally. Safety rules, for the most part, are written to reduce casualness in our tasks, specifically tasks associated with high hazards. Oregon OSHA produced a guidebook on rules that have special requirements. A simple outline of rules with letter designations noting the requirement associated with said rule.

The document aids in answering the question, "Which of OSHA rules have requirements?" Rules special requirements are categorized into ten separate mandates, with a category named: Frequently Cited (FC). This indicates a rule is among the top ten most violated rules within a division. There are six separate divisions, with Division 1 through 3 associated with utility operations.

Of the fourteen topics highlighted, nine of the rules are frequently cited for violation. Of the topics, only "Rules for all Workplaces" have the requirement for a 'qualified person' and said person must have a recognized degree or professional certificate. "Excavation Safety" is the only topic among the list that requires a "competent person", the term for someone who can evaluate hazardous conditions and mechanical systems, inspect equipment, and train others to work safely. Certification is required for personal protective equipment, permit required confined space, hazardous energy and powered industrial trucks. Certification, in this instance means a written, signed, and dated statement confirming the performance of a requirement – also called a 'certification record' in many of the rules.

Navigating the rules can be daunting and includes a routine evaluation of your workplace. Understanding which safety programs require written programs, recordkeeping, and monitoring provides a platform to retain compliance.

A short list of the frequently cited topics includes workplace safety committees, portable fire extinguishers, personal protective equipment, hazardous energy, noise exposure, and hazardous communications. To remain in compliance, training is required either initially, annually, or when necessary.

Of all the steps required to stay in compliance, the single most important action is record keeping, documenting all training with attendee names, dates and topics. The link below takes you to the rule obligation webpage. Prior to navigating the webpage determine which rule number you are searching for, as this will expedite the search process.

https://osha.oregon.gov/pubs/Pages/Rules-With-Requirements.aspx?wp7982=f:%7bc:46652,o:%7bt:2,o:%5b%22Program%22%5d%7d%7d

Each rule will list the requirement type in the left column, i.e. recordkeeping, training, or qualified person. The webpage offers a link to each specific rule to further investigate if necessary. Being laser focused on our daily routine is impossible. Too many circumstances distract us from those tasks and safety compliance forces us to turn off autopilot and review our safety. Forming a habit of reviewing your health and safety programs is a single, simple step to stay in compliance. The best of everything in life!

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Winter Mental Blues

by Heather Davis, Apprenticeship Coordinator

During the winter season, many of us face days that are cold, dark, and emotionally draining. These conditions can take a toll on our mental health, which in turn affects our physical well-being and how we show up in our daily lives.

Taking care of our mental health needs to be a priority in our lives, not just for personal reasons, but for our professional lives as well. When our minds are clouded or overwhelmed, it impacts our focus, productivity, and relationships. We make more mistakes, struggle with memory, and find it harder to think clearly. I'm willing to bet that everyone reading this has experienced days, weeks, or even months like that.

I know this is a subject that not a lot of people like to really talk about, but if we do it can help us to have a happy life. Here are some things to consider during these cold, dark days that can help you make it till spring.

First thing is getting some sunshine when you can, step outside when the sun is out for 15-30 minutes. We need to get our vitamin D to help put us in a good mood.

Second thing is making sure you do something fun with friends and family every once in a while. Get some fun social time in your life, outside of the workplace. Having good friends and family that you can be yourself with and spill your inner thoughts too can help you get rid of everything you're holding on to and get you out with people.

Third, move your body. Do a workout, go for a walk, take a dance class. Movement release endorphins, endorphins help to make you happy. It does help with your physical body, but it also helps with mental health as well.

Fourth, spark your creativity. Paint a picture, take up backing, start journaling. Something that gets your mind creative and brings you joy in the process. When we do something that has the ability to get our mind working that is away from work and creates something which brings us joy in the process.

Please take care of your mental health this winter season. Help yourself be happier in life so that you are your best in every aspect of life.

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Smokin' Dope in Oregon

by Bill Palmaymesa, Small System Trainer

Author's Note: *This article was written with the help of Grok and his obviously jealous counterpart, Ara, Artificial Intelligence (AI), for statistical citations. Despite the AI hoopla, many errors were found during proof check. Please direct all questions regarding this article to the author: bpalmaymesa@oawu.net*

At OAWU's Fall Operator Conference held in October 2025, during a round-table discussion on operator retention and recruitment, the question was asked of the attendees, "How many of you are having a hard time finding a job candidate who can pass the pre-hire drug screen?" This triggered a multitude of verbal responses from the audience. From the question's response and the ensuing conversations, the decriminalization of drugs, especially cannabis, has had a perceived negative impact on Oregon's water and wastewater utilities. Because retaining and replacing an aging industry vital workforce is becoming one of the largest obstacles, second only to the aging infrastructure, that we, as operators and utility managers, need to overcome. I decided to pursue the subject further.

Oregon's water and wastewater treatment industry relies on a small pool of certified, skilled workers-operators, engineers, and technicians-who ensure public health and environmental compliance. With the passing of the 2014 Ballot Measure 91 legalizing recreational marijuana use for adults and Ballot Measure 110 in 2020 decriminalizing small drug amounts, off-duty drug use has become common, if not prevalent. Yet, federal and state safety regulations impose strict limits, complicating hiring and retention. As of 2025, recriminalization efforts and cannabis policy tweaks amplify these federal and state tensions, risking workforce shortages amid aging infrastructure demands. Oregon employment law permits private employers' broad latitude in drug testing, absent specific restrictions. Off-duty use, especially cannabis, is protected by law, barring discrimination for legal marijuana outside work hours unless it impairs performance. Under Department of Transportation (DOT) regulations (49 CFR Part 40), utilities handling hazardous materials, like chlorine in treatment plants, require pre-employment and random drug testing. ADA (42 U.S.C. § 12112) protects recovering addicts as disabled, but active impairment justifies disciplinary action.

In Oregon, OAR 105-050-0004 allows for final-applicant drug testing for public safety, mental health services, or other classifications and/or positions designated by the appointing authority. This could include water and wastewater operations if designated by the appointing authority, but it does not require it.

Oregon's water and wastewater industry employs roughly 4,000 certified operators statewide, per Oregon Health Authority and Oregon Department of Environmental Quality data but faces a 15-20% vacancy rate in treatment plants, distribution, and collections systems. These vacancies are driven by retirements, out-of-state postings, and competition from tech sectors. Legal drug use, particularly cannabis, amplifies this. An unsubstantiated 2024 survey referenced

by Grok/Ara found 62% of employers cite failed drug screens as a top hiring barrier, disqualifying otherwise qualified candidates. If the room response to the question posed to attendees in Canyonville is any indicator, 62% is a fair assessment.

This primarily affects younger, entry level workers (under age 35), who report 40% higher cannabis use rates (CDC, 2023), leading to a 25% drop in applicant pools for operator roles since 2020. Rural systems suffer most, with 30% shortages in Eastern Oregon, where isolation compounds limited pay issues. These shortages threaten environmental compliance: understaffed plants risk violations. Approximately 20% - 30% of sanitary sewer overflow violations were a result of training gaps or understaffing. Violations of NPDES or WPCF permits are just the tip of the iceberg. Unless something changes dramatically, the water and wastewater industry will show a 30% skills deficit by 2030, directly jeopardizing public health.

How do we as an industry change the trajectory of what appears to be a cultural or societal issue? Oregon Association of Water Utilities is beginning a new operator apprenticeship program that will partner with utilities and get them in touch with those desiring a career in the water and wastewater industry. We're also about to open a much-anticipated Training Center that will house classrooms and a wet lab for hands on training. But what if the apprentice or trainee can't pass the preemployment drug test?

We need to address the problem by educating those around us. How many people in our communities know what happens after the toilets flushed or how the water got in the shower head? Do our state legislatures and representatives know we have a problem? Do we need to socially accept marijuana or cannabis like we accept alcohol, thereby lowering our preemployment standards?

The Value of Family Time

by Mike Collier, Deputy Director/Source Water Specialist

In today's world, where work deadlines, notifications, and short videos compete for our attention, the importance of family time can be overlooked. It is often the moments spent with our family that help us, offering a sense of belonging, security, and love to give us that re-set we so dearly need.

Family time is more than just being in the same room as so often happens; it's about listening to and understanding one another. Whether it's gathering around the dinner table, playing a board game, or simply sharing stories about the day, these interactions help to build trust and open communication. Over time, these bonds become why the family can be our support system through life's ups and downs.

Think back to your favorite childhood memories. Chances are, many of them involve family traditions, vacations, or even simple routines like weekend pancakes or movie nights. These shared experiences don't just make for great stories—they create a lasting sense of family identity and togetherness. Even as children grow and establish their own lives, those memories help to remind them of where they came from and will help them to have the desire to do so with their children.

Spending quality time with family also has a profound effect on our mental and emotional well-being. Studies show that children who regularly engage with their families are more confident, perform better academically, and display greater resilience. For adults, family gatherings can reduce stress and foster a sense of fulfillment. In a world where isolation is increasingly common, these moments of togetherness are important for everyone's health and happiness.

It's easy to let busy schedules get in the way, but prioritizing family time doesn't have to mean big, elaborate plans. Even small, everyday gestures—a quick check-in, text, or a shared meal—can make a difference. The key is to be present and intentional, putting aside distractions in favor of genuine connection.

In the end, family time is an investment that pays lifelong dividends. The laughter, support, and love we share with our families enrich our lives in countless ways. So, let's carve out those moments, big and small—and cherish what we have in our family around us.

Confidant Health; "How supportive Relationships help build confidence?"; confidanthealth.com/improving-mental-health; 11/14/2025

Marples, Megan; 5/20/2022; "Children are more likely to succeed if they live in this type of environment"; edition.cnn.com/2022/05/20/health.

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Metering Mastery: Unlocking Leak Detection

by Jason Brooks, Small System Circuit Rider

In the world of small water systems, where every drop counts, metering isn't just a tool—it's a lifeline. Mastering metering can mean the difference between a sustainable system and one plagued by hidden losses. Drawing from experiences shared by operators, this article explores the critical importance of metering, its direct ties to leak detection and prevention, and actionable steps to integrate it into your daily operations. With Oregon Administrative Rules (OAR 333-061-0070) emphasizing water conservation plans for systems serving over 300 connections, effective metering helps you comply, cut costs, and ensure clean, safe drinking water for your community.

The Foundation: Why Metering Matters for Small Systems

Metering—the accurate measurement of water flow at production, distribution, and customer points—provides the data backbone for any efficient water system. In Oregon's small community systems, where budgets are slim and infrastructure may date back decades, unmetered or poorly metered water can lead to staggering losses. Oregon Drinking Water Services (DWS) reports that average unaccounted-for water in these systems hovers around 15-25%, often due to leaks, unauthorized use, or inaccurate billing.

Beyond compliance, metering promotes sustainability. It empowers operators to identify usage patterns, educate community members on conservation, and justify rate adjustments based on real data. For instance, in a system producing 100,000 gallons per day (gpd) like some coastal districts, even a 10% loss equates to 10,000 gpd wasted—enough to supply dozens of households. By tying metering to leak prevention, you not only reduce non-revenue water, but also minimize energy costs for pumping and treatment. Don't forget you're incurring all the cost for energy and chemicals to deliver water that escapes through leaks.

How Metering Fuels Leak Detection

Metering and leak detection are inseparable partners: meters provide the early warning system that flags anomalies before they become crises. Without reliable metering, leaks can go undetected for months, eroding pipes, and risking contamination.

Consider the process: master meters at the source (wells or treatment plants) track total production, while sub-meters or customer meters monitor consumption. By comparing these, we calculate water loss via a simple audit: Loss Percentage = (Production - Billed Consumption) / Production × 100. If losses exceed 10-15%, it's time for detection efforts like acoustic surveys or pressure testing.

In practice, advanced metering infrastructure (AMI) or automatic meter reading (AMR) systems take this further. These "smart" meters transmit real-time data, alerting you to sudden drops in pressure or unusual nighttime flows-classic leak indicators. For small system operators, even basic ultrasonic or electromagnetic meters (starting at $200-500 each) can pinpoint issues in zones. A case from a Lane County district: after installing zone meters, operators detected a 5% loss spike, tracing it to a buried main leak via correlation tools, saving $3,000 in annual pumping costs.

and Prevention for Small Water Operators in Oregon

Prevention Through Proactive Metering

Detection is reactive; prevention is where metering shines. Regular meter calibration and replacement (every 5-10 years per AWWA standards) ensure accuracy, preventing "apparent losses" from under-registering meters that mask real leaks. OAR 333-061-0050, on system maintenance, encourages this as part of our asset management plan.

Metering also enables demand-side prevention: by analyzing customer data, we can spot high-usage outliers (e.g., irrigation leaks) reducing overall system stress. Integrate with leak detection by setting baselines-e.g., minimum night flow should be under 10% of average daily use. If it rises, investigate.

Getting Started: Tips for Small System Operators

Ready to ramp up your metering game? Here's a roadmap tailored for Oregon's small systems:

- **Assess Your Current Setup**: Inventory meters.
- **Choose the Right Tech**: Start affordable: Mechanical meters for basics, or upgrade to AMI for real-time alerts.
- **Link to Detection Programs:** Pair metering with audits using AWWA's free software or other sources.
- **Secure Funding and Support:** Tap USDA Rural Development grants for rural systems, or OWRD's Water Project Grants. Application deadline for OWRD is Wednesday, January 21, 2026, by 5pm. Document savings in your conservation plan to unlock more aid.

Metering as Your Shield Against Losses

For small water systems in Oregon, metering isn't optional-it's essential for safeguarding resources and public health. By weaving it into leak detection and prevention, we create a resilient system that's better ready for the future.

End of The Year Reporting

by Keith Bedell, Wastewater Technician

I know this is probably too late to help this year, but maybe it will be a reminder for next year. As I am currently writing this article, it is getting close to the end of the irrigation season for land application of effluent.

Have you been documenting everything that is required in your permit? Have you been following your Recycled Water Use Plan (RWUP)? Some of the information might not be included in a new permit, but it will say that we will need to look at our RWUP for the information. Have you done your annual influent and effluent flow meter calibration or verification of accuracy? One thing I have noticed on new permits is that they are now asking for how much freeboard in the lagoons instead of the depths of the water.

Here is a list of requirements that most of you should be monitoring and reporting monthly and annually.

- **Flow in Million Gallons per Day.**
- **Quantity irrigated in inches/acre with location irrigation type documented on a map.**
- **Nutrients applied with the irrigation water: TKN, NO2 + NO3-N, NH3, Total Phosphorus**
- **Chlorine residual, daily while irrigating.**
- **pH, number of times during irrigation required in your permit.**
- **Total coliform or E coli, number of times during irrigation required in your permit.**
- **Crop yield and crude protein analysis if you are making hay.**
- **Do you have to do groundwater monitoring and soil samples? If so, these are additional samples that need to be taken.**
- **Don't forget you will need to do an I & I report.**

As soon as you are done discharging you can start on the annual reporting, don't wait until a week before it is due. This will keep you from getting stressed out when there are other things that you could be accomplishing. The main thing is to be familiar with the current permit, even if it has expired and you are waiting for the new permit to be approved.

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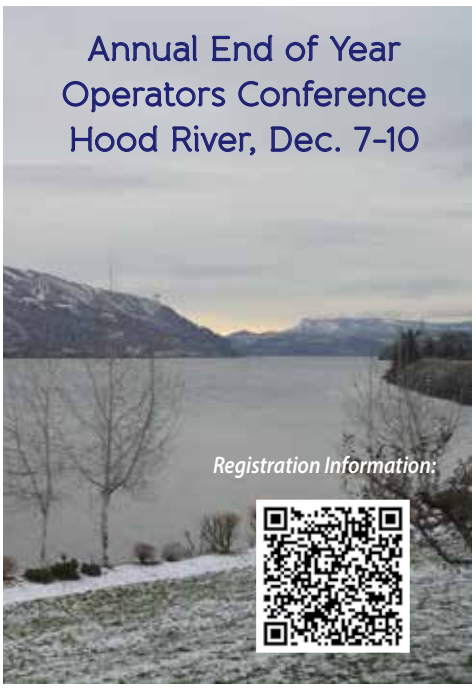

MARK YOUR CALENDAR!

Excavation Safety: Identifying and

by Scott Berry, Operations Manager

In a past professional life, I was a Forest Officer for the Oregon Department of Forestry and was responsible for training summer crews. We generally had new crews every summer and had developed or adopted some "shorthand" training tools. One of those tools was the Red Book, a pocket-sized handbook containing lots of good information to have at your fingertips including "Watch Out" situations to be aware of. In the spirit of borrowing other good ideas, I tried to develop a set of "Watch Out" situations for excavations. Excavation is a high-risk construction activity essential to installing utilities and countless other infrastructure projects. However, with the ground literally shifting underfoot, excavation work presents unique dangers. Throughout every phase, workers and supervisors need to be especially vigilant for other "Watch Out" situations—warning signs and conditions that, if ignored, can lead to serious injuries or fatalities.

1. Unstable Soil Conditions and Cave-In Hazards

Cave-ins are the leading cause of fatalities in excavation work. Trenches can collapse suddenly, burying workers under tons of soil. Cave-in risks increase in soils that are loose, wet, or previously disturbed, and even brief exposure can be fatal. Workers should pay close attention to "Watch Out" situations, such as: Cracking, Bulging, or Slumping Soil: Any change in the appearance of trench walls may signal an imminent collapse. Accumulation of Water: Water in the trench or at the bottom can quickly destabilize soil. Unprotected Trenches: Never enter an excavation deeper than five feet without appropriate cave-in protection, such as sloping, shoring, or shielding. Vibrations: Heavy equipment, passing vehicles, or nearby construction activities can trigger cave-ins.

Employers must ensure regular inspections by a Competent Person, especially after rainstorms or incidents that may have affected trench stability. Providing workers with education to recognize and immediately report these situations is non-negotiable for safety.

2. Underground Utilities: Hidden and Unpredictable

Excavating without proper knowledge of buried utilities presents extreme danger. Striking unmarked gas lines, electrical cables, or water mains can result in explosions, electrocution, or flooding. "Watch Out" situations associated with utilities include: Unmarked or Mismarked Lines: Always use Call Before You Dig services and verify markings on the jobsite. New or Unexpected Pipes or Cables: Stop work immediately if anything unanticipated is discovered and notify supervisors. Signs of Gas: Odors, hissing sounds, or visible vapor can indicate a ruptured gas main, triggering the need to evacuate and call emergency services.

Proper planning, marking, and potholing either by hand or with vacuum excavation expose utilities before using heavy machinery are industry best practices.

3. Changing Weather and Environmental Conditions

Weather changes can turn a stable excavation into a hazard zone. Rain, snow, freeze-thaw cycles, and even high winds can alter soil properties and site conditions. "Watch Out" situations here include: After Heavy Rain or Melting Snow: These conditions often lead to saturated, weak soils. Extreme Heat or Cold: Heat can dry and crack soils, while freezing can make the ground brittle and unpredictable. Water Seepage: Even slow leaks can

Responding to "Watch Out" Situations

significantly destabilize trench walls; always monitor and pump out accumulating water promptly.

Always reassess protective systems after significant weather events, and do not assume yesterday's safe conditions remain unchanged today.

4. Materials, Spoil Piles, and Equipment Placement

Improper storage of excavated material (spoil piles) and poor equipment placement can increase the risk of trench wall collapse and worker injury. Critical "Watch Out" points include:

Spoil Piles Too Close to Edge: OSHA recommends keeping materials and equipment at least two feet from the edge to prevent additional loading and potential collapse. Heavy Equipment Movement: Machines placed too close can cause vibrations and soil movement. Falling Objects: Tools, debris, or equipment can accidentally fall into open excavations, posing serious risks to those working below.

Supervisors should designate clear zones for spoil piles and equipment and maintain them throughout the project.

5. Hazardous Atmospheres in Excavations

Certain excavations, especially deep trenches or those with limited airflow, can quickly develop hazardous atmospheres. "Watch Out" includes: Unusual Odors or Visible Vapors: These may be indications of gas or chemical leaks. Symptoms Among Workers: headaches, dizziness, or difficulty breathing should be treated as potential atmospheric emergencies. Lack of Testing: Trenches over four feet deep, or those in areas with known contamination, must be tested for oxygen deficiency, flammable gases, or toxic substances before entry.

If a hazardous atmosphere is suspected, workers must not enter until testing and appropriate ventilation have been conducted.

6. Access and Egress:

Rapid escape from a trench can save lives in an emergency. OSHA requires a safe exit—such as a ladder, ramp, or stairs—within 25 feet of workers in trenches four feet or deeper. "Watch Out" situations here involve: Missing or Inadequate Ladders: Workers should never have to climb or jump to get out. Blocked Exits: Spoil piles, equipment, or debris must not obstruct escape routes. Improper Installation: Ladders should extend 3' above trench edges and be secured.

Regularly inspect access and egress systems to ensure they remain clear, safe, and compliant.

7. Working within Right-of-Ways

Any time a worksite is within the ROW you must provide for adequate and effective vehicle and pedestrian traffic control for the protection of both the workers as well as the general public. Additional hazards may include falling loads from cranes, contact with mobile equipment, and exposure to hazardous materials. Overhead power lines, for instance, are often overlooked but can present electrocution risks.

Excavation sites are dynamic and dangerous environments where "Watch Out" situations can mean the difference between a routine day and a life-altering accident. Recognizing these key warning signs—unstable soils, utility risks, adverse weather, improper material placement, hazardous atmospheres, and safe access or egress—empowers workers and supervisors to actively prevent harm. Vigilance, ongoing communication, and adherence to safety protocols are every worker's and employer's responsibility. By making safety a priority and treating every "Watch Out" situation with the seriousness it deserves, excavation professionals can ensure everyone goes home at the end of the day.

The Big One

by Sam Waller, Circuit Rider

We have been hearing about the big earthquake that is over due to hit Oregon for years now. The threat of a major earthquake is not just a distant worry, it is a real possibility that could have dire consequences for water utilities in the state.

Oregon has several fault lines, with the Cascadia Subduction Zone being the one most people are concerned with right now. This fault runs a few miles off the coast and has the potential to generate powerful earthquakes, with estimates suggesting a magnitude of 9.0 or higher. The last time we have had such a large scale earthquake was well over 300 years ago.

As a water operator, this could lead to the failure of critical water infrastructure components, including treatment facilities, pipelines, and storage tanks. The sudden ground movement can crack and rupture pipelines, leading to significant water loss through leaks and breaks. What can we do with a problem so large that many of our systems may be compromised?

- **Know your system** and where valves are in case you are able to keep parts of your system working, even if some parts are broken until repairs can be made.
- **Consider backups for water plants, such as wells.** Some systems have backup wells that have not been operated in years because the water may have an unpleasant taste or odor. Make sure these well pumps are operational for a bad natural disaster, safe poor tasting water will be welcomed.
- **Update the emergency response plan.** This is something that should be looked at periodically to ensure we are ready for many disasters, not just earthquakes.
- **Ensure emergency generators are working and fueled up.** There are many aspects to the earthquake that we don't know, but having a basic level of preparedness is helpful for any emergency. As we likely already know, clean water flowing from a tap is largely ignored until the day it stops flowing.

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Geosmin: Something Smells a Little Funky

by Monty Norris, Wastewater Technician

At our recent Fall Conference at Seven Feathers in Canyonville, we toured the water and wastewater facilities and discussed Geosmin—a compound known for causing taste and odor problems in water. So, what is geosmin, how does it get into water, and how can we treat it?

Geosmin is a naturally occurring substance famous for its earthy smell, which isn't exactly welcomed in drinking water. It's common in soil and aquatic environments and helps break down organic material. When rain disturbs the soil, geosmin is released into the air, producing that familiar earthy scent. In water, geosmin often comes from algae blooms—specifically cyanobacteria and algae—which generate the compound and cause water supplies to take on an unpleasant smell and taste. Geosmin is extremely strong; because it belongs to an alcohol group, it is volatile and easily noticed, even at concentrations as low as 5 parts per trillion.

Water treatment plants use several methods to tackle geosmin, such as keeping detention ponds moving so geosmin doesn't build up, applying oxidation processes, and using advanced filtration systems.

Beyond water issues, geosmin has found uses in various fields. The perfume industry, for example, has tried to recreate the scent of petrichor—freshly fallen rain—using geosmin. In agriculture, geosmin production can help manage soil health and boost crop yields. Geosmin is a fascinating compound, bridging chemistry, biology, and our senses. Its aroma ties us to nature, reminding us of rain and fresh earth. While it can make managing water quality tricky, geosmin highlights the complex interplay between microorganisms and their environment. Whether you notice it as the scent of rain or the taste in your water, geosmin is a subtle yet enduring reminder of nature's chemistry.

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The Worth of Water

by Heath Cokeley, Programs Manager/Circuit Rider

In the OAWU Fall of 2025 H20 Magazine the article titled "Lessons Learned: One Operator's Story of Post-Fire Utility Restoration," it stated the article was by Heath Cokeley. This was not accurate and should have read "by Meghan Smith and submitted by Heath Cokeley." We apologize for this error.

I wrote and turned in the following article 4 days short of 10 years ago. Though many things have changed in the last decade I feel this article is almost more prevalent today than it was a decade ago. While a decade ago we would see projects, even for small to medium sized communities, be in millions of dollars. Now we see projects in the tens of millions of dollars making it even more important to have community buy-in when bringing our water and wastewater infrastructure into the modern age.

Many of us have heard the statement "when the well's dry, we know the worth of water," Ben Franklin. But what does that mean in today's world? Increasingly in the United States fewer people are depending on private home wells and more are relying on municipal sources of water. I realize I am preaching to the choir here, but this means more and more of the responsibility to providing potable water falls on the shoulders of the water operators, as well as the responsibility for treating wastewater falls on the shoulders of wastewater operators, and in many systems, it is the same person. So why is it so hard to get the general public to understand why their water and wastewater systems are vitally important and need maintenance and repair? My hope is this is at least partially because the water and wastewater system personnel have been doing such a good job for a number of years.

Where some of the older generations may remember what it is like to live without the luxury of indoor plumbing the majority of the people alive in the United States view it as a necessity to modern day life. While I don't see a problem with viewing it this way, I do see a danger in viewing it as a requirement and a basic human right regardless to whether you can pay your bill. I realize I am taking on a much larger society issue, but the bottom line is when one household refuses to pay their utility bill, for whatever reason, it puts an added burden on the rest of the utility consumers. The smaller the utility the more prevalent that burden becomes.

One of the most devastating things to a community, as far as day-to-day operations go, is a reduction in that community's population. They have the same amount of infrastructure to operate and maintain with less revenue coming in to do so. While this is fairly obvious to water and wastewater operators it can be a difficult thing to relay to the public. For the most part the public doesn't realize the importance of water and wastewater until the tap doesn't work or the toilet doesn't flush. So how do we, as operators, change that? How do we make the public realize and accept that water and wastewater systems should not be taken for granted? This is a very broad question with many different answers

depending on your community. Public education through mailings and even system facility tours is one option. Let's be honest though that is only going to get the people who are interested to begin with. Most of the time when we are going to hear from the rest of the system patrons is when we raise their bill. This is often when we are going to have the largest public attendance to our board or council meetings. This can be a stressful time but can still be used for positive public communication. This is the time to explain why the rates need to go up to pay for new or existing infrastructure.

Another way to get community buy in for a project is keeping them up to speed on what their money is being spent on. Whether that is notes in a quarterly newsletter about the status of a project. Annual update on the projects complemented, or maybe giving a presentation at the local school about the importance of water and wastewater facilities. The nice thing about getting into the schools is we are not just educating the kids on a subject that tends to interest them, but we are educating the parents as well when the kids go home and tell them what they did in school that day. One method to get community buy-in, that I saw recently, was a system put a live web cam overlooking a new tank project they are doing. This way the community can see what their money is paying for. Which one of these types of public outreach will work will vary system to system based on that system's community dynamics as, unfortunately, there is not a one size fits all solution. Hopefully you can take something away from this article that you can use in your system, or if you have another way to deal with this issue, share it will me when I stop by so maybe I can pass it on to the next system down the road.

What It Really Takes to Run Your Water Plant's SCADA In-House

By Jonathan Frank, Business Development Director, Advanced Control Systems (ACS)

When a remote intruder tried to jack up lye dosing at Oldsmar, Florida's water plant, an operator saw the mouse moving on its own and quickly reversed the change. Investigators said a desktop-sharing tool (TeamViewer) was likely involved. The lesson was not "one odd hack"; it was that everyday remote-access shortcuts can become single points of failure. ACS would suggest prevention through secure, encrypted connections, MFA, and least-privilege by default.

People: The Human Lift Behind the Screens

Cyber/OT Lead — tracks advisories and sets compensating controls (0.25–0.5 FTE).

A modern water resource recovery facility (WRRF) faces persistent cyber threats. Someone on staff must track CISA industrial-control-system (ICS) advisories, decide which CVEs matter, and write compensating controls until patches clear testing. CISA posts ICS advisories, often multiple times a week3.

SCADA Adm — maintains the operation of upgrades, certificates, and thin clients working (0.5–1 FTE). Licensing, driver updates, historian maintenance, and graphics tweaks add up quickly. A single Ignition upgrade touches Java versions, OPC-UA certificates, and thin-client compatibility. Skip one step, and your plant dashboard is blank on Monday morning.

Controls Engineer — validates logic in a lab before it touches live (0.25 FTE).

Every firmware bump on a PLC requires regression testing in a sandbox. Someone must keep simulation racks and virtual machines current, so process logic can be validated without risking a pump trip.

IT Systems Admin (0.25 FTE).
Even if your SCADA runs in an industrial DMZ, it still sits on Windows Server or Linux. Patching, backups, and domain-controller health bleed time from an already stretched staff.

Without overlap or holiday coverage, that is a bare minimum of 1-¼ to 2 full-time equivalents, before the first sensor is calibrated.

Process: The Cadence That Never Stops

Asset & Dependency Inventory (Quarterly).
Tag every PLC rack, unmanaged switch, thin client, and driver version. A living bill of materials is the prerequisite for vulnerability management.

Patch-Management Cycle (Monthly or risk-triggered).
NIST SP 800-82 Rev 3 recommends a "test-stage-deploy" loop, with a dedicated lab that mirrors production firmware, drivers, and network rules4. Validate changes in the lab, then deploy with an approval and rollback plan.

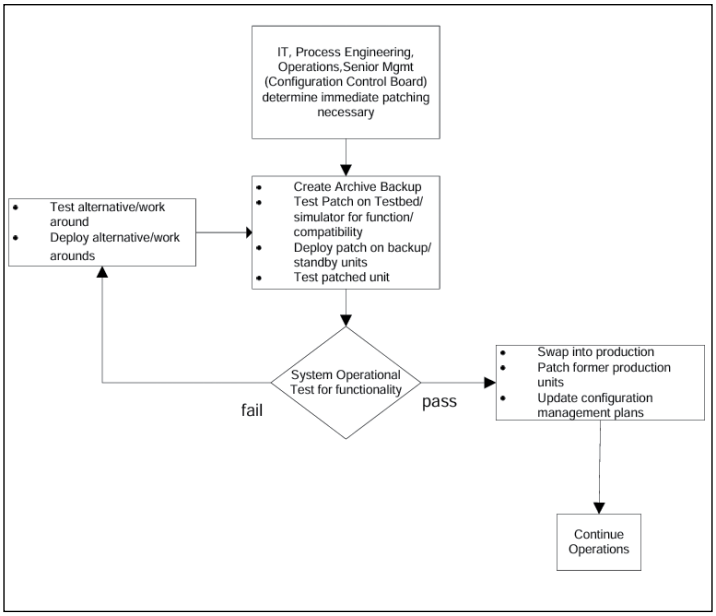

Fig. 1 - "Patch cycle for WRRF SCADA: triage → lab validation → controlled deployment with rollback." Based on NIST SP 800-40 Rev. 4, Sec. 2.2–2.3; see also CISA ICS Patch Management Recommended Practice (public domain).

Configuration & Data Backups (Daily).
Source-control repositories for PLC code, nightly database dumps, and monthly "gold images" of virtual machines need to exit the building, encrypted and offline, to survive ransomware.

Change Management & Documentation (Continuous).

Whether you follow ISO 55000 or an in-house ticket tracker, auditors now ask to see proof of approval and rollback plans for every logic tweak.

Pen-Testing & Tabletop Drills (Annual).

Run an annual third-party assessment and a tabletop exercise so your team can practice roles and communications under pressure.

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Technology: More Than a Box of PLCs

Foundation	"DIY" Requirement	Why It Matters
Network Segmentation	Managed switches, VLANs, firewalls, and one-way trust in business IT (see Fig. 2 below)	Unmanaged daisy chains leave you open to broadcast storms and silent traffic floods that can brick HMIs.
Secure Remote Access	MFA-protected VPN or jump server, with session recording	Oldsmar's attacker used remote access as a pathway; insurers now demand MFA.
Time Synchronization	GPS-disciplined NTP/PTP clock	Without accurate timestamps, historian forensics fail during an incident.
Sandbox/Test Lab	Virtualized SCADA stack plus spare PLC rack	Test and validate changes in a lab that mirrors production before deployment.
Backup Hardware	Hot-standby SSDs, power supplies, niche IO cards	Lead times on specialty control cards still run 12–40 weeks.
Monitoring & Alerting	OT-aware SIEM or log aggregator	Separates "process alarms" from "system health" noise so operators can react.

Fig. 2 - "Reference architecture for segmented IT/OT with an industrial DMZ and jump host." Adapted from NIST SP 800-82 Rev. 3, Sec. 5 (public domain).

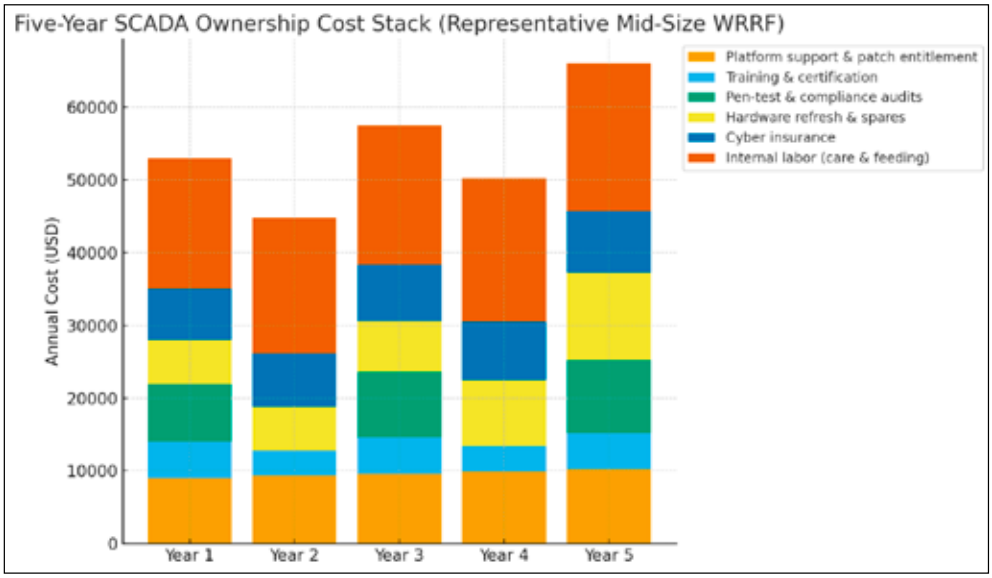

Fig. 3 - "Representative five-year SCADA ownership cost stack: platform support, training, audits, hardware refresh, cyber insurance, and internal labor." Custom chart derived from EPA Asset Management and EPA WBS cost methodology (public domain), with GAO sector context.

Cost: The Budget Line Items Nobody Sees Up Front

Industry overviews peg annual SCADA maintenance between $5,000 and $40,000, depending on tag count, driver mix, and support tiers. That number excludes: Cyber Insurance Premiums – Many carriers now require proof of a patch program and an external pen-test; expect $5k–$12k for a mid-size plant. Hardware Refreshes Fund – Virtual servers are replaced every five years, and PLC spares add $12k–$25k annually. Training & Certification – Keeping one staffer Ignition-gold certified and another ISA/IEC 62443 trained runs $3k–$8k per year. Budget realistically: SCADA overhead is a visible line item in utility O&M plans; it is not pocket change.

Compliance & Reputation: The Stakes Keep Climbing

The Environmental Protection Agency withdrew its 2023 directive to bake cybersecurity into sanitary surveys, but the agency's October 2023 notice still emphasizes that cyber hygiene remains a high priority for water systems. Meanwhile, critical-infrastructure sectors, including water utilities, are maintaining a heightened posture amid geopolitical tensions.

A single ransomware outage that forces an unpermitted discharge can trigger fines, public-notification costs, and months of reputation damage. In risk-adjusted dollars, the labor and tooling above are cheaper than a headline.

Build, Buy, or Blend?

Maintaining SCADA in-house can work when: The plant has at least two cross-trained staff covering controls and cybersecurity. A lab environment exists and is funded.

Management commits to a patch rhythm (often ~30 days for typical updates, faster if risk warrants). If any of those pillars wobble, a co-managed model or fully managed CarefreeSCADA subscription, where your team owns daily operations, but a specialist firm backstops security patching, 24 × 7 monitoring, and annual audits, often lands at a lower total cost and higher uptime.

Key Takeaway

If you run SCADA in-house, you own a living program, people, process, and tech that must keep pace with threats and aging gear. Before deciding to go it alone, budget the hidden FTE hours, the hard costs, and the regulatory exposure. Many WRRFs find that a partnership, whether fully managed or hybrid, lets operators focus on treatment goals while specialists shoulder the relentless cadence of security, updates, and compliance.

Either way, the Oldsmar lesson rings clear: the cost of doing nothing is always higher.

How ACS Makes the Heavy Lifting...Light

At Advanced Control Systems, our CarefreeSCADA offering wraps these practices, advisory monitoring and patch planning with test/staging validation, secured remote access with least-privilege and credential vaulting, lab-style rehearsals of restores, multi-layer backups with an encrypted off-site physical copy (and a cloud copy under access control), plus quarterly backup/off-site verification and database integrity checks, around your in-house operations. By rehearsing upgrades and restores in test/staging before they touch live equipment, we aim to reduce emergency call-outs and smooth maintenance windows.

Jonathan Frank is the Business Development Director at Advanced Control Systems, a control system integrator and SCADA provider specializing in water, wastewater, and industrial telemetry solutions across the Pacific Northwest.

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UPCOMING TRAINING & EVENTS

Date	Class Title	Location	CEU Information	ESAC#, Fee/Free
February 3-4	Water Treatment/Distribution Certification Review	Independence	1.4 Water/0.5 Wastewater/Onsite	7548 Fee
February 5	Water T/D Level 3,4 & Filtration Endorsement	Independence	0.6 Water	7546 Fee
March 2-6	48th Annual Management & Technical Conference	Sunriver	3.0 Water/Wastewater	TBA Fee
March 17-18	Wastewater Treatment/Collections Certification Review	Independence	1.4 Wastewater/0.5 Water	6043 Fee
April 7-8	Water Treatment/Distribution Certification Review	Independence	1.4 Water/0.5 Wastewater/Onsite	7548 Fee
April 23	Distribution Basics	Independence	0.6 Water	5986 Fee
May 12	Math for Operators	Redmond	0.4 Water/Wastewater	6104 Fee
May 12	Pumps & Pumping	Redmond	0.3 Water/Wastewater/Onsite	6216 Fee
May 20	Distribution Basics	Independence	0.6 Water	5986 Fee
June 17	Math for Operators	Hermiston	0.4 Water/Wastewater	6104 Fee
June 17	Pumps and Pumping	Hermiston	0.3 Water/Wastewater/Onsite	6216 Fee
July 21-22	Water Treatment/Distribution Certification Review	Redmond	1.4 Water/0.5 Wastewater/Onsite	7548 Fee
August 4-5	Wastewater Treatment/Collections Certification Review	Independence	1.4 Wastewater/0.5 Water	6043 Fee
August 17-20	32nd Annual Summer Classic Conference	Seaside	2.0 Water/Wastewater	TBA Fee
October 5-8	2026 Fall Operator's Conference	Canyonville	2.0 Water/Wastewater	TBA Fee
October 13-14	Water Treatment/Distribution Certification Review	Independence	1.4 Water/0.5 Wastewater/Onsite	7548 Fee
October 15	Water T/D Level 3,4 & Filtration Endorsement	Independence	0.6 Water	7546 Fee
October 20-21	Wastewater Treatment/Collections Certification Review	Redmond	1.4 Wastewater/0.5 Water	6043 Fee
November 16-19	Spirit Mountain Casino Operator's Conference – 2026	Grand Ronde	2.0 Water/Wastewater	TBA Fee
December 7-10	Annual End of Year Operator's Conference	Hood River	2.0 Water/Wastewater	TBA Fee

Levels 1–4 Water Operator Exams

Trained and certified operators are necessary to ensure that the systems are managed in a manner that fully protects public health and the environment. The OARs for certification stipulate that the qualifying experience for applicants for certification as a water treatment plant operator must attain at least half the required operating experience at a public water purification plant that uses complex filtration technology and is not more than one classification lower than the level of certification they are seeking. In other words, if you have only worked for a Class 2 treatment plant, we allow you to apply for a Level 3 certification but not a Level 4 certification. If you move on to a Class 3 plant, then you must have ½ the qualifying experience (at the Level 3 plant) before allowing to apply for a Level 4 certification. Reciprocity from state-to-state ensures that the operator have the operating experience for which they are certified.

For additional information, please visit http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/OperatorCertification/Levels1-4/Pages/exams.aspx

Drinking Water Data Online https://yourwater.oregon.gov
Drinking Water Services https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/Pages/index.aspx

Training class dates, class topic and/or locations may be subject to change as needed.

For more information on any class by OAWU, contact 503-837-1212 / office@oawu.net or visit

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Kids These Days?

Throwing My Loop
by Michael Johnson

Some time ago, I saw a post on Facebook attributed to television personality, Mike Rowe. He said, "We are churning out a generation of poorly educated people with no skill, no ambition, no guidance, and no realistic expectations of what it means to go to work." I hear that a lot. Actually, I've been hearing it for years - often from some university professors. Just recently, one told me, "These kids are not like we were. We had to work!" That was in the 2019. I've heard that before...

I heard "kids these days are no good," in the 90's, I heard it in the 80's, in the 70's, and in the late 60's when I first began teaching. So naturally, I wondered, "Well, when were kids good?" So I decided to do a carefully controlled, first-class, exciting, experimental, research paper on that very subject – and how excited you must be now to realize you are about one-eighth of the way through that very research based journal article! Here are the surprising results!

Turns out I was able to trace this idea that "kids are not like we were" back to the 50's, Then I found articles from the 40's saying kids had become worthless and also in the 30's, then to my surprise, I found such statements coming from the 1800's that young people had all turned to sin, then how about this shocker?

"The children now love luxury. They have bad manners, contempt for authority, disrespect for elders, and love chatter in place of exercise. Children are now tyrants, not the servants of their households. They no longer rise when elders enter the room." —Socrates 469 – 399 B. C.

(What? Socrates? B. C.???) I had no idea kids were no good that far back! My goodness, this problem was so much worse than I realized. So fear not, dear reader. I did not stop there! I continued my research into the distant past and finally – finally – found the answer to when kids were good! My search ended after poring (studying intently - "poring" not "pouring") over endless records and at last found what I was looking for in the place so many have found what they were looking for...the Bible! Yes Sir, brothers and sisters – there I was right at the front gate of...wait for it... the Garden of Eden!

Adam and Eve were sitting in the garden on a big rock – no couches yet – watching their two little ones, Cain and Abel, playing before them. Adam turns to Eve and says, "These kids today have it so much better than we did."

"How true," said Eve with a sigh. "I had to make their clothes. Had to make ours, too. We didn't even have clothes."

"We had to name all the plants – man, there were a lot of those," said Adam. "I'm still not through with that and probably never will be. And don't even get me started on how many animals there are."

Eve said, "I had to make all the waste baskets and trash containers, too. Oh, that reminds me – you need to take out the trash."

"What?" said Adam. "Why do I have to do that? Why don't one of the kids do that?"

"Well, there you go," said Eve. "That's just the sort of thing I'm talking about. These kids today...they won't even do that."

"You know what really irks me?" asked Adam.

"What, dear?" said Eve.

"These two kids of ours – they had the best parents in the world. You and me."

"Well, sweetie, actually we are the only parents in the world," said Eve.

"That's exactly what I'm talking about," said Adam. "What if we hadn't been here to take care of them? And look at them out there wrestling around. They just fight all the time. One of 'ems gonna' end up killing the other. And why don't they ever have their friends over from school? What's the matter with these kids these days?"

And so you get the picture. Kids never were any good. Case closed. Problem solved...or is it? See, there just this little problem that bothers me. Indulge me a moment...

Some years ago now, my life changed. No need to explain all the reasons why, but one result was I decided to spend the rest of my days encouraging the people who had helped me so – those people in education and those in agriculture. (Couldn't I have picked at least one group with some money?)

I began traveling around America and Canada targeting three groups – education conferences, agri-business conventions, and some corporate groups. That lead to a number of engagements involving Professional Staff Developments for teachers. In the early days, I dreaded that so – because I was like everyone else. I knew kids these days were no good. I mean after all, that's all you hear from so many, so I knew kids these days were really armed criminals passing themselves off as students. I knew none of

Continued next page

the teachers cared anymore and it "wasn't like it used to be." Then something happened...

I went to my first school. The school was in Oklahoma – small and in the mountains.

Can you imagine how surprised I was to see all the teachers neatly dressed, smiling, and most pleasant? Even more surprising the students were quiet, polite, and respectful. So I thought, "Mmmm...wow, I just lucked onto one of the few good schools remaining in America." Then I went to Kansas and Wyoming and Montana and California and Massachusetts, Virginia, Florida, Georgia, and I could go on. Now some four-hundred in the past 20 years and guess what? I was wrong about teachers, schools, and students!

Did I find some bad ones? Of course I did. I've met some doctors, dentists, and lawyers who were idiots...but not very many. And that's the way it was with schools - some less desirable but the overwhelming majority were filled with people who cared, who were trying to build something and make it better...young human beings. And those young human beings stunned me. So much better than I ever expected. "Sir," and "Ma'am" you to death. Not phony, but pleasant and genuine and authentic. As one superintendent in Oregon told me, "My wife and I would be honored to have 90% of this student body in our home as our children." He had 2,200 students! And don't even get me started on the Ag teachers. There is no one like them. Everyone in education could take a lesson from Ag teachers. They require much from their students – more than most in fact. But there is respect for the students there, there is inclusion, and there is caring.

I doubt there are many people who have been in as many different schools as I have. (Maybe a textbook salesman or something.) And after all these years, I believe this down in my core...If Americans could see what I have seen, their hearts would soar with optimism! If you sit on your backside in a cafe somewhere with all the other old geezers and complain about how bad things are, it's easy to believe everything has "gone to hell in a hand-basket." (Whatever than means operationally speaking?) But if you were to dare to get off your butt and go see...you would see teachers who care more than you knew and students who are so much more than you ever thought. If you would only go to where I have been – to Texas Tech, Texas A&M, Texas A&M – Commerce, West Texas State in Canyon, To Texas A&M – Kingsville, to Tarleton, to the University of Oklahoma, to Oklahoma State, to Penn State, and to so many others. Just go to those places and walk around the campus for thirty minutes and come back and tell me "kids are no good these days." You won't be able to. You can't. I bet you could find an Ag teacher somewhere that would tell you kids these days are no good...but I bet you would have to look for him or her a long, long time. If you would just go see...

"Now we see through a glass darkly, but when I am face to face with you I see in part." – Paul, 1st Corinthians 13:12

And these good people have taught me something that truly helps. I've seen it not just in Ag Teachers, (I'm terribly biased toward Ag Teachers) but in so many teachers and principals and superintendents. It's called "caring." That is what helps. Helps with the human, the horse, and the working dog. Comes from an old favorite writer of mine...

"Unless someone like you and me cares a whole awful lot... nothing is going to get better. It's just not."

— Theodor Geisel (Dr. Seuss)

— Michael Johnson

WELCOME, NEW MEMBERS!

Associate Members

Tank Maintenance Solutions

Rose City Laboratories

Dan's Leak Detection, LLC

Individual Members

Frazier, Paul

Mason, Keith

Scranton, Keith

Wesely, John

Christensen, Matthew

Kintz, Brian

Robustelli, Jason

Tecmire, Timothy G

Ambrose, Lee

Keri, Scott

Pesterfield, Dale

Clinton, Josh

Walley, James

King, Jordan

Mickle, Richard

Menteer, Juston

Redondo, Alejondro

Wood, Rick

Heard, Richard

Croy, Huntyr

Hood River End of Year Operators Conference 2025

The 2025 Hood River End of Year Operators Conference was a success. The feedback received was positive. However, it's important to look for opportunities and adjust as we need for future conference success.

The venue was at the Hood River Inn and the hotel staff were exceptional people to work with. We were greeted on Monday with the wonderful news that we had been upgraded, at no additional cost to the Gorge Room. This is ideal for accommodating a conference like the End of Year. The attendees and speakers alike prefer this building. Tech support staff were on top of it. We received many positive responses to the meals provided. The weather for the week started rainy, but by midway through the conference it was great. We look forward to see you at the next OAWU event and we thank you for your continued support!

QUIZ CORNER

1. What is the capital of France?
   A. Berlin
   B. Paris
   C. Madrid
   D. Rome

2. Who wrote the play "Romeo and Juliet"?
   A. Charles Dickens
   B. William Shakespeare
   C. Mark Twain
   D. Jane Austen

3. What is the largest planet in our solar system?
   A. Earth
   B. Mars
   C. Jupiter
   D. Saturn

4. Gregorian Calendar, which is the one we use today. It is based on a cycle of 400 years, made up of 146,097 days. By equally dividing the days by years, each year is an average of how many days?
   A. 365.2425 days
   B. 365.5125 days
   C. 365.4425 days
   D. 365.2145 days

5. The groove on one side of a vinyl record is how long?
   A. 1500 feet
   B. 500 feet
   C. 150 feet
   D. 15 feet

6. The average groove width on a vinyl record is:
   A. 0.02 mm
   B. 0.04 mm
   C. 1.00 mm
   D. 2.00 mm

7. The 3 main types of trench protection are:
   A. Sloping/benching, Shielding, Shoring
   B. Sloughing, Spalling, Bulging
   C. Hoping, Wishing, Praying

8. What is the minimum velocity that a water main should be flushed?
   A. 5 gpm
   B. 5 fps
   C. 15 gpm
   D. 2.5 fps

9. What type of pipe joint is available in both bolted and boltless flexible pipe joint designs?
   A. Ball and Socket
   B. Bell and Socket
   C. Flange
   D. Mechanical

10. The disinfection power of chlorine goes down as the pH decreases?
    A. True
    B. False

ANSWERS: 1-B, 2-B, 3-C, 4-A, 5-A, 6-B, 7-A, 8-D, 9-A, 10-B

2026 OREGON ASSOCIATION OF WATER UTILITIES

MEMBERSHIP APPLICATION

Member Name: _____

Mailing Address: _____

City/State: _____

County:_____ ZIP: _____

Email: _____

Phone: _____

Contact Person:_____

Number of Hook-ups: _____

Were you referred? By whom _____

Type of System:

❑ Water ❑ Wastewater ❑ Both

Membership Category	Membership Dues
❑ Regular Member	$_____ See schedule below
❑ Associate Member	$700.00
❑ Individual Member	$100.00

Regular Member Dues Schedule

1 to 100	$75 + 53 cents per connection
101 to 500	$85 + 53 cents per connection
501 to 1,000	$90 + 53 cents per connection
1,000 and up	$100 + 53 cents per connection
Maximum dues is	$1,600.00

☐ **Please Invoice** ☐ **Payment Enclosed**

Credit cards: please call 503-837-1212 for processing and receipt.

Please return to OAWU:
935 N. Main St., Independence, OR 97351
or email: office@oawu.net or fax: 503-837-1213

MB26

Membership Types

Regular Member

A Regular Member shall be any water or wastewater utility, public or private, engaged in the production, distribution or reclamation of water. A Regular Member shall have one vote. Annual Dues: See Regular Member Dues Schedule

Associate Member

An Associate Member shall be any organization, individual or corporation, supplying services or equipment to water and wastewater utilities. An Associate Member shall have one vote. Annual Dues $700.00 per year

Individual Member

An Individual Member shall be an individual involved in the water/wastewater industry or a user of such utilities. The membership is informational in nature and shall be non-voting. Annual Dues $100.00 per year

Benefits of Membership

- On-site technical assistance
- Various free training programs
- Discounts on training courses
- Discounts on Annual Conference registration
- Access to on-site training program
- Subscription to quarterly H2Oregon magazine
- Direct mailings about upcoming training courses in your area
- Summaries of legislative issues
- Legislative representation at state and federal level
- Associate Member Services and Products Guide
- Access to technical assistance library
- Access to technical and testing equipment for loan
- Voting rights in Association affairs
- Positive contacts with other organizations
- Camaraderie with water and wastewater professionals
- Operator Of Record services
- Job referrals, announcements and searches
- Well testing, plan review, rate studies, WMCP plans
- System performance evaluation and options
- Additional programs and services
- Disaster response assistance and planning

MEMBERS

Regular Members
62nd Court Mutual Water Company
Adair Village, City of
Adams, City of
Adrian, City of
Agate Creek Water Association
Agate Water System
Albany, City of
Albany Rifle & Pistol Club
Alfalfa Water LLC
Alpine Crest Improvement Dist.
Amity, City of
Ananda Center at Laurelwood, Inc.
Arch Cape Water & Sanitary District
Arlington, City of
Arrowhead Mobile Home Park
Aspen Lakes Utility Company, L.L.C.
Astoria, City of
Athena, City of
Aumsville, City of
Aurora, City of
Avion Water Company
Baker City, City of
Bandon Dunes Resort
Bandon, City of
Banks, City of
Barlow Water Improvement District
Barlow, City of
Bay City, City of
Bay Hills Water Association
Bayou Water Improvement District
Beaver Water District
Beaverton, City of
Bend, City of
Benton County Service District
Bents Court Water Co.
Berndt Creek Water Corp.
Beverly Beach Water District
Biggs Service District
Black Butte Ranch
Black Mountain Water District
Blue River Water and Sanitation District
Blue Spruce Estates
Bly Water & Sanitary Dist.
Boardman, City of
Bonanza, Town of
Boring Water District #24
Brandy Bar Landing, Inc.
Breitenbush Hot Springs
Bridge Water District
Brightwood Water Works
Brooks Community Service District
Brownsville, City of
Buell-Red Prairie Water District
Bunns Village Properties, LLC
Burlington Water District
Burns, City of
Burnside Water Association
Butte Falls, Town of
Camp Baker BSA
Canby, City of
Canby Utility
Cannon Beach, City of
Cannon View Park, Inc.
Canyon City, Town of
Canyonville, City of
Carlton, City of
Cascade Locks, City of
Cave Junction, City of
Cedarhurst Improvement Club, Inc.
Central Coast Clean Water Company
Century Meadows Sanitary System, Inc
Century Meadows Water System, Inc.
Charles Tracts Water Company
Chart Water Supply, Inc.
Chehalem Mt. Sun Ridge Association
Chenowith Water PUD
Chiloquin, City of
CHR Dist. Improvement Co.
Christmas Valley Domestic Water
Cimmarron City Water Co., Inc.
Circle C Improvement Dist.
Clackamas River Water
Clarks Branch Water Association
Clatskanie, City of
Clayton Creek Water Association
Cline Falls MHP
Cloverdale Sanitary District
Cloverdale Water District
Coburg, City of
Collins Products LLC
Colorado Lake Co-Op
Colton Water District
Columbia City, City of
Columbia Hills Homeowners Association
Columbia River PUD
Condon, City of
Coos Bay, City of
Coquille, City of
Corbett Water District
Cornelius, City of
Corvallis Waldorf School
Cottage Grove, City of
Country Club Water District
Country View Estates Water System
Country View Mobile Estates
Cove Orchard Water Association
Cove, City of
Crater Lake National Park
Crescent Sanitary District
Crescent Water Supply & Improvement District
Creswell, City of
Crooked River Ranch Water Co-Op
Crystal Springs Water District
Culver, City of
Dallas, City of
Dayton, City of
Dayville, City of
Deer Creek Estates Water Association
Delphian School
Depoe Bay, City of
Deschutes Valley Water District
Detroit, City of
Dexter Oaks Mobile Home Park
Dexter Sanitary District
Diamond Peaks at Leisure Woods I&II
Dietz Airpark Water System
Donald, City of
Drain, City of
Drifter's MHP
Dry Creek Airpark HOA, Inc.
Dufur, City of
Dundee, City of
DWF Round Lake Utilities
Eagle Point, City of
East Shore Water Improvement District
East Yamhill Rural Water Company
Eastmont Water Company
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Elgin, City of
Elkton, City of
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Emerald Valley Wastewater Co.
Enterprise, City of
Estacada, City of
Estacada Mobile Village, Inc.
Eugene Mobile Village
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Fairview, City of
Falcon Cove Beach Water District
Falcon Heights Water & Sewer District
Fall Creek Water District
Falls City, City of
Fern Ridge School Dist. 28J-10
Fern Valley Estates Improvement Dist
Fernridge Mobile Estates
Fir Grove HOA
Fir View Water Company
Fishhawk Lake Recreation Club, Inc.
Florence, City of
Forest Park Mobile Village
Fossil, City of
Garden Valley Water Association
Garibaldi, City of
Gaston, City of
Gates, City of
Gearhart, City of
Georgia Pacific-Wauna
Gervais, City of
Gilchrist Water Co., LLC
Gladstone, City of
Glendale, City of
Gleneden Sanitary District
Glenmorrie Co-op Association
Glide Water Association
Goble Water Association
Gold Beach, City of
Government Camp Water Company
Grand Prairie Water Supply Company
Grand Ronde Community Water Association
Grand Ronde Sanitary District
Grants Pass, City of
Grass Valley, City of
Green Area Water & Sanitary Authority
Green Oaks Park
Haines, City of
Halfway, City of
Hall's Trailer Court
Halsey, City of
Harbor Water PUD
Harrisburg, City of
Hebo Joint Water & Sanitary Authority
Heceta Water PUD
Helix, City of
Heppner, City of
Hermiston, City of
Hidden Valley Improvement District
High Lostine Owners Association
Highland Subdivision Water District
Hiland Water Corporation
Hillsboro, City of
Hines, City of
Hood River, City of
Hopewell Water Co.
Hubbard, City of
Hunnell Hills Community Water System
Huntington, City of
Ice Fountain Water District
Idanha, City of
Idleway Improvement District, Inc.
Imbler, City of
Independence, City of
Indian Meadow Water Company
Inn at Otter Crest
Interlachen Water PUD
Ione, City of
Irrigon, City of
Island City, City of
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Jacksonville, City of
Jasper Knolls Water District
Jewell School District
John Day Water District
John Day, City of
Johnson Creek Water Services Company
Joseph, City of
Junction City, City of
Keizer, City of
Kelly's Brighton Marina, LLC
Kelso Water Association
Keno Water Company, Inc.
K-GB-LB Water District
Kilchis Water District
Klamath Falls, City of
Klippel Water System
Knappa Water Association
Knoll Terrace Park
L.A. Water Cooperative
La Pine, City of
Labish Village Water Commission
Lady Creek Water System
Lafayette, City of
Laidlaw Water District
Lake Creek Lodge
Lake Grove Water District
Lake of the Woods Resort, LLC.
Lake Oswego, City of
Lakeside Water District
Lakeside, City of
Lakeview, Town of
Lakewood Homeowner's, Inc.
Lamb Weston
Lamontai Improvement District
Lamplighter Water Association
Lane County Parks
Langlois Water District
Laurelwood Water User's Co-op
Lawrence Subdivision Water Assn., Inc
Lawson Acres Water Assoc.
Lebanon, City of
Lexington, Town of
Lincoln City, City of
Little Beaver School, Inc.
London Water Co-op

MEMBERS

Long Creek, City of
Lostine, City of
Lowell, City of
Luckiamute Domestic Water Co-op
Lusted Water District
Lyons-Mehama Water District
Madras, City of
Madrone Hill Mobile Home Park
Madsen Springs Water Assn.
Malin, City of
Manzanita, City of
Mapleton Water District
Maupin, City of
McKay Acres Improvement District
McKenzie Palisades Water
McMinnville Water & Light
McNulty Water PUD
Merrill, City of
Metolius Meadows Prop. Owners Assn.
Metolius, City of
Midland Water Association
Mill City, City of
Milo Adventist Academy
Minikahda Water District, Inc.
Mitchell, City of
Molalla, City of
Monmouth, City of
Monroe, City of
Moro, City of
Morrow Commission, Port of
Mossy Brae Water District
Mt. Angel Abbey
Mt. Angel, City of
Mt. Ashland
Mt. Bachelor, Inc.
Mt. Shadows HOA
Mt. Vernon, City of
Mulino Water Dist. #23
Myrtle Creek, City of
Myrtle Point, City of
Nantucket Shores Water Company
NeahKahNie Water District
Nehalem, City of
Nesbitt Water Management
Nesika Beach-Ophir Water District
Neskowin Regional Sanitary Authority
Neskowin Regional Water District
Netarts Water District
Netarts-Oceanside Sanitary Dist.
Newberg, City of
Newport, City of
North Corvallis Mobile Home Park
North Hill Water Corporation
North Powder, City of
Northwest Newberg Water Association
Nyssa, City of
Oak Lodge Water District
Oakland, City of
Oakridge, City of
Oakwood Water Systems, Inc.
Oceanside Water District
Ochoco West Water & Sanitary Authority
Odell Sanitary District
Olney-Walluski Water Association
OPRD Main Office – Salem
Orchard Heights Water Association
Oregon Cascade RV Co-op.
Oregon Shores Beach Club, Inc.
Oregon Shores II
Oregon Water Utilities-Cline Butte
Oregon Water Utilities-Mtn. Lakes
Oregon Water Wonderland II Sanitary District
Orient Drive Mobile Estates, LLC
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Phoenix, City of
Pilot Rock, City of
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Pioneer Park Water Co-op
Pioneer Village Water Company, Inc.
Pleasant Home Water District
Pleasant View Water Co.
Polehn Heights Water Association
Ponderosa Pines Water Company
Port of Columbia County
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Power City Water Co-op
Powers, City of
Prairie City, City of
Prineville, City of
Quincy Water Association
Rainier, City of
Red Hills Estates HOA
Redmond, City of
Redwood Water Service, Inc.
Reeder Ranch, Inc.
Reedsport, City of
Reehers Homestead, Inc.
Rhododenron Water Association
Richland, City of
Rickreall Community Water Association
Riddle, City of
Rieth Water & Sanitary District
Rimrock West Improvement District
River Meadows Improvement District
River Point Farms, LLC
Riverbend-Riverbank Water District
Rivergrove Water District
Riverside Water District
Roats Water System, Inc.
Rock Creek Water District
Rock of Ages
Rockaway Beach, City of
Rockwood Water PUD
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Rogue Lea Estates MHP LLC
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Rogue River – Siskiyou National Forest
Round Lake Water Utilities
Rufus, City of
Salem, City of
Salishan Sanitary District
Salmon Valley Water Company
Sandy, City of
Scappoose, City of
Scio, City of
Scotts Mills, City of
Scravel Hill Water Co-op
Seal Rock Water District
Seaside, City of
Seneca, City of
Shadow Hills Park Water Cooperative
Shangri-La Water District
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Sheridan, City of
Sherwood, City of
Siletz Community Water System
Siletz, City of
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Silverton, City of
Sisters, City of
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South Umpqua Water Assn.
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Springwater Estates HOA
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Staffordshire Water System, Inc.
Stahlman Summer Homes
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Star Satellite Improvement District
Stayton, City of
Steeves Mobile City
Storlie Water Company Inc.
Sublimity, City of
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Sumpter, City of
Sun Mountain Water System
Sunny Acres Water Co.
Sunridge Estates
Sunrise Water Authority
Sunriver Water LLC/Sunriver Utilities
Sunset Acres Water Company
Sunset Hills Domestic Water Assn.
Sunset Lake RV Park
Sunset Water Systems, Inc.
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SW Lincoln County Water PUD
Sweet Home, City of
Talent, City of
Terrace Mobile Plaza
Terrebonne Domestic Water District
The Dalles, City of
Three Rivers School District
Tierra Del Mar Water Company
Tigard, City of
Tillamook Bay, Port of
Tillamook County Creamery Association
Tillamook, City of
Timber Water Association
Toledo, City of
Tollgate Water Company
Tone Water
Tooley Water District
Trailer Park Village
Trappist Abbey
Tri City Water & Sanitary Authority
Troutdale, City of
Tualatin Valley Water District
Tualatin, City of
Turner, City of
Twin Island Community Water
Twin Rocks Sanitary District
Tygh Valley Water District
Ukiah, City of
Umatilla, City of
Umatilla Indian Conf. Tribes Reservation
Umpqua Basin Water Assn.
Umpqua Indian Utility Co-op
Union, City of
Vale, City of
Valley View Water Co-op
Valley View Water District
Valley Vista Estates Water Improv. Dist.
Vernonia, City of
VIDA-LEA Community Co-op
Waldport, City of
Wallowa Lake Co. Service District
Wallowa, City of
Warm Springs Conf. Tribes Reservation of OR
Warren Water Association
Warrenton, City of
Wasco, City of
Water Wonderland Improvement District
Wedderburn Sanitary District
Weiss Estates Water System
Welches Water Company
Weldon Mobile Home Park
West Hills Water Company
West Linn, City of
West Slope Water District
Western Heights Water Association
Westfir, City of
Weston, City of
Westport Water Association
Westridge HOA, LLC.
Westridge Water District
Westwind
Wheeler, City of
Wickiup Water District
Willamette Water Company
Willamina, City of
Wilsonville, City of
Winchester Bay Sanitary
Wi-Ne-Ma Christian Camp, Inc.
Winston-Dillard Water District
Wood Village, City of
Woodburn, City of
Yachats, City of
Yamhill, City of
Yoncalla, City of
Young Life
Young's River Lewis & Clark WD
Zig Zag Water Cooperative, Inc.

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Anderson, Dale
Anderson, Dylan
Andre, Alistair
Anthony, Joe
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Baily, Drew
Barnes, Abednego
Barnes, Chase
Bauer, Kyle
Beehler, Joel
Becker, Jeffrey
Bennington, James
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Benzel, Sandy
Bernal, Antonio
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Greene, Michael
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Grimstad, Erik
Groat, Steven
Grout, Ronnie
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Hamilton, Grant
Hamilton, Howard
Hamilton, Megan
Hammond, Dan
Hammond, Tim
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Haring, Joshua
Harris, Alan
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Heard, Richard
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Helmboldt, Kyler
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Hensley, Daryl
Hermansen, Dave
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Hubbell, Lillian
Huff, Zach
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Hunter, Mark
Hunter, Ryan
Hunzeker, Brian
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Jacops, Scott
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Joers, Shiloh
Johnson, Grady
Johnson, Tim
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Jones, Uriah
Jordan, Michael
Judah, Dave
Kemper, John
Kemper, Troy
Keri, Scott
Kimball, Troy
King, Jordan
King, Kara
Kintz, Brian
Kirchmann, Russell
Klann, Eric
Koellermeier, Zach
Koppel, Eric
Laetzsch, Dawna
Lane, Brian
Lankford, Mark
Laudenslager, Brian
Leach, Randall
LeBret, Dean
Lewis, Tim
Lockard, Darrel
Lueckenotte, Dustin
Lundblad, Christian
Maas, David
MacCarthy, Steven
Marshall, Chad
Mason, Keith
Mauter, Stephen
McFall, William
McKinney, Donald
Mendez, Matias
Mendoza, Cesar
Menteer, Juston
Meskill, Garrett
Mickle, Richard
Miller, Bill
Minica, Jason
Miranda, Michelle
Molatore, Tyler
Moretti, Garrett
Morris, Nicole
Mudra, Austin
Neal, David
Nelson, Ron
Niedermeyer, Hanns
Normandin, Matthew
Novac, Samuel
Nugent, Brett
Ortiz, Samuel
Palmer, Spencer
Pearson, Jeff
Pedersen, Joshua
Pesterfield, Dale
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Pierce, Matt
Pierce, Scott
Pippenger, Jebadiah
Pippenger, Robert
Pistoresi, Michael
Polach, Ron
Powers, Ryan
Ramos-Pino, Patricio
Rand, Terry
Redondo, Aljondro
Reeder, Matt
Reedy, Steven
Renhard, Chad
Rice, Shania
Richards, Paul
Rierson, Matt
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Robustelli, Jason
Rodriguez, Debra
Roe, Scott
Ruseell, Ben
Sabia, Stephen
Sawyer, Charlie
Schaafsma, Eric
Schaefers, John
Schmidt, Lonny
Schneider, Aaron
Scott, Ethan
Scott, Keri
Scranton, Keith
Sedivg, Stuart
Sewall, Andrew
Sherman, Tim
Sherriff, Kelly
Simon, Andy
Sinclair, Frank
Skaggs, Eric
Smith, Gerard
Smith, Guy
Smith, Larry
Speakman, Aaron
Springer, Rondi
Stalker, Easton
Statchwick, Jeff
Statham, Lee
Steidler, Matthew B.
Stewart, Jason
Stewart, Tyson
Stirling, Ethan
Strassel, Kristal
Stratton, Lance
Sundstrom, Daniel
Surgeon, Scotty
Tecmire, Timothy
Terrusa, David
Thayer, Bradley
Thompson, Anthony
Thompson, Branden
Tupper, Sean
Turnham, Chris
Uhrich, William J.
Unger, Benjamin
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Vorpahl, Mike
Vos, Joseph
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Webb-Dudley, Jennifer
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Wiese, Michael
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