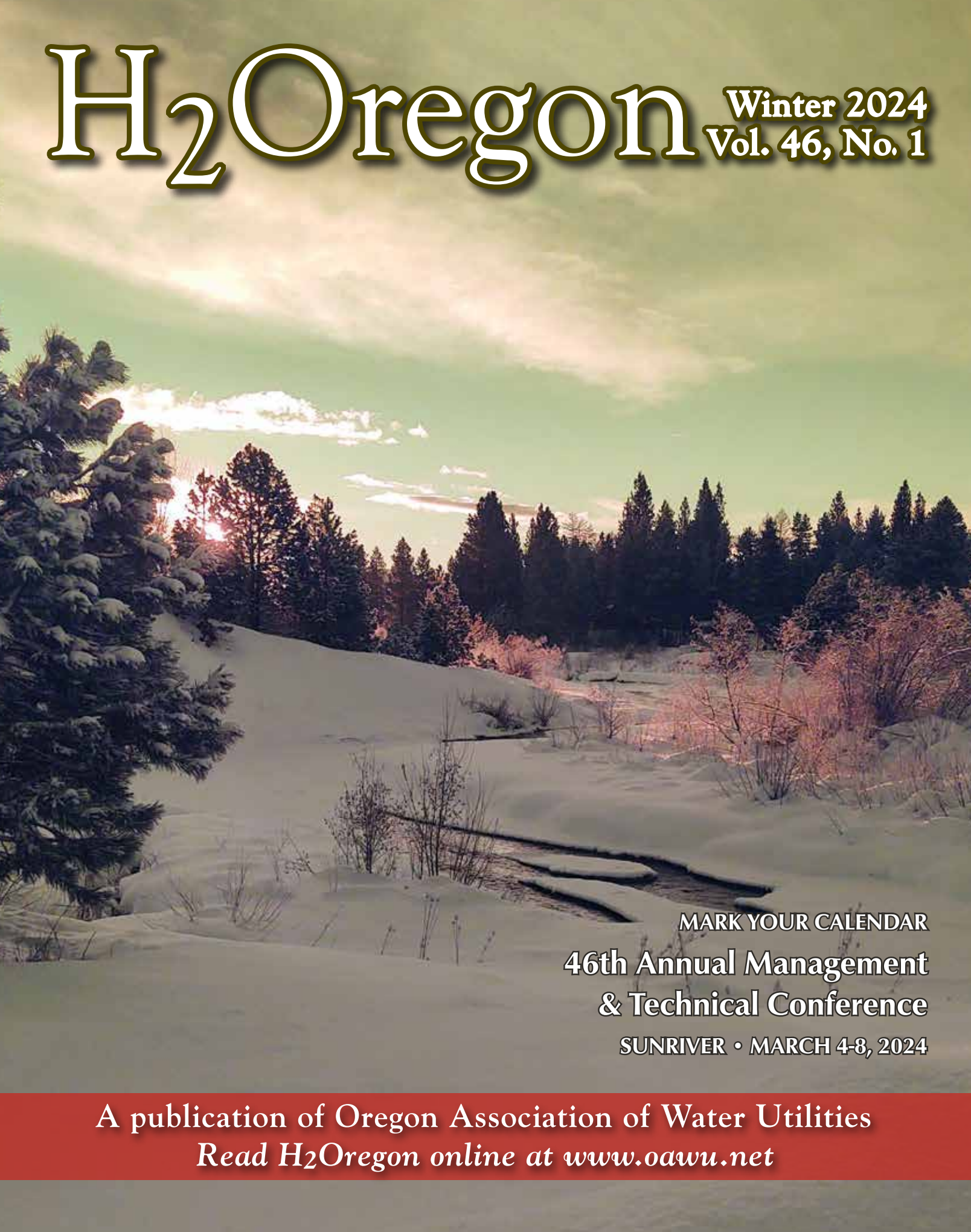


H₂Oregon

Winter 2024
Vol. 46, No. 1



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OAWU's mission is to provide service, support and solutions for Oregon water & wastewater utilities to meet the challenges of today & tomorrow.

Oregon Association of Water Utilities

Getting The Most Out of Contractors

by Scott Berry, Operations Manager



The question of how to get the most, strike that, how to get the BEST out of the contractors that you hire is not as complicated as it may seem. The focus for this article will be the smaller projects such as simple service installs, leak repairs, etc., it all starts with knowing the goal.

I've had the benefit of seeing both sides of the challenges of employing contractors. In my opinion it doesn't matter whether you're the one hiring the contractor, or the contractor hired to complete a job; the goal is the same. Complete the job in the best and most efficient way possible. Clearly define your expectations and have a good set of Construction Standards compiled and adopted as policy by the board or council.

Communication is where a successful project starts and ends. Knowing what the finished project should look like and being able to articulate that to the contractor is critical. Have any construction standards and material specifications available to the contractor. Problems often come up when there is a lack of detail in the plans or specifications. Have a preplanning meeting when possible and get the contractor's perspective on the project.

Avoid Change Orders. Unexpected changes during a project can quickly derail a project and cause it to go over budget and over time. Change orders are often caused by unforeseen conditions, errors or oversights, and additional requests. Some change orders may be inevitable; taking the right steps and identifying possible complications early in the project planning can help to avoid them. During the project, use face-to-face communication and follow that up with written summaries of those communications. If a situation comes up that requires a change order, put it in writing.

Inspection and Quality Control. Our final tip for avoiding change orders and reducing costs is to establish a quality control process for all stages and levels of the project. Your quality control shouldn't just begin on the job site, it should also include processes for ensuring quality by formally adopting construction standards if your utility has not already done so. ♦

Read past issues and learn about upcoming events at
www.oawu.net





How May We Help?

by Hans Schroeder, Circuit Rider

I know you know we have our four to five conferences a year, Sunriver, Spirit Mountain, Seaside, Hood River, and sometimes Florence to help you get your CEU credits and network with fellow operators and vendors.

However, did you also know we put on several smaller water and wastewater classes in different areas to help you pass your state exams? If you would like more information on these please call or email our office staff. Also, would you like to have one of these classes put on in your area? We are always open to assisting in making on-site training available for your staff and surrounding systems.

We will assist in a quick “refresher” for your system staff by coming to your shop and giving a little extra help in the areas they feel uncomfortable with to make sure they feel more confident to pass the State test.

Lagoon services are another great resource you can utilize, our staff will map your lagoon via boat with a sludge judge and give you suggestions on what to do to improve sludge accumulation. A bird’s eye view via drone will give your council aerial coverage of the lagoon profile process.

Our drone services also can help with exterior reservoir inspections. We can view the ladder access, hatch, lock, and some screened vents. Staff are equipped with leak detectors to help your systems detect a water leak that you can’t find when you don’t have access to your own equipment. We can also give suggestions on ways to fix a leak and offer assistance if needed.

Rate studies for your system both on the water and wastewater side are essential for cities to make sure they are charging the proper amounts for services and to meet the requirements set for any federal funding the city may be receiving, please contact our office for details on this service.

We would like to hear more input from our members on what you are looking for in your Association to help all systems improve. If you have any ideas, please email me or our office and give us some input. Our Team is ready to serve you.

We look forward to working with you in the near future. 💧

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Water Right Titles: Who is the Owner?

by Laura A. Schroeder and Max Jones

Property transactions should be straightforward. When it comes to real estate sales, a deed transfers the ownership to the purchaser. However, water use rights are not as simple to transfer ownership in Oregon. Water rights of use that are certificated or decreed are considered real property, and transfer as an appurtenance with the land. On the other hand, water use applications, water use permits, and applications and orders to transfer existing water rights are considered personal property of the holders. Thus, instead of transferring simply as an appurtenance, these holders must assign their interest to the new owner. This is a crucial step where many purchasers go astray to ensure ownership of the water rights of use for which they depend.

Proper Transfer

A water right of use allows the private use of Oregon's public water. A water right of use gives the holder the privilege to divert a specific amount of water from its source for a beneficial purpose. In Oregon, water rights of use become appurtenant to the land upon which the water is applied when the water rights of use are decreed or certified. Water rights of use transfer automatically with the transfer of land, unless expressly reserved by the seller. However, we recommend that in addition to the deed that the new owner of a certificated water right file an Ownership Update Form (Certificated Rights Only) (oregon.gov). This will ensure that the new owner receives notice if any issues arise affecting the certificated water right.

Ownership transfer of applications, permits, transfer permits, or limited licenses is not transferred as an appurtenance because the legal appurtenance does not occur until these water rights of use are perfected to become real property. Instead, these water rights of use are personal property for which ownership is transferred by assignment. As to the Oregon Water Resources Department ("OWRD"), one must file a "request for assignment": request for assignment (oregon.gov).

It is important to file a request for assignment with the OWRD to provide notice to third-party purchasers and mortgagors. For

the assignment to be valid the parties to the assignment must give notice to all property owners who are not a party to the assignment. Proof of such notice must be filed contemporaneously with the request for assignment.

WRD uses the ownership and assignment forms for purposes of notice only. Unlike other states, Oregon does not use these forms as proof of water right ownership and leaves it up to the Courts to make property title decisions, including water rights of use. Nevertheless, given that the name on the permit or certificate remains in the name of the applicant throughout title ownership changes, it is highly recommended that these forms be completed and filed with OWRD.

What is Required?

The assignment process is similar to changing the name on the title of a vehicle. If the existing holder of the water right records will be signing the "request for assignment" there is no need to provide "proof of ownership." If the permit holder is absent, the person requesting the assignment must prove proof of ownership otherwise the OWRD will not process the assignment request. Assign-by-proof (oregon.gov).

Specific details regarding the water permit or right are needed to complete these OWRD applications including the permit or certificate identification number. Further, if only a portion of a water use right is to be assigned, then a map must be included within the application showing the portion of the water use right to be assigned. Finally, with regards to cost, the completed "request for Assignment" form must be submitted to the Department along with the recording fee of \$120. There is no fee to update ownership of a Certificate. 💧

Schroeder Law Offices, P.C., can assist with ownership and title issues. Please contact attorney Laura A. Schroeder or attorney Max Jones, the authors of this article by contacting us through our website, <http://water-law.com>

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Clean Out Your Flash Mixer

by Heath Cokeley, Programs Manager/Circuit Rider

Did the title of the article entice you? No? The title isn't an euphemism. This quarter, we're talking about the not so fun process of checking on, and cleaning out, a flash mixer. My guess is that the majority of you that inject some type of chemical coagulant has a flash mixer of some type, likely right after the injection point. When was the last time you pulled this lovely little device, that looks like a big pipe spool, out and cleaned it? As the flash mixer is what gives the coagulant its high energy mix when it first comes into contact with the water, it is important that it is not full of muck and debris and has the nice sharp edges on the fins, if it is that type, to provide that high energy mix. The down side for the mixer is that these coagulants are very sticky. Several times I have helped a system pull this item out and found it packed with caked on stuff as it hasn't been looked at for a while, sometimes decades. Other times I have helped pull them apart and the mixer has been perfectly clean inside. Likely because the coagulant dosage had been correct, and the injector was in good shape. That said, it doesn't take much to pull them out and check at least once in a while.

To pull the flash mixer, we will need to isolate it with valves, unbolt it and remove it from service, the plant will need to be down for a time, so have the tanks full. It will likely be flanged in, so a way to spread the pipes some may be necessary - think this part through as this will be most important when



reinstalling it. After unbolting and removing it we will be able to see if it is caked up. If it is stainless steel and has heavy deposits, a flat head screwdriver may be useful, but if it is fiberglass or plastic you may want to be more careful during this part.

Bottom line is hot water, and a light chlorine solution will be our friend for cleaning all this up. Don't just focus on the flash mixer but look up and

“When was the last time you pulled this lovely little device, that looks like a big pipe spool, out and cleaned it?”

down the line as well for additional deposits. The system I assisted today, the operator and I ended up taking out about 7 feet of pipe in order to get past the heavy deposits of Pass C that had filled the pipe half full. This section included the flow meter from when the plant was put in in 2009 and has been in place until today, late 2023. Don't be surprised if this work increases the flow to the plant and if we are experiencing a flow issue/pinch point from the intake, this may be the best, first place to look.

After putting everything back together (PLEASE POINT THE ARROWS IN THE CORRECT DIRECTION, THIS MATTERS) doing the best to flush out all the big stuff out, simply reverse all the valves that were closed to isolate this section of pipe. I personally also like to have the streaming current monitor feed line, if you have one, off for this and I leave it off until after it has run for a minute to flush the big stuff past. You may need to pull things apart and clean them downstream like the streaming current monitor and turbidimeters as this maintenance task will likely knock lots of stuff loose that could cause issues downstream if not addressed.

I hope you were able to glean something useful from this article, which I will admit, isn't the most exciting of subjects. I will say though, if your flash mixer is getting clogged up, your process will be happier when it is cleaned up and with that, I will see you down the road. 💧



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Casualness Trumps Discipline

by *Tim Tice, Projects Manager*



When we consider strategies, it is usually associated with war, sports, or a competition of some sort that, for a moment, allows us to believe we are moving in the right direction, to win. And winning is often defined by a numerical score.

Casualness can be considered as a “lack of caring,” but the focus here is better defined as a distraction, or business that trumps our routines in both water and wastewater operations. Disciplined, trained people who follow procedures and know utility operations, are purposeful to keep the utility working at its highest level and or efficiency.

Supporting a balance with our system operators has resulted in various approaches, but the driving key factor to effective utility operations is giving the system enough of our time to provide protection of public health. “Enough of your time” cannot be defined with a numerical score. Instead of calculating a score to measure our success, let’s simply look at our time and how best we are using it.

An individual operating a utility solo must deal with all aspects of system performance, for our industry, we categorize the tasks under managerial, technical, and financial. Larger municipalities have all the same tasks and likely more, due to their complexity, but more personnel can be available to help sort out the many responsibilities.

Responsibilities and duties entrusted to an individual are seldom considered by others. We have experienced the never-ending deluge of distractions from co-workers, some absolutely necessary and some, to be frank, time squandering. Time, yours, mine, or ours? It is rather difficult to call the calendar mine. Unless you’re a monk living in a remote area, your calendar is rarely set in stone. But most of us have to abide by multiple calendars and keeping them in order is often nearly impossible. Impractical is a better word.

So how are we to manage? Maybe the single best step to staying disciplined is physical organization which can include putting inventories (meters, valves, fittings) to computer files. A sufficient supply of components in their correct place reduces time during projects. Chasing parts is time consuming! A place for everything and everything in its place. The same can be stated for projects and priorities.

A supporting second step is keeping a calendar and reviewing the calendar routinely. Calendars should be designed with some flexibility. One big concern with calendars is too many tasks added. This puts pressure to limit the time it takes to complete a task. We tend to have too much on our plate.

If we are consistently putting tasks off due to not enough time, then there is too much on our plate. The calendar becomes a note pad; time to reorganize. Delegate to others. What does the calendar look like to whom you are delegating?

Managing time is all about awareness, being pliable with schedules, even those calendars that belong to your boss, family member or group. What strategies can we employ? Regardless of the level of discipline, everyone occasionally becomes distracted. To better understand time management, maybe we should look at managing (reducing) the distractions of our workplace, home, and personal life. The best that life has to offer! 💧





What is the Grade for

by Mike Collier, Deputy Director/Source Water Specialist

Most of us change our car's oil, transmission fluid, spark plugs, wiper blades, and radiator fluid at regular intervals. We understand that this type of maintenance is necessary for our vehicles. We usually check to see how many miles we have driven and, as we get closer to needing one of these procedures, we begin to set aside some money in order to pay for them.

If this is the case for the majority of vehicles on the road, then why is it that many water and wastewater systems throughout the US, and throughout Oregon, have maintenance that goes undone? This maintenance includes everything from meter replacement and pump maintenance to updates to our O and M manuals.

Generally, the water system does not have time or funding to perform these tasks. Partially, this may be due to decisions from managers, board members, or the city council. These tasks can remain difficult to get done even when we have a board that has bought in to a general maintenance plan for our system and infrastructure. This problem usually stems from funding. We have a product that is greatly undervalued. When the cost of production, or collection and treatment is almost equal to what is billed there is little to no excess money available to complete the general maintenance.

Every year The American Society of Civil Engineers (ASCE) creates a Report Card which shows the condition and performance of the nation's infrastructure. According to ASCE's 2021 report card for America's infrastructure the US has a C-, with an investment gap of \$434 Billion by 2029.

The United States has about 170,000 drinking water systems and of these, 54,000 are community water systems that serve more than 264 million people which is almost 84% of the US population. Much of our drinking water infrastructure is nearing the end of its useful life. The quality of drinking water in the United States remains high, even though pipes and mainlines are frequently in need of replacement.

It is estimated that the US has more than one million miles of water mains in place. The condition of most of these pipes is unknown, as they are buried underground. These pipes are usually not examined until there is a problem or a line break. These breaks are estimated to be 240,000 water main breaks per year in the United States. When the pipe fails there are added costs due to the emergency response needed to such an event and the damage that a large line break can have to the surrounding infrastructure.

Pipes that were installed during the middle of the 20th century are likely to begin failing. This can be reduced by replacing the worst pipes before they have a chance to fail. Doing a survey of the pipe in your system can help determine what sections of mainline need to be first, giving us the most bang for our buck.

There is less and less money available to do such projects for our water systems. We have seen increases in costs placed upon water systems to meeting regulatory requirements as the result of the implementation of the Safe Drinking Water Act (SDWA) Amendments of 1996. The SDWA created stricter drinking water limits

your System?

on numerous contaminants, including arsenic, radioactive contaminants, microbial, and disinfection byproducts. Even with these increased costs imposed on our water and wastewater systems for testing and/or system upgrades, the federal and state funding has often remained the same.

Pipes represent the largest need, about 85% of necessary investment, for wastewater and stormwater systems. Along with piping the EPA and the U.S. Justice Department have made eliminating Combined Sewer Overflows a top priority. We will also have an increase in the cost of treatment facilities due to the growing concern of new contaminants, increase in regulation, and expanded capacity due to growth.

The United States has approximately 15,000 treatment facilities; the condition of many of these systems is poor, with aging pipes and inadequate capacity which leads to the

discharge of an estimated 900 billion gallons of untreated sewage each year.

To cover the necessary maintenance along with the additional increase in costs it is important to raise awareness for the true cost of water. Current water and wastewater rates do not reflect the true cost of supplying clean, reliable drinking water. Replacing the old piping will require significant local investment; this will include increasing water rates and an increase in private, state and federal programs to supply the necessary funding. Also, we may need to be creative: increasing our conservation efforts in order to prolong the life of the current infrastructure and increasing non-potable water systems for things like irrigation and toilet flushing. Consider your phone, cable, or electric bill, most of these cost much more each month than our water or sewer bill. We have an inequitable system where we pay more for entertainment than something that is necessary for even basic life and well being. 💧



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The Challenge of Treating Emerging Contaminants in Wastewater

by Jason Coker, EPA Wastewater Technician

As global urbanization and industrial growth continue unabated, the wastewater industry faces a mounting task: the treatment of emerging contaminants. These encompass a range of substances, notably pharmaceuticals, personal care products, and microplastics. Their increasing prevalence in our water systems poses significant challenges to both human health and the environment.

Pharmaceuticals: Every year, vast amounts of drugs—ranging from antibiotics to painkillers—are consumed globally. While these drugs have transformed healthcare, they also leave their residue. Once ingested, our bodies absorb only a portion of these drugs, expelling the rest into wastewater. Traditional wastewater treatment plants (WWTPs) are not equipped to remove these compounds effectively. Consequently, traces of these drugs find their way into rivers, streams, and even our drinking water. This continuous low-level exposure can lead to antibiotic resistance in bacteria.

Personal Care Products: Sunscreens, shampoos, and lotions have become staples in daily routines. However, the chemicals used in these products, such as parabens and triclosan, are often not entirely removed during wastewater treatment. When released into aquatic ecosystems, they can disrupt the hormonal balance in aquatic life, leading to reduced fertility and even changes in physical characteristics.

Microplastics: tiny plastic particles less than five millimeters in length. Originating from broken-down plastic waste, microbeads in exfoliants, and synthetic fibers from washing clothes, these particles are almost omnipresent in our water systems. Due to their minute size, they easily evade filtration processes in WWTPs. Aquatic life, mistaking them for food, consume these particles, leading to both physical blockages and potential chemical poisoning. The toxins then bioaccumulate, making their way up the food chain.

Addressing these contaminants requires a multifaceted approach:

Advanced Treatment Technologies: Technologies such as activated carbon adsorption, advanced oxidation processes, and membrane filtration have shown promise in removing these contaminants. Integrating these processes into existing WWTPs can enhance the removal efficiency.

Public Awareness: Educating the public about the downstream effects of their consumption choices can drive demand for other products and proper disposal.

While the challenge of treating emerging contaminants is daunting, we can further safeguard our water sources. 💧

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QUIZ CORNER

- When is your lead service line inventory due?
 - December 2022
 - October 2024
 - September 2026
 - There is no due date
- If your system is required a Filter Endorsement you can meet that requirement if the DRC has a Treatment level 3 or 4 even if they don't have the Filter Endorsement.
 - True
 - False
- What is the largest dam in the world?
 - Three Gorges Dam, China
 - Hoover Dam, Nevada
 - Grand Coulee Dam, Washington
 - Vajont Dam, Italy
- How many pounds of HTH containing 13% available chlorine would be needed to provide 73 pounds of chlorine?
 - 220 pounds
 - 780 pounds
 - 562 pounds
 - 442 pounds
- A flow of 700 GPM is pumped against a Total Dynamic Head (TDH) of 250 feet by a pump with an efficiency of 65%. What is the pump's horsepower?
 - 85 HP
 - 68 HP
 - 78 HP
 - 50 HP
- What US city is farther west?
 - San Diego CA.
 - Reno NV.
 - Los Angeles CA.
 - Kennewick WA.
- Which term refers to a group of pandas?
 - An embarrassment
 - A shame
 - A pity
 - A Herd
- If 1.8 million gallons flows through the filter during a 42 hour run how much is flowing through the filter each minute?
 - 480 gpm
 - 1,100 gpm
 - 714 gpm
 - 950 gpm

FIND THE ANSWERS ON PAGE 17

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2.



3.

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Changing Things Up

by Heather Davis, Apprenticeship Coordinator



Change: make (someone or something) different; alter or modify.

What is your response to change? Take some time and really think about it. Can I guess what the answer is? It's a mix, right? If we are all being honest with ourselves, we are not always a fan of change. Sometimes it depends on the situation, sometimes on the person going through the it.

For some people they are excited for something new. They purposefully will find ways to create new routines. For others, the idea of it scares the living daylights out of them. It's like having a security blanket and then their security blanket is taken away from them.

Change is always happening around us, sometimes for the better, sometimes not so much. There are times when it seems like a bad thing, just to find out later it was a good thing. However, change is something that will always be happening no matter what we do. So how should we react? The best we can.

We can try to go with the flow. Try new things, take a chance, and find something new. Whether at work or in our personal life. There is always something to improve and sometimes learn more about ourselves.

I am not always a big fan of change, yet it pushes me to something I did not know was possible. Yes, sometimes it turns out to be very frustrating and a waste of time. Yet, I will always learn something new about myself and how to improve as a person. Whether I like it or not.

When we were kids, we couldn't wait to grow up and get our driver's license, move out, buy a car, buy a house. Then when we're adults, we wish we were kids again. Go back to simpler times. So, I'm not saying to always change things up, just to take the time to enjoy what is going on around you.

Fall and winter are proof that change is beautiful. We should be open to it and see what we learn, also what we learn about ourselves. ♦

QUIZ CORNER ANSWERS(FROM PAGE 15):

1-B, 2-A, 3-A, 4-C, 5-B, 6-B, 7-A, 8-C

4, ANSWER: lbs of HTH = lbs chlorine ÷ % available chlorine = 73 lbs ÷ 0.13 = 561.5 Lbs HTH

5, ANSWER: HP = GPM X TDH X 8.34 ÷ 33 ÷ % efficiency.
700 X 250 X 8.34 ÷ 33,000 ÷ 0.65 = 68 HP

8, ANSWER: GPM = GPD ÷ minutes = 1,800,000 GPD ÷ (42 hr x 60 mins/hr) =
1,800,000 GPD ÷ 2,520 minutes = 714 GPM





We are Protecting Our

by Keith Bedell, Wastewater Technician

Wastewater treatment is a critical process that plays a pivotal role in safeguarding our environment and public health, as operators we are on the front line in doing this. As populations continue to grow and industrial activities expand, the management and treatment of wastewater has become increasingly important. This article explores the significance of wastewater treatment, the processes involved, and its far-reaching impact on our lives. Wastewater is any water that has been contaminated by human activities, such as domestic sewage, industrial processes, and agricultural runoff. If left untreated, it can pose severe risks to both the environment and human health. The significance of wastewater treatment can be understood through several key points:

1. **Environmental Protection:** Wastewater, when released to water ways without treatment, can harm aquatic ecosystems. It introduces pollutants, nutrients, and harmful pathogens into rivers, lakes, and oceans, leading to water quality degradation, fish kills, and the disruption of entire ecosystems.
2. **Public Health:** Contaminated water can transmit diseases and infections to humans. Proper wastewater treatment is essential to prevent the spread of waterborne illnesses, which can be life-threatening, particularly in developing countries that have limited access to clean water.
3. **Resource Conservation:** Wastewater often contains valuable resources like nutrients and organic matter. Through treatment, these resources can be recovered and reused, reducing the strain on natural resources.
4. **Regulatory Compliance:** Many countries have strict regulations governing the discharge of wastewater. Compliance with these regulations is essential to avoid legal penalties and to protect the environment.

Wastewater treatment is a complex process that involves several stages. The specific methods used can vary based on the source of the wastewater, its composition, and the intended discharge or reuse. However, there are some common steps involved in most wastewater treatment plants:

1. **Preliminary Treatment:** This initial step involves screening out large objects and removing grit and debris. It helps protect downstream equipment and processes.
2. **Primary Treatment:** In this stage, solid particles are settled and separated from the water, forming sludge. This reduces the load of solids in the wastewater.
3. **Secondary Treatment:** Biological processes are used to break down organic matter and remove nutrients. Biological treatments rely on bacteria, nematodes, or other small organisms to break down organic wastes using normal cellular processes. Common methods include activated sludge and trickling filters.
4. **Tertiary Treatment:** If further purification is necessary, additional processes, such as filtration and chemical treatment, are employed to ensure the water meets specific quality standards. Now there are

Environment and Public Health

Membrane Bioreactors (MBR) that provide micro or ultrafiltration of the water.

5. **Disinfection:** To kill harmful pathogens, disinfection methods like chlorination or ultraviolet (UV) treatment are applied. With the use of chlorination, after the contact time with the water to get the required kill of bacteria, it is then de-chlorinated so there is no harm to the aquatic life by the chlorine.
6. **Sludge Treatment:** The sludge generated during primary and secondary treatment is processed to reduce its volume and convert it into a safer, more manageable form, such as biosolids, often for use as fertilizer or for disposal.

Wastewater treatment has numerous positive effects on our environment and society:

1. **Cleaner Water:** Treated wastewater is released into natural water bodies, reducing pollution, and protecting aquatic life. This treated effluent is often cleaner than the receiving stream that it is being discharged into.
2. **Healthier Communities:** By preventing waterborne diseases, wastewater treatment contributes to healthier communities and improved public health. The effluent is required by permit to be disinfected to minimize bacteria, permit requirements are for either E-coli or total coliform maximum limits.
3. **Resource Recovery:** Valuable resources like phosphorus and nitrogen can be reclaimed from wastewater, reducing the demand for mining, and reducing environmental impacts. The sludge

produced can be further treated as class B biosolids and land applied improving soil health with the nutrients and organic material applied at the agronomic loading rate.

4. **Economic Benefits:** Wastewater treatment plants provide employment opportunities and support industries that produce equipment and chemicals used in the treatment process. There is a long list of manufacturers that provide the necessary resources for the operation of a wastewater treatment facility.
5. **Environmental Sustainability:** Proper wastewater treatment is essential for achieving sustainable water management, conserving water resources, and maintaining an ecological balance. With new and improved technology, now being tested, the potable water that is used in homes could eventually be recycled back from the wastewater treatment facility to the water treatment facility. Currently, there are some areas that recycle the treated effluent for irrigation, cutting down on the requirements of pumping ground or surface water.

Wastewater treatment is a vital process that protects our environment and public health. It prevents pollution, reduces the spread of waterborne diseases, and conserves valuable resources. As the global population continues to grow, the importance of wastewater treatment will only become more pronounced. It is a cornerstone of responsible environmental stewardship and a key factor in ensuring a sustainable future for our planet. 💧

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Asset Management and Emergency Response

by Arnab Bhowmick, Aktivov Asset Management

Public Works (PW) infrastructure forms the backbone of our communities, providing essential services to our ratepayers. During emergencies, the seamless functioning of these assets becomes paramount for quality of life, public safety, and rapid response. Enterprise Asset Management (EAM) plays a pivotal role in ensuring the resilience and effectiveness of PW during crises. EAM involves the systematic planning, acquisition, operation, maintenance, and disposal of various types of physical assets to achieve organizational objectives effectively and efficiently. Assets encompass a wide range of structures, facilities, equipment, and technologies inventoried in GIS, CAD, SCADA that contribute to the delivery of essential services to the community. Below are few lessons learned from real life examples across the USA these show the importance of EAM tools, and its criticality in emergency response.

EAM in PW:

- **Resource Optimization:**
Efficient EAM helps PW allocate resources. By understanding the condition and performance of assets

and using AI and IoT tools, agencies can prioritize maintenance and replacement, ensuring that critical infrastructure remains in optimal condition.

- **Risk Mitigation/ Predictive Maintenance:**
EAM enables the identification of potential risks and failures in PW systems. By assessing the condition of assets and understanding their life cycles, agencies can proactively address issues before they escalate or fail, reducing the risk of failures during emergencies.
- **Cost Savings/ Reserves Building:**
Strategic EAM leads to cost savings by preventing unplanned downtime and reducing emergency repairs. Regular maintenance and timely replacement of aging assets can help to prevent costly emergency situations, contributing to long-term fiscal responsibility.
- **Resilience Building:**
Resilient PW infrastructure is crucial for effective emergency response. EAM ensures that critical assets are designed, operated, and maintained with resilience



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in mind, equipping them to withstand natural disasters, accidents, or other unforeseen events.

EAM in Emergency Response (ER):

- **Rapid Decision-Making:**

Time is of the essence during emergencies. EAM provides real-time data on the condition and location of assets, enabling quick decision-making for PW, first responders, and ER teams to allocate resources efficiently and respond promptly.

- **Prioritizing Critical Assets:**

EAM allows PW to identify and prioritize critical assets that are essential for ER, e.g., in the event of a natural disaster, water and wastewater networks may be prioritized for inspection and repair for upkeep of critical life sustaining services.

- **Data-Driven Planning:**

Effective ER requires accurate and up-to-date information. EAM provides a wealth of data that is utilized for scenario planning, risk assessment, and resource

allocation. This data-driven approach enhances the preparedness of PW for ER.

- **Coordination and Collaboration:**

EAM fosters cross-collaboration between different agencies involved in ER. By sharing asset related information, organizations can coordinate efforts more effectively, ensuring a cohesive and streamlined response.

The importance of EAM in PW and ER cannot be overstated. Strategic EAM enhances critical infrastructure resiliency, optimizes costs and resource allocations, and facilitates rapid decision-making during ER. As communities face increasingly complex challenges for their budget and growth over time, investing in robust EAM systems is essential to ensure the safety, well-being, and efficient functioning of our systems leading to sustainable services and happy ratepayers. 💧

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Where There's Smoke There's

by Monty Norris, Wastewater Technician

Where there's smoke there's fire is the usual saying but, in this case, where there's smoke there's "I & I" or inflow and infiltration. We get a lot of requests and have a lot of questions about testing for I & I from municipalities. We offer the use of one of our smoke machines for a daily fee, provide assistance, and training with it. Smoke testing provides a quick snapshot of I & I in the system and is preferably done in the summertime but can be done in winter if needed. Sometimes, it is a requirement of the permit, but a lot of times it is triggered by the high flows at the wastewater plant during the rainy season, indicating I & I. That's not the only thing that triggers smoke testing, sometimes it's the new master plan that needs it, if a new road system is going in it might be a good time to smoke test and assure there are no problems that will require digging roads up afterward.

Wastewater treatment plants should be treating sewage not rainwater, or in a perfect world that would be the case, right? However, suddenly the flows pick up, the plant begins to meet its hydraulic capacity and phone calls have to be made afterward explaining the cause. The quick response answer is usually "fix your I & I problem." Yes, there is a lot of truth to that answer and it should be addressed sooner than later. Smoke testing, sewer scoping, flow monitoring of pump station provide data of I & I areas. Doing these investigative duties can help you grab the low hanging fruit and make a large impact quickly.

Alright, what's involved? Safety first! Make sure the manhole being tested is protected with cones and vehicles for crew and public. A smoke machine uses either liquid smoke or fuse lit smoke bombs that are placed above fan. Map of area determined to be tested which is usually or should be a planned-out area years in advance to cover the entire town. The collection data from smoke detection requires addresses, pictures, and a small description of problem found. Public notification is important as they are going to see smoke coming up from the roofs of their homes which is where it's supposed to go, but that's not always the case! Notifying the emergency services is a good idea as they will have to respond to calls. You will see smoke occasionally coming from gutters, eaves, inside homes/garages, etc. due to no water in the drains/ P-traps or loose wax rings on the toilet, broken pipes under house or vent pipes not extending out of house. All this will cause concern and they will come ask or call 911.

Now, what are you looking for? Smoke coming from the ground near sewer collection system, gutters meaning they are connected to collections and

Inflow and Infiltration!

should not be. Ultimately, you are looking for indication of cracked sewer lines or bad joints not connected or sealed allowing water into the system. Upon completion of testing, data should be gathered, documented, residents need informed of issues that exist on their property, prioritize the work based on findings of smoke testing and if you have a mapping system of town then document these areas and save them for future reference.

For information on assistance and training with smoke testing please contact the OAWU office at (503) 837-1212 and they will put you in touch with our staff. ♡



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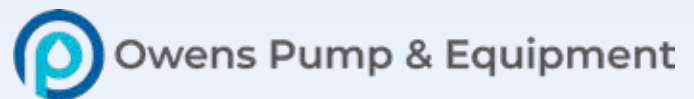
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Septic Tanks and Water Contamination

by Sam Waller, Circuit Rider

Septic tanks are widely used in rural areas where centralized wastewater treatment facilities are not available. While septic tanks offer an efficient and cost-effective solution for managing household wastewater, they also pose a significant risk of contaminating drinking water sources if not managed properly.

The distance between a septic tank and a water source, such as a well or a surface water body, is crucial in preventing water contamination. If the separation distance is inadequate, contaminants from the septic system can easily migrate into the groundwater. Poorly designed or improperly located septic systems can increase the risk of contamination, especially in areas with shallow water tables or permeable soils. Knowing where existing septic systems are located is imperative before drilling a new well.

Septic systems require regular maintenance and periodic pumping to ensure proper functioning. When septic tanks are not adequately maintained, they can become overloaded, leading to system failures. Malfunctioning or failing septic systems can result in the release of untreated or partially treated wastewater directly into the soil, bypassing the drain field. This can lead to the rapid contamination of ground and surface water with harmful bacteria, viruses, and chemicals. Septic tanks can also release high levels of nutrients, such as nitrogen and phosphorus, into the soil. When these nutrients exceed the soil's capacity to absorb and assimilate them, they can leach into the groundwater. Excessive nutrient loading in groundwater that flows to surface waters can lead to eutrophication, a process in which excessive plant growth occurs, depleting oxygen levels and harming aquatic ecosystems. In addition to pathogens and nutrients, septic tanks can also introduce various chemicals into the groundwater. Household cleaning products, pharmaceuticals, and personal care products can find their way into septic systems and can eventually contaminate groundwater. These chemicals can pose a threat to human health and the environment, especially if they persist in the groundwater for an extended period.

Septic tanks, while providing a practical solution for wastewater treatment in areas without centralized sewer systems can pose a significant risk of ground and surface water contamination if inadequately treated due to malfunctioning systems, inadequate separation distances, nutrient overloading, and chemical contamination. The consequences of such contamination can have impacts on human health. Therefore, it is crucial to implement proper maintenance practices and adhere to regulations. 💧

UPCOMING TRAINING & EVENTS

Date	Class Title	Location	CEU Information	ESAC#, Fee/Free
February 6-7	Water Treatment, Water Distribution Certification Review	Keizer	1.4 Water/0.5 Wastewater/Onsite	5815 Fee
February 8	Water T/D Level 3,4 & Filtration Endorsement	Keizer	0.6 Water	5816 Fee
March 4-8	46 th Annual Management & Technical Conference	Sunriver	3.0 Water/Wastewater	TBA Fee
March 19-20	Wastewater Treatment/Collections Certification Review	Keizer	1.4 Wastewater/0.7 Water	6043 Fee
March 21	Developing Your Operations & Maintenance Manual	Scappoose	0.4 Water/Wastewater/Onsite	5805 Fee
March 28	Math for Operators	Turner	0.4 Water/Wastewater	TBA Fee
March 28	Preparing for a W System Survey & WW System Inspection	Turner	0.3 Water/Wastewater	TBA Fee
April 2-3	Water Treatment, Water Distribution Certification Review	Keizer	1.4 Water/0.5 Wastewater/Onsite	5815 Fee
April 4	Water T/D Level 3,4 & Filtration Endorsement	Keizer	0.6 Water	5816 Fee
April 4	Distribution Basics	Roseburg	0.6 Water/Wastewater	5986 Fee
April 11	Math for Operators	Newport	0.4 Water/Wastewater	TBA Fee
April 11	Preparing for a W System Survey & WW System Inspection	Newport	0.3 Water/Wastewater	TBA Fee
May 15	Distribution Basics	Salem	0.6 Water	5986 Fee
May TBA	EXPO	Rickreall	0.4 Water/Wastewater	TBA FREE
May 21-22	Water Treatment, Water Distribution Certification Review	Keizer	1.4 Water/0.5 Wastewater/Onsite	5815 Fee
May 23	Water T/D Level 3,4 & Filtration Endorsement	Keizer	0.6 Water	5816 Fee
May 23	Math for Operators	Redmond	0.4 Water/Wastewater	TBA Fee
May 23	Pumps & Pumping	Redmond	0.3 Water/Wastewater/Onsite	TBA Fee
June 27	Math for Operators	Hermiston	0.4 Water/Wastewater	TBA Fee
June 27	Pumps and Pumping	Hermiston	0.3 Water/Wastewater/Onsite	TBA Fee
July 16	Confined Space	Pendleton	0.3 Water/Wastewater	4634 Fee
July 16	Job Site Safety	Pendleton	0.3 Water/Wastewater	4635
July 23-24	Water Treatment, Water Distribution Certification Review	Redmond	1.4 Water/0.5 Wastewater/Onsite	5815 Fee
August 6-7	Wastewater Treatment/Collections Certification Review	Keizer	1.4 Wastewater/0.7 Water	6043 Fee
August 19-22	30 th Annual Summer Classic Conference	Seaside	2.3 Water/Wastewater	TBA Fee
September 23-26	2024 Fall Operators Conference	Florence	2.7 Water/Wastewater	TBA Fee
September 25	Developing Your Operations & Maintenance Manual	Baker City	0.4 Water/Wastewater	5805 Fee
November 5-7	Spirit Mountain Casino Operator's Conference – 20234	Grand Ronde	2.0 Water/Wastewater	TBA Fee
November 13	Understanding the Requirements of the WMCP	Salem	0.3 Wate	TBA Fee
November 13	Job Site Safety	Salem	0.3 Water/Wastewater/Onsite	4635 Fee
December 9-12	Annual End of Year Operator's Conference	Hood River	2.3 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>

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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

www.oawu.net

Positive Coaching

Throwing My Loop
by Michael Johnson

How do we help those we love? How do we help people improve at a particular task? Did you ever coach a little league team? How about soccer? Teach someone how to ride or rope? How did you do it? Did you implement your coaching strategies after meticulous research on best practices? Probably not. You probably did it like all coaches since the days of Moses. All coaches coached the way they were coached - they say everything really loud and they always say it twice! (As in, "Let's go! Let's go! Hustle! Hustle!") Surely the coaches I had in life must have set some kind of record - none of them ever smiled a single time in four years! And almost all dads have one surefire method...yell at your kid more than you do the others. Of course, if any player (or horse) makes a mistake - you yell at them! That's just the way it's done, right?

Could there be a better way? Maybe so...an organization called Positive Coaching Alliance surely does offer some food for thought. PCA was founded by Jim Thompson, a man who worked at the Stanford Business School. Before that, Thompson taught emotionally disturbed students where he became skilled with managing and motivating those children. When his son turned 6 and started in sports, Thompson discovered parents and coaches violating all the methods he knew to be effective - putting intense pressure on children, giving technical advice when the child was anxious or frustrated, and coaches yelling at children when they made a mistake. Thompson would eventually collect his ideas in a book called "Positive Coaching, Building Self-Esteem Through Sports." With the support of the Stanford Athletic Department, he launched PCA in 1998.

The core of PCA is to train "double-goal" coaches. Coaches are encouraged to win - indeed to be relentlessly positive, and to teach life-lessons as well. Parents are encouraged not to coach, but rather to focus on guiding their child's character development - to help their child become a good person.

Sports psychologists know athletes who focus on things they can control - as opposed to external factors - are less anxious, more confident, happier, and better performers. And according to Thompson, to be a "good" coach - that is to help players come closer to their potential - the key is not praise for good performance nor criticism for poor performance. What works best for young people is to help them understand they control three key variables - their level of effort, whether they learn from experiences, and how they respond to mistakes. (Rodeo cowboys are usually really good at all three of those. I wish everyone was.) That last one - how to handle mistakes - interests me.

For years I've noticed successful athletes - particularly golfers and bull-riders - share a powerful trait. One of the primary differences between the amateur and pro is the ability of the pro to instantly wash the bad shot from memory. Bull-riders fail more than fifty percent of the time, yet they seem unaffected by what most of us would consider a high failure rate. I'm hard pressed to think of any behavior we could adapt in our own personal lives that could help us more than that trait of resiliency.

Jim Thompson would agree. His coaches are trained to help us do just that. Your daughter takes a called third strike. She looks at you. What do you do? Son misses a steer. He looks at you. What do you do? If you were trained as one of Thompson's coaches, you would have a response.

You make a gesture - a flushing motion like with a toilet! It's gone. Forget it.

PCA's philosophy is that every child has an emotional tank, and we must be careful to not let it run dry. The organization even encourages a "magic ratio." Five positive statements for every one that's negative. Some of my buddies might consider that soft. I don't think so at all. I've had some powerful coaches in my life who felt the same way. I attended a herding dog clinic

in Amarillo long ago. The teacher was Orin Barnes, a master with the horse and with the herding dog as well. As he lectured, these words came forth...

“We must get to the top of the pecking order with the horse and the dog,” he said. “There are two things, however, we cannot do.” He paused for the longest time. Then he said,

“We cannot hit and we cannot yell.”

I held up my hand. “Mr. Barnes, as a native Texan, you have robbed me of the only two weapons I have used all my life. If I can’t hit or yell, what on earth can I do?”

“That, Miguel, is why we are having this clinic,” he said. Then he added... “And that, young man, is a question I expect you to work on for the rest of your life.” ♦



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WE PROVIDE COST EFFECTIVE WAYS TO MEET ALL YOUR WATER SYSTEM NEEDS

CONTACT US AT:
(800) 841-7689
www.bmi-backflow.com

- TRAINING
- CONSULTATION
- PUBLIC EDUCATION PACKETS
- ASSEMBLY TRACKING SOFTWARE
- ENFORCEMENT DOCUMENTS
- WRITTEN PROGRAM PLANS

"BMI is dedicated to the pursuit of clean, safe drinking water through education"

Carefree SCADA

Turnkey water SCADA in the cloud
Water | WWTP | Irrigation
1-208-362-5858
sales@carefreescada.com

Operator Views

- View equipment status in realtime
- Supervisory control from operator views
- View and acknowledge process alarms
- Easy to use



Historical Trends

- Meet regulatory agency requirements
- User-selectable time periods
- Seconds, minutes, hours, days
- Color-coded traces



Asset Management

- Avoid unplanned downtime
- Calendar and condition-based scheduling
- Maintenance work orders
- Easy to use



Mobile Access

- Always be in touch with your plants and processes
- Access your SCADA data from anywhere at any time
- View and acknowledge alarms easily
- Easy and intuitive to use



Cloud Based

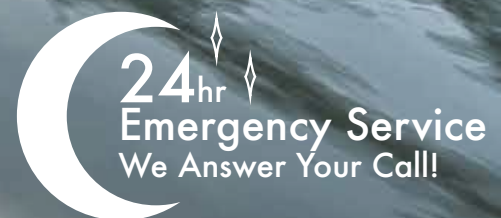
- Minimal or no additional computer hardware investment
- Updates automatically
- Low maintenance
- Secure



Brought to you by:



Advanced Control Systems, LLC



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

- | | |
|--|--------------------------------|
| <input type="checkbox"/> Regular Member | \$ _____
See schedule below |
| <input type="checkbox"/> Associate Member | \$600.00 |
| <input type="checkbox"/> Individual Member | \$100.00 |

Regular Member Dues Schedule

1 to 100	\$75 + 48 cents per connection
101 to 500	\$85 + 48 cents per connection
501 to 1,000	\$90 + 48 cents per connection
1,000 and up	\$100 + 48 cents per connection
Maximum dues is	\$1,400.00

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

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 \$600.00 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



MB24

MEMBERS

62nd Court Mutual Water Company
Adair Village, City of
Adams, City of
Adrian, City of
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 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
Camp Rilea
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
Chenoweth 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
Clean Water Services
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
Coquille, City of
Corbett Water District
Cornelius, City of
Corvallis Waldorf School
Cottage Grove, City of
Country Club Water District
Country View Mobile Estates
Covanta Marion, Inc.
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 Yamhill Rural Water Company
Eastmont Water Company
East Shore Water Improvement District
Echo, City of
Elgin, City of
Elkton, City of
Emerald Meadows HOA
Emerald Valley Wastewater Co.
Enterprise, City of
Estacada, City of
Estacada Mobile Village, Inc.
Eugene Mobile Village
Fairview Water District
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
Gold Hill, 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
Jackson County Parks
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
Kellogg Springs Camp
Kelly's Brighton Marina, LLC
Kelso Water Association
Keno Water Company, Inc.
K-GB-LB Water District
Kilchis Water District
Kingswood Heights Water Association
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
Lampighter 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
 Lonza Bend Inc.
 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
 Modoc Point Sanitary District
 Molalla, City of
 Monmouth, City of
 Monroe, City of
 Monument, 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
 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
 Otter Rock Water District
 Pacific High School
 Paisley, City of
 Paradise/Rogue Meadow WS
 Parkdale Water Company, Inc.
 Perrydale Domestic Water Association
 Philomath, City of
 Phoenix, City of
 Pilot Rock, City of
 Pine Grove Water District
 Pioneer Park Water Co-op
 Pioneer Village Water Company, Inc.
 Pleasant View Water Company
 Polehn Heights Water Association
 Ponderosa Pines Water Company
 Port Orford, City of
 Port of Columbia County
 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.
 Rhododendron 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
 Rockaway Beach, City of
 Rockwood Water PUD
 Rocky Pointe Marina
 Rogue Community College
 Rogue Lea Estates MHP LLC
 Rogue River, City of
 Rogue River – Siskiyou National Forest
 Roseburg Forest Products Company
 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
 Scrael Hill Water Co-op
 Seal Rock Water District
 Seaside, City of
 Seneca, City of
 Shadow Hills Park Water Cooperative
 Shangri-La Water District
 Shelley Road Crest Acres W.D.
 Sheridan, City of
 Sherwood, City of
 Siletz Community Water System
 Siletz, City of
 Silver Falls School District 4J
 Silverton, City of
 Sisters, City of
 Skylane Farm
 Skyview Acres Water Company
 Sodaville, City of
 South Fork Water Board
 South Hills Water System, Inc.
 South Suburban Sanitary District
 South Umpqua Water Assn.
 Southview Improvement District
 Southwood Park Water District
 Spirit Mountain Gaming, Inc.
 Sportsman’s Park Water Association
 Spray, City of
 Springwater Estates HOA
 St. Paul, City of
 Staffordshire Water System, Inc.
 Stahlman Summer Homes
 Stanfield, City of
 Star Satellite Improvement District
 Stayton, City of
 Steeves Mobile City
 Storlie Water Company Inc.
 Sublimity, City of
 Suburban East Salem Water District
 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.
 Sunshine Village Water Association
 Sutherlin, City of
 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.
 Veneta, City of
 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 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.

INDIVIDUAL MEMBERS

Allison, Danny	Ceballos, Oscar	Gaskey, Harvey	Hubbard, Tom	MacCarthy, Steven	Percy, Patrick	Statchwick, Jeff
Allred, James	Chipman, Kenneth	Gates, Andrew	Huff, Zach	Madrigal, Deno	Perry, Gary	Steidler, Matthew B.
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Boyles, Blake	Davis, Erin	Hanks, Kevin	Katrena, Scott	Mudra, Austin	Sears, Ronelle	Wabschall, Aaron
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Brown, Scott	Emmel, Triston	Hess, Drew	Laetzsch, Dawna	Odell, Mark	Smith, Bob	Whitten, Kevin
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Cable, Joe	Finnegan, Brady	Hoesch, Jacob	Lee, Jon	Ott, Mallory	Smith, Justin	Wirsing, Jennifer
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	Gallino, Joseph	Howell, Roy A.	Locke, Rick	Patton, Chris	Stark, Chris	

ASSOCIATE MEMBERS

4B Engineering & Consulting	CIMCO-GC Systems, Inc.	Granich Engineered Products	Mueller Company	Schroeder Law Offices, PC
A.Y. McDonald MFG. Co.	CIMCO Sales and Marketing	Harmsco Filtration Products	MuniBilling	Seattle Pump & Equipment Co.
Adkins Engineering & Surveying	Cleanwater1	Harrang Long Gary Rudnick PC	Neptune Technology Group	Sensus USA
Advanced Control Systems	Clow Valve Company	HD Fowler Company, Inc.	Northstar Chemical, Inc.	SHN Consulting Engineers & Geologists
Aegion-Insituform Technologies, LLC	CoBank	Hollabaugh Brothers & Associates	Nurnberg Scientific	Smart Earth Technologies
AKTIVOV Asset Management	Columbia Laboratories	Holman Capital Corporation	NW Hydrovac	Smith & Loveless Inc.
Alpha Guardian Networks	Consolidated Supply Co.	Hose Solutions	One.7, Inc.	Special Districts Assn of Oregon
American AVK Company	CORE & MAIN	Huma Environmental	Optimal Control Systems	The Automation Group
American Flow Control	CORRECT Equipment, Inc.	Hurley Engineering Company	Oregon Meter Repair & Water Solutions	The Ford Meter Box Co., Inc.
American Leak Detection	Ditch Witch West	Hydra-Stop	Oregon Public Utility Commission	Thompson McLean Assoc.
Anderson Perry & Associates	Diversified Construction and Consulting, LLC	HYMAX by Mueller	Orenco Systems	TMG Services
Aqualtec Corp.	DN Tanks	InfoSense, Inc.	Owen Equipment Company	Trade Tool
Backflow Management, Inc. (BMI)	Duke's Root Control	Instrument Technology Corporation	Owens Pump & Equipment	Tripac
Bainbridge Associates, Inc	Edge Analytical Laboratories	Kasco Marine	PACE Engineers, Inc.	Umpqua Research Co.
Baker Silo, LLC.	EJ	Kennedy/M&H Valve	Pacific NW Sales	Underground Tech.
Bancorp Insurance	Energy Trust of Oregon	Lakeside Industries/EZ Street	Pittsburg Tank & Tower Co.	USABluebook
Baseform	Enviro-Clean Equipment, Inc.	League of Oregon Cities	Prestige Worldwide Technologies, LLC	Waterlab Corp
Big Dog Sales, NW	Ferguson Enterprises	Legacy Power Systems	PumpTech Inc	Western Systems
BioLynceus, LLC	FloHawks	Lesman Instrument Company	Puttman Infrastructure, Inc.	Western Water Works Supply, Co.
Business Oregon Development Dept.	Frank J. Martin Company	MacKay Sposito	RDO Equipment	Whitney Equipment Company, Inc
Cascade Columbia Distribution Co.	Frontier Precision, Inc.	Master Meter, Inc.	Reiner Pump	Wm H. Reilly & Co.
Cascade Waterworks	Furrow Pump, Inc.	Max Distributing	Romac Industries, Inc.	Xylem, Flygt Products
	G.T. Gordon & Associates, Inc.	Metolius Engineering LLC	Romtec Utilities, Inc.	Zenner USA
	General Pacific, Inc.	Metron Farnier	Schneider Water Services	
	Goble Sampson Associates	Morrison-Maierle		

Team Communications System

Introducing LiberatorMAX™

The most advanced system for team communications. Multi-person intercom system that is versatile and simple to use. Turn the headset on and be connected with other headsets. No installation or base station is required which gives you the freedom to move around without any restrictions.



Please visit our website!

- Up to 8 intercom (unlimited amount of listen-only headsets).
- 8 Talk group channels.
- Ability to integrate portable radio into the headset allowing the user to simultaneously communicate over the portable radio and intercom.
- Range: Up to 1,500 feet (line of sight).
- Premium dual-speaker headset with noise reduction rating of 23dB.
- Full duplex intercom communications without any push-to-talk (PTT) required.
- Available in Behind-the-Head Style.
- 15 hours battery life.
- Different charging options available.
- Charge anywhere with 120VAC to 12VDC wall charger or 12VDC power supply.
- Heavy-duty and durable design to extend life in a demanding environment. Perfect for rugged industrial situations.
- No installation or base station required - Just turn on your headset and start talking.
- Carrying case available.

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Your Lift Station Checklist



Routine maintenance is your best defense against costly downtime and repairs. Count on USABlueBook for everything you need to keep your lift stations in top condition!

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