H_2Oregon

Summer 2020
Vol. 42, No. 3

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Oregon Association of Water Utilities
935 N. Main St.
Independence, OR 97351
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H2Oregon is the official publication of the Oregon Association of Water Utilities, and is published quarterly for distribution to representatives of rural and municipal suppliers. Issues are mailed free of charge to member and nonmember rural water/wastewater associations. Articles and photos are encouraged with payment in complimentary copies.

H2Oregon is published for the Oregon Association of Water Utilities by

Mt. Angel Publishing, Inc.
135 N. Main St., Mt. Angel, OR 97362
503-845-9499 fax: 503-845-9202
www.mtangelpub.com

OAWU Staff Members

Jason Green , Executive Director
jgreen@oawu.net

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

Shawna Crowther, Office Manager
scrowther@oawu.net

Donna Bernt, Administrative/Financial Assistant
dbernt@oawu.net

Heather Davis, Administrative Assistant
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

Bob Waller, Circuit Rider
bwaller@oawu.net

Jeff Crowther, Workforce Development
jcrowther@oawu.net

Keith Bedell, Wastewater Technician
kbedell@oawu.net

H2Oregon

OAWU Officers & Board Members

PRESIDENT
Mike Edwards
City of Bend
62975 Boyd Acres Rd
Bend, OR 97701
Phone: (541) 317-3050
medwards@oawu.net
Reg. 1, exp. 2021

VICE PRESIDENT
Matt Johnson
City of Monmouth
151 W. Main Street
Monmouth, OR 97361
Phone: (503) 838-2173
Fax: (503) 838-0201
mjohnson@ci.monmouth.or.us
Rep. Reg. 5, exp. 2020

SECRETARY
Craig Smith
City of Lake Oswego
17601 Pilkington Rd.
Lake Oswego, OR 97034
Phone: (503) 260-7519
csmith@ci.oswego.or.us
Rep. Reg. 1, exp. 2022

TREASURER
Micah Olson
City of Columbia City
700 N. College St.
Newberg, OR 97132
Phone: (971) 563-3128
molson@oawu.net
Rep. Reg. 1, exp. 2022

NRWA DIRECTOR
Russell Cooper
City of Monmouth
151 W. Main Street
Monmouth, OR 97361
Phone: (503) 838-2173
Fax: (503) 838-0201
rcooper@ci.monmouth.or.us
Rep. Reg. 3, exp. 2021

PAST PRESIDENT
Mark Beam
Ice Fountain Water District
1185 Tucker Road
Hood River, OR 97031
Phone: (541) 386-4299
Fax: (541) 386-7228
mbeamifwater@hrecn.net
Rep. Reg. 2, exp. 2022

Board of Directors

Ed Butts
4B Engineering
4454 71st Ave. SE
Salem, OR 97317
Phone: (503) 881-7100
epbpe@juno.com
Assoc. Mbr. Rep. exp. 2021

Craig Sheldon
City of Sherwood
15527 SW Willamette St
Sherwood, OR 97140
Phone: (503) 925-2310
Fax: (503) 625-0620
sheldonc@sherwoodoregon.gov
Rep. Reg. 2, exp. 2020

Tim Lyda
City of Tillamook
801 Laurel Ave.
Tillamook, OR 97141
Phone: (503) 842-2343
tlyda@tillamookor.gov
Rep. Reg. 3, exp. 2021

Phil Davis
Odell Water Company
P.O. Box 166
Odell, OR 97044
Phone: (541) 354-1885
pkdavis@hrecn.net
Rep. Reg. 2, exp. 2020

Dwayne Barnes
City of Salem
1410 20th St. SE Bldg. #2
Salem, OR 97302
Phone: (503) 588-6333
dbarnes@oawu.net
Rep. Reg. 1, exp 2022

Mark Kerns
Avion Water Co.
935 N. Main Street
Independence, OR 97351
Phone: (503) 837-1212
bigkahuna1949@icloud.com
Rep. Reg. 3, exp. 2021

Konrad Dimmitt
City of Lafayette
PO Box 55
Lafayette, OR 97127
(503) 864-2451
pw@ci.lafayette.or.us
Rep. Reg. 3, exp. 2020

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

Looking Forward

by Jason Green, Executive Director

In following state orders and directives regarding shelter in place, travel, distancing, face masks and attempting to continue to conduct membership and field services such as consulting/technical assistance and training, etc., the previous six months have been challenging. In the area of training and conferences, we were extremely thankful to have concluded the annual conference in Sunriver the week prior to the shutdown in March. Since then we have provided several webinars to National Rural Water Association affiliate state associations and a six-hour Small Water Operator class. Through careful consideration and planning, working with the City of Seaside and Conference Center and state Covid Committee team members, seeking advice from other state and professional sources, we proceeded to advertise and move forward with our Seaside conference.

Because this is related training and gathering of essential employees in the drinking water and wastewater field/industry, at this time, we will be meeting all required protocols and directives. Should changes occur, we will adapt and adhere to new requirements or possibly cancel the training conference if required. Appropriate distancing and masks will be required as well as following additional City and Conference Center requirements and state requirements. Attendee and exhibitor registration numbers are limited. Currently, we also plan to run at least one track as a live webinar for those who are unable to attend for whatever reason—we will provide additional information by email to the membership and those registered and post updates on the OAWU home page as we approach the scheduled dates.

Additionally, beginning September, the Association will begin to provide approximately 10–12 hours (1.0 to 1.2 CEUs) of free and low cost webinars for those wanting or needing CEUs for testing and/or certification renewals. The Florence and Grand Ronde conferences have been cancelled, but the End of Year Conference at Hood River is scheduled to take place as planned.

2021 will likely include webinars, class trainings, certification reviews, Small Water Operator training and various conferences such as the Annual Management and Training Conference at Sunriver in March. We respectfully look forward to seeing you if you can travel, and would welcome any visitors. If you are unable to make either occur, call or email us—we will make something happen to assist you in any way we can.

Thank you and we covet your support, especially during these times!

—The OAWU Board of Directors and Staff

The COVID-19 Blues

by Mike Collier, Deputy Director/Source Water Specialist

As I sit here writing this article, I have kids playing on the home computer, arguing, smashing on the piano, yelling, and giving general distraction. This is only the first part of the second week of the schools being shut down … we only have to make it a few more months until summer. Not sure if they will be able to handle it with the rain forcing them inside, I am not sure if I can handle it. If it weren't raining, we could just kick them outside for a few hours every day.

So, what are some ways we can handle this dilemma, how can we make the most of it? Will I be able to get any work done with the continual noise, chaos, and distraction? Or should I just take some vacation time? At least I am still able to work.

Some options that we have tried to use to distract the kids are online class opportunities, board games, crafts, and my wife is getting them to clean their rooms – which is like pulling teeth and I am sure the rooms will only look nice and tidy for one afternoon.

For many of us we already have a lot of different thoughts going through our heads right now. How long will this last, how bad is my retirement looking, is it really that bad, will someone I know get it, will we have work, if we lose our job how long will we be able to go without income, will the kids be able to finish the school year, will this put them behind, will we get the money back from the different cancelations, and more?

For me the two biggest takeaways from this threat is the reminder that our family and friends are important, and we should devote some of our time and energy to them and not fill up our time with so much other stuff. Also, no matter how much we get and achieve in this world, we are not in ultimate control. We need to go with the flow of the situation and not get bogged down with thoughts and feeling the need to hoard toilet paper. Let go, we are not in control, when major changes occur in our lives, we can either let them crush us or we can move with them, adjust, and realize that we are resilient and adaptable.

Maybe there is something else out there that is moving and changing. Maybe we were too comfortable or too proud of what we have accomplished.

Safe Practices

by Jeff Crowther, Workforce Development

We all have jobs that need to be completed, whether at home or at the office. How we approach these tasks can make a difference in the outcome, be it a quality job or safety.

A few weeks ago, my son had purchased a new wood stove to be installed at his house. This was going to be a pretty simple task since it was loaded into the back of his truck and all we needed to do was grab it and set it on the hearth where the old one had been sitting. We recruited his brother to help and arrived at the house with a piano dolly to roll it into the house. We drug it to the back of the pickup, positioned the dolly on the ground, and all three grabbed and lifted it up and off the tailgate. This would have been okay if the rolling dolly was positioned further away. Unfortunately, the eldest son stepped or tripped on it and before we knew what was happening, he started to fall down, which allowed all the weight to adjust to his side. We were able to get it to the ground without damaging the stove, however, there was significant damage to the eldest son. He dislocated his shoulder, fractured the shoulder socket, not sure, but maybe broke a toe, and put some really ugly bruises on his leg. Of course, this required a trip to the ER and x-rays with a follow up at the orthopedic surgeon and physical therapy for weeks.

All this could have been avoided if we had slowed down and thought the process through rather than being in a hurry to get the job done. As we all go through our routines, whether at work or at home, the value in a tailgate meeting prior to starting a project is priceless. Make sure that you have checked the area for hazards and barriers, have adequate personnel to assist, have the correct tools for the job, and are carrying out the tasks in a safe manner. At the end of the day, the main objective is to go home safe not to make any unnecessary emergency room visits.

All for the First Time

Submitted by Hans Schroeder, Circuit Rider

This article was written by one our foreign exchange students, Leonie Ottmar from Luneberg, Germany. Some of you met her at our Annual Conference held in Sunriver. She was definitely a light to our past year.

The last time I turned around at the airport and see the milky glass door slam behind me, I knew I wouldn't be coming back anytime soon. In this moment I laughed and cried at the same time. Nevertheless, I had been looking forward to this day for half a year and suddenly there was the day, when I flew to a country with a completely different culture. I remember when I first met my host parents. I thought it would be silent at first, but that wasn't it at all. My host dad, Hans, started joking and we still have a lot of fun together. It just never gets boring with him. In addition, Tina, my host mom, welcomed me like her own daughter. I always have the feeling that she is always there for me. I couldn't have imagined better host parents. It is quite an experience, not only to get to know completely new enchanting people, but also to fly to a country and stay for such a long time that I would otherwise only have seen on the map.

Over time I got a lot of new impressions about the American life. The differences are small, but very different. When I was in the restaurant for the first time, free water was brought to the table or the soft drink was refilled. In Germany you have to pay for water and nothing is refilled. Also, to take the leftovers of the ordered food home with you. For this you need a "doggy bag." I didn't know that from home. There we can take home, at most, pizza leftovers.

I lived far in the country in the USA and I went to a small school with about 40 students in the entire high school. That makes school life very familiar. It is like a cracked family and even the parents to the other children treat you all like their own children. That makes life very personal. I never had this feeling at home in my school in Germany. There are around 800 students in my high school, and I did know many of them. There I live more anonymously without everyone knowing me. I really enjoy and appreciate the familiarity in the USA. The sports also take place here at school. This forces us to keep our academic performance high, so we even have the opportunity to be part of the team. In Germany, however, this is very different. All sports take place outside of school in clubs. This allows us to do sports even with poor grades. Here in the USA the school motivation is higher due to this condition.

We also had a homecoming ball here. I had seen many in American movies and I always had dreamed of going on one myself. Now I went to one and my little American dream had come true. I would never have thought that it would actually happen that way. In Germany we have no school dances or anything like that. So it was an evening that I will never forget.

Another difference is if I have a barbecue on Sunday afternoon in Germany with friends and we run out of beer (I can drink in Germany at the age of 16) and we would like to buy new ones, no supermarket is open, but here you can go shopping in the supermarket almost every day, whether on Sundays or on public holidays.

There is no emphasis on how you look. Once I came from a basketball game with a nice dress and wanted to buy something from Wal-Mart. I looked at myself and then the others. I said to Hans (my host dad): "I'm overdressed". Then we both had to laugh.

Besides, I really lived in the year in the middle of nowhere. I realized that on a summer day I would hear the electrons in the high-voltage line. If I tell that at home, nobody would believe what living in nowhere means. In Germany, people do not live far in the country without neighbors. I have had a year full of new experiences. It was not always easy, but every day I feel like I have more life experience and grow older. It is like a life test. I am also grateful that I lived in such a great host family and to be treated like I was their own daughter. There are small cultural differences that gave me new impressions and memories every day of my year abroad. There were experiences that were unique and new.

I finally had to stop my year because the coronavirus has spread to the United States. Where everyone initially thought that this is just a disease in China and will remain there, but it went unplanned. Every day from the 2nd week of March came new information, or bans, which should from now on completely turn our social life and our everyday life upside down. I did not feel like turning on the television anymore. I was also astonished at the time that a state like Oregon prohibited everything, even though there were only about 100 cases in the state at the time. After school closed, my friends and I had an incredible amount of time because there was no school, no sport, and nothing at all. However, we could not do the otherwise self-evident activities, such as going to the cinema or eating out, because everything was closed. It was and still is a feeling of anger and sadness that fills me. Most have never experienced such a situation before. We start to appreciate things that seemed natural to each of us. Many have the desire to finally be allowed to go back to work, go to school and simply meet up with friends again. Perhaps it comforts us to know that this is happening all over the world. Nobody is alone. I have realized to never lose hope and courage because then everything is lost.

Despite the end of the year abroad, I have gained so much in life experience and today I am sitting in Germany and look with a laughing eye, because I have experienced all the beautiful things and got to know many new lovable people. On the other side I also look back with a crying eye because I had to stop the year due to the virus. However, I will always have an incredibly beautiful memory of my time in the USA. I will also fly back to see everyone again. So, with the coronavirus, we will come back and be stronger than before.

—Leonie Ottmar

The Lever

Heath Cokeley, Programs Manager/Circuit Rider

"Give me a lever and a firm place to stand and I can move the world." What do these words mean to you? Some of you are saying to yourselves right now that it's the fact that with a strong enough stick and an axis on which to pivot it you can move a mass far heavier than the normal strength of many men. For others, these words may have a different meaning. When I was 6, my father told me these words. At the time he meant it to explain how we were going to move an old wagon sprayer we needed to move. Over the following decade, before his passing, he would tell me these words several more times in my life until ultimately the words came to mean to me that nothing is impossible.

I continue to be amazed by the caliber of people I have met in the water/wastewater industry. I hear people say far more often "We need to find a way to do this" rather than "It can't be done." The idea that something just can't be done has always puzzled me. I firmly believe nothing is impossible; it is simply time and resources. If there is an issue we are dealing with, chances are that someone else has dealt with that issue before and possibly figured out a way to solve the problem. That is why teamwork and networking is just as vital in this industry as any tool we may carry on our utility truck.

I wrote the first two paragraphs of this article more than 6 years ago. You see, for every article I write, there are frequently two or three I start, but don't finish and it goes away in a file to possibly be looked at later or maybe never see the light of day again. I felt this was an appropriate time to bring this one out because we are currently navigating the Coronavirus Pandemic which has impacted everyone differently. The one nice thing about water and wastewater is that we don't have a choice, but to put our boots on and go to work because at the end of the day the tap must flow, and the toilet must flush. Of course, this may have changed how, where, or when some of us work, but the end goal is still the same. Continue to provide quality on tap to all connections and provide necessary waste disposal.

We continue to network, but much more of it is done on the phone, by email or on a video conferencing platform. This is a difficult thing for me as I have always greatly valued the in-person conversations and networking this industry has had so much of. I find I greatly miss the conversations that take place between classes at conferences or other trainings, but we will have those again. It is my belief that even after this is over many supervisors or managers will look at virtual training and webinars as the answer to the cost of sending people to a conference or a class to get their CEUs. My sincere hope is, if that is the case, they take a hard look at the way they like to receive training. That they truly evaluate what will be lost if that person to person networking is not allowed to happen. If I had a dollar for every time, I have had someone at a conference say that the one 5-minute conversation with one of their peers from a neighboring utility was worth it to come to the conference… Obviously, our goal is to have the classes top notch as well and have a bit of fun during the whole process, but I will take what I can get. Until we are back to our normal conferences and classes feel free to call or email if you need anything. As our Executive Director, Jason Green said at the beginning of this, "If our Members are Working, OAWU is Working" and we are happy to help in any way we can. With that I will see you down the road.

Energy Cost and Spending

by Tim Tice, Projects Manager

Water and Wastewater Utilities have had to balance an array of tasks, everything from compliance of regulations, personnel, to funding normal day-to-day operations. Looking at the past sixty years, an average of 2.3 percent of Gross Domestic Product (GDP) is spent on transportation and water infrastructure annually.[1] During this time, State and Local governments have spent 3.5 times (2016) more money than the Federal Government to keep pace with the aging infrastructure. A mere 130 billion dollars in 1956 has ballooned to 342 billion in 2016.[1]

A steady or slight decline in Federal spending since the late 1980s, except for the time 2010-12, we saw the average Federal public spending at around 2.5 percent of GDP 2. We, as a country, are spending more money to keep the existing infrastructure functioning instead of moving forward with major upgrades.[2] The peak of Federal spending occurred in the mid-1970s, at a rate of 39 percent of the budget in 1977.[1]

State and local government spending during the same period (6 years) averaged 32 percent of budgets each year on water and wastewater utilities, with operations and maintenance exceeding capital by two and one-half times.

The ever-changing landscape demands decision makers to balance spending against revenues, providing adequate evidence of return on investment for the public, and the ever-complex idea of competent asset management. The scenery the utility industry has lived in has forced many decision makers to create a format of "reactionary maintenance" to keep the compliance and service levels meeting expectations.

Cutting costs in order to build savings has run its course and is not a viable option. The costs are outpacing the rate at which public utilities can save. The idea of rate-payers investing into the future has been riddled with confusion, incompetence, and misconstrued approaches.

One of the last areas to approach, an idea that is gaining traction, is energy efficiency. The U.S. Department of Energy shows that more than 70% of the total potential motor system energy savings is estimated to be available through system improvements by reducing system load requirements, reducing or controlling motor speed, matching component sizes to the load, upgrading component efficiency, implementing better maintenance practices, and downsizing the motor when possible. As much as forty percent of operating costs for drinking water and wastewater systems can be for energy.[3]

With the advancing methods to apply, manage, and use electricity, utilities currently have many areas to improve with both current and the next wave of technological advancements. By incorporating energy efficient practices, utilities can save 15 to 30 percent of total power costs. The intrinsic value associated with more efficient electrical uses is the reduction in mechanical stresses on equipment, thus likely having equipment usage extended to match manufacturer's intended timeline or beyond.

For obvious reasons, a 10 HP motor with the same operating parameters of a 50 HP motor will not see the same dollar savings. Reducing the energy demand from water/wastewater utilities also reduces the pressure of adding new power-generating facilities to keep up.

When electrical efficiencies are measured, many components are used in the equation to determine the overall cost per unit of water/wastewater treated, or a better term,

delivered. Like so many operational tasks, to pinpoint the actual cost per *delivered* unit can be daunting. At this juncture, some look to data at neighboring systems and review technical documents to determine where their system ranks. Another approach to system evaluation is to stay with the system best known to you, the one you operate.

Dissect your water/wastewater system with a simple all-encompassing list of motors and pumps with an emphasis on the structure surrounding these components. Is there a valve that is partially closed to control flow?

For many water utilities, transmission and distribution pumping account for 70 percent of total electrical expenses, while wastewater treatment accounts for 55–90 percent of consumed energy, with the focus on aeration.[4]

Routinely reviewing the all-encompassing list will provide the operator the information to reprioritize the list and apply a cost for upgrades. These figures can then be placed in the next annual budget. Upgrading equipment, adding controls, resizing motors are measures to address total energy efficiency. Most changes to equipment and operational methods will show a 1 to 5-year return on investment.

General rules of motor management are applied in developing standard policies. Repairing a motor versus buying a new motor makes sense if the savings is less than sixty percent. If rewinding a motor is $1,500 and a new motor is $2,200, the ratio is 68 percent, buy the new motor. If the savings favor the repair of the motor and is fifty percent less, economically it makes sense.

Another way to set policy is based on motor size. If the motor in question is less than "x", then you purchase new. Where "x" comes into play can be as simple as looking at all the motors at the utility and determine the average size, that size becomes the policy.

One key component in the energy efficiency reviews performed by OAWU, is the return on investment, that dictates when a motor should be replaced. Less than three years return on investment will surely move towards a new motor. This rule is substantiated with simple calculations based on energy savings.

There is much to do and a balance of time to accomplish what we can during the time that we have. Monies spent to meet regulatory compliance and infrastructure upgrades comes from a few sources, but the bottom line is, "it will cost more tomorrow than today!" Investing in the future must be considered, shared and implemented for the public much like someone does on the personal side. A homeowner replaces the roof on a house for

one simple reason, to protect the existing structure from further damage. The home investment is important to maintain, and how often are new roofs put on a house in order to sell them. This cost is an investment for the future. This message should be resounding in the communities where we live, with an importance on reliable water/wastewater infrastructure.

Oregon Association of Water Utilities will assist your utility to determine energy consumption, return on investment of upgrading equipment, and possible rebates where applicable. Add to energy efficiency the relationship of water loss and the expense associated, and the process becomes all-encompassing.

The best that life has to offer!

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1 www.cbo.gov/system/files/2018-10/54539-Infrastructure.pdf, March 2015

2 www.brookings.edu/research/shifting-into-an-era-of-repair-us-infrastructure-spending-trends/

3 www.eia.gov/todayinenergy/detail.php?id=18151

4 Compiled by authors based on estimates of typical systems in the United States (EPRI, 2012).

Keeping up the Flow

by Keith Bedell, Wastewater Technician

We have all been reading and hearing about the effects of the Coronavirus Pandemic. Hopefully, by the time you are reading this we are in a better situation, but there are a few things that have continued as normal. Turning on our water faucets and flushing our toilets (even if toilet paper is scarce) continues as usual for the average American. Thousands of American men and women continue to trudge on with their daily work to make sure all of us can wash our hands for the twenty seconds necessary to wash away the droplets that can bring on this sometimes deadly disease. It is at this time that we need to consider and appreciate the dedication of the workers that keep up the flow.

Now more than ever, Americans need access to clean water. There is no other practice that can help us fight off sickness so efficiently. Unfortunately, this is not reflected in the city, county, state, or national budgets that fund these programs. On the news we hear and read of the ways the pandemic will change our country. The economy, education, social aid, and social events may appear totally alien to many of us after the country is back up and running, but without significant funding, the system that has helped us fight off the virus, may be squeezed even tighter.

Many rural communities are already running their utility programs on a shoestring budget. Water and sewer systems are overtasked and often failing. This is the moment for all of us to look at what are our most precious resources. Clean water for all is at the top of the list. We need clean water to drink, wash, and clean. Water is the safest and most expedient way to sterilize societal needs from medical equipment to the dishes in restaurants and homes. The government has talked about, and even bragged about, bringing 5K internet to all Americans, but what about clean water?

The pandemic has brought to light many areas in which America needs to improve. We have changed our views on the importance of many professions and who is really on the front line. Utility workers, however, are still being underappreciated. We must let our local and federal governments know that the right of clean water is not just a given. Money, research, and technology need to be invested in keeping up the flow.

What to Do, What to Do, During the COVID-19 Pandemic

by Donna Bernt, Administrative/Financial Assistant

Seems boring just waiting for things to happen. It took some time for me to figure out the things I can do since all this started, since I cannot do as much shopping or go out to lunch with friends and family. Believe me when I say - not as much shopping…. most women love to look at things and don't always buy, but if you find a good deal, buying is fun. The problem is that only a handful of stores are open. Fun is what most of us are looking for. Fun was going to the beach, getting sand in our shoes, and eating seafood. Fun is visiting with friends and enjoying a meal somewhere that is not in your kitchen! Fun is getting out of the HOUSE. I have to laugh when a lot of mothers are complaining about their crazy world at home. The kids are going wild being in the house for days, using the hallway for a runway or raceway. Pretending the bathtub is the ocean and forgetting to turn the water off, so they see waves, using the kitchen detergent for bubbles that do not go away, and dressing the dogs in some crazy outfits. AND, they are always hungry, lol. In some ways, all of us are having different worlds right now.

Family?? I have not seen most of mine since the beginning of March. You are afraid to hug them in case they have any kind of bug, even allergies scare. I am sneezing and coughing a lot because of the allergies, people at the store look afraid when they see me. Some people are dressing wilder then before because they just do not care what they look like, and they are comfortable. Comfort and dressing normal, (what is normal today?) is not happening right now. People are wearing things, when they go out, that you have never seen matched that way before. If nothing else, you can shake your head and laugh to yourself, that you have on a better outfit, but wait, what the heck do I have on that represents a normal outfit? These old sweatpants look like they are 10 yrs. old, the shirt has stains on it and I got my slippers on. Classic case of Walmart shoppers and bored people. Don't even ask about my hair. I cannot get it colored or cut, so awesome is the look I have going on now. You might think I look scary, but I think I look pretty good for a woman that is housebound most of the time, eating everything in sight and trying to hide the weight I have gained in these outfits I adore.

Don't get me started on men. They are bored too. Looking for those honey-do projects to keep them busy. They always complained before about the wife giving them all these things to do, but now they are looking forward to having something to keep them occupied. There are no games for them to watch right now. All kinds of reruns on to keep them entertained, but it's just not the same.

So, what to do? You just keep doing what you are doing and be thankful that time is still moving, family is still here, hopefully everyone has enough food, and you thank God for another day. We have gone through struggles before and this one is no better. We will get thru it, one way or the other. I am grateful for what I have, who is in my life and that we get sunshine every few days.

Smile. That one little thing will bring joy to others. Here is my smile for you.

The dog just ate the phone… lol.

Concrete problems?

by Bob Waller, Water Circuit Rider

Over the past couple of years, we have had many systems ask about concrete repair. Not surprising—in our industry we have manholes, wet wells, lift stations, reservoirs, cisterns, not to mention an ongoing list of infrastructure, all made of—you guessed it—concrete.

During my time in public works I have had to repair corners of lift stations and wet wells that have started to degrade. Also, when our new bridge was put in, we feathered out air holes using a concrete slurry and a rubber float. We repaired cracks in sidewalks, driveways and the list go on.

You will find there are different challenges when dealing with concrete repairs such as softening. Sometimes when concrete is painted without a good primer, water can get in behind the paint and caused the concrete to just soften and fall away. All concrete structures will erode over time and knowing how to do simple repairs can prolong infrastructure life and save your system money.

Cracks are another issue we will have to deal with, some cracks are dynamic which means they are moving and need to be dealt with appropriately. Cracks in cisterns or reservoirs having pressure behind them may have to be professionally repaired. Making a series of perpendicular cuts and using concrete caulking designed for this type of repair can stop a crack from expanding.

Through my experience and in talking to contractors, the most important part of any repair is the preparation. We will start by cleaning the surface. Whether using a pressure washer, a wire wheel on an angle grinder, a hammer and concrete chisel, or just a wire brush; the surface must be prepped properly. All loose material removed and if we're using a pressure washer, give it plenty of time to dry. With cracks, just like doing crack sealing on asphalt, the crack

needs to be cleaned properly, this can be done with high pressure air or a pressure washer. Here is an idea: put a little Casoron in the crack to sterilize the ground.

Now it's time for the proper bonding agent. There are many types and many companies that make them. This is a good time to find your local masonry supplier. They will have the proper material for the job, and it's not a bad idea to take some pictures to show them the problem, that way you're both on the same page.

Once the bonding agent has time to set, it is time for the concrete patching compound or what is recommended by the supplier. I would use a flat trowel to get the material on and finish with a wood or sponge float. Some will use a small broom to create the texture they want.

However you decide to get the job done, OAWU is always here to help or at least get you in touch with someone who can.

Need to Review Water or Sewer Rates? OAWU Can Help!

Take advantage of your Association's services – We Do Rates!

OAWU has built a solid reputation for providing water and wastewater systems with factual, user-friendly, and defendable Rate Studies. Our rate studies, once implemented, have allowed many systems to obtain Capitol Improvement funding from various private and government lending agencies. An OAWU rate study can also provide a plan for systems to gain the capital to "pay as you go" by outlining a strategy to maximize and streamline revenue and thereby allow water/wastewater system administrators to forecast projects that may be funded in-house. OAWU will provide you a professionally compiled rate study and supporting documentation that will allow you and your council or board to adopt new rates necessary to meet your system needs.

For bids or estimates, call OAWU: 503-837-1212.

2020 TRAINING & EVENTS

Date	Class Title	Location	CEU Information	ESAC#, Fee/Free	
August 4	Developing your O&M Manual	Salem	0.4 Water/Wastewater/Onsite	4116	Fee
August 5	Hazardous Communication Standard (Global Harmonization)	Bend	0.3 Water/Wastewater	4193	Fee
August 5	Confined Space	Bend	0.3 Water/Wastewater/Onsite	3841	Fee
August 11-12	Wastewater Treatment/Collections Certification Review	Salem	1.4 Wastewater/0.7 Water/0.1 Onsite	3559	Fee
August 17	Effective Utility Management	Seaside	0.6 Water/Wastewater	4178	FREE
August 17-20	26th Annual Summer Classic Conference	Seaside	2.3 Water/Wastewater	4178	Fee
September 1	CPR/First Aid	Grants Pass		N/A	Fee
September 2	Defensive Driving	Grants Pass		N/A	Fee
September 10	Water & Wastewater Emergency Response Planning	Salem	0.4 Water/Wastewater	3915	Fee
September 23	Confined Space	Baker City	0.3 Water/Wastewater/Onsite	3841	Fee
September 23	Water & Wastewater Emergency Response Planning	Baker City	0.4 Water/Wastewater	3915	Fee
November 17	Distribution Basics	Salem	0.6 Water	4117	Fee
November 19	Job Site Safety	McMinnville	0.3 Water/Wastewater	3890	Fee
December 7	Effective Utility Management	Hood River	0.6 Water/Wastewater	TBA	FREE
December 7-10	Annual End of Year Operators Conference - 2020	Hood River	2.7 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

More Resources

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, please contact the office at 503-837-1212, office@oawu.net or visit www.oawu.net.

QUIZ CORNER

1. **What is the operating ratio of a water utility?**
   A. Total debt service divided by the total revenues of a water utility
   B. Total number of operators of a water utility divided by the average daily water use
   C. Total pounds of all chemicals used for treatment divided by average daily water use
   D. Total revenues divided by total operating expenses of a water utility

2. **According to (DEQ/AWWA construction Standards). When a sewer is installed parallel to a water line, it must be a minimum of _____ away (measured from the outside diameters).**
   A. A. 6 feet
   B. B. 48 inches
   C. C. 36 inches
   D. D. 10 feet

3. **A benefit of using potassium permanganate to oxidize both iron and manganese is:**
   A. It is a strong disinfectant
   B. Pink water indicates that more is needed
   C. Odor causing compounds can be enhanced
   D. No trihalomethanes are formed

4. **Chlorine is advantageous over chloramines in that chlorine:**
   A. Is a much stronger oxidant
   B. Has a long history of use
   C. Is simple to feed
   D. Has a persistent residual

5. **At what temperature does water freeze?**
   A. 32 C
   B. 39.2 C
   C. 0 C
   D. 39.2 F

6. **What is the only substance on earth found natural in all three forms (solid, liquid and gas).**
   A. Sulfur
   B. Oil
   C. Rubber
   D. Water

7. **What is the F/M ratio of the activated sludge process, using all zones except fermentation?**
   A. Influent CBOD5 is 250 mg/L
   B. Aeration MLSS is 4,500 mg/L
   C. Influent flow is 10.5 MGD
   D. Aeration MLSS is 74% Volatile

8. **Aeration tank volume is 5.95602 MG**
   A. 0.42
   B. 0.13
   C. 0.76
   D. 0.11

9. **8. A flow of 280gpm is pumped against a total head of 175 feet. If the efficiency of the pump is 65% and the efficiency of the motor is 90%, what is the horsepower?**
   A. 33 HP
   B. 27 HP
   C. 21 HP
   D. 18 HP

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

Public Education for Water & Wastewater

The Top Priority for Administrators, Management and Utility Workers

With our expanding populations in many areas of the country, combined with residents not understanding the harmful effects on wastewater of new products on the market today, it is becoming more apparent we need to teach them. Every day in the business of water and wastewater, professionals see how these products are harmful to our aging infrastructures.

In a world where most people do not know where water comes from, except they turn on the faucet and hopefully clean water comes out and you cannot set it on fire, it is our responsibility to educate them. Moreover, most residents do not know what happens to the stuff in the toilet or where it goes when they push the handle down. For these reasons, it is imperative that we educate people on where it goes and more importantly what not to flush.

There are many opportunities to work within your respective communities to educate the public. Any chance to educate the public will be beneficial to your overall operation.

When I am teaching classes on Fats, Oils and Grease (FOG) or Sanitary Wipes, I often tell municipal workers and management that it is their responsibility to educate the public. One of the best ways to educate is through plant tours. Tours should be held at the actual wastewater plant or water plant (not in a classroom). In order for your attendees to maximize their understanding of your operation, they need to touch, feel and smell what it is like to be in your business on a daily basis. These tours should be offered once per month to the community at large.

A more effective approach would be for treatment plants to offer field education through your local school districts to (grades 4 through 9). Kids are the best teachers for their parents and the teachers in your area should be in favor of any field trips they can find. Again, these educational day or half-day trips need to include both wastewater and water plant tours.

Teach them where their water comes from, why it is important to conserve water, and where water goes when it is flushed.

I recommend that you offer tours at least once per month. Offer them to schools, civic organizations, industrial users, hospitals, daycare facility owners—the list goes on.

On a hike a few years ago with a park ranger who told me the story of a person who attended his "Full Moon" hike of the canyon and how this person wrote their congressman to complain because the ranger refused to do more than one Full Moon hike per month. Ironically, the congressman wrote the ranger requesting an explanation. I guess the congressman forgot there is only one full moon per month. Lesson learned: I do *not* recommend you give full moon tours of your water and wastewater facilities.

Make sure you use every opportunity to work with local newspapers, television and radio stations to take advantage of free advertising. Public Service Announcements (PSAs) are usually free.

Putting up signs in every public restroom and on every bulletin board in your community is aneffective approach.

Bismarck, North Dakota even put up billboards on every highway coming into town to "Keep Grease out of the Drain." Very effective along with a vehicle wrap on one of their Chevy Suburbans.

Door hangers and other types of print advertising can be very effective for both Grease and Sanitary Wipe campaigns. An Idaho operator told me she uses Boy Scouts to deliver door hangers. It is very effective and only costs her a few ice cream cones or kids meals.

Clark County, Nevada and many other cities offer Grease Cans to their citizens to help them properly dispose of grease (see photo).

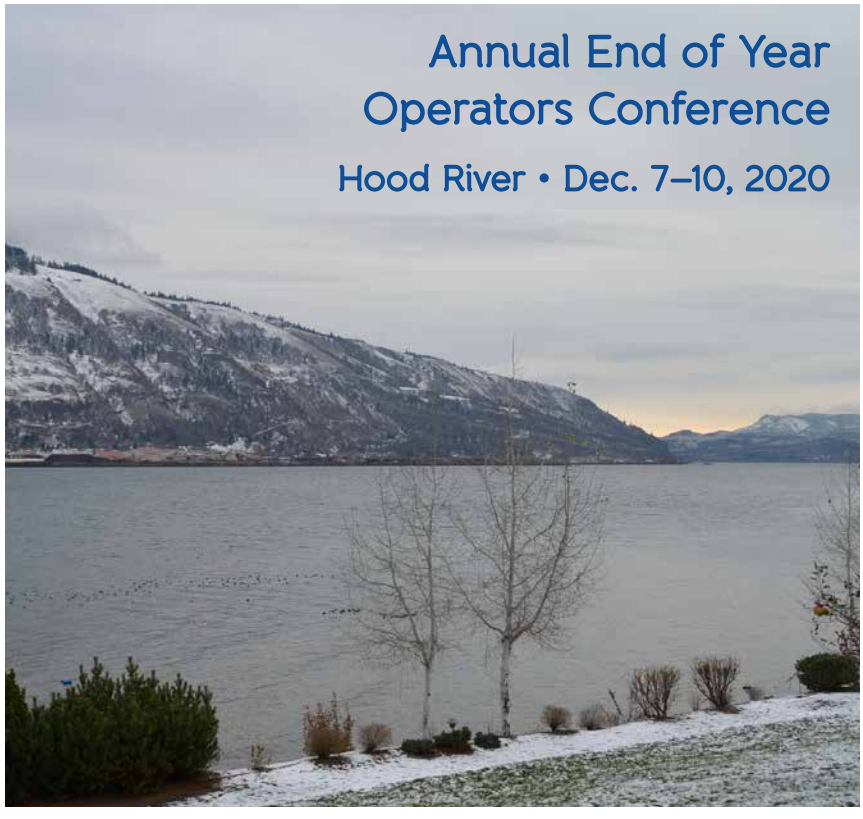
There are advertising companies that will provide you with public information door hangers and marketing materials to educate the public.

In the world of public education the options are limitless. Use your imagination! Bismarck has one of the best programs I have seen.

I caution that if you are going to use somebody else's program or graphics that you must get permission first.

Contact BioLynceus at 970-586-3391 or email rick@biolynceus.com with questions.

MARK YOUR CALENDAR



UPCOMING CONFERENCES

System O&M Manuals Required

Have you completed your state-required Operations & Maintenance Manual?

Oregon Association of Water Utilities has prepared a full day class to assist operators in outlining an operations and maintenance manual per the Oregon Administrative Rule 333-061-0065 which requires each water system to develop an operations and maintenance manual.

This class will assist the water and wastewater system operator in outlining the specific points in developing the draft of the O&M manual. Step by step, each attendee will create their draft as it relates to their utility system during class. The e-file may then be completed back at the system office.

Class cost is $160, or if you are unable to attend a class you may purchase a thumb drive with e-files for $160. To sign up for the class, or to have a thumb drive

Advances in Technology Make SCADA More

Large water and wastewater utilities have been using Supervisory Control and Data Acquisition (SCADA) systems for years. However, due to the cost and complexity of traditional systems, SCADA has been out of reach for many rural and small agencies.

The good news is that newer, proven technologies are making SCADA less costly, simpler, and more reliable.

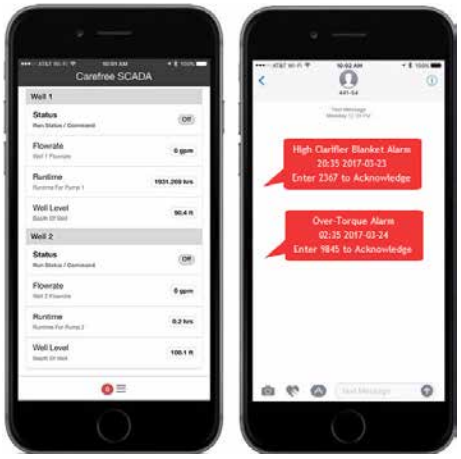
What Are the Benefits of SCADA?

The benefits of SCADA are better visibility into, and control of, critical water and wastewater operations. Graphical status screens show the state of pumps, reservoir and clarifier levels, and other important variables in real time. Operators are alerted to plant upsets within seconds of them occurring.

SCADA-logged historical records can be used in lieu of, or as validation for, manually collected data required by regulatory agencies.

Why Don't More Agencies Use SCADA?

As stated above, complexity, cost, and reliability of traditional SCADA, based on older technology, can put it out of reach for many rural and small-town agencies.



SCADA status screen and alarm messaging on mobile phones.

Technology to the Rescue!

Cloud-hosted SCADA

Cloud hosting locates the SCADA software at the hosting provider's secure, remote facilities, while still allowing agency personnel to use it from their central location, on laptops, and mobile phones. SCADA functionality is accessed by browsing to a secure website located on the hosting provider's servers.

Reduced Complexity

All a cloud-hosted SCADA computer needs is the ability to browse the internet. Computer maintenance is minimal at the plant-site, while software upgrades are installed by the hosting provider at their site. For this reason, cloud-hosted SCADA can be considered "obsolescence-proof."

Agency computer repairs, if needed, are usually just a matter of replacing the defective unit with an inexpensive PC that only needs to browse the internet.

Lower Cost

Cloud-hosted SCADA's initial installation costs are typically 40–50% of the cost of traditional systems.

Traditional systems require ongoing maintenance, upgrade and expansion hardware and software expenditures, plus the added cost of IT support to implement them.

Cloud-hosted SCADA systems have low monthly costs that cover the cost of upgrades, and maintenance. Troubleshooting can be performed remotely by the cloud—SCADA provider, costs for site travel and interruptions to agency operations.

Better Reliability

Cloud-hosted SCADA is located in secure data centers, and installed on high-availability server-class computers, with fail-safe redundancy. Data is backed up on a regular basis. All systems functionality is monitored around the clock by qualified and certified systems technicians.

Cellular Communications

Today, wide-spread coverage and low-cost data plans make cellular technology the appropriate choice for communications with remote and local water and waste-water sites.

Reduced Complexity

Cellular-based telemetry is much simpler than traditional technologies. A cellular modem installed near the remote RTU or PLC is typically all that's needed for communications. Tall antenna masts or leased lines are not needed.

Lower Cost

Installing a cellular RTU is less expensive than radio or leased line telemetry systems. Cell-based systems keep already low data costs even lower by sending data in small packets and only on request or by exception.

Better Reliability

Storms, wind, and line-of-sight obstacles no impact on availability. Cell towers have backup power systems that keep them online during power outages.

Cellular modems are also reliable, and repairs, if needed, are accomplished by a quick swap out of the modem itself.

City of Payette, Idaho

Fresh Water System—SCADA Upgrade

The City of Payette's water system had been controlled by a traditional SCADA system for 12 years. The equipment employed RTUs comprised of signal cards and radios. They communicated through radios back to a central SCADA computer. All control system operations were performed by the central computer.

Five years ago, the FCC mandated that all public and emergency radios transmit over narrow band frequencies. The City then converted all its radios to narrow band equipment. The new radios proved unreliable and communications between the central computer and the RTUs were

Affordable Than Ever *By Rick Patton, Advanced Control Systems*

Typical SCADA screen showing asset status, process values, history, and alarm information.

frequently lost. When this happened, the RTUs would not turn on pumps that replenished reservoir and tank water.

The central computer was unreliable and would freeze, so that alarms could not be sent to the on-call operator. Also, pumps would stay in their last states until the computer was rebooted, which needed to be done twice a day.

In 2015, the City upgraded their SCADA system to a cloud-hosted one that utilizes cellular telemetry. According to Water Superintendent Jacob Hust, "We went with Carefree SCADA, and have been very happy with it. It's extremely reliable, and has built-in failover functionality, so, if cellular communications go down, the system still operates safely. Communication interruptions are infrequent and short, and do not present much of a problem at all."

PC-based RTU with cellular modem and uninterruptible power supply.

"We also like the other benefits of cloud-hosted SCADA", added Hust. "We don't have to manage and perform updates or maintenance. That's all handled by our SCADA provider, Advanced Control Systems."

Although there is a SCADA computer at the water shop, the city's on-call technicians can also view and supervise water operations from laptops in the field or home computers, by securely logging into the system from a web browser.

ADVANCED CONTROL SYSTEMS

About Advanced Control Systems

ACS is celebrating its 25th year providing process automation and SCADA system integration solutions to Asotin County PUD, City of Payette, City of Nez Perce, and scores of other municipalities, agencies, and manufacturers. ACS is the developer of CarefreeSCADA™, a cloud-hosted SCADA application. For information on cloud-hosted SCADA, contact Rick Patton at rick@advancedcontrol.com, or go to advancedcontrol.com.

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:

ACS

Advanced Control Systems, LLC

24hr
Emergency Service
We Answer Your Call!

NATIONAL RURAL WATER ASSOCIATION
NRWA America's Largest Utility Membership

FORD FLEET PROGRAM

The National Rural Water Association and the Ford Motor Company have created a partnership to offer special fleet discounts to State Rural Water Associations and their utility system members. This partnership combines the buying power of 31,000 individual utilities to provide reduced fleet pricing on utility vehicles. The Ford Fleet Team is #1 in commercial fleet customer satisfaction according to surveys.

Vehicles may be purchased at your local dealer or through the national fleet auto group at www.nrwafleet.com. Incentive discount pricing is available on fuel-efficient cars, vans, SUVs, and trucks. To qualify, fleet vehicles must be registered to a member water or wastewater system, be operated in the U.S., and be in service for a minimum of 12 months or 20,000 miles. **Systems can save up to $5,800 off factory invoice per vehicle!**

The Rural Water Ford Fleet Program is a valuable member benefit for water and wastewater utilities. Contact OAWU to get your Fleet Identification Number and access the program.

WHY AREN'T *YOU* A *MEMBER* OF OAWU?

Serving Water & Wastewater Utilities Since 1977

- We provide **onsite technical assistance and training**, meaning that we will come to you and help with any problems you may be encountering with water or wastewater.
- We provide water and sewer **rates** and **lagoon profiling**. Call OAWU at 503-837-1212 for a bid or estimate. We can save you money!

These are just a few facts about OAWU. The next time you are in need, pick up the phone and call us before hiring outside help. We are here to help. ***It's our industry. It's what we do.***

To join or for more information, visit www.oawu.net or call 503-837-1212.

Oregon Association of Water Utilities
935 N. Main Street
Independence, Oregon 97351
Phone (503) 837-1212
Fax (503) 837-1213 www.oawu.net

YOUR ASSOCIATION • YOUR MEMBERSHIP
Since 1977
OAWU
Serving Oregon's Water & Wastewater Systems

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

2020 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	$500.00
❏ Individual Member	$100.00

Regular Member Dues Schedule

1 to 100	$75 + 38 cents per connection
101 to 500	$85 + 38 cents per connection
501 to 1,000	$90 + 38 cents per connection
1,000 and up	$100 + 38 cents per connection
Maximum dues is	$1,100.00

Mail payment to: **OAWU**
935 N. Main Street
Independence, OR 97351

If paying by credit card, please call the OAWU office at 503-837-1212 for processing and receipt.

MB20

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 $500.00 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 in your area about upcoming training courses
- 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 (Regular & Associate Members)
- Positive contacts with other organizations
- Camaraderie with water and wastewater professionals
- Operator Of Record services
- Job referrals, announcements and searches
- Well testing
- Plan review
- System performance evaluation and options
- Additional programs and services
- Disaster response assistance and planning

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

MEMBERS

62nd Court Mutual Water Company
Adair Village, City of
Adams, City of
Adrian, City of
Agate Water System
Albany Rifle & Pistol Club
Alpine Crest Improvement Dist.
Amigo Villa Water Service, Inc.
Amity, City of
Ananda Center at Laurelwood, Inc.
Arch Cape Water & Sanitary District
Arlington, City of
Arrah Wanna Water Company
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 Research Inc.
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
Bradley Lake Estates
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 Rilea
Canby, City of
Canby Utility
Cannon Beach, City of
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.
Clarks Branch Water Associatioin
Clatskanie, City of
Clayton Creek Water Association
Clean Water Services
Cline Falls MHP
Cloverdale Sanitary District
Cloverdale Water District
Coburg, City of
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 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
Deception Creek Mobile Park
Deer Creek Estates Water Association
Deerhorn Community Water Association
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
Diamond Summit Association
Dietz Airpark Water System
Donald, City of
Drain, City of
Drifter's MHP
Dry Creek Airpark HOA, Inc.
Dufur, City of
Dundee, City of
Eagle Point, City of
East Yamhill Rural Water Company
Eastmont Water Company
Eastshore 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
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
Fischer's Place Mobile Home Park
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
Green Oaks Mobile Ranch
Greenhoot Properties
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 Company
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
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
Johnson Park & Water Co.
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 Grove Water District
Lake of the Woods Resort, LLC.
Lake Oswego, City of
Lakeshore Terrace
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 Association, Inc
Lebanon, City of
Lexington, Town of
Lincoln City, City of
Little Beaver School, Inc.

MEMBERS

London Water Co-op
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
Malin, City of
Manzanita, City of
Mapleton Water District
Maupin, City of
McKay Acres Improvement District
McKenzie Palisades Water
McLain Village Water
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
Mosier, City 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
Odell Water Company
Olney-Walnuski 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 Utilities-Southview
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 Valley Water Company
Pleasant View Water Company
Polehn Heights Water Association
Ponderosa Pines Water Company
Port Orford, City of
Power City Water Co-op
Powers, City of
Prairie City, City of
Prineville, City of
Quincy Water Association
Rainier, City of
Redmond, City of
Redwood Water Service, Inc.
Reeder Ranch, Inc.
Reedsport, City of
Rhododenron Water Association
Richland, City of
Rickreall Community Water Association
Riddle, City of
Rimrock West Improvement District
River Meadows Improvement District
River Point Farms, LLC
Riverbend-Riverbank Water District
Rivergrove Water District
Riverside Water District
Riverview RV Park
Roats Water System, Inc.
Roberts Creek Water District
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
Salmon River Mobile Village
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
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
Sleepy Hallow Phase 1 Water
Sodaville, City of
South Fork Water Board
South Hills Water System, Inc.
South Umpqua Water Assn.
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 Assn.
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
Sunridge Estates
Sunrise Water Authority
Sunriver Environmental LLC/Sunriver Water LLC
Sunset Acres Water Company
Sunset Lake RV Park
Sunset Water Systems, Inc.
Sunshine Village Water Association
Sutherlin,City of
SW Lincoln County Water District
Sweet Home, City of
Talent, City of
Terrace Mobile Plaza
Terrebonne Domestic Water District
The Dalles, City of
The Rim at Aspen Lakes
Three Rivers School District
Tierra Del Mar Water Company
Tigard, City of
Tillamook Bay, Port of
Tillmook County Creamery Association
Tillamook, City of
Timber Water Association
Toledo, City of
Tollgate Water Company
Tone Water
Trappist Abbey
Tri City Water & Sanitary Authority
Troutdale, City of
Tualatin Valley Water District
Turner, City of
Twin Island Community Water
Twin Rocks Sanitary District
Tygh Valley Water District
Ukiah, City of
Umatilla, City of
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
Welches Water Company
Weldon Mobile Home Park
West Hills Water Company
West Linn, City of
West Slope Water District
West Yamhill Water Company
Western Heights Water Association
Westfir, City of
Weston, City of
Westport Water Association
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's WA Family Ranch
Young's River Lewis & Clark WD
Zig Zag Water Cooperative, Inc.

WELCOME, NEW MEMBERS!

Alden, Ryan
Blake, Mike
Christensen, Matthew M.
Crosby, Ty Caleb
DeArmond, Brandon C.

Glanz, Jared
Hoskinson-Wiebe, Bonnie
Howell, Ryan
Kemper, John

Kitchens, Louis
Lowe, Jeremy W.
Partney, Sheldon
Tecmire, Timothy G.
Woody, Jonathan

Nurnberg Scientific

Astoria, City of
Fir Grove HOA
Joseph, City of
Salmon Valley Water Co.

INDIVIDUAL MEMBERS

Abbott, Rick
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Allison, Danny
Anderson, Tim
Andre, Alistair
Anthony, Joe
Atkinson, Ansel
Barnes, Chase
Bathke, Vernon
Bell, Ron
Blake, Mike
Bock, Paul
Braden, Larry
Brenneman, Scott
Buckley, John
Burton, Howard
Buskirk, Jeff
Cable, Joe
Caldwell, Kevin
Campbell, Mike
Carlson, Rob
Ceballos, Oscar
Chamberlain, Brian
Chipman, Kenneth
Christensen, Matthew M.
Clark, Harvey
Clark, Jamie
Clark, Joshua
Clement, Tony
Close, Greg
Cohen, David
Cooper, Mark
Cowley, Sean
Cox, Hanna
Crosby, Ty Caleb
Daniel, Morgan
Davis, Guy P.
DeArmond, Brandon C.
Diemer, Bill
Dillard, Bob
Durfee, Kenneth
Eichler, Robert
Elder, Dave
Evans, Peter
Falk, Tim
Fery, Michael
Fitzwater, Jim
Franklin, Henry
Free, Derek
Gallino, Joseph
Gates, Andrew
Gentry, Mike
Gil, Riley
Glanz, Jared
Gordon, Matt
Gott, Craig
Graham, Doug
Halverson, Bruce
Hanks, Kevin
Hardy, Vance
Hart, Steven
Harvey, John
Hatcher, James
Hawkins, Michael
Heath, Corey C.
Heide, Tracy
Hinzman, Terry
Hoefler, Matthew J.
Hoskinson-Wiebe, Bonnie
Houglum, Daniel
Howard, Richard
Howe, Phebe
Howell, Ryan
Hubbard, Tom
Huerta, Osbaldo
Huff, Jered
Hughes, James
Hume, John
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James, William K.
Johnson, Grady
Johnson, Tim
Jones, Uriah
Judah, Dave
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Kirby, Derek
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Leeper, Clifford
Lockard, Darrel
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Lundblad, Christian
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Marshall, John
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McGinnis, Lee
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McMahan, Boaz
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Milera, Luis
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Monnin, Brian
Monroe, Donald Jr.
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Morris, Brady S
Murphy, Michael
Nanney, Eddie T.
Neal, David
Nelson, Ron
Newberg, Leo
Novac, Samuel
Odell, Mark
Onkka, David
Orchard, David
O'Connor, Monty
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Springer, Rondi
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Tew, Shawn
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Thompson, Matt
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Turner, Keith
Vanderkin, Rick
Vangrunsven, Tom
Van Houten, Boz
Vollmer, Jodi
Wabschall, Steve
Wahle, Lynn
Wainwright, Timothy
Warrick, Logan
Welch, Dennis
Whittenburg, Gregory
Williams, Benjamin
Wimberley, John
Winders, Kristal
Winterton, Robbie
Woodward, Steve
Woody, Jonathan

ASSOCIATE MEMBERS

Advanced Control Systems
AKTIVOV Asset Management
American AVK Company
American Flow Control
Anderson Perry & Associates
Aqualitec Corp.
Backflow Management, Inc. (BMI)
Badger Meter, Inc
Bainbridge Associates, Inc
Bancorp Insurance
BioLynceus, LLC
Branom Instrument Co.
Business Oregon Development Dept.
Calhoun & DeJong, Inc.
Cascade Columbia Distribution Co.
CIMCO Sales and Marketing
Clow Valve Company
CoBank
Columbia Food Laboratories
Consolidated Supply Co.
Continental Utility Solutions, Inc.
Convergint Technologies, LLC
CORE & MAIN
Correct Equipment, Inc.
CUES
Dan's Leak Detection, LLC.
DFW Plastics Inc.
Ditch Witch West
DN Tanks
Edge Analytical Laboratories
EJ
Empower Retirement
Enviro-Clean Environment, Inc.
Ferguson Enterprises
FloHawks
Frank J. Martin Company
Frost Engineering Service Company NW
Furrow Pump, Inc.
G.T. Gordon & Associates, Inc.
GC Systems, Inc.
General Pacific, Inc.
Harmsco Filtration Products
Harrang Long Gary Rudnick PC
HASA Inc.
HD Fowler Company, Inc.
Heard Farms, Inc.
Honeywell Smart Energy
Hose Solutions
Hurley Engineering Company
HYMAX by Krausz
Instrument Technology Corporation
Jacobs
Kamstrup Water Metering
King Sales NW
Lakeside Industries/EZ Street
League of Oregon Cities
Lehr
Madewll Products Crop.
Master Meter, Inc.
Mountain States Pipe & Supply Co.
Mueller Company
Neptune Technology Group
NLine Energy
Nurnberg Scientific
Olson Engineering
One.7, Inc.
Optimal Control Systems
Oregon Meter Repair
Oregon Public Utility Commission
Orenco Composites
Owen Equipment Company
Owens Pump & Equipment
PACE Engineers, Inc.
Pacific NW Sales
PCE Pacific, Inc.
Pittsburg Tank & Tower Co.
Process Engineered Water Equipment, LLC
PumpTech Inc
Puttman Infrastructure, Inc.
RDO Equipment
Romac Industries, Inc.
Schneider Water Services
Schroeder Law Offices, PC
Sensus USA
SHN Consulting Engineers & Geologists
Special Districts Assn of Oregon
SUEZ Water Advanced Solutions
Superior Tank Co., Inc.
Taurus Power and Controls, Inc.
Taylor Made Pump Stations
Tesco Controls, Inc.
The Automation Group
The Ford Meter Box Co., Inc.
TMG Services
Tripac
Trumbull Industries
UGSI Solutions
Umpqua Research Co.
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US SAWS
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Waterlab Corp
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