Irrigation Leader

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JULY/AUGUST 2023

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Susan Goodfellow of Central Plains Water: Reducing Groundwater Pumping to Improve Stream Flows

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Irrigation Leader

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Elizabeth Soal
New Zealand Contributing Editor
+64 21 454 615 cell
elizabeth.soal@irrigationleadermagazine.com

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STAFF:
Kris Polly, *Editor-in-Chief*
Joshua Dill, *Managing Editor*
Elizabeth Soal, *Contributing Editor*
William Polly, *Editorial Assistant*
Amanda Schultz, *Editorial Assistant*
Elaine Robbins, *Copyeditor*
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Lane Simpson, *Media Assistant*
The Polly Agency, *Production Assistance and Social Media*

SUBMISSIONS:
Irrigation Leader welcomes manuscript, photography, and art submissions. However, the right to edit or deny publishing submissions is reserved. Submissions are returned only upon request. For more information, please contact Nicholas Swenson at (402) 309-4151 or nicholas.swenson@waterstrategies.com or Tom Wacker at tom.wacker@waterstrategies.com.

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COVER PHOTO:
Susan Goodfellow, CEO, Central Plains Water Limited.
Photo courtesy of Central Plains Water Limited.

PHOTO COURTESY OF CENTRAL PLAINS WATER LIMITED.

The Largest Irrigation Scheme on the South Island

By Kris Polly

In this month's cover story, we speak with CEO Susan Goodfellow of Central Plains Water Limited, which runs the largest irrigation scheme on the South Island: the 45,000-hectare (111,197-acre) Central Plains Water Enhancement Scheme. We learn about how the scheme is reducing groundwater pumping, resulting in aquifer and streamflow recovery, and working to uphold rigorous environmental rules.

As a native of western Nebraska, I can attest that it is no place to grow pineapples in the winter. Yet farmers are doing just that with simple geothermal greenhouses manufactured by Greenhouse in the Snow. We speak with Allen Bright about the ingenious technology, designed by founder Russ Finch, and what can be grown with it. We also speak with Leigh Dodd, the executive vice president of the Greenhouse Company of South Carolina, about the company's line of Jäderloon greenhouses, which are suited for customers ranging from commercial operations to hobbyists.

Next, we speak with Mike Britton of Oregon's North Unit Irrigation District about its new pump station, fish screens, and other infrastructure upgrades.

We also talk with Josh Mosier, the North American general manager of Komet Irrigation, a global irrigation company known for its high-efficiency sprinklers and other products.

Then, we speak with Ward Neesen, the chief technology officer at Watertronics, about the new WaterVision 2.0 cloud telemetry system, which can automatically and remotely control pump and irrigation systems, help prepare reports, and adjust flow levels to optimize the output of irrigation devices.

Next, we talk to Alejandro Caballero, the director of engineering at Spanish engineering and consulting firm BIOAZUL, about the company's work around the world to purify and reuse wastewater, especially for agricultural irrigation.

We also speak with President Mark Turpin and Business Development Manager Steve Macomber of Duperon about the company's rakes and screens, which can help irrigation managers handle debris, storm surges, and waste in their systems.

In one sense, the business of irrigated agriculture is simple: putting water on plants. But as we all know, doing this efficiently, productively, and effectively takes hard work, ingenuity, and creativity. From geothermal greenhouses to telemetry systems to recycled wastewater, this month's interviewees exemplify these qualities. IL

Kris Polly is the editor-in-chief of Irrigation Leader *magazine and the president of Water Strategies LLC, a government relations firm he began in February 2009 for the purpose of representing and guiding water, power, and agricultural entities in their dealings with Congress, the Bureau of Reclamation, and other federal government agencies.*

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Susan Goodfellow of Central Plains Water: Reducing Groundwater Pumping to Improve Stream Flows

Central Plains' headrace canal.

Water monitoring at Central Plains Water.

The Central Plains Water Enhancement Scheme, the largest irrigation scheme on the South Island of New Zealand, irrigates about 45,000 hectares (111,197 acres) in central Canterbury. The scheme, which is owned and operated by Central Plains Water Limited (CPWL), provides a reliable alpine river–sourced water supply to farmers and has permanently reduced groundwater pumping. The resulting aquifer recharge is now leading to improved flows in lowland streams and the Selwyn River. In this interview, CEO Susan Goodfellow talks with Irrigation Leader *about the scheme's rigorous environmental monitoring and the farm environment plans designed to minimize nutrient discharge and other issues.*

Irrigation Leader: Please describe your background and how you came to be in your current position.

Susan Goodfellow: My early career was in resource management and master planning. I worked for 10 years in Asia, mainly in Hong Kong and China, on large-scale urban development and infrastructure projects, taking them from master planning through to construction. I first came to Central Plains Water in 2011 as the general manager for environment. That was in the scheme's early years: We were going through the consent appeals, after which we set out to secure funding, develop the design, and construct the scheme.

During the construction of the final stage of the scheme, discussions about how farmers could move from dryland to irrigated farming without converting to dairy and in a financially feasible manner highlighted the challenge some farmers were facing. I decided that addressing that was my next calling. I cofounded Leftfield Innovation Limited with five other professionals with experience across the value chain of the market, logistics, food-product development, technology, and agronomy. We looked at market opportunities for high-value products that could be produced on the land and processed locally for consumers who cared about provenance. The work started in the Central Plains but quickly expanded across the country. Five years on, this work continues to go from strength to strength. Twelve months ago, the CPWL board started its search for a leader with a future-focused vision to lead the company following the retirement of the CEO. I was fortunate to be appointed CEO in October 2022.

Irrigation Leader: Tell us about the Central Plains Water Enhancement Scheme.

Susan Goodfellow: The Central Plains Water Enhancement Scheme, owned and operated by CPWL, is the largest irrigation scheme on the South Island. We irrigate 45,000 hectares (111,197 acres) in central Canterbury and are consented to irrigate 60,000 hectares (148,263 acres). The scheme has 400 shareholders and supplies 263 farms. Mixed-use farm systems dominate, featuring dairy systems; dairy, beef, and sheep grazing; arable farming; and horticulture in varying proportions. Dairy farming makes up about 40 percent of our scheme area. Dairying is a challenge in Canterbury due to the region's light soils, which have the potential to leach nitrates into groundwater. In the 20 years prior to the launch of CPWL, there had been a significant

PHOTOS COURTESY OF CPWL.

expansion of groundwater-irrigated dairy farming. Dairy farming has continued to expand because of the scheme, but less than had been predicted.

The scheme is a run-of-river scheme that takes water primarily from the Rakaia River. The river water is delivered by a level, 17-kilometer (10.6-mile) open-headrace canal into a 400-kilometer (248-mile) underground pipe network. The water is delivered under pressure to the farm gate. We also take water from the Waimakariri River to supply the Sheffield area, which is 4,300 hectares (10,626 acres) and includes a 2-million-cubic-meter (1,621-acre-foot) storage pond.

All of CPWL's shareholders have Farm Environment Plans (FEPs), which are required by our consents. The plans set out the farms' risk areas, irrigation management, stock management, crop management, nutrient application, water use efficiency, and effluent management. Good management of these aspects is critical to ensure that individual farmers, and the scheme as a collective, minimize the discharge of nutrients to groundwater and other effects on the environment.

The company has a team of 21 staff who are committed to the vision of *sustainable water growing our world* and to supporting and delivering value to our shareholders. We have a range of diverse skills and capabilities, including operations, engineering, maintenance, legal matters, environmental compliance, water monitoring, finance, and communications.

Irrigation Leader: Please discuss your efforts for climate resilience in irrigation practices.

Susan Goodfellow: The scheme itself is an example of climate-resilience infrastructure, as it provides a supply of reliable run-of-river water; this is why the farmers have joined. When the Canterbury Plains are experiencing the drying northwest winds, the alpine hinterland is experiencing heavy rain. It is this rain that increases the flows in the alpine rivers that supply the scheme. If predictions that the Canterbury Plains will experience more frequent and intense periods of dry weather are borne out, alpine rainfall will enable the scheme to provide long-term climate resilience to the food and fiber producers across the scheme.

The scheme monitors the water that is taken from the river and the water that is delivered to each farmer's turnout at their farm boundary. The scheme is required to demonstrate water take compliance to ensure that the ecological health of the rivers is being maintained and protected. At the farm level, farmers manage their water use efficiency as part of their FEP compliance. They use soil moisture monitoring technology and predictive weather data to inform them of when and how much they need to irrigate. This approach results in a just-in-time application of water—the application of the amount of water the crop needs at its current stage in the growth cycle—that minimizes overwatering. The FEP auditors look for evidence of the use of these data.

To support ongoing learning, the scheme runs and hosts training sessions and workshops across a range of farm practices and technology applications to ensure that farmers have the opportunity to continue to improve their irrigation practices and water use efficiency.

Irrigation Leader: How has the collective approach helped farmers improve performance and meet challenging regulatory requirements?

Susan Goodfellow: There are a lot of resource management regulations that guide what farmers can and cannot do on their land. For some, it is overwhelming to keep up with this work, as new regulations are rolled out frequently. Our job as a scheme is to keep up with the regulatory changes; understand what they mean from the irrigation, farming, and implementation perspectives; and help the farmers understand the rules. Farmers like that CPWL manages the interface between them and the regulator. We follow the regulatory processes and make submissions where required on any proposed regulations. Most importantly, we compile all the farm-based data that are captured in their FEPs and report the performance of the scheme at an aggregated level annually. Tracking improvements year on year provides shareholders, the regulator, and the community a transparent view of how the scheme is performing.

In the 2021–2022 season, 98 percent of our audited FEPs achieved A and B grades. We've reduced nitrate leaching by 25 percent in the catchment. We've saved 50 million cubic meters (40,536 acre-feet) of groundwater that used to be pumped by farmers. Being able to report that progress in aggregate provides a powerful story for our stakeholders and the community.

Since starting our operations, we've invested NZ$1.4 million (US$869,680) into environmental enhancements. We have planted 70,000 plants. We have invested in research initiatives to reduce on-farm nitrate leaching and supported wetland enhancement projects. This work is funded by an annual levy included in the scheme's water use charge. We also have an extensive ground and surface water monitoring program that has been running for 10 years. We take water quality samples from 20 groundwater bores and 29 surface water sites. Having the ability to look at effects on a catchment-wide basis is valuable to help us determine what we can do to continue to improve performance.

Irrigation Leader: Please tell us about any current or upcoming projects at CPWL.

Susan Goodfellow: The scheme's infrastructure can support uses other than irrigation, including providing environmental benefits. An example of this is the near-river recharge project, which was a collaboration between CPWL and Canterbury's regional council, Environment Canterbury. During construction, Environment Canterbury

Near-river recharge infrastructure.

A Central Plains Water turnout.

took the opportunity to construct an offtake on a CPWL pipeline that crosses the Selwyn River. This offtake enables it to discharge up to 3.5 cubic meters per second (124 cubic feet per second) of river water into the gravels of the Selwyn River in dry years. Water percolates down into the near-surface aquifers and increases the lowland stream flows to average levels for a dry year. This is the largest targeted stream-augmentation initiative in the world that has been built solely for environmental purposes.

We're also currently developing a feasibility study for a 4-hectare (10-acre) pilot solar energy project to offset the cost of pumping. Subject to the success of this project, we may expand solar generation across the scheme area by looking at floating solar arrays on the surface of the headrace canal or the Sheffield Pond.

Irrigation Leader: Do you have water storage capacity?

Susan Goodfellow: Rakaia River water is approximately 65 percent reliable, which is not viable for any scheme. We do not have on-plains storage within our scheme area, except for the storage pond that supplies the Sheffield area. What we do have is Lake Coleridge, a lake upstream from our intake. We have an agreement with Manawa Energy Limited that allows it to take our water from the Rakaia River during high-flow periods and store it in the lake. When the river is on restriction, Manawa Energy releases the stored water into the river, and we take it downstream. The operation of stored water has strict monitoring and reporting requirements to ensure the health of the river is maintained.

Irrigation Leader: What is your vision for the future?

Susan Goodfellow: We recently created a 100-year plan focusing on the principles that will enable us to deliver our vision of *sustainable water growing our world*. This vision enables us to unlock our potential to think beyond today to deliver innovative and intergenerational solutions that transform our world.

The scheme footprint includes about 25 percent of the agricultural land within the Selwyn Waihora catchment. All stakeholders in the catchment are concerned about maintaining healthy river and stream flows and improving water quality. We have infrastructure that delivers climate resilience to produce food and fiber that has generated an economic contribution of NZ$340 million (US$217 million) to Canterbury's GDP and created over 2,000 jobs in the region. We are now challenging ourselves to think about how we can leverage this infrastructure to create additional opportunities and benefits for climate resilience for the community. That could include initiatives such as the supply of drinking water to local communities and potentially to Christchurch City.

Our strategic priorities include a foothills-to-the-sea approach in which CPWL collaborates with other stakeholders and landowners in the catchment. We are actively looking at how our infrastructure, our position in the catchment, and the tools we have can be leveraged to further improve environmental, social, cultural, and economic outcomes over the long term. IL

Susan Goodfellow is the CEO of Central Plains Water Limited. She can be contacted at sgoodfellow@cpwl.co.nz.

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ASSETGUARD

A Winter Harvest: Allen Bright of Greenhouse in the Snow

Russ Finch's original greenhouse.

Want to grow citrus, vegetables, and flowers in the wintertime? With Greenhouse in the Snow's geothermal greenhouse kits, you can tap reliable warmth year-round and grow everything from oranges and lemons to tomatoes and spinach. We speak with Greenhouse in the Snow's owner, Allen Bright about the origin of the design, what makes it work, and the possibilities it brings.

Irrigation Leader: Please tell us about your background and how you came to be involved with Greenhouse in the Snow.

Allen Bright: I grew up in western Nebraska and worked in agriculture for many years. Now, I run a commercial machine shop as well as Greenhouse in the Snow. Russ Finch, the designer of the greenhouses, approached my machine shop 13 years ago about making parts for his greenhouse. We started building them, and the business has morphed into what it is today.

Irrigation Leader: Would you tell us more about Mr. Finch?

Allen Bright: Russ Finch is the creator of the Greenhouse in the Snow. He was born in 1932 and lives at home with his wife, Darlene. About 35 years ago, Russ wanted to build a greenhouse. He came up with the idea that he could build it into the ground and bring in air through tubes to warm the greenhouse. The idea was to gain heat and run it into the greenhouse to keep the plants inside from freezing at night during western Nebraska winters. He studied the idea for quite a while and eventually came up with a plan and built his first greenhouse. Over a period of 35 years, Russ designed and perfected his beloved greenhouse using low-grade geothermal to produce citrus, fruits, vegetables, and many flowers all year round. He ran that greenhouse for about 22 years and replaced it in 2010.

In April 2010, Russ approached me at Antioch Machine, LLC, in Alliance, Nebraska, about manufacturing parts for his greenhouses. I happily agreed, and the first order was placed on April 30, 2010. The response from people was amazing, and the greenhouses started getting more and more attention. I was brought in on the deal and have been aiding Russ in manufacturing, selling, and delivering greenhouses ever since.

Since 2013, we have sold over 600 greenhouses. We have done all our sales through our website and by word of mouth. As Russ has aged, I have taken over the business. Today, we show the greenhouse at my house to people several times a week. The Greenhouse in the Snow business is blooming and flourishing.

Irrigation Leader: How cold does it get in western Nebraska, where you first built the greenhouses?

PHOTOS COURTESY OF GREENHOUSE IN THE SNOW.

Allen Bright: Our temperature in the winter usually reaches lows of negative 30° Fahrenheit at night, and we get an average of 38 inches of snowfall per winter. The coldest I've seen is 45° below zero. That is the actual temperature, not the wind-chill factor.

Irrigation Leader: Would you tell us about the geothermal technology the greenhouses use?

Allen Bright: We run corrugated plastic drain tubes through the soil at a depth of 8–10 feet. The number of tubes we use depends on the size of the greenhouse. They run out in a big loop. We push cold air out of the greenhouse through those tubes. The air gets warmed in the tubes to about 50 degrees, and we bring it back into the greenhouse. The greenhouses are built into the ground and are built with insulation in the right places to keep them from freezing. Even when it's 10° outside, the temperature in the greenhouse at the growing level can be 90°. We routinely raise citrus, such as lemons and oranges. We get a lot of customers who are growing bananas, and we have pineapples in our greenhouse right now.

Irrigation Leader: What kind of fan do you use to push the air? What kind of energy costs does that incur?

Allen Bright: We use a squirrel cage blower—a fairly common furnace-type blower. Depending on the local energy costs and the weather, the winter energy costs are in the range of $20–$50 a month for a 100-foot-long greenhouse.

Irrigation Leader: How do you irrigate the plants in your greenhouses?

Allen Bright: For many years, we watered the 96-foot-long greenhouse by hand with a spray nozzle, taking about 20 minutes a day in the summer and about the same amount of time once or twice a week in the winter. We have more recently switched to an automatic computer-controlled system that gives us better coverage in our watering, uses water more efficiently, and results in better plant production. We began experimenting with a combination of sprays, drips, and soakers, but for most plants, we have settled on the drips and soakers to reduce evaporation. The biggest benefit we have seen is not the time savings but being able to effectively water in a consistent manner.

Irrigation Leader: When somebody purchases a greenhouse kit, do they get the materials delivered to them to assemble themselves?

Allen Bright: Yes. We supply complete directions and unlimited phone, e-mail, and text support. If somebody is building a greenhouse and they have a question, they can call me, and I will walk them through it. If they need further help, we can put them in contact with a couple of people we work with who do construction, and they can work directly with them.

Irrigation Leader: Given that your greenhouses are designed to sit below grade, is an excavator required to build them?

Allen Bright: Yes; an excavator is required to excavate the footprint of the greenhouse itself as well as the trench that the tubes go in. A pretty good-sized excavator is required, and it involves a couple of days of work.

Irrigation Leader: How much do your greenhouses cost?

Allen Bright: Taking as an example the 102-foot greenhouse, which is our most popular size, the overall cost would be in the range of $17–$20 or so per square foot, including construction costs. To be fair, that can vary greatly based on how much of it you do yourself. Some people want something that is simple and utilitarian and gets the job done. Others are

Asparagus (fronds on the right), cucumbers (far left), a fig tree (rear), a hibiscus tree (left foreground), and two Meyer lemon trees (right foreground) inside a Greenhouse in the Snow greenhouse.

Coffee plants (low plants near right wall), geraniums, several varieties of lime trees, and an orange tree (foreground) inside a Greenhouse in the Snow greenhouse.

Greenhouse in the Snow's European licensee's show greenhouse.

Tomatoes (left), cucumbers (right), and squash (toward the back) grow in a Greenhouse in the Snow greenhouse.

a lot more interested in aesthetics and will spend more money on things like landscape-block retaining walls and interior lighting (lights for visibility and/or grow lights).

Irrigation Leader: What results have some of your customers seen?

Allen Bright: One of the things we are known for is that our customers can grow citrus: grapefruit, kumquats, lemons, limes, and oranges. The thing that gets everybody's attention is growing lemons in western Nebraska in the wintertime. There are lots of pictures and articles out there of Russ holding an armload of lemons off the trees. We do tours during the winter so that people can see the greenhouses when it is 10° outside and 80° or 90° inside the greenhouse. They step in from the cold and see the citrus starting to bloom and smell the lemon blossoms. But you can grow much more than citrus. We have pineapples and figs in our greenhouse. We also grow carrots, garlic, onions, peppers, potatoes, radishes, squash, and tomatoes, as well as perennial crops, such as artichokes and asparagus. Russ always says that the list of what you can't grow is shorter than the list of what you can grow.

Irrigation Leader: Do you know whether any of your customers have commercial operations providing fresh fruits in the winter?

Allen Bright: Some customers provide produce to restaurants or sell at farmers' markets. Some grow head lettuce; some grow other kinds of things. One guy I know grows spinach in flats. He sells it at farmers' markets and says he can sell as many of the flats as he can grow.

Irrigation Leader: You mentioned that you have sold about 600 of these greenhouse kits. Do you know where most of them ended up?

Allen Bright: We have licensed the greenhouse to a distributor in Canada and one in France, so we have sold a few to customers in Canada, the Czech Republic, England, and France. In the United States, our sales are heavily concentrated in Colorado, Idaho, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. We have also sold quite a few in Kentucky, Minnesota, Tennessee, and Wisconsin. And we sell a fair number in Mid-Atlantic and Northeastern states, such as Georgia, Maine, Maryland, Massachusetts, New Hampshire, New York, North Carolina, Pennsylvania, Vermont, Virginia, and West Virginia. The people who buy our greenhouses come from about every background you can imagine, and every political perspective you can imagine, from one extreme to the other. IL

Allen Bright is the owner of Greenhouse in the Snow. He can be contacted at greenhouse.ganda@gmail.com or (308) 760-9718. For more on Greenhouse in the Snow, visit www.greenhouseinthesnow.com.

PHOTOS COURTESY OF GREENHOUSE IN THE SNOW.

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The Greenhouse Company: Greenhouses and Irrigation Systems for Every Customer

The Jāderloon Classic Greenhouse.

The Greenhouse Company of South Carolina manufactures a wide range of Jāderloon-branded greenhouses for commercial, institutional, and individual customers. With models and irrigation systems for every crop and horticultural practice, the Greenhouse Company has something to offer everyone. In this interview, Executive Vice President Leigh Dodd tells us more.

Irrigation Leader: Please tell us about the Greenhouse Company's history and current business.

Leigh Dodd: The Greenhouse Company is the exclusive manufacturer of Jāderloon greenhouses. It was founded over 45 years ago and today is one of the largest manufacturers of greenhouses in North America. The Greenhouse Company guarantees 100 percent satisfaction and is the first manufacturer to offer a 2-year warranty. The Greenhouse Company is a certified woman-owned small business that takes pride in going the extra mile for every project manufactured and installed. The Greenhouse Company is insured and bondable.

Irrigation Leader: How big is your business? Where are you active?

Leigh Dodd: The Greenhouse Company has projects all over the United States and some in Canada and Mexico.

Irrigation Leader: Who are your customers? Do they include both commercial businesses and independent growers?

Leigh Dodd: Our customer base includes commercial growers, garden centers, universities, school districts, farmers, homeowners, zoos, and botanical gardens.

Irrigation Leader: Who are some of your larger commercial customers?

Leigh Dodd: Some of our larger projects have been for the Growers Exchange and Red's Home and Garden Center; we have also manufactured greenhouses for some large amusement parks and a premier golf course in the Southeast.

PHOTOS COURTESY OF THE GREENHOUSE COMPANY.

Irrigation Leader: What sort of design services do you provide to customers? Explain the process that a new client goes through to construct a greenhouse through your services.

Leigh Dodd: An account manager guides customers through every step of the process from design to delivery. Jāderloon greenhouses can be certified to meet any snow and wind load in every state in the country. Our quality control personnel act as representatives on the plant floor and ensure that each component is built to specifications. We offer approved and highly trained installation crews.

Irrigation Leader: Explain the benefits of the different greenhouses that you build for customers of differing horticulture practices.

Leigh Dodd: The Appalachian offers a premium retail environment with maximum flexibility, from totally enclosed to the feel of an open-air market. The attractive A-frame roofline and variety of cover and equipment options make it the preferred greenhouse structure for retail and institutional applications. Its high sidewalls and great roof strength allow for hanging baskets while maintaining visibility throughout. The ability to join multiple bays of any width and length together makes it appropriate for almost any situation.

The Blue Ridge greenhouse by Jāderloon offers the same premium look as the Appalachian greenhouse and includes gutters, providing the ability to add multiple bays in a smaller size and at a lower price. The Blue Ridge greenhouse combines Jāderloon's quality with the Appalachian greenhouse's strength, features, and functions.

The Classic's arched roofline, economical design, multiple bay widths, integrated gutters, and strong exterior bracing make it the best investment for growers.

The Instructor greenhouse is low maintenance and has superior strength, making it the perfect option for institutions. It is durable and easy to operate and is meant to last decades.

The Freestanding greenhouse is engineered for strength, dependability, and economy. It can be used as a cold frame, a heated growing greenhouse, a propagation greenhouse, a hardening-off greenhouse, or a high tunnel. It is suitable for anyone from novices to seasoned growers and is low maintenance and easy to operate. It is flexible in size and location.

Other models include seasonal high tunnels, which are used for farming seasonal crops; the MicroFarm, which is a scaled-down version of a commercial greenhouse with an incredibly strong frame polycarbonate cover; and the Hobby House, an affordable, fully functional, scaled-down greenhouse for homeowners.

Our company invented and pioneered the use of cross connectors to nearly double the strength and rigidity of frames. Our frames have been built and tested in Hurricane Alley for 45 years with a 99.9 percent survival rate. We have the lowest total cost of ownership with reduced maintenance, longer life, and the best warranty in the industry. Also, we invented Poly-Patch—the original polyethylene repair tape, and still the best!

Irrigation Leader: What forms of irrigation do you generally use? Do you sell and design irrigation equipment as well?

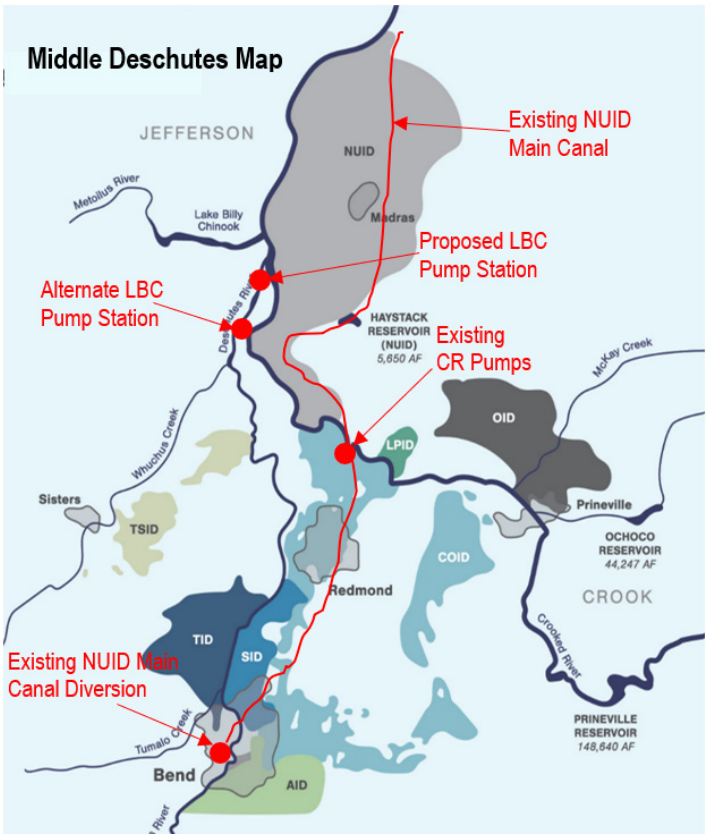
Leigh Dodd: The Greenhouse Company offers irrigation for all your growing needs. Irrigation kits are designed for any size production or retail setting, including hanging-basket, overhead mist, and drip irrigation kits, as well as multiple-outlet drip systems for benchtop applications. The Greenhouse Company designed a Hose Trolley system that allows hoses to be suspended and stored above plants, keeping the hose off the ground. We also offer a complete aquaponics system, which is a circulatory irrigation and fertigation system. IL

Inside a Jāderloon greenhouse.

A Jāderloon-built greenhouse at a Red's Home and Garden Center location.

Leigh Dodd is the executive vice president of the Greenhouse Company of South Carolina. The Greenhouse Company can be contacted at info@thegreenhousecompany or (800) 258-7171. For more about the Greenhouse Company, visit www.thegreenhousecompany.net.

Mike Britton of North Unit Irrigation District on the Crooked River Water Quality and Supply Reliability Project



A diagram of the existing NUID canal and pump station and the proposed Lake Billy Chinook Project.

North Unit Irrigation District (NUID) in central Oregon has seen dramatically reduced water deliveries due to drought conditions in recent years and a habitat conservation plan (HCP) that reserves in-stream flow for endangered species. As the district seeks a solution, it is pursuing a plan that will involve installing a pumping station in Lake Billy Chinook to provide a more reliable water source for farmers. In this interview, NUID Executive Manager Mike Britton talks with Irrigation Leader *about the complexities of a project that could keep the district's growers from becoming an endangered species.*

Irrigation Leader: Please tell us about your background and how you came to be in your current position.

Mike Britton: I served as NUID's general manager from July 1, 2008, until November 2021. I initially planned to retire but stayed on with NUID in an advisory role as executive manager. I have been here 15 years as of July 1. Prior to that, I managed two irrigation districts in northern California.

Irrigation Leader: Please introduce NUID.

Mike Britton: NUID is a Bureau of Reclamation district (part of the Deschutes Project) that operates under a repayment contract with Reclamation. The district encompasses about 130,000 acres at the north end of the Deschutes basin and delivers irrigation water to nearly 59,000 acres through 300 miles of conveyance system. Our main water supply is stored water from Wickiup Reservoir. Releases from Wickiup are conveyed to our main canal diversion in Bend, Oregon, via the Deschutes River. We also get some storage and live flow supply from Prineville Reservoir and the Crooked River via our Crooked River Pumping Plant, located about 30 miles southeast of Madras.

The Deschutes Project has two reservoirs, Wickiup and Haystack. Wickiup, a 200,000-acre-foot reservoir, is our main source of supply. The project was built under an act of Congress starting in the late 1930s. We are the junior water right holder for Deschutes River water. We're the last to get water and the first to see reductions when there's not enough water to go around. Haystack Reservoir is a regulating reservoir with a capacity of about 6,000 acre-feet. Haystack was built in the mid-1950s to provide a consistent and reliable source of water to the farmers we serve below Haystack. It's a nice little reservoir with many benefits. Both reservoirs are transferred works from Reclamation to NUID, which means that NUID is responsible for the operations and maintenance of the dams, reservoirs, and water conveyance facilities.

We're the second-largest irrigation district in the state of Oregon and the largest in the Deschutes basin. We have 28 employees, of which 20 are operations-type staff. The rest are office administration and management. NUID is governed by a 5-member board of directors.

Irrigation Leader: What other infrastructure does NUID own and operate?

Mike Britton: We have 65 miles of main canal and 235 miles of smaller canals and laterals. Our water travels about 60 river-miles from Wickiup Reservoir to our main canal diversion point in Bend, and that same water can travel another 60 miles to its end location. Some of our water can travel 120 miles or more before reaching its final on-farm destination. And as I mentioned, we operate and maintain two reservoirs, Wickiup and Haystack.

The geology here is volcanic, and there are a lot of fractured basalt formations, so we lose a lot of water through seepage. We lined the 12 miles of the main canal downstream of Bend. That saved about 30,000-acre-feet of

IMAGE COURTESY OF NUID.

water annually. We have also piped about 40 miles of our laterals and ditches. We've been busy doing that for as long as I've been here. Aside from saving water and increasing efficiency, piping those laterals and ditches allows us to provide pressurized water to our patrons.

Also during my time here, we have installed two hydroelectric facilities: the Monroe Drop project and the Mile 45 project. They've been in operation now for about 5 years. The Mile 45 project is a 3-megawatt facility, and Monroe Drop is a 0.5-megawatt facility. We worked with Apple Inc., the tech company, as investors in the projects. Apple has since sold the Monroe Drop Project to Natel Energy, a small energy development company in California. Mile 45 is still owned and operated by Apple. Although NUID does not own the projects, we share in the revenue that they generate. After 20 years, the ownership of both those projects will revert to the district.

Irrigation Leader: What are the main crops your customers are growing?

Mike Britton: We are predominantly a seed-growing region. We do have a lot of alfalfa and forage crops, but carrot seed is our main cash crop. Central Oregon is the primary U.S. hybrid carrot seed production area, supplying seed to the domestic fresh market carrot industry. Approximately 55 percent of the U.S. domestic market's carrot variety seed production and 45 percent of the global market's carrot variety seed production occurs in Jefferson County. Alfalfa seed and grass seed are the other big ones. We grow different varieties of grass seed, such as Kentucky Bluegrass, which is used for lawns, recreational areas, and turf for athletic fields and golf courses.

We also have some fresh market crops—not a lot, but we're starting to see more. Some of the potatoes we grow end up in Lay's potato chip bags. Lay's is a major contractor in our area. We grow peppermint that ends up in toothpaste tubes around the world as well.

Irrigation Leader: Tell us about your new pump station and the Lake Billy Chinook Project. What is the motivation for this new project?

Mike Britton: Fourteen years ago, we embarked on an HCP that covers endangered species such as the Oregon spotted frog and some fish species. We knew going in that we'd need additional supplies or large-scale conservation projects to make up for the water that was needed for the frogs. Thanks to a WaterSMART grant from Reclamation, we were able to study various options regarding water supply. The Crooked River Water Quality and Supply Reliability Project, or the Lake Billy Chinook Pumping Plant Project for short, was left standing once all the considerations were complete.

Wickiup Reservoir is where we store water during the winter to release in the summer for our irrigators. Before the HCP, during that winter storage period, the Deschutes River below Wickiup would be reduced to as little as 20 cubic feet per second (cfs), which in a river system isn't a lot of water. The HCP requires us to release more water during the winter for frog habitat. It began in 2021 with a 100 cfs release, which will last for 7 years. In year 8 of the HCB, that will jump to 300 cfs; 5 years after that, it will jump to 400–500 cfs. Releasing 300 cfs all winter long doesn't leave much water in a 200,000-acre-foot reservoir come irrigation season. We recognize that we need to find an additional sustainable source of water. Unfortunately, the implementation of the HCP came at a time of historic drought in central Oregon.

Lake Billy Chinook.

Lake Billy Chinook is about 2–3 miles west of us as the crow flies and is downstream of our diversions. At full elevation, it's a 550,000-acre-foot reservoir. The idea is that as we release water from the Crooked River and Deschutes River systems, we would collect it in Lake Billy Chinook. Then, we would be able to pull it out when we needed it.

We also have a 200 cfs live-flow Crooked River supply. Currently, we have a pumping facility in the middle of this river system. If we pull 150 cfs through our pump system, the rest of the river below us suffers as a result, because we're only leaving 50 cfs in the river when there could have been 200. The idea is to move that pumping station from the middle of the river system to Lake Billy Chinook, which would leave 200 cfs in the river from its source at Bowman Dam all the way down to Lake Billy Chinook, essentially ensuring 70 river miles of ecological benefit.

The Crooked River is critical for reintroduced steelhead. Bull trout, also an endangered species, are trying to make their way back up the river as well. We've pitched this project to a lot of people and even some of our adversaries.

PHOTO BY BONNIE MORELAND, LICENSED UNDER CC0 1.0.

For the most part, people are very supportive of an idea that will guarantee a reliable supply of water to our farmers as well as environmental benefits for fish and wildlife.

Irrigation Leader: Are you compensated in any way for the water that you're no longer able to store in Wickiup Reservoir because of the HCP?

Mike Britton: No; I guess our compensation is the fact that we can still operate. If it weren't for the HCP, we would have been without water years ago, because the frog would have taken it. We were sued in federal court because of the claim that there was "take" occurring (as defined in the Endangered Species Act) with the Oregon spotted frog. We won—or at least reversed the preliminary injunction to stop any water being released from Wickiup Reservoir—because we were developing the HCP. It required 12 years of work and about $9 million to get the HCP over the finish line, but we were able to do it. It was really a historic effort. Not many people can say that they started an HCP, finished it, and were able to implement it. It is quite difficult to do.

Irrigation Leader: Are you going to somehow be trading your water rights from Wickiup Reservoir and other places for rights in Lake Billy Chinook?

Mike Britton: That's a big question. In our mind, we're simply moving some of our diversion points, including our Crooked River pumping station, downstream to Lake Billy Chinook. We're currently working with Reclamation on an appraisal study that will include some water modeling to help us define how much water is available and when. There's still homework to do on the water rights about what water would be available for our use. We are also wrapping up a separate economic study to justify the need based on the value of agriculture in our region.

Irrigation Leader: What is the time frame for completing this project?

Mike Britton: The appraisal study, which should be complete by the end of this year, will inform us, Reclamation, and others whether a full feasibility study is warranted. The full feasibility study will probably take 3–5 years and cost around $5 million. If the feasibility study warrants construction, the project will need federal involvement in some manner given the costs. Early cost estimates started at $350–$450 million. Even a large district like NUID can't foot a bill like that. We would have to start working with Congress, Reclamation, and others to make that project happen.

There's still a lot of heavy lifting to be done, but in general, the concept is widely accepted. I think Reclamation is excited. Our water users are excited about the potential for a reliable, sustainable supply of water.

Lake Billy Chinook is owned and operated by Portland General Electric (PGE) and the Confederated Tribes of Warm Springs. We've approached both entities about the project and worked with PGE on concepts. The tribal community is aware of the project but is waiting to see what the appraisal and feasibility studies show. That's not to mention all the other agencies we're going to have to deal with in permitting and the National Environmental Policy Act. There is a long list of requirements.

Irrigation Leader: Would you tell us about some of the fish screens you have installed in the past?

Mike Britton: Our Crooked River screens were installed in 2008. At the time, the plastic traveling screen was the newest, latest, and greatest technology. Those have been in place and have worked well since we installed them, but we do have to remove them occasionally because of high flows.

The Bend fish screen project has been on my to-do list for at least 10 years. Now, with all the federal funding that has become available through the Biden administration, there is an opportunity to try to get that done. Our Bend diversion currently uses the original rotary-drum fish screens that were installed in the 1940s. Believe it or not, they have held up over the decades, but time has taken its toll on them. In central Oregon, we get snow and ice in the winter, so they have far exceeded their useful life expectancy. We're trying to get funding at various levels to replace them.

Irrigation Leader: Are there any other current issues or projects you wanted to discuss?

Mike Britton: We are beginning the first phase of our PL-566 piping project. It's about a $32 million project that will be phased in over a few years. A large part of the funding comes from the Natural Resources Conservation Service's (NRCS) Watershed Flood Prevention Operations Program, commonly referred to as PL-566. PL-566 is a federal program that provides funding for projects such as putting pipe in the ground. On the east side of the Rockies, folks are using PL-566 for things such as storage facilities and dam rehabilitation. Now, states across the West are applying. In the case of our piping project, we have to provide a 25 percent match to the $25 million being provided by the NRCS. This is just one of many large-scale projects on the radar for North Unit. IL

Mike Britton is the executive manager at North Unit Irrigation District. He can be contacted at mbritton@northunitid.com.

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CHRIS GARGAN
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iwschris@sbcglobal.net

JOEL IRVING
(310) 614-4681
iwsjoel@sbcglobal.net

ANGELO DEFEO
(805) 901-3232
iwsangelo@yahoo.com

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Josh Mosier of Komet Pivot Products: Precision and Quality

KPT sprinklers being used to irrigate black potatoes in Alberta.

Komet's pivot sprinklers provide uniform water distribution across fields while maintaining a consistent droplet size to minimize water loss due to wind and heat. In this interview, General Manager Josh Mosier talks with Irrigation Leader *about the advantages of Komet's end guns and pivot sprinklers and the company's passion for education. We also hear about the annual Komet Academy, which offers irrigators a week's worth of training courses on everything from design to troubleshooting.*

Irrigation Leader: Please describe your background and how you came to be in your current position.

Josh Mosier: I am a Nebraska farm kid. We had flood irrigation on our farm, and I started irrigating as soon as I was old enough to hold the shovel. When I went to college, I got a degree in architecture and swore I was never going back to the farm. Five years later, though, I found myself farming again. That was during a severe downturn in the industry, so I ended up working at an irrigation pivot original equipment manufacturer (OEM) to supplement my farming habit. I designed the sprinkler packages that go on center pivots. It ended up becoming my full-time job. Water has always fascinated me, so I dove into the water application side of the business. That led me to the engineering side and technical side. Then, the farmer bug bit me so much that I honestly couldn't stand being in an office anymore. An opportunity arose to do field agronomy, and just a few months after that, Komet Irrigation contacted me. My OEM had been one of Komet's customers, and I had done beta testing of its product on our farm. I had gotten to know the company well and was impressed with its approach. Komet offered me the position of general manager and director of technical sales for North America.

Irrigation Leader: Please introduce Komet Irrigation.

Josh Mosier: Komet was started in Italy in 1952 by Roland Drechsel. The company manufactured solid-set sprinklers. When his three sons took over the business in the late 1990s, they moved into mechanized irrigation. They started working with center pivots and travelers and developing the product line from there. In 2000, the company moved to Austria, which had a more stable economy and workforce. Komet started selling products in North America in 1991. I started working with the company in 2011, a few years after it had expressed an interest in developing the pivot sprinklers that we now manufacture

PHOTOS COURTESY OF KOMET.

The KPT PC-180° part circle sprinkler in use on a drop in Alberta.

and sell. One thing that struck me is that the company is dedicated to water efficiency. That's Komet's number 1 priority: to take our most precious resource, water, and make sure that it is applied correctly.

Today, the company's headquarters and factory are in Lienz, Austria, and all the manufacturing and product development take place there. I work at our North American distribution facility in Fremont, Nebraska; we also just opened a distribution facility in Brazil. Komet has about 60 employees in Lienz and 13 in North America—9 in the field and 4 in the distribution center. Our main customers are companies that distribute sprinklers for mechanized irrigation—traveler OEMs, center-pivot OEMs, and other distributors that work specifically with the mechanized agriculture industry.

Irrigation Leader: What kind of growth have you seen in the United States over the years?

Josh Mosier: We have made a huge expansion here. It was slow in the beginning because our main pivot sprinkler product line took a long time to develop. We spent over 10 years in development, starting from the initial concept. We spent the first year just interviewing mechanized irrigation farmers in the field to find out what their needs were. Then, we developed a streamlined product line that could adapt to a lot of different environmental situations. Our move into the market was also slow and measured, but over the last 3 years, we have taken a lot of market share. When I started 12 years ago, our sales team consisted of me covering the United States and Canada and Hugo Drechsel covering the rest of the world. Now, we have nine salespeople in North America, five in South America, two in Africa and Australia, and three in Europe and Asia.

Irrigation Leader: Please tell us about Komet's products.

Josh Mosier: We have two main product lines. We have the high-volume line, which includes center-pivot end guns and the guns that are used on traveling machines or solid sets. Because these are high volume, you only need a few sprinklers to water a large area. The technology that we developed allows them to have high, uniform distribution at low pressures. Because they can work at lower pressures, they have lower input and energy costs, and they distribute water in a more even fashion so that it infiltrates more easily into the root zone.

Our pivot sprinklers will work at the lowest pressures in the industry with the highest distribution performance. They are designed to adapt to a lot of different soil types; topographies; and environmental conditions, including hot, dry, windy conditions. We wanted to develop something that would be durable and resilient in the field while keeping input costs low.

The product line includes our Twin and Twin Ultra lines of end guns, which range from the Twin Max, our smallest gun, to the Twin 202 Ultra, which can pump 800 gallons a minute out of one sprinkler. We have our Komet Precision Twister, or KPT, line, which is a rain-like distribution device. Our Komet Precision Regulators, or KPR-X, line, has the widest flow range and the most efficient operating parameters in the industry. We've developed a lot of products in a relatively short amount of time just because of the efficient way they apply water.

Our most successful sales technique is to show people how the product works in the field through a trial demonstration. We can talk till we're blue in the face, but our sales process is slower because it requires field trials with customers. We will either do a side-by-side comparison with what they are using now or demonstrate how a full system would operate in their field conditions. They're going to watch the product operate for a full season before they make the choice to buy. A skeptical potential new customer wouldn't have to pay anything upfront; they're just gathering the information on how the product works and can move forward after that. We stand behind our product that way. We want customers to see how the product works before they purchase it so that they're completely comfortable with it.

A KPT Peak sprinkler and a Twin Ultra gun irrigating peas in Wisconsin.

We sell not on price but on return on investment (ROI). Our products are highly engineered and are made with the highest-quality materials, so they are not cheap. However, they are going to give you a significantly higher ROI than will a cheap product. That's where education comes in. We've developed a lot of educational tools because we found that in the industry, there is a lot of emphasis on the mechanical side of mechanized irrigation and not a lot on the application side. A lot of education needs to happen at the OEM, dealer, and farmer levels. I became aware of this knowledge gap from my own experience. Before I got into the irrigation industry, if I saw water coming out of the pivot, I didn't worry about performance. Something's leaking over there? Big deal. It's just adding more water to the field. I didn't realize how detrimental that was. The sprinkler package is one of the least expensive things that you can put on a pivot. Yet many people try to save money by putting out a couple fewer sprinklers. Well, having a couple fewer sprinklers can cost you thousands of dollars in one season during a drought. You may have saved a few hundred dollars upfront on the price, but you've lost money by not using a properly designed package. That's where our education process comes in. We educate growers and dealers on how water application makes you money.

Irrigation Leader: Tell us about Komet's pivot software.

Josh Mosier: Our pivot software arguably has the most accurate output of any of the charting software. We have considered everything down to the finest of the hydraulic inputs. It is a comprehensive program that gives a lot of information that you don't really see in the market. The chart is going to kick out what your application intensity is and what your uniformities are—we built all those things into the design program. It took us years to develop the program, and it's constantly in development. As we run into things in the field that we feel we can do better, we reengineer the software. We're currently moving it to a new platform because we've run out of programming potential. We'll be testing the new platform soon.

Irrigation Leader: Tell us more about the Komet Academy.

Josh Mosier: We offer our Komet Academy, our week-long online training, once a year, typically at the end of February. It usually lasts 1–2 hours each day. The seminars, each called *academies,* cover a wide range of topics. The foundation is the Building a Better Sprinkler Package Academy, covering the design criteria that you need to consider to develop a highly effective application package for a center-pivot or linear machine.

As we brought more people onto our team, we've been developing a lot more of these academies. We have building, and we have troubleshooting—once a sprinkler package has been out in the field for several years, depending on the conditions, it may start to show signs of mechanical wear or hydraulic changes that need to be addressed. How does all that affect the water application? We discuss lowering application intensity to ensure that the water infiltrates into the soil root zone. The Wheel Tracks Academy covers how to deal with stuck pivots, and the LEPA Academy covers the specific design criteria for low-energy precision application (LEPA) for hot, dry areas with low humidity and high evaporation. The End of System Solutions Academy covers how to better get water to the end of the system and the ramifications of not getting the correct water application at the end of the system. One course I'm working on right now is on chemigation and fertigation and the whole picture of applying those products through the sprinkler package. Our seminars are targeted at people who have their boots on the ground, such as farmers, sprinkler package salespeople, engineers, and OEM and dealer personnel. An engineer is going to get just as much out of them as the person who's out there day to day operating the equipment. More than 300 people signed up for our last academy, and the number is growing. People crave more education. Additionally, if anyone wants a one-on-one session, we can do that, or we can do trainings at dealer meetings or events like Natural Resources Conservation Service meetings. We offer all these trainings at any given point; we just need to schedule them for anybody who is interested.

Irrigation Leader: What is your vision for the future?

Josh Mosier: One of the things that we're looking forward to in the industry is being able to advance the knowledge of water application. To us, the more knowledge a customer has, the better decisions they can make. We make our academies as brand neutral as possible when it comes to designing systems. How do you make these products work? How do you make sprinkler products in general work in your field environment to maximize your output, minimize your inputs, and minimize the effect on the environment? We also want to help move the industry forward to be as efficient as possible. Everyone in our group has been in the agriculture industry in one capacity or another, and they bring a wealth of knowledge. We have an amazing team, yet when I go out and teach an academy somewhere, I learn almost as much as I teach, because farmers throw stuff at me that I haven't seen before. To me, that's the fun part of this work—it's a never-ending process of trying to improve. IL

Josh Mosier is the general manager and technical director for North America of Komet Pivot Products. He can be contacted at josh.mosier@kometirrigation.com.

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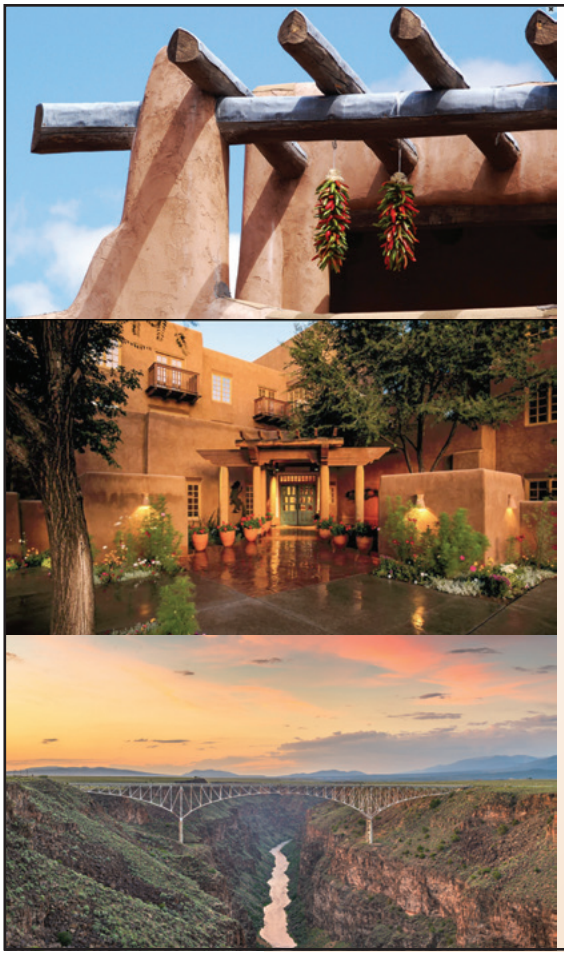

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Melanie Brooks, CEO, MHV Water, New Zealand

Ward Neesen on the WaterVision 2.0 Remote Monitoring System for Pump Stations

WaterVision can be used on multiple devices.

WaterVision 2.0 is a completely reimagined cloud-based monitoring system based on the well-established WaterVision system launched by Watertronics in 2009. WaterVision 2.0's expanded capabilities allow users to monitor and control their pump networks from any web-enabled device. In this interview, Irrigation Leader *talks with Ward Neesen, the chief technology officer at Watertronics, about the benefits of the new technology.*

Irrigation Leader: Please tell us about your background and how you came to be in your current position.

Ward Neesen: I collaborated with the group at Watertronics when I worked for Lindsay. I worked on Lindsay's FieldNET team and managed a lot of the software development, product releases, and other parts of FieldNET's telemetry platform. I left to work for an agribusiness in Wisconsin, and when that company was sold, I had to figure out what I wanted to do next. I was reintroduced to Watertronics President Rick Reinders. He told me that Watertronics was looking to do more with telemetry and that with my background and skill set, I would fit well in his organization. I joined the company in 2021 as its chief technology officer.

Irrigation Leader: Please introduce Watertronics.

Ward Neesen: Watertronics has been designing pumping solutions for golf, landscape, municipal, and agricultural use for more than 30 years. We offer a full line of pump station products from single-pump, self-enclosed landscape pumping systems to highly complex, large-capacity systems for water districts, resorts, and farming operations. We build uniquely tailored solutions for our customers.

Irrigation Leader: What is WaterVision 2.0?

Ward Neesen: WaterVision 2.0 represents our newest advancement in cloud telemetry technology. The underlying principle of WaterVision 2.0 is to provide our clients with real-time insights into their pump station operations along with certain control capabilities. It introduces an additional feature known as rules-based control, which enables the pump station to operate and respond based on predefined parameters. WaterVision 2.0 has similarities to a SCADA system but is uniquely positioned in the cloud, allowing for greater flexibility. The technology we have developed allows efficient data management by moving and storing

PHOTOS COURTESY OF WATERTRONICS.

only relevant information. WaterVision 2.0 enables our clients to monitor nearly all pump station operations, exert control where necessary, and receive alerts in case issues arise. Moreover, it allows pump stations to operate semiautonomously by making certain decisions based on the provided parameters. We have thus established a strong foundation in the industry with our platform, setting the stage for limitless future advancements.

Irrigation Leader: To use the software, does a customer need to have some sort of existing metering system?

Ward Neesen: Yes. This product will monitor the pump station if there is a metering solution in the pumps. Most pump stations do have that hardware. The software works not just with Watertronics pump stations but with many different kinds of pump stations, and more are coming online every day.

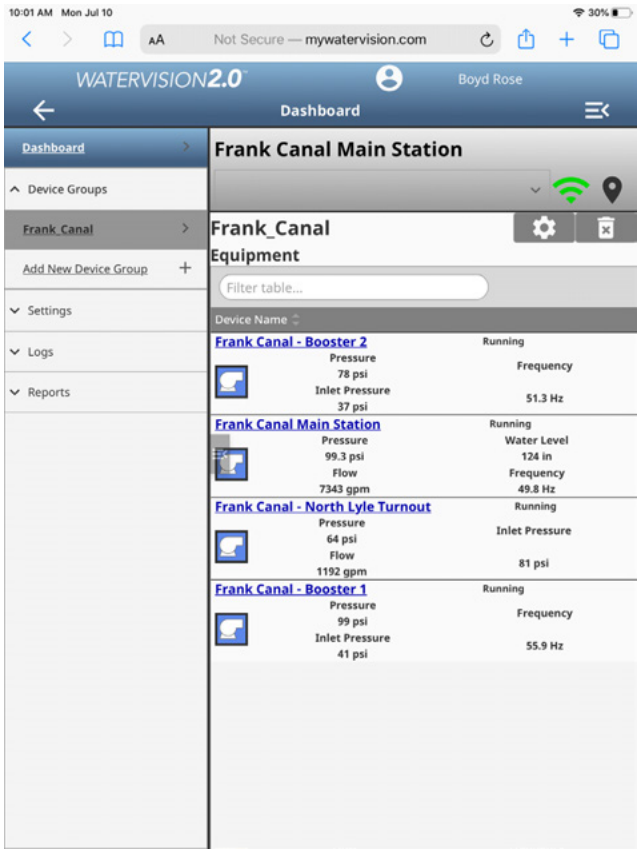
Irrigation Leader: What kind of data does the system collect and analyze, and what kind of results does it provide?

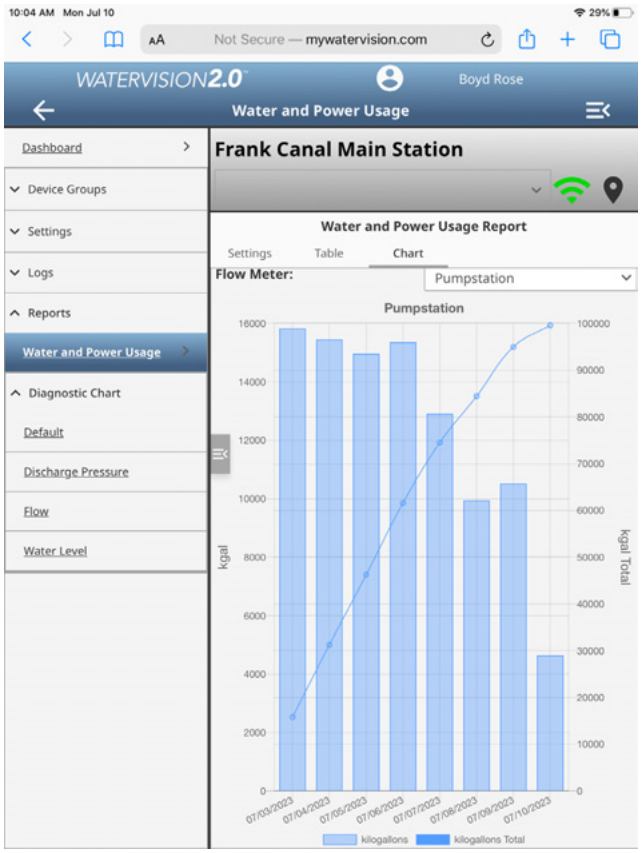
Ward Neesen: It does a couple of things. One is what I like to call the go-to-your-kid's-baseball-game feature. Customers sometimes feel they need to constantly monitor the system when they're pumping water, just in case something goes awry. With our system, they don't need to do that. We have a full alerting system that will notify the user if certain situations come up. That's a huge selling point. The second highlight is the dashboard design. In addition to showing pressure and flow, it can be adapted to visualize other things, like temperature and input flow.

Irrigation Leader: You mentioned that the system can be set up to automatically control the pump station. What functions can it control, and why is that an advantage?

Ward Neesen: Say, for example, we want to pump water out of a pond on a hill, and there's a pond at the bottom of the hill that's filling the pond further up. The person pumping would have to drive back and forth, turning things on and off, to get the levels right. Using our technology, we can program the system to automatically fill the pond when its water level gets too low. You can do all that with one set of controls. We can get more complex from there. Home automation has really taken off in the last decade with the Internet of Things allowing services like Google and Alexa to turn lights on and off when you get home. We like the fact that we're like an industrial Internet of Things, making connections between various pieces of equipment. That gives us the flexibility to continue to integrate with new systems in order to meet our customers' needs.

Irrigation Leader: What kind of users are the target audience for this product?





WaterVision can be used to monitor and control equipment across a delivery system.

Ward Neesen: What's great about WaterVision 2.0 is that customers can manage most of their pump station operations right from their computer or smartphone. This service is particularly beneficial for anyone who uses a pump station. It's user-friendly for even the most basic user who just needs to switch the pump station on or off. It also caters to users with more complex requirements, such as generating reports for external agencies or for internal purposes. Everything they need is conveniently available in our cloud-based product, enabling them to keep track of their system's operations. In short, our service can cater to any user across the entire range of pump station operations.

Irrigation Leader: In what ways are the agricultural applications of this technology different from other uses?

Ward Neesen: I came from the agriculture world, so I know that these days the amount of reporting involved in agriculture is unbelievable. People spent a lot of time preparing reports on individual pumps and wells. But with a properly implemented system, much of that end-of-week, end-of-month, and end-of-period reporting to various agencies can be fully automated. The other benefit for agricultural users is that our unique technology allows users to adjust flow levels to optimize the output of irrigation devices such as pivots based on what the pump stations are doing.

Irrigation Leader: How did your background with Lindsay and the ag market influence the design of this product?

Ward Neesen: The product was in the design phase when I got here. I brought it across the finish line and added a whole bunch of features. At Lindsay, I did a lot of work on the finished user interface, making the mobile app work better. I brought those talents here to make sure we put the right amount of polish on what we're doing.

Irrigation Leader: What does the installation and startup process look like for a customer who purchases WaterVision 2.0?

Ward Neesen: Starting late last year, all the pump stations that we ship out now come with WaterVision 2.0 installed and configured. Access to our cloud platform for the first few years is included in the price of the pump station. We have also developed a bolt-on device with a couple of wires that allows us to attach WaterVision 2.0 to existing Watertronics pump stations and some other pump stations.

Irrigation Leader: What results should users expect to see?

Ward Neesen: One of the hallmarks that we talked about today is not so much about delivering the right amount of water, but delivering the right amount of water the most efficiently. I told you we could monitor numerous data points using a Watertronics pump station, one of which is energy usage. We can monitor energy usage and energy time, and WaterVision 2.0 can then work to optimize the energy usage or the dollar per acre-foot of water you're putting down, potentially leading to savings. The other thing that we're working on is the ability to do predictive maintenance: We want the stations running WaterVision 2.0 to be able to alert you when things start to go a little bit sideways. The goal is to allow you to go out and check the station or order some service work before the situation becomes critical. These features can lead to savings in energy costs and hopefully prevent downtime caused by unscheduled maintenance.

Irrigation Leader: Are you targeting users of a specific size?

Ward Neesen: No matter whether you're a small or a large user, having a system that alerts you, enables automated report generation, and offers remote management capabilities can be hugely beneficial. For larger users—those managing multiple pump stations—we provide an expanded dashboard. Many of these features are designed to adapt and scale according to the user's needs, making them useful across all user levels.

Irrigation Leader: What kind of customer service does Watertronics provide to users of this product?

Ward Neesen: Watertronics is unique in having an entire division dedicated to keeping our pump stations running. Customers make one call to our Pump Services Network and can get right to the people who can help them.

Irrigation Leader: Is there anything you'd like to add?

Ward Neesen: We think that WaterVision 2.0 is the best telemetry product in the industry, and we're just getting started! We see this becoming the most integrable and integrated tool on all platforms. It's been a great product so far, and we can only see it getting better from here.

Irrigation Leader: If anybody reading this thinks this might be a good product for their system, how should they get in touch with you?

Ward Neesen: They can e-mail me at ward.neesen@watertronics.com or reach out to our sales group at sales@watertronics.com. IL

Ward Neesen is the chief technology officer at Watertronics. He can be contacted at ward.neesen@watertronics.com.

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BIOAZUL: Transforming Wastewater Into Safe, Sustainable Irrigation Water Supplies

BIOAZUL is a Spanish engineering and technology consulting company that is involved in research and development (R&D) and technology design and implementation across the Mediterranean basin and the world. Much of BIOAZUL's work concerns the purification and reuse of wastewater, especially for agricultural irrigation. In this interview, Director of Engineering Alejandro Caballero tells us more about the many projects BIOAZUL is active in across the Mediterranean basin and around the world.

Irrigation Leader: Please tell us about your background and how you came to be in your current position.

Alejandro Caballero: I hold a degree in marine sciences with a specialization in environmental engineering. Since the beginning of my professional career, my work has related to engineering solutions to water-related problems, leading to my specialization in engineering work on water treatment and environmental solutions.

I am currently a PhD student at the University of Seville, where I am working on my thesis in the Department of Biochemistry and Molecular Biology within the Natural Resources and Environment Program.

Since I joined BIOAZUL, I have developed, designed, implemented, and optimized different wastewater treatment systems, both urban and industrial, at the international level, always with the aim of reusing reclaimed water for processes and agricultural applications.

Irrigation Leader: Please tell us about BIOAZUL.

Alejandro Caballero: BIOAZUL was founded in 2003 with the aim of offering solutions focused on sustainable water management. It was established by six Spanish and German shareholders who worked at a research and technology transfer center in Germany and decided to start an innovative project in Spain, aware of the opportunities offered by the market there. This pioneering startup chose Málaga as its operational center because of the potential and possibilities of the city. Over the past two decades, the company has been evolving, expanding its team, changing its core shareholders, and enlarging its line of products and services.

Aligned with the United Nations' Sustainable Development Goals and with a firm commitment to innovation and efficiency, BIOAZUL has participated in more than 80 projects, mostly international, providing engineering and technological consulting services for the development of eco-innovative and sustainable solutions, with a special focus on the treatment and reuse of water as well as resources recovery. In this, the company is truly aligned with circular economy principles.

A RichWater installation.

Irrigation Leader: What are BIOAZUL's main business lines today, and who are its customers?

Alejandro Caballero: We work in three main areas: R&D consulting, offering an integral approach for projects of strategic interest and high market potential; water engineering, with customized procedures for the treatment of industrial and urban water; and technologies and products such as water treatment systems and humidifiers.

In the field of engineering projects, BIOAZUL works to provide optimal water resources solutions for each specific case. We develop detailed engineering for the executing companies, and if the geographical and financial framework is favorable, we have the capacity to implement the engineering as well.

In addition, with the goal of helping industrial users use water resources more efficiently, we carry out diagnoses of their integral water cycles. We aim to minimize and optimize the use of water and to propose solutions to treat the effluent they generate so that it can be reused in the industrial processes themselves or elsewhere.

To carry out these tasks, the company has a multidisciplinary and highly committed team of 12 professionals who provide a comprehensive response to the needs of our clients, mainly composed of private entities as well as academia, public administration, and civil society entities.

Irrigation Leader: Please tell us about some of BIOAZUL's projects that involve water recycling and nonconventional water resources.

Alejandro Caballero: BIOAZUL has been working on treatment and reclamation projects since its creation. We have actively participated in dozens of international projects with widely recognized partners from all over the world, making advances in sustainable water resources management. I would like to highlight several projects.

PHOTOS COURTESY OF BIOAZUL.

RichWater

The RichWater project is an initiative financed by the European Union (EU) through the Fast Track to Innovation program (funded under the Horizon 2020 program), whose main objective was to support technology companies in commercializing innovative solutions for the treatment and reclamation of wastewater for agricultural purposes and achieving successful market entry.

In the case of RichWater, the technology consists of a system for the reuse of treated water in agricultural irrigation that combines a membrane bioreactor (MBR), which efficiently and affordably treats the water; a mixing station, which achieves the optimal combination of water and nutrients; and a control and monitoring system with sensors in the water, plant, and soil line. This combination makes it possible to offer a reliable source of pathogen-free water and to respond in situ to the irrigation and fertilization demand of each type of plant and soil.

The RichWater system produces an effluent that is free of pathogens (the system has a 99 percent E. coli removal rate) and rich in nutrients (including nitrogen, phosphorous, and potassium), which can be adjusted according to the needs of crops. The benefits of the RichWater system have been verified by the European Commission's Environmental Technology Verification (ETV) program, making RichWater 1 of only 16 water treatment and monitoring technologies to have been verified since the ETV program's launch in 2013.

RichWater benefits farmers by helping them save water and fertilizer. It allows wastewater treatment plant operators to offer a new product—nutrient-rich and pathogen-free irrigation water—and provides farmers a guaranteed and constant source of this water, which is a huge benefit in arid regions.

Sustainable Axarquía

The Sustainable Axarquía (*Axarquía Sostenible*) operating group focuses on the use of reclaimed water in the area of La Axarquía, near Málaga. In the municipalities of Vélez-Málaga, Algarrobo, and Torrox alone, around 30,000 cubic meters (7.9 million gallons) of wastewater are produced every day in the summer, and around 20,000 are produced in the winter. This huge volume of water is being discharged into the sea after being treated, even though the lack of available irrigation water is a limitation for agricultural production and wealth creation in the region. We aim to consolidate a working group in La Axarquía to promote the sustainable management of water resources and to demonstrate the viability and economic efficiency of the RichWater water regeneration system.

PAVITR

The PAVITR project is a European-Indian project funded in part by the Horizon 2020 program and the Andalusian Agency for Innovation and Development, supported by the European Regional Development Fund. The project will provide real solutions to water-related challenges in India. Its main objective is to validate, develop, and implement efficient and sustainable solutions to address water challenges, promote water reuse, protect river water quality, and restore degraded ecosystems in India. This will be achieved through the implementation of wastewater treatment technologies and the use of sensors for emerging and traditional contaminants.

BIOAZUL is executing two projects within the PAVITR framework:

- The detailed engineering, construction management, and startup of a wastewater treatment system for a university campus, using a sequencing batch reactor (SBR) process to treat 75 cubic meters (19,813 gallons) of wastewater per day. A tertiary treatment system will also be incorporated to produce reclaimed water for use in irrigating fruit trees, mainly mango trees.
- The automation and optimization of an existing SBR process with a treatment capacity of 150 cubic meters (39,626 gallons) per day. Currently, the process is manually controlled. BIOAZUL has sensorized the system and implemented a control process that allows the system to be controlled automatically, increasing its performance and resulting in a more stable and reliable process.

FIT4REUSE

FIT4REUSE is an EU program whose main objective is to provide a safe and locally sustainable water supply for the Mediterranean agricultural sector through the exploitation of nonconventional water resources—that is, reclaimed water and desalinated water. In particular, FIT4REUSE will focus on innovative treatment technologies and the use of nonconventional water resources in agriculture and for aquifer recharge. The participation of partners from different Mediterranean regions allows FIT4REUSE to carry out high-quality collaborative research, to produce substantive results at a regional scale that fit local scenarios, and to start a long-lasting collaboration between the participating institutions. Furthermore, the project has developed appropriate guidelines to support the widespread adoption of water reuse safety planning in the Mediterranean basin in order to minimize any potential threats and support water regulations and policies.

Irrigation Leader: What kinds of regulations or restrictions govern the use of recycled water for agricultural irrigation in Spain?

Alejandro Caballero: In Spain, the use of reclaimed water is strictly regulated by Royal Decree 1620/2007 (RD1620/2007), which provides guidelines for the use of treated wastewater for different purposes, including agriculture. RD1620/2007 sets quality standards for water reuse, depending on the type of use, to ensure that the water is safe for human and environmental health.

In agriculture, the quality standards for reclaimed water use depend on the level of contact between the reclaimed water and the plant being irrigated as well as the irrigation

method. This means that different standards apply to drip irrigation, sprinkler irrigation, and other methods. The use of reclaimed water for irrigation requires a license from the regional authorities, which is issued to the final user after an assessment of the suitability of the proposed use and the quality of the reclaimed water.

Moreover, the EU has introduced Regulation 2020/741, which establishes minimum requirements for water reuse and sets standards for monitoring the quality of reclaimed water. The regulation also requires the development of risk management plans for the use of reclaimed water. The new EU regulation is applicable in Spain and all EU member states as of June 2023 and will probably lead to the modification of RD1620/2007 to align with the EU norm.

Irrigation Leader: What is the scale of the demand for recycled or nonconventional water resources in Spain today?

Alejandro Caballero: The demand for reclaimed water in Spain has been steadily increasing in recent years due to factors including water scarcity, population growth, and the need for more-sustainable water management practices. The exact scale of the demand for reclaimed water in Spain is difficult to quantify because it varies depending on factors such as location, sector, and water availability.

According to a 2018 report by Spain's Ministry for the Ecological Transition and the Demographic Challenge, the approximate volume of reclaimed water supplied in Spain in 2017–2018 was about 380 cubic hectometers (308,071 acre-feet), which represents less than 10 percent of the total water used in Spain during that period.

There is a strong demand from the agriculture sector in Spain to use reclaimed water for irrigation. Agriculture is one of the largest consumers of water in Spain, accounting for more than two-thirds of total water consumption in some regions. In areas where water resources are scarce, the use of reclaimed water for irrigation is increasingly being considered as a way to reduce the pressure on freshwater resources and to ensure the sustainability of agricultural production.

Irrigation Leader: What research is BIOAZUL working on today?

Alejandro Caballero: Our current research includes the following projects:

BONEX

The BONEX project is one of the initiatives cofinanced by the Partnership for Research and Innovation in the Mediterranean Area that contributes to the sustainable use of natural resources, economic growth, and stability in the Mediterranean. Specifically, the BONEX project seeks to offer a new innovative and transdisciplinary framework—the water, energy, food, and ecosystems framework, or WEFeF—to allow for the development and application of specific plans using different innovative technologies, such as water reuse with solar energy, agrovoltaic systems, and solar irrigation, in diverse socioeconomic contexts. These innovative approaches will be developed and tested iteratively in seven demonstration projects (one of them led by BIOAZUL and located in La Axarquía) that cover a diversity of contexts, challenges, and technologies in the Mediterranean region to ensure that the results are truly replicable and that the wide socioecological and cultural diversity of the Mediterranean is considered.

P2GREEN

The P2GREEN project is aimed at developing, testing, and adapting the use of human sanitation waste as a safe agricultural biofertilizer. We lead the project's Spanish cluster and have a pilot on an experimental plot next to the wastewater treatment plant in the municipality of Algarrobo in La Axarquía. The main objective of this pilot is the development and implementation of an innovative tool for decisionmaking and nutrient control in the application of reclaimed water to avocado and mango crops, taking into account the crop's water and nutritional needs at any given time. The study of the use of nutrients contained in reclaimed water will allow us to adjust the use of fertilizers in agriculture and avoid nitrogen and phosphorus contamination in nearby bodies of water.

Irrigation Leader: What is the company's vision for the future?

Alejandro Caballero: BIOAZUL is committed to providing innovative solutions for sustainable water management with a focus on promoting the use of reclaimed water for several purposes, including irrigation. Our vision is to become a leading provider of sustainable solutions that enable farmers to reduce their dependence on freshwater resources and ensure the long-term sustainability of agricultural production.

At BIOAZUL, we believe that the use of reclaimed water for irrigation is an essential part of the solution to the water scarcity challenges Spain and other regions around the world are facing. Our goal is to develop cutting-edge water treatment technologies that make it possible to transform wastewater into a valuable resource for agricultural production while also ensuring that the water meets the necessary quality standards for safe and effective use. Ultimately, our vision is to help build a more sustainable and resilient agricultural sector in Spain, one that is better equipped to meet the challenges of a changing climate and growing demand for food while also protecting our valuable freshwater resources for future generations. IL

Alejandro Caballero is the director of engineering at BIOAZUL. For more about BIOAZUL, visit bioazul.com.

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Duperon's Screen and Rake Solutions

In 2019, two FlexRake Heavy Duty bar screens were installed at the 10-foot-wide, 16½-foot-deep channel in the Mud Lake Water Users' Owsley Canal, about 1½ miles south of Mud Lake at the entrance to a new culvert.

The Duperon FlexRake Heavy Duty screen has significantly reduced Mud Lake Water Users' manual labor needs and safety concerns, saving $12,324, or 53 percent, on labor costs.

Duperon's rakes and screens can help irrigation and municipal water managers handle debris, storm surges, and waste in their systems. In this interview, Duperon President Mark Turpin and Business Development Manager Steve Macomber talk with Irrigation Leader *about how the company's wastewater screening products offer smart solutions to help customers respond to these challenges. By adapting to flow and debris conditions, these next-generation products make water systems more flexible and resilient.*

Irrigation Leader: Please tell us about your backgrounds and how you came to be in your current positions.

Mark Turpin: I started out in the automotive industry, then moved to ABB, which produced high-voltage switchgear for power transmission. We built a knowledge-services business for ABB, training electric utility workers from all over the world to maintain and start up high-voltage switchgear, which is rather dangerous work. When I left ABB, I went to Johns Manville and ran its materials business, which serves the gypsum wallboard industry. We were able to take its business global; introduce new products; and serve the people who produce fire-rated gypsum wallboard, primarily for commercial space. After that, I went to work for Parkson Corporation, which supplies water and wastewater equipment. I started off running the company's aftermarket business and later had the opportunity to run its municipal and industrial business. Since 2016, I have been the president of Duperon, which sells screening and solids handling equipment for municipal and industrial uses.

Steve Macomber: I am the regional sales and business development manager for Duperon Corporation. I have 25 years of industry experience, including 18 years working for equipment manufacturers in the screening, dewatering, and thickening sector. I have a bachelor's degree from North Carolina State University and a master's in engineering with a focus on environmental and civil from the University of North Carolina in Charlotte.

Irrigation Leader: Please tell us about Duperon.

Mark Turpin: Duperon offers screening solutions and expertise for irrigation applications, wastewater plants, flood control, and storm water. We're a company of about 70 people based in Saginaw, Michigan. Our supply chain is primarily located in this area, but we also source products from throughout the Midwest. Our partners do the fabrication and ship us components; our team then assembles and tests every piece of equipment here at our plant in Saginaw.

The company's roots go back to the 1970s, when founder Terry Duperon had another company that produced pumps. The pumps were frequently fouled with vegetation and other debris. Terry started trying to figure out how to protect pumps in open-channel applications. He developed the self-cleaning trash rack to solve that problem. The business was officially founded in 1985, when Terry Duperon and Tammy Bernier started Duperon Corporation as a father-daughter team. They then developed the FlexRake for the municipal space, and that has become the company's flagship

PHOTOS COURTESY OF DUPERON.

product. For the couple of decades preceding my joining the company, Tammy Bernier ran the company as its CEO. During that period, the company saw significant growth, particularly in the municipal space in North America. Duperon has a special, customer-facing culture that strives to deliver the experience promised by our motto, "You'll like working with us," at every interaction.

Irrigation Leader: What kind of raking systems do you manufacture?

Mark Turpin: Our raking systems are front-clean, front-return rakes that are designed to run 24 hours a day, 7 days a week. They operate at very slow speeds, which creates a low-wear situation for wearable components. Some of our new designs have built-in intelligence so that as things change within the channel, they can adapt their speed and other settings.

Duperon's design bias from the beginning has been toward simplicity, and our team continues that approach today as we develop new products. We want to remove as many moving parts as possible and create a system that has the fewest possible maintenance and ongoing operational requirements for our end customers. Terry Duperon had a saying that has become famous around here: "Two parts are one part too many." As often as we can, we work to eliminate parts in our designs. That has worked quite well for our customers.

Irrigation Leader: What other products does Duperon offer?

Mark Turpin: We have a lot going on on the product side. I mentioned the self-cleaning trash rack, which is intended for storm water applications. We have recently developed and launched the FlexRake IQ. The FlexRake IQ is built on the original FlexRake platform, but its design was significantly upgraded to maximize resiliency around the screen and to significantly improve stone and grit removal. The FlexRake IQ screen also removes up to four times more solids than the original FlexRake, and it has much better screen-cleaning performance once a scraper has engaged a large piece of debris. It does all this while running at the slowest speeds the vast majority of the time. To gain these added benefits, we rethought everything about the FlexRake: The materials of construction, the scraper geometry, the chain design, and the controls logic were all upgraded in this newest version of the FlexRake.

We also have a design we call the FlexRake IQ^2. The FlexRake IQ^2 has all the benefits of the FlexRake IQ and more. It was designed for water treatment plants that experience significant peaking factors. For example, there are plants with average flows of 5 million gallons a day (MGD) that see 20 MGD or more during storm events—something that is occurring more and more frequently now. When those large hydraulic surges arrive in the collection system, they scour a lot of settled debris from the pipes, including small rocks, grit, pieces of wood, two-by-fours, grease, and rag balls. When the surge shows up at the headworks, 5–10 times the designed flow can hit the screen in a short period along with a huge amount of solids. The FlexRake IQ^2 is designed to sense when that's happening and change speed based on the conditions. Just as with the FlexRake IQ, that adjustment in speed combined with changes to scraper geometry and chain design allow a large amount of solids to be removed quickly at the onset of the event. If the event continues to build after the first flush, the FlexRake IQ^2 will automatically change the bar opening size to accommodate higher flows. All of that happens without any operator intervention. This design allows engineers to design the FlexRake IQ^2 bar opening size to take out the maximum amount of solids at average flows, knowing the screen will adjust to peak flows and then adjust back to the finest opening size for average flows once the event has passed. Without the FlexRake IQ^2's abilities, the design might have needed to be at the larger opening size 100 percent of the time. That means the municipality would not have captured nearly as much debris during the 95 percent of the time flows are at average or normal levels.

Beyond these newly launched products, we have four products in the beta phase that should be coming out in the next 12–18 months or so, as well as a number of products in the research and development pipeline.

FlexRake Heavy Duty handles the heavy inflow of moss from the lake at Owsley Canal.

Irrigation Leader: Do you always sell your raking systems along with a bar screen, or do they sometimes come separately?

Mark Turpin: Usually, the bar screen and the rake are sold together. We also have applications in which we sell the FlexRake only—what we call an FRO mechanism. Let's say the local contractor we are working with is also a fabricator.

In that case, we can work with them on the design of the screen. We will ship the raking components, the drive head, the drive system, and the controls—everything that goes into a screening system except the screen. In municipal headworks, we typically ship full screens.

We also have a couple of FRO options for the aftermarket space. If, after decades of continuous use, a customer wants to rebuild their screen, we use the FRO to extend the life of their equipment. We also have an FRO IQ model that upgrades an existing installation to our newest FlexRake IQ technology. On occasion, we'll use the FRO or the FRO IQ to upgrade another manufacturer's equipment. If someone has a rake screen that's aging out and they want to upgrade it to a FlexRake, we can do that as long as the bar screen is in good shape and the dimensions are correct.

Irrigation Leader: Does your company do installations?

Mark Turpin: We bid our projects to contractors. The contractor builds the plant and installs the equipment, and then our team starts up the equipment and trains the operators. We serve both the contractor and the end customer.

Irrigation Leader: What are some applications of your products for irrigated agriculture customers?

Steve Macomber: For agriculture, our products are especially well-suited for irrigation and wastewater applications. For irrigation, our products remove debris from the water source before it gets pumped into sprinklers. For agricultural operations that treat their own wastewater, our products keep debris out of wastewater and storm water. The FlexRake adapts to unpredictable debris and flow variations, which is useful on a farm, where flow is affected by harvest volume and both local and regional weather. It also uses very little energy, which farmers appreciate.

Irrigation Leader: Who are your customers in this realm?

Steve Macomber: McManis Family Vineyards in Ripon, California, is an interesting Duperon customer. They use the FlexRake Fine Screen to remove grape solids like leaves, seeds, pulp, stems, and skins that enter the process wastewater and storm water runoff, which is diverted to an evaporation pond. These solids can have a deleterious effect on the wastewater and the farm due to their high sugar content. On its way to the pond, the wastewater is routed through the FlexRake, where grape solids are removed and prevented from causing a high-sugar sludge that will slow or halt the work of a healthy evaporation pond.

Irrigation Leader: What results have they seen from your products?

Steve Macomber: McManis Family Vineyards has been able to save water, create compost, reduce the energy required to keep the ponds healthy, and extend the time between pond cleanings from every 2–3 years to every 5–7 years.

Another agricultural customer in Mud Lake, Idaho, was having problems with their automated sprinkler system. Because they didn't have a screen system, the pumps were pumping unscreened water to the sprinkler system, and that water was clogging the sprinkler heads in their fields. They installed a FlexRake to prevent the debris from getting through the pumps.

Irrigation Leader: We've read that the rakes and screens in your design can also help reduce water consumption in wine country. How does that work?

Mark Turpin: That is because of the way we clean our fine screen in industrial applications, specifically food and beverage applications. It takes quite a lot of water to clean debris off some screening systems, especially the fine, clinging type of debris that gets produced at some food and beverage sites. Our fine screen requires significantly less water than some other technologies. It also allows for a great capture rate of those solids.

Irrigation Leader: Did you set out to design that in response to an industry request? How do you figure out what new products to develop?

Mark Turpin: When we develop products, we start with the customer. We try to identify the need or issue that the customer hasn't found a solution for. In this case, we knew that wineries were struggling with the water issue. In other cases, a problem shows up as high maintenance. Customers are struggling to maintain their screening equipment or are putting themselves in a dangerous position to maintain it. We always ask ourselves, "What if this could be done in a different way?" Whether it's at a winery or a municipal plant, we want to leave our customers with as much time as possible to focus on their core mission of protecting waterways and providing safe drinking water sources. IL

Mark Turpin is the president of Duperon. He can be contacted at mturpin@duperon.com.

Steve Macomber is the regional sales and business development manager at Duperon. He can be contacted at smacomber@duperon.com.

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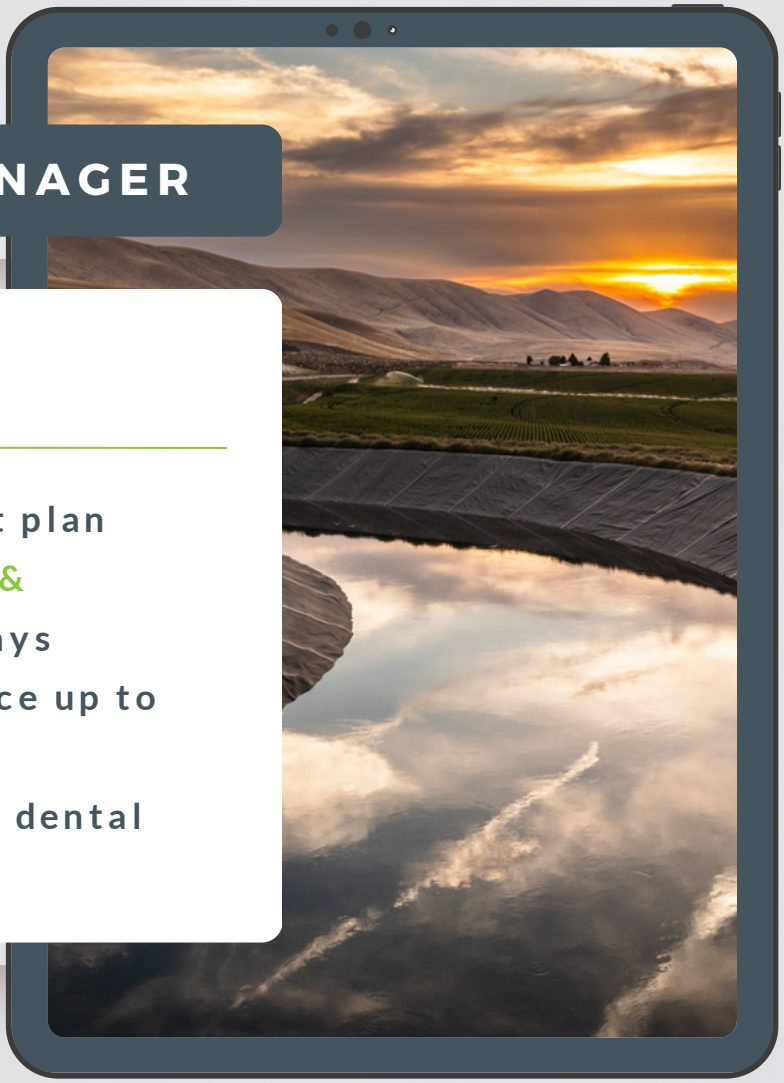

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Salary: Based on qualifications
Location: Hybrid – Denver, CO or Atlanta, GA
Deadline: Until filled
Summary: Will be responsible for the technical design of hydrokinetic energy systems. The position will support the entire process from project prospecting to commissioning, maximizing performance based on site characteristics and product portfolio. Work will also include supporting team innovation for process efficiency improvements, clarity of communication, and driving down system cost and time to project deployment.
Apply: https://emrgy.com/careers/

LOWER YELLOWSTONE IRRIGATION PROJECT HEAVY EQUIPMENT OPERATOR

Salary: Based on qualifications
Location: Sidney, MT
Deadline: Until filled
Summary: Seeking experienced excavator operator to safely operate, transport, maintain, and repair employer's line of equipment including hydraulic excavators, dozers, loaders, dump trucks, low boy transport trucks, motor graders, and scrapers in construction and maintenance of public irrigation waterways. Type 2 Class A CDL and some welding and vehicle maintenance skills preferred.
Apply: Contact 406-433-1306 or Lyip@mplicatioidrivers.com for additional details and application.

Northwest Pipe Company

Northwest Pipe Company
Title: Project Designer
Salary: Based on qualifications
Location: Adelanto, CA
Deadline: Until filled
Summary: Support the project manager's (PM) efforts from inception through production both in new product design and in existing steel pressure pipe product redesign on each individual project to which they are assigned. Accurately compile the contract requirements, customer preferences, and manufacturing limitations of a given project into a cohesive design drawing package, bill of materials, and Track.net. Ability to work in a fast-paced environment with demonstrated ability to juggle and prioritize multiple, competing tasks and demands and to seek supervisory assistance as appropriate.
Apply: https://www.nwpipe.com/careers/

McCROMETER

INSIDE SALES SPECIALIST

Salary: $64,500–$65,500 annually
Location: Hemet, CA
Deadline: Open until filled
Summary: This role engages with customers to qualify sales opportunities and engage in an application evaluation, client consultation, product selection, and purchasing needs across all major product lines. The goal of the specialist is to manage a funnel of opportunities by supporting each customer's needs from initial assessment and product evaluation through to the point of sale. Because our products are highly customized, the inside sales specialist must be able to evaluate the customer's existing systems, their specific applications and goals, and develop a customized offering that suits their needs Internal collaboration efforts will include interaction with marketing, technical support, and field sales in order to e sure that each customer receives a product that meets those needs, the best possible support, and purchase experience as measured by team and department KPIs.
Apply: https://jobs.danaher.com/global/en/job/r1236992/inside-sales-specialist#irrigationleader

For more job listings, please visit: irrigationleadermagazine.com/job-board/.

Irrigation Leader

Upcoming Events

July 19–21 North Dakota Water Resource Districts Association and North Dakota Water Education Foundation, Joint Summer Water Meeting and Executive Briefing, Dickinson, ND

July 21–24 National Association of Counties, Annual Conference and Exposition, Austin, TX

July 27 Water Day at the North Dakota State Fair, Minot, ND

August 2–4 National Water Resources Association, Western Water Seminar, Medora, ND

August 7 North Dakota Water Education Foundation and the Garrison Diversion Conservancy District, Top o' the Day Tee-Off Golf Scramble, Carrington, ND

August 14–16 National Conference of State Legislatures, Legislative Summit, Indianapolis, IN

October 3–5 Coalition of Rio Grande Water Users, Inaugural Meeting, Santa Fe, NM

November 8–10 National Water Resources Association, Leadership Forum and Annual Conference, San Antonio, TX

January 23–25, 2024 *Irrigation Leader,* Irrigation Leaders Workshop, Phoenix/Chandler, AZ

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