



NSPE-TX™ TEXAS SOCIETY OF
PROFESSIONAL ENGINEERS



February 20-26, 2022

National Engineers Week

INSIDE:

Updates on stormwater projects
hit by summer storms

Female engineers in leadership

Photos:

(above) Sam Snead Stormwater
Recovery Project

(right) Ojo de Aqua Channel Repair
before and after



EPWATER IN HIGH GEAR ON STORMWATER IMPROVEMENTS

By Cassie Flores, El Paso Water



Before and after of Ojo de Agua Channel in West El Paso.

Under January's approved stormwater budget, EPWater announced it would accelerate planned projects and implement the full master plan within 10 years. New federal and state funding announced last week will help the utility to manage costs and move soon on some of the needed infrastructure improvements.

U.S. Army Corps of Engineers announced it will fund \$7 million from the Infrastructure Investment and Jobs Act for two El Paso stormwater projects. About \$3 million will go toward the Clardy Fox Pump Station in the Lower Valley, and \$4 million will go toward the Northgate Diversion Channel in the Northeast. The funding represents 75% of the total cost, and the utility will provide a 25% match.

The Texas Water Development Board also announced Flood Infrastructure Fund assistance to the Will Ruth Pond project, a long-awaited project located in Northeast El Paso. The utility will receive \$5.1 million in grant funding and additional low-interest financing to begin construction later this year.

The 93-million-gallon pond will collect stormwater from Dyer Street and the surrounding area and prevent it from flowing into nearby neighborhoods. With better flood control, hundreds of homes near Will Ruth Pond will be mapped out of the floodplain, which could save many homeowners from having to pay for flood insurance.

Progress on Repairs from the 2021 Monsoon

When storms hit the Borderland with record-breaking rain in summer 2021, El Paso Water moved to fast-track stormwater system repairs, and the Public Service Board acted quickly to pass an emergency declaration that allowed EPWater to hire additional contractors.

The utility documented 65 locations citywide where channels, ponds and drains were damaged or blocked with debris and rocks.

Two channels critical to the West side stormwater system took a particularly hard hit. The Ojo de Agua and the High Ridge channels are essential for diverting stormwater runoff from the Franklin Mountains. Both concrete channels and surrounding rock walls sustained significant damage.

"We knew we needed to act fast because monsoon season was still ongoing," Stormwater Engineer Rafael Velazquez said. "But the emergency declaration really saved us a lot of time."

The reconstruction on both channels wrapped up in January, sporting fresh and thicker concrete for renewed strength.

Roughly 29 smaller stormwater projects throughout El Paso have been completed since the emergency declaration was approved.

Preparing for the next big storm

Improvements to stormwater infrastructure also are underway in Central El Paso.

In August, the area recorded a record 3.2 inches of rain in one hour, classifying it as a 230-year storm, according to the National Oceanic Atmospheric Administration. In 2006, the same area received 1.5 inches of rain in one hour, falling into the category of a 100-year storm.

"Since the inception of the Stormwater Utility, most of our structures are built to a 100-year standard; however, older structures and dams in the Central watershed were simply overwhelmed due to previous design standards," said Gisela Dagnino, Engineering Division Manager for Stormwater.

Crews are adding more capacity at the Morehead Dam, burrowed along the mountainside behind Morehead Avenue. During the August storms, rushing waters carried rocks and dirt downstream to the heavily trafficked Alabama Avenue.

Farther north at the Memphis Dam, crews are strengthening slopes to withstand high-velocity rushing waters, erosion and ultimately reduce future damage.

Investments in planning and future infrastructure

To offset the massive costs of new stormwater projects, EPWater continuously pursues funding alternatives and partnerships to minimize the impact to customers.

In September, the utility and the U.S. Army Corps of Engineers jointly announced a \$3 million, 3-year feasibility study of the Central Cebada watershed. The study will run models on flooding dynamics in the Central watershed and audit the Central drainage system to look at sufficiency of existing dams and evaluate solutions. Based on the results, there's an opportunity for the Corps to potentially fund a portion of the cost of design and construction for projects from the study.

"The Corps of Engineers has been a great partner with us," said Government Affairs Manager Hector Gonzalez. "We have collaborated in the past on water and wastewater projects, but with their expertise and our needs, we have shifted our funding focus to flood control infrastructure needs here in El Paso."



Contractors building gabions (wire cages with rocks) at the Memphis Dam in Central El Paso.

TSPE'S ENGINEER OF THE YEAR AWARD



Gilbert Trejo, P.E.

Gilbert Trejo, recipient of TSPE's Engineer of the Year Award, has been preparing his whole life for a rewarding career at El Paso Water.

From his first job cleaning canals as a youth to his first job out of college at the United States Geological Survey as an entry level civil engineer, Trejo has become one of the nation's renowned water reuse experts and one of the utility's most valuable members of senior leadership.

As Interim Chief Operations Officer for Production and Treatment, Trejo oversees EPWater's water and wastewater treatment plants.

"Going into Operations was a very natural next step for me to understand that side of the process," Trejo said. "We engineer things and operators have to operate them, maintain them and then another project is born at some point because those facilities get old. It's extremely enlightening, eye-opening and it's certainly going to make me a better engineer for it."

Previously, he served as Chief Technical Officer, which includes engineering, planning and development, and project and construction management. Before coming to the utility in 2014, he was the principal in charge of Arcadis' water

division in the El Paso region. Trejo is also past chair and current board member for the Water Reuse Association and serves on the board with the Water Environment and Reuse Research Foundation. He is a licensed Professional Engineer in the State of Texas and a Certified Floodplain Manager. Trejo earned a Bachelor of Science in Civil Engineering from the University of Texas at El Paso and a Master of Science in Environmental and Water Resources Engineering from the University of Texas at Austin.

Trejo credits his parents for his successful 16-year engineering career because they instilled a strong work ethic. It's something he likes to share with young engineers who seek out his career advice.

"Ask a lot of questions, listen and work hard," he said. "That means do a little bit more than what is asked of you. Hard work for me meant staying late and asking for more assignments. Also, above all, treat people right."

In addition to being recognized as the Engineer of the Year of the TSPE El Paso Chapter, Mr. Trejo will also be nominated for the State Engineer of the Year Award. TSPE would like to congratulate and thank Mr. Trejo for his dedicated service to the engineering profession and El Paso community.

TSPE'S YOUNG ENGINEER OF THE YEAR AWARD

The El Paso Chapter of the Texas Society of Professional Engineers (TSPE) will present its 56th Annual Young Engineer of the Year Award to Isaac Rodriguez, P.E., on February 18th, 2022. This honor serves to recognize Mr. Rodriguez's technical ability, professional achievements, and civic and humanitarian activities.

Mr. Rodriguez is a graduate of the University of Texas at El Paso where he earned a Bachelor of Science degree in Civil Engineering and is a licensed professional engineer in the state of Texas. Mr. Rodriguez is a project manager at H2O Terra with over ten years of combined experience in land development, water distribution, wastewater treatment, and storm water design projects. He has designed several residential subdivisions and contributed to various engineering projects throughout the city of El Paso. This list includes Enchanted Hills Unit 3, Peyton Estates Units 7 & 8, Haskell Street Wastewater Treatment Plant Heating System Upgrades, John T. Hickerson Water Reclamation Facility Design Build, and implementation of a skid mounted Concentrate Enhanced Recovery Reverse Osmosis (CERRO) unit

at three Lower Valley Wellhead Reverse Osmosis units, which was a gold medal winner at the 2020 ACEC Engineering Excellence Awards in Texas.

Mr. Rodriguez is currently president for the NSPE-TX El Paso Chapter and has served on the TSPE board since 2014. He is also a former member of the board of directors for the Paseo Del Este MUD 4 and is currently serving his appointment to the City of El Paso's Zoning Board of Adjustment. He actively volunteers in the El Paso community promoting STEM and civil engineering to the UTEP Alumni Mentorship program and local schools. He also volunteers as a youth football coach for the Upper Valley Longhorns 7U program. Mr. Rodriguez enjoys spending his free time with his wife Natalie raising their five wonderful kids.

In addition to being recognized as the Young Engineer of the Year of the TSPE El Paso Chapter, Mr. Rodriguez will also be nominated for the State Young Engineer of the Year Award. TSPE would like to congratulate and thank Mr. Rodriguez for his dedicated service to the engineering profession, TSPE and the El Paso community.



Isaac Rodriguez, P.E.

ENGINEER HONOREE TREJO GROOMED FOR **INDUSTRIOUS** **CAREER IN WATER**

By Martha Koester, *El Paso Water*

El Paso's Engineer of the Year Gilbert Trejo of El Paso Water has been learning about the water sector since he was 18 and cleaning canals in El Paso's Lower Valley.

Fresh out of Ysleta High School, Trejo took a job cleaning canals for the El Paso County Water Improvement District during the summer heat. Growing up in the shadow of the Rio Grande in the Lower Valley, he had already gained an appreciation of the neighboring Ysleta del Sur Pueblo's intimacy with the river and how the area's farmers use the canals for irrigation.

"I am very fortunate that as an El Pasoan, I understand the river valley," he said. "The Rio Grande is not a border to me; I grew up all along it."

Getting an education

After earning his bachelor's in engineering at the University of Texas at El Paso, Trejo moved to focus on his master's at the University of Texas at Austin. While there, he worked for the United States Geological Survey as an entry level civil engineer conducting ecological surveys.

At the USGS, Trejo's introduction to engineering was running water quality measurements on the state's diverse waterways, and he eventually wrote his master's thesis on stormwater modeling on unit hydrographs.

After 6 years with Arcadis in the Dallas office, Trejo had the opportunity to return to El Paso and become the principal in charge of Arcadis' water division in the El Paso region. A thriving career at EPWater would soon follow, where he served as Chief Technical Officer and was recently promoted to Interim Chief Operations Officer for Production and Treatment.

Trejo has gained a national profile as one of the nation's renowned water reuse experts and advocates. He is past chair and current board member for the WaterReuse Association and serves on the board with the Water Research Foundation.

"It's all about building relationships and maintaining them," Trejo said. "I was given a lot of opportunities from a lot of people in El Paso and outside of El Paso. I have taken full advantage and just worked hard."

On being named Engineer of the Year, Trejo said the recognition allows him the opportunity to shine a light on EPWater's dedicated team who works hard daily to provide clean and safe drinking water and top-notch water services. He also credits his parents for instilling a strong work ethic.

"I am happiest for my parents because they get to experience this with me," he said. "Work hard, be respectful, try your best – super simple. It really is that easy."

Life lessons

It's an ethic that has served him well at EPWater, especially during times of crisis, such as the recent Frontera wastewater emergency.

"Mr. Ed Archuleta did a fantastic job leading this utility in the past, planning ahead for future water sources," Trejo said. But current President and CEO John Balliew, who advanced long-term water supply further and brought new focus to the people and culture at EPWater, is who Trejo counts as a mentor for his strong and even-keeled leadership during the Frontera emergency.

"Now, we are entering this new water utility era – maintenance, repair and replacement. The rehabilitation of our system needs to be No. 1," Trejo said.

Trejo realized that his all-encompassing knowledge of water – from cleaning canals as a youth to his early career with the USGS – prepared him very well to handle issues like the Frontera emergency.

"I was very comfortable with what was going on because of the experience I had with the USGS – understanding water quality, natural streams and how the environment protects itself," he said. "When Frontera happened, it was very intimate to me. I understood everyone's perspectives – economic growth and impact, City Council concerns. I'm an El Pasoan and glad that I could be of assistance."

Aside from countless industry achievements, which include making significant headway with EPWater's future Advanced Water Purification Facility, Trejo said he is



Gilbert Trejo, El Paso Water's Interim Chief Operations Officer for Production and Treatment, overlooks the Rio Grande outfall where treated wastewater from the John T. Hickerson Water Reclamation Facility is released into the river.



Trejo, shown at the Kay Bailey Hutchison Desalination Plant, has gained a national profile as one of the nation's renowned water reuse experts and advocates.

most proud of the little girls he has coached from age 6 to 16. High-school graduation and college will soon break up the softball team, which includes his daughter.

Trejo names former Ysleta High School football Coach Craig Richey as the influence that drove him to coach a team.

"I am not a big guy and was going to quit the football team until Coach said, 'Just come out and try hard; there's always going to be a place for you,'" said Trejo, who ended up playing on the varsity team as a starting linebacker. "He taught me how to believe in people, and I wanted to show that to other kids. It's a life lesson I took with me and carry out to this day."

H₂Terra CONGRATULATES OUR YOUNG ENGINEER OF THE YEAR ISAAC RODRIGUEZ, P.E.!

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H2O Terra, LLC, is a small locally owned business with a forty-year history of innovative and economical solutions in Civil Engineering and Surveying in the El Paso community, west Texas, and southern New Mexico. Originally founded in 1980 as Roe and Associates, it was primarily a surveying and development services. In 2014, under the new proprietorship of Steve Morgan, P.E., the company expanded its services to include

water, wastewater, stormwater, construction management, subsurface utility engineering (SUE), and aerial drone surveys. In 2020, H2O Terra was awarded the Gold Medal from the ACEC Engineering Excellence Awards in Texas for the Concentrate Enhanced Recovery Reverse Osmosis (CERRO) project completed at three El Paso Water Lower Valley Wellhead reverse osmosis units.



Today, H2O Terra has twenty-eight local employees, many are UTEP graduates, including six engineers registered in the state of Texas and a Registered Professional Land Surveyor. We are growing to meet our client's needs as a full-service Civil Engineering and Surveying firm through our increased technical capabilities, expertise, and resources that include:



This year we are excited to celebrate Isaac Rodriguez's, P.E., selection as TSPE's Young Engineer of the Year. Isaac graduated from UTEP with a Bachelor of Science degree in Civil Engineering and he is a Project Manager with over ten years of experience in land development, water distribution, wastewater treatment, and storm water projects. Isaac's contributions have been most notably Enchanted Hills Unit 3, Peyton Estates Units 7 & 8, HSWWTP Heating System Upgrades, JTHWRF Rehabilitation, and the CERRO project. Isaac actively volunteers in the community promoting STEM and civil engineering, he volunteers as a youth football coach and enjoys free time with his family.

In a culture where often the philosophy is "bigger is better", our small, locally owned firm is truly committed to serving our clients! Thanks, El Paso !

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FEMALE ENGINEERING LEADERS THRIVE AT EPWATER

By Martha Koester, El Paso Water



Rojas and Castillo participated in the First Annual Girl Powered Conference at the University of Texas at El Paso in October. Utility Engineer Associate Emma Saucedo-Cordova and Engineering Lead Technician Desiree Dominguez also took part.

Interim Chief Technical Officer Irazema Rojas (from left), Engineering Division Manager Adriana Castillo for Planning and Development and Engineering Division Manager Amy Castner for Water/Wastewater Engineering are helping to build diversity at El Paso Water.

El Paso Water is a rare phenom in the water industry, as the utility's female engineers in leadership continue to shatter barriers and build diversity.

Less than one in five employees in the water sector are women, according to a 2020 study by the World Bank on women in water utilities.

With six female engineers in leadership roles, EPWater offers aspiring female employees a pool of inspirational role models.

- Interim Chief Technical Officer Irazema Rojas
- Wastewater Treatment Manager Aide Fuentes
- Water Production Manager Veronica Galindo
- Engineering Division Manager Amy Castner for Water/Wastewater Engineering
- Engineering Division Manager Adriana Castillo for Planning and Development
- Engineering Division Manager Gisela Dagnino for Stormwater Engineering

Career advancement

All are longtime employees who have developed their careers at the utility and climbed the ranks. Most notably, they all have a significant role in the design and maintenance of EPWater's water, wastewater and stormwater systems, as well as in policymaking.

All agree dedication, diligence and perseverance led them to their current positions.

"You really have to put in your work, and let your work speak for itself," said Rojas, the first woman to be promoted to Interim Chief Technical Officer. "Don't limit yourself. I hope that I am doing something right so that other women and men could follow suit."

The secret to success is in managing the tougher projects, said Castillo, who began her career as a chemical engineer working in the lab at EPWater.

"Learn as much as you can," Castillo said. "Don't shy away from challenging projects because those will give you more tools in the future to become promotable."

Castner stressed that all aspiring engineers should become licensed professional engineers.

"It wasn't easy for me to get either, but that's the route you have to take to move up," said Castner, whose father was an engineer and provided inspiration.

Fostering growth

All agree that EPWater helped lay the foundation for their successful careers.

"I have always had opportunities to grow," Castillo said. "If you want it and the opportunity is open, they consider the person and their qualifications."

"EPWater is like a family because we cooperate with everybody else and work as a team," Castner said.

"There's a focus on continuing education and bettering yourself," said Galindo, who said her affinity for math and science led to her engineering career. "Supervisors are always very supportive of whatever class you want to take, even though it's going to move you out of the section. They want you to advance."

Rojas is also grateful she had the opportunity to advance her career in the El Paso community, where she has enjoyed work-life balance as a working mother.

"I love our city," Rojas said. "We are a model community, and I think we have had great women in leadership positions, from former mayors to female engineers who have pioneered this industry."

SUNSET RESERVOIR REHABILITATION

On the morning of March 26, 2020, a 5.0 earthquake near Mentone, Texas was felt in El Paso. The tremor caused water to leak from the Sunset Reservoirs, a system of two large water tanks located near downtown El Paso which were already slated for rehabilitation. The reservoirs, which are over 100 years old, are built into solid rock and are critical to the water supply. For this reason, as well as being historical structures, a long reconstruction schedule was simply not feasible. El Paso Water worked around the clock with CONSOR Engineers to immediately inspect the reservoirs and to develop a time sensitive rehabilitation plan that would remedy the damage caused by the tremor and extend the life of the reservoir. The proposed solution was to install Carbon Fiber Reinforced Polymer (CFRP) over the existing surface of the inside of

the reservoirs. CFRP is a fiber material that in combination with epoxy, hardens and obtains incredibly high strength. Areas that were damaged by the earthquake were repaired using concrete patches and epoxy sealants over large cracks. Once the repairs were made, the CFRP liner was applied over the restored surface. The contractor responsible for applying over 100,000 square feet of carbon fiber laminates was Composite Construction out of Tucson, Arizona. The overall cost for the rehabilitation was \$4.1 million. The 4.0 million gallon water reservoir is now back in service, continuing to supply the area of Sunset Heights, UTEP and downtown El Paso. This project is the largest application of CFRP in an El Paso Water project to date.

ACEC would like to recognize all the efforts that El Paso Water does to keep critical infrastructure safe.



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On behalf of the El Paso Chapter of the Texas Society of Professional Engineers, we hope you enjoy this special section of the El Paso Inc. celebrating the 71st Annual National Engineers Week. This week is dedicated to raising public awareness of the engineering profession amongst students, parents, and teachers and to encourage students to pursue engineering and technology careers in order to provide a diverse and vigorous engineering workforce. Engineers Week was started in 1951 by the National Society of Professional Engineers and is now a collaboration of more than seventy engineering, educational and cultural societies with the support of many corporations and government agencies. Although we are celebrating one week, we invite you to explore and increase your awareness of how engineers, through innovation, contribute to our everyday quality of life. Speak to a teacher, counselor or one of the many engineers working in our community and find out how you can or encourage someone to pursue an engineering profession.

Sincerely,



Isaac Rodriguez, P.E.
President, El Paso Chapter of TSPE

