Tres Ríos Headworks JOC

by Lilian von Rago

As anyone who works in the wastewater industry knows, hydrogen sulfide (H2S) is an odorous toxic gas that smells like rotten eggs, corrodes infrastructure, and impairs the performance of wastewater treatment operations. Hydrogen sulfide is naturally converted to sulfuric acid, which is corrosive to steel and concrete. Last year during an inspection, RWRD staff noticed that extreme corrosion to its Archimedes screws at the headworks caused the pumps to lose efficiency. The screws were in dire need of replacement.

An Archimedes screw is a type of pump (allegedly invented by the ancient Greek scientist Archimedes) for removing water from the hulls of large ships. RWRD uses three of these enormous pumps at the headworks to lift influent from a low point to a high point (30 feet higher) so that it can flow through RWRD tanks by gravity, go through the treatment process, and return to the Santa Cruz River via the outfall.

The screw pumps at Tres Ríos Water Reclamation Facility (WRF) were originally installed in December 2000 at a cost of $250,000 each. They weigh 43,300 pounds, are 46 feet long and 8 ½ feet wide. Over time, H2S corroded the metal screws to the point where the fins were full of holes and the metal had deteriorated to almost nothing. Part of that corrosion occurred because the flows at Tres Ríos WRF are not laminar flows. Instead, they are characterized by chaotic property changes including rapid variation of pressure and flow velocity.

One screw pump is scheduled to be online before Independence Day; two other screws are being replaced next year. One Archimedes screw can pump 33 MGD. They run 24 hours a day and their use rotates among three screws.
by Jackson Jenkins

Some call the summer of 2021 “The Summer of Freedom,” marking the nation’s return to normalcy after the pandemic. People are flying and cruising again. The summer Olympics in Tokyo are slated to begin July 23. Families and friends are having back-yard barbecues to celebrate our nation’s independence!

As you celebrate this summer, be extra vigilant about keeping hydrated, keeping an eye on children near water, applying sunscreen, and consuming alcohol responsibly. Extreme temperatures and continuing drought require us to be cognizant of the fire danger that comes with lighting up fireworks and barbecues.

As we navigate into a new fiscal year, I would like to update you on the FY 2021/2022 budget. For a number of years, we kept our budget at the same level despite inflation, increases in employee costs, and in utility costs. For FY 2021/2022, we’re increasing our operations budget due to the restoration of programs such as Odor Control and Root Control, programs that were cut in 2020. Chemical costs increased due to COVID-related shortages, and Tucson Electric Power Company and Tucson Water have also raised their rates, which will affect our operations.

To learn more about recent departmental happenings, please attend my semi-annual Pillar Talk scheduled for August. The Pillar Talks are my opportunity to share information about new developments within the department that you may not be aware of.

As always, thank you for your hard work, dedication, and the effort that goes into producing A+ quality water. It would not have been possible without the high level of service that you provide to our customers.

2021 PILLAR TALK MEETING SCHEDULE

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<tr>
<td>Tuesday, August 3</td>
<td>7:15 - 8:45 a.m.</td>
<td>Conveyance Division Conference Rm.</td>
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<td>Tuesday, August 3</td>
<td>2:00 - 3:30 p.m.</td>
<td>Tres Rios WRF - Lrg. Conference Rm.</td>
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<td>Wednesday, August 4</td>
<td>1:00 - 2:30 p.m.</td>
<td>Sub-Regional - Lrg. Conference Rm.</td>
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<td>Thursday, August 5</td>
<td>9:30 - 11:00 a.m.</td>
<td>Water Campus - Radon Conference Rm.</td>
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<td>Monday, August 9</td>
<td>9:30 - 11:00 a.m.</td>
<td>Public Works Bldg. - Conference Rm. C</td>
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<td>Thursday, August 12</td>
<td>7:00 - 8:30 a.m.</td>
<td>Tres Rios WRF - Lrg. Conference Rm.</td>
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<tr>
<td>Thursday, August 12</td>
<td>2:00 - 3:30 p.m.</td>
<td>Conveyance Division Conference Rm.</td>
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<td>Friday, August 13</td>
<td>7:00 - 8:30 a.m.</td>
<td>Mission Road - Building 9 Training Rm.</td>
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The Hazards of Living in Tucson

Tucson is a beautiful city that is growing fast. We can see some sort of development everywhere we go. The weather is typically pleasant, aside from the extreme heat we need to deal with in the summer. But what are the hazards we face while living here? There may be more than you think. The City of Tucson has a webpage dedicated solely to those hazards. The following hazards made their list:

- **Disease:** Due to our population, we have experienced plenty of disease. There have been outbreaks of influenza, measles, coronavirus and more.
- **Drought:** We are in the midst of a severe drought but have certainly dealt with droughts historically. Droughts are a risk to one of our most precious resources: water.
- **Earthquakes:** Even though they were in the 1800’s, we have had a couple of significant earthquakes. One of them was estimated to have an intensity of 7.2!
- **Extreme Temperatures:** The Tucson area has a huge range of temperature extremes. From a high of 117 degrees to a low of only 6 degrees. Both extremes cause challenges for vulnerable persons, infrastructure, and businesses.
- **Floods and Flash Floods:** We see this often. Rain in the mountains rushes down to the desert floor causing damage, destruction, and risk to life if you get in its way.
- **Hazardous Materials Incidents:** These incidents occur with the transportation of hazardous material by rail, truck, or pipe. While these incidents tend to be localized, they can still affect vast areas of the population (for example: a natural gas line rupture).
- **Human-Caused Disasters:** Disasters such as structure fires have taken numerous lives in Tucson.

**Severe Wind:** Our severe thunderstorms cause extreme wind events at times. These microbursts topple large trees and can destroy residences. We have also been exposed to hurricanes coming up through the Sea of Cortez.

- **Wildfires:** Unfortunately, wildfires have become a part of our daily lives and are also related to drought. When the forest is destroyed by fire, flash floods become more significant because there are no plants and trees whose roots can absorb the rain in the mountains.
- **Winter Storms:** Winter storms over the years have dumped almost 7 inches of snow, and have caused many pipes to burst, leaving residents without water.

Some of the hazards that did not make the list are traffic, tornados, and lightning, all of which have caused death and injuries over the years.

For so many reasons, people are attracted to the beauty of this area; that is why we are growing so fast, but adverse health and safety events occur in Tucson more often than you would think. Pay attention to local media outlets and heed warnings when advised to stay out of certain areas. For more information on some specific historical events relating to the above categories, go to: www.tucsonaz.gov/em/our-hazards

**SAFETY SHARE**

**Summer is here!** Many people will be preparing to take a vacation in the next several weeks. One of the most important things to do before leaving on a road trip is to check your tires. Inspecting your tires can help you avoid an accident, and a major headache!

Do you have a Safety Share to share? Email pipeline@pima.gov
How RWRD is responding to Arizona’s long drought

Arizona faces multiple hazards this summer, from a welter of wildfires to a record-smashing heat wave. The most serious peril can be summed up in a single word: drought.

Arizona has been in the grip of a severe drought for the past 22 years, with no end in sight. According to the National Integrated Drought Information System, 57.8 percent of Arizona is experiencing Exceptional Drought, the highest category possible. The past year was the driest year Arizona has weathered in at least 126 years.

Last month, the water level in Lake Mead—the massive reservoir on the Arizona-Nevada border that provides our state with much of its water—finally dipped below 1,075 feet. If that low level persists, the U.S. Bureau of Reclamation will declare a water shortage, triggering reduced water deliveries to Arizona. The Central Arizona Project (CAP), which supplies 36 percent of Arizona’s water, could have its water allocation cut by 18 percent.

What’s causing the water level to drop? Like other rivers, the Colorado River is replenished by melting snow. As temperatures increase due to climate change, the soil dries out, which means that the ground absorbs a lot of that snow runoff. Normally, the soil would be moistened by rain—except that the Southwest isn’t getting that rain. Low river flow means that less water goes to the reservoirs.

Like a pebble dropped into a lake, drought has ripple effects that spread far and wide. Dry grasses and brush drastically increase the potential for wildfires. The dry ground makes flooding more likely. Drought can have a devastating impact on farms and ranches, and it can do lasting harm to local plants and animals.

As the drought worsens, responsible water use becomes even more critical. That’s why Pima County has taken a number of actions to conserve water. RWRD has made a significant contribution to a sustainable future by making it possible to recycle much of the water that goes through the county’s sanitary sewer system.

Since 2000, RWRD has upgraded its water reclamation facilities in order to produce higher quality effluent. Thus, we can use treated wastewater to irrigate parks, golf courses, and other areas around the county. In addition, effluent is used to replenish the Santa Cruz River and nourish the riparian ecosystem. This helps to conserve our potable water supplies.

With CAP—which supplies more than half of our local water supply—facing potential cuts, it’s likely that the value of these efforts will only increase. RWRD is committed to promoting sustainable water practices to ensure that we use this essential resource as efficiently and responsibly as possible.
Eddie Arevalo, WW Utility Maintenance Worker III, is RWRD’s Employee of the Quarter! RWRD Supervisors and Managers voted for Eddie to receive this honor because of his resolute dedication to upholding the safety measures of the Department. On April 26, he celebrated eight years with RWRD.

Eddie is a native Tucsonan. After graduating from Pueblo High School, he joined the Fire Department. When asked what he found to be the most common cause of fires, he did not say arson, or cigarettes left burning, or candles. The most common culprit was a certain type of coffee maker (which was subsequently reconfigured with stringent safety measures). Eddie is very proactive about safety, and it probably would not surprise anyone if he gave safety tips to the manufacturer of the coffee maker.

In 2020, Eddie was part of a team of RWRD personnel who won the AZ Water Gimmicks and Gadgets Award for the idea, design, and prototype of the Delta, now known as the Safety Cross. When the Occupational Safety and Health Administration (OSHA) changed their requirements for fall protection while working around an open manhole, they specified that open manholes must be protected by a cover, a guardrail system, a travel restraint system, and a personal fall arrest system. The change directly affected the Conveyance Division, so the safety team began researching manhole covers from different vendors. None were suitable for Conveyance Division needs, so Eddie, his supervisor Safety Coordinator Chris Hernandez, and other members of the safety team designed the device that would prevent a fall into a manhole, yet give crew members the capability of working inside the manhole. The Safety Cross has now been produced, is in use, and RWRD employees have a safer workplace.

When Eddie is not working at RWRD, he is working at home. He’s adding a 1,700 square foot addition to his 1,000 square foot house. He jokes that it feels like he has been living in the addition, and is now adding the house! His other passion is cruising. He has sailed to numerous ports of call including the Mexican Riviera, the west Caribbean, Alaska, and is planning another cruise that includes Panama in 2023.

Eddie is a huge asset to RWRD helping make an industrial workplace safer. He says, “You know how, technically, there are four seasons? I believe there are five seasons, and one of them is safety, and it’s a year-round season.” His supervisor, Chris Hernandez said, “Eddie, being in his second career at RWRD, previously a firefighter for 30 years, is always available and ready to respond. It’s a privilege to have him on our team”.

Safety & Security Program Manager Ken Coultas said, “Everyone will agree that Eddie is always there to help. He is exceptional in his efforts to improve workplace safety--not only in Conveyance but throughout all of RWRD. He is a true asset to the safety program!” Congratulations, Eddie, on this honor. You earned it!
You may have heard the phrase “If it ain’t broke, don’t fix it.” Although this thought process may work in the short term, unplanned asset failure could be catastrophic in the 24-hour-per-day wastewater industry. That is why Water Campus staff are thrilled to have an assigned Facilities Management Trades Maintenance Supervisor Mike Moran on site.

Mike has been with Pima County for 25 years. His role is to perform preventative maintenance on systems that support the Water Campus Building — pumps, chillers, cooling towers, and the like. But that’s not all. He’s done fabrication and assembly of components for rocket motors, all kinds of work on structures, and he’s a mechanic. This guy is going to be busy!

Mike will tell you that, as a rule of thumb, it’s less costly and less stressful to prevent issues rather than react to them. Companies and organizations can waste thousands of dollars each year due to a lack of consistent proactive repairs whereas preventative maintenance promotes optimal equipment performance and reduces the likelihood of unexpected issues occurring.

You can find Mike in cubicle 1026H. His hours are Monday through Friday from 8 a.m. to 5 p.m., and his desktop phone number is 724-6267. Managers will be able to go directly to Mike to make requests that may not require a work order. Managers should include him in any communication to administrative or managerial staff regarding building issues or work orders. He’s been added to the Water Campus and CRAO group email list, and even though he remains a Facilities Management employee, he needs to be in the loop at the Water Campus. Welcome, Mike!

**COMINGS AND GOINGS**

**NEW HIRES – None**

**PROMOTIONS – Congratulations!**

Sergio Gamboa  
Utility Maintenance Worker II  
Conveyance Division

Steve Garcia  
Utility Maintenance Worker II  
Conveyance Division

Joshua Kroll  
Utility Maintenance Worker II  
Conveyance Division

Timothy Salazar  
Purchasing/Warehouse Supervisor  
Treatment Division

**PROMOTIONS**

Patrick Smith  
Utility Maintenance Worker II  
Conveyance Division

Seth Waters  
Utility Maintenance Worker II  
Conveyance Division

**RETIREMENTS – Good-bye!**

Joseph Amendola  
Utility Maintenance Worker III  
Conveyance Division

**HAPPY BIRTHDAY**

Happy Birthday to all those celebrating in July!

**PIMA COUNTY**

WASTEWATER RECLAMATION