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Tipping Green

Overcoming the Yuck Factor

by Lee Allen

Nearly everybody who is anybody has sung about water. From Hank Williams, Marty Robbins, Slim Whitman, and Johnny Cash to Riders in the Sky, Sons of the Pioneers, and even The Muppets, performers have lamented, “All day I face the barren waste / Without the taste of water, cool water”—lyrics from one of the top 100 Western songs of all time, *Cool Water*, by Bob Nolan.



Tucson Water's Central Avra Valley Storage and Recovery Project recharge facilities, where CAP water is recharged and allowed to blend with native groundwater, are visible from Gates Pass.

Courtesy: City of Tucson Water Department

Tucson is no stranger to water-shortage issues, and Tucson Water is proposing a solution to these challenges. “Specially treated and purified wastewater could be Tucson’s next renewable water resource,” says the utility’s public information officer, Fernando Molina. “Groundwater pumping is not sustainable in the long run, and climate change and drought may impact future delivery of Central Arizona Project water. So now is the time to look at supply projections through 2050 and start considering some transitioning to renewable supplies, and reclaimed water is our best resource, our best option.”

Tucson Water has been delivering recycled wastewater for irrigation use at a thousand sites since 1984, in places like parks and golf courses. “But we still have a large amount of treated wastewater, about thirty percent, that goes unused,” says Molina. Currently, excess reclaimed water is allowed to flow into the dry Santa Cruz riverbed and percolate its way into the aquifer.

“This is a resource we’ve already paid for twice,” he explains. “We pay to bring the water here, our customers use it, then we pay a second time to clean it back up. It’s a resource we already own. We don’t have to go out and look for it, then figure out how to get it here. As

we examine our future water reliability, this will be our best resource.”

Brace yourself. What Molina is talking about here is a concept already familiar to thirsty, drought-plagued Californians. It’s euphemistically called “toilet to tap,” a man-made multitiered purification process that replicates nature’s own water-cleansing system.

A T-T-T program is already in operation in Orange County (\$620 million initially with a \$142 million expansion), and Los Angeles County is currently working on a \$1 billion project that will be the world’s largest. Even more stringent programs are already at work in harder-hit areas, like Big Springs, Texas, a town that went completely dry and



Fernando Molina

Membrane filtration technology, as used in Orange County, California, could be a part of Tucson’s future water-recycling plans.

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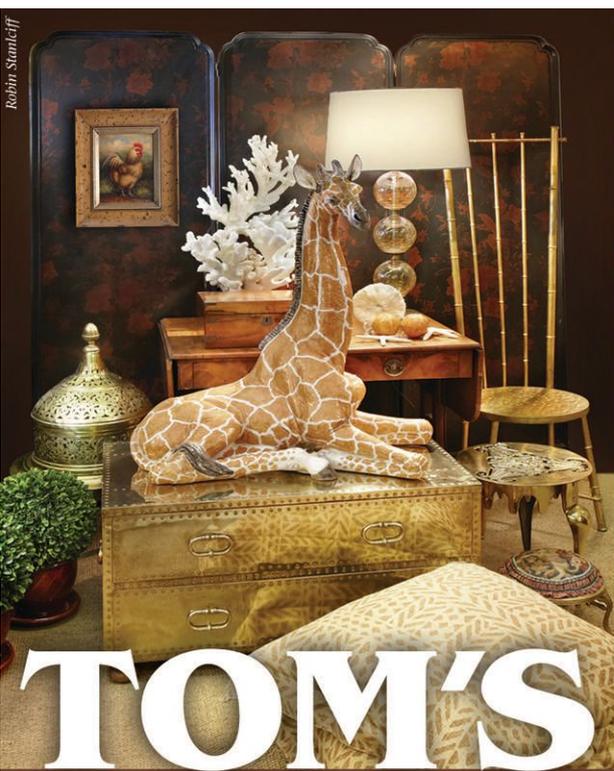
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had to rely on direct potable reuse for its drinking water.

Sharon Megdal, director of the UA's Water Resources Research Center, supports the concept but doesn't subscribe to the toilet-to-tap terminology: "The term sticks around just because it does, but it doesn't accurately describe the true, complicated process. People need to get beyond the 'yuck' factor and realize that utilities have to plan to close future gaps between supply and demand, and reusing treatable water for potable purposes is an important component."

Molina has drunk California's blended water without negative result, as have many visitors to Disneyland. "Orange County has been reclaiming effluent, recharging it into the aquifer, and pumping it back out for potable use in the city of Anaheim," says Molina. "So if you've been to Disneyland in the last thirty years, you've already tasted recycled water."

Tucson Water's planned treatment process involves multiple stages. "Recharge is the first step," says Molina, "and we have twenty-plus years' experience with reclaimed water. We also have more than a decade of experience recharging CAP [Central Arizona

Project] water. The next step would be some sort of membrane filtration, which would be something new for Tucson. Advanced oxidation would be the final step to destroy molecules of anything that might be left at this point, and we have a year or so experience operating an oxidation facility. In the end, our goal would be to meet, and exceed wherever possible, both EPA [Environmental Protection Agency] and ADEQ [Arizona Department of Environmental Quality] standards. Compared to what consumers are drinking today, we believe our blended water product would be an improvement."

Maintaining day-to-day operations to keep consumers satisfied is a given. Proactive management has helped Tucson Water build a reputation for prescience. "Our planning is really effective and we're respected around the world in terms of our innovation in recharge and recovery capabilities," says Molina.

"Any timeframe for implantation of a Recycled Water Master Plan [an executive summary is available on the department's website] hinges a lot on CAP water and what happens to that in terms of availability and cost. Recycling what we have will probably be cheaper

than seeking out more Colorado River water in Yuma and getting it here."

So the step-by-step toilet-to-tap process technology exists, and the planning for its implementation is underway. It is Molina's job to help consumers draw that mental connection and begin to get accustomed to it.

"Surveys we've conducted over the past couple of years show more than half of our customers are already comfortable with the concept," he says. "For those who still have some discomfort, public education is the key to understanding what happens between the start and the finish of the process. All we're really doing is accelerating what would be a natural process, because given time, treatment occurs naturally either through river systems or aquifer recharge. We're just taking advantage of technology to speed up the process to give our customers water that is safe to drink. Recycling fits the bigger water picture for our community, because we don't have a lot of other options—we're not near an ocean, we don't have flowing rivers, and salting clouds won't help much.

"We know that at some point we'll need to do this," he adds. "We just need

to keep people informed and help them to overcome any 'yuck' factor. When we talk about doing this, we're merely discussing the acceleration of a natural process with a lot of safeguards in place. There are proven ways to get around the repugnance factor and ensure a reliable supply of healthy drinkable water."

Jeff Biggs, manager of the Recycled Water Program, adds, "Our Master Plan provides guidance on how to move forward with managing our Reclaimed Water System for irrigation use—but also how to move towards closing the loop of the urban water cycle to ensure all investments we have made in water resources are maximized for water reliability into the future."

Molina is available to groups and organizations to discuss Tucson's long-term water picture and the role recycled water can play in ensuring a sufficient and safe supply. Call 791-4331 or visit tucsonaz.gov/water.

DL

Lee Allen is a local freelance writer. Comments for publication should be addressed to letters@desertleaf.com.



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