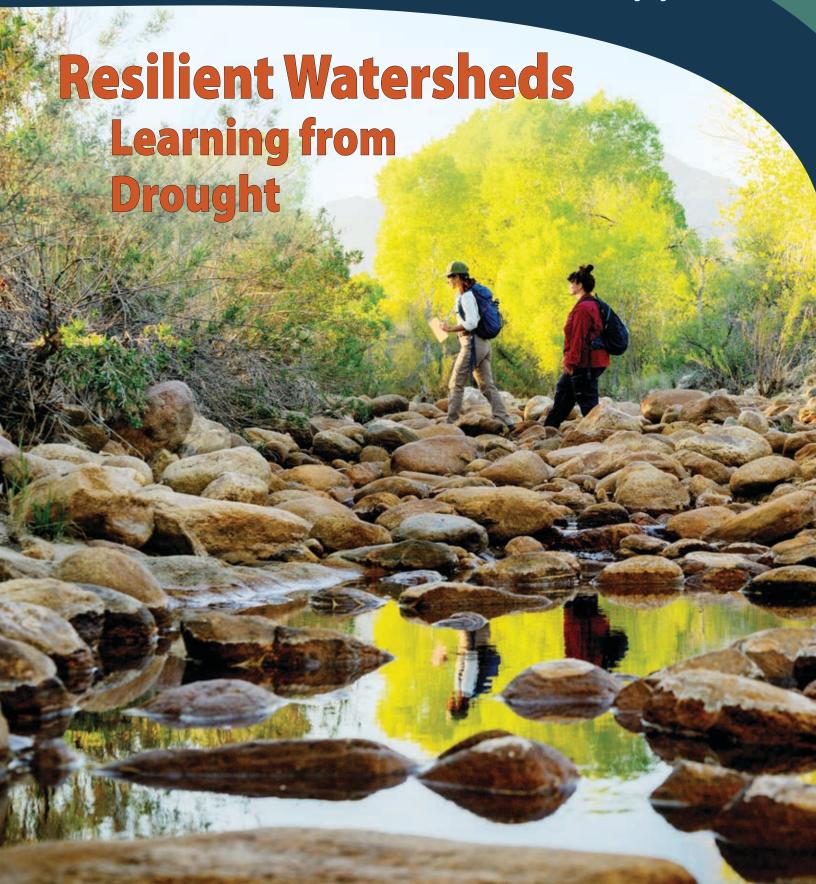


Watershed MANAGEMENT GROUP

A NEWSLETTER OF WATERSHED MANAGEMENT GROUP

watershedmg.org 520-396-3266





Writing & editing: Lisa Shipek, Jen Glass, Lauren Knight, Valerisa Gaddy, Catlow Shipek, Joaquin Murrieta Photos: Julius Schlosburg, Watershed Management Group Graphic Design & Illustrations: Dennis Caldwell **Cover:** Watershed apprentice, Lizbeth Perez, and Restoration Ecology Coordinator Staff, Nadira Mitchell, cross Lower Sabino Creek, flowing again thanks to fall moisture from two tropical storms.

From Severe Drought to Superbloom What The Desert Teaches Us About Resilience

By Lisa Shipek, Executive Director



It was a very dry winter in the Sonoran Desert. In March, they were saying it had been the driest six months on record.

The Sonoran Desert is considered a lush desert, with two rainy seasons per year: winter and summer. So after the record dry spell, we desert people waited. We waited alongside the Velvet mesquite trees, the wildlife, and the wildflowers, conserving our energy, anticipating the summer rains.

In late June, the monsoon season started with infrequent and scattered showers. The tension was building; dark storm clouds would gather in the distance, and all desert creatures thirsted for much-needed rain. And yet, it rarely came. Many creeks continued without flow, the Velvet mesquite trees lost some leaves and turned dull, and the wildflowers waited as desiccated seeds.

With our rain tanks now dry for many months, I scaled back my summer garden and shifted to piped-in Colorado River water to drink.

We watched the desert plants around us, concerned that this drought might be too long to survive if we did not intervene. The buckets came out, and we hauled water to our native trees and shrubs that normally thrive on the desert rains.

As the monsoon season was coming to a close in September, we took stock of plants lost and reflected on the drought, wondering, when would we get relief?

And then, mid-September, a degrading hurricane brought moisture in, and we received over two inches of rain! This was a big storm for a summer rainy season that averages 5-6 inches. So many emotions came with the rain – relief, exhaustion, joy, wonder. I recorded flows along the Rillito River, I prepared my cool-season garden beds and planted seeds, and I watched the plants around me respond to the rains.

A soft green fuzz grew across my yard, especially where stormwater flowed off the streets through our water harvesting swales and basins, bringing hundreds of thousands more gallons of rain than had fallen on our landscape from the sky. The barnyard daisies, the summer grasses, the sacred datura, and many more plants I don't

Above: Lisa and Catlow Shipek, Watershed co-founders, enjoying a wildflower superbloom on a fall morning following a year-long drought. They utilize harvested rainwater and stormwater as the primary irrigation for their native plants, fruit trees, and veggie gardens.

know by name raised their heads. I thought the green fuzz layer would not last; we'd really need more rain for these seasonal seedlings to reach their potential.

And then it happened: Tropical Storm Raymond came two weeks later, dumping 2.5 inches of rain in three days, and millions of gallons of stormwater flowed off the streets.

And that most unlikely thing happened in the wake of the year-long drought: a superbloom! It felt like pure joy in a carpet of yellow flowers, sweet smells, and bees caked in pollen. Our yard took on a soft and happy resonance, in stark contrast to the dry and desperate feeling just a month prior.

As I walk through the Rillito floodplain behind my yard, I see the wildflowers alongside new growth and flowers on native plants, as well as a few dead mesquite trees. The mesquites stand as a stark reminder of the record drought we just experienced and its bigger impacts.

In the Sonoran Desert, some plants look dead when they are waiting for rain. Growing up in NH, I'm very familiar with deciduous trees, plants that lose their leaves in the winter and conserve energy. In the desert, you have drought-deciduous plants – plants that can also shed their leaves due to lack of rain, not just cold. So, in the warm time of year, you might come across a tree or a shrub with no leaves, thinking it dead, but in fact, it's just waiting for the rains to come.

During the 25 years I've lived in Tucson, I've experienced a multi-decadal drought. We've had very dry seasons and many dry years. We've also had normal years, wet years, and record-breaking rainy seasons. 2020 was a record-breaking dry and hot year.

And yet, this year's drought felt different. This was a life-changing drought. This was a migration drought. This was a drought where waiting might lead to dying off. I could see the dying off in the plants around me, including some Velvet mesquites that have very deep roots and are the model of resilience. So the very difficult choice to leave in search of water would be upon us. I could feel this... yes, this is the type of drought that might cause people to leave their homeland.

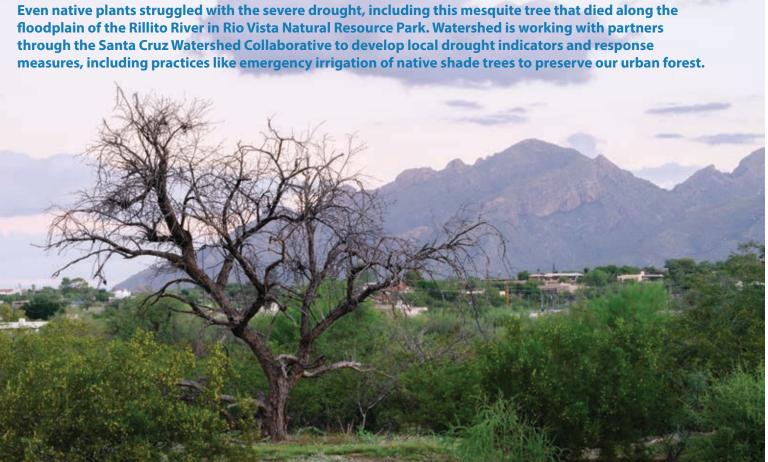
Even so, people have lived in the Sonoran Desert since time immemorial. They have not only survived but thrived here, eating the plentiful native foods, growing crops along the rivers, and developing vibrant traditions in tune with the seasons, lean times, and abundant times.

I often hear people talk about moving away from Tucson to escape to cooler and wetter climates. The folks planning migrations are usually those with shallow roots, often with affluence. And perhaps that makes sense, for it's the desert people who have learned how to thrive here. They know how to wait for the rains to come. They have learned how to harvest and store the rains for future times. They use and conserve water for life-giving purposes - drinking, bathing, sustenance.

Here are lessons for us all—to learn from the desert people, plants, and animals—and find a pathway to resilience, even in times of drought.

And yet, this year's drought felt different. This was a life-changing drought. This was a migration drought.





Coordinating and Communicating a Community-Wide Drought Response

By Lisa Shipek & Catlow Shipek

Watershed Management Group (Watershed) is spearheading an initiative to reshape how we respond to drought in the Tucson region. This work is taking place in collaboration with many partners through the Santa Cruz Watershed Collaborative, with the goal of identifying drought triggers and coordinating responses across jurisdictions, water utilities, and community and non-profit organizations.

Along with the goal of a coordinated response, we seek to better learn from and respond to drought conditions in the Tucson basin, protecting the health of our watershed including our groundwater aquifer, springs, river flows, urban and riparian forests, and wildlife.

This is a new way of thinking, different from current drought measures that respond only to shortages along the Colorado River, a distant but important source of water that has been piped into the region for several decades.

Our technical advisory team, which includes city and county representatives, has helped shape our recommended local drought status levels, based both on rainfall and aquifer levels in key parts of the watershed. Here is a potential way of communicating the drought status, showing the Tucson basin watershed, key river systems, and our groundwater monitoring wells.

By sharing drought messages and stewardship practices through Watershed's communication platforms, we will continue to build awareness and pilot public engagement strategies. Your feedback is welcome!

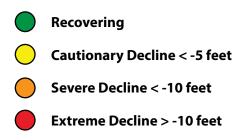
Tucson Basin Drought Status

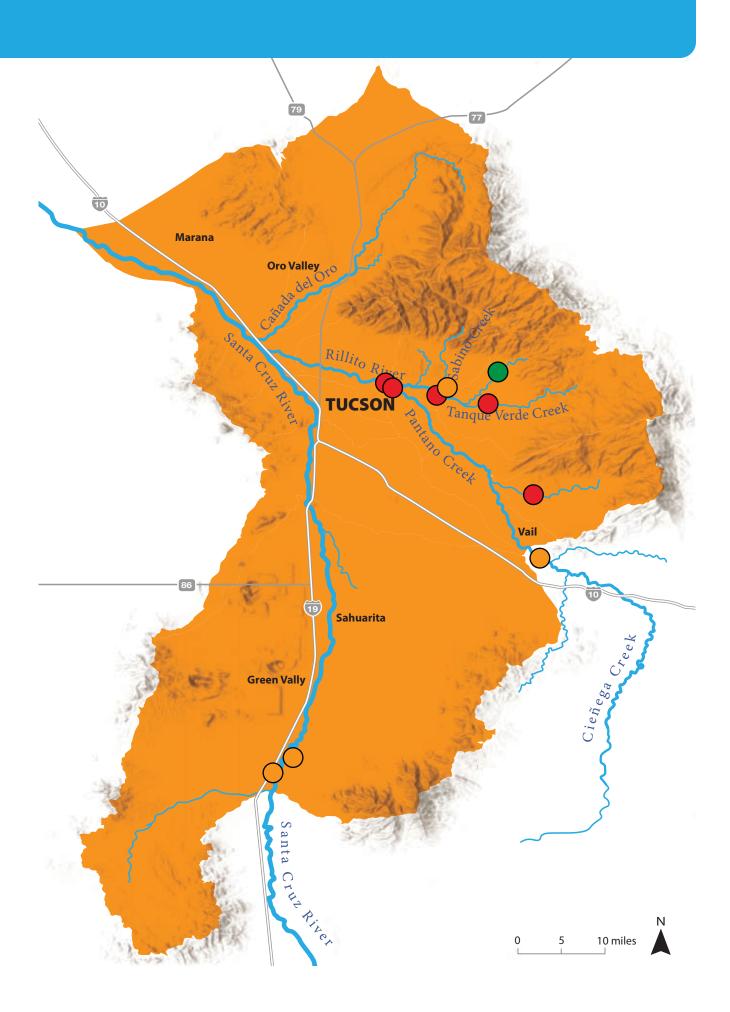
Based on rainfall, updated September 2025



Shallow Groundwater Area Resilience Status

Based on groundwater levels, updated June 2025





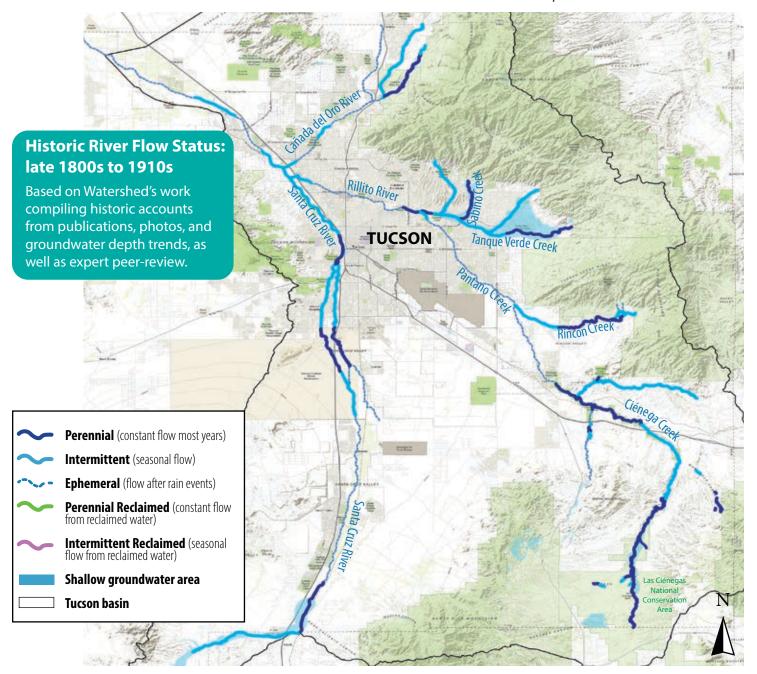
Reclaimed Water Helps Restore our Heritage of Flowing Rivers Protecting our Water Future from Data Centers

By Lisa Shipek & Catlow Shipek

This summer, in the middle of a record-breaking drought, with Colorado River water cuts looming, Tucsonans learned of a plan to build a data center that would become the largest water and energy user in the city. This news unleashed a passionate rebuke across the community. Watershed added our voice to the movement, sharing our vision for a hydro-local Tucson,

an alternative to the shortsighted practices that have depleted our watershed and heated up our city.

Tucson has achieved much over the last decade: institutionalizing water harvesting, funding a city green stormwater infrastructure program, and restoring stretches of the Santa Cruz River and its tributaries. Collectively we've worked hard for these

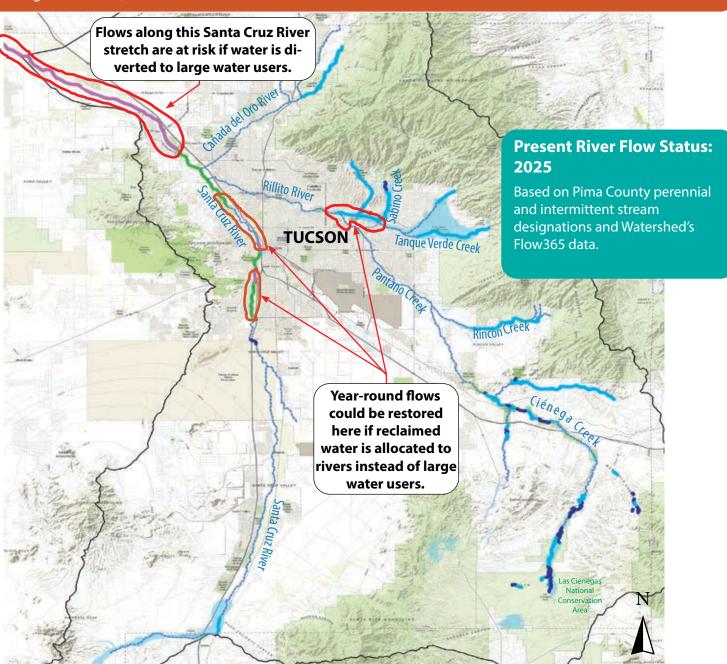


conservation efforts to restore our watershed, and these gains need to be honored and protected.

Reclaimed water plays an important role in replenishing local waters. The diversion of reclaimed water to large water-user industries like data centers is a real threat to sustaining river flows and aquifer recharge. For a hydro-local future, reclaimed water should be prioritized and protected for release into our rivers, to restore flows, recharge our aquifer, and restore cooling riparian forests.

We encourage Tucson and other communities to choose protecting and valuing our local waters, springs, rivers, and aquifers, over easy money from data centers. We can say no to water-intensive industries like data centers, and instead seek out businesses that respect our desert home and honor the sacred value of water for all the plants, animals, and people that live here.

Currently, 45% of Tucson's reclaimed water is used for recharge, either in constructed facilities or in our rivers. The other 55% of reclaimed water goes to customers, with 48% of that water going to golf courses and the remaining going to schools and parks. The City of Tucson is looking to increase sales of reclaimed water to industries, including large water users, like data centers.







Resilient Rivers Flow365 Stories

By Lauren Knight, River Run Network Program Manager

"Our washes are dry..."

"We have no flowing rivers here..."

"What rivers?"

These are common thoughts shared with our River Run Network Program Manager, Lauren Knight, when she speaks about the creeks and rivers we have throughout our city. But the data from our Flow365 Monitoring Program tells us a different story.

All year long, our 91 community scientists in the Flow365 Monitoring Program are capturing flow data for 46 sites across the Rillito and Santa Cruz Rivers and the Pantano, Sabino, Agua Caliente, Tanque Verde, Rincon, and even Ciénega Creek. This community science operation is led by trained volunteers from our River Run Network— a group of community members working together to restore Tucson's heritage of flowing creeks and rivers.

"They collect data at least once a month, but many of our volunteers go out weekly, or sometimes daily, to snap photos when they think it may be flowing," says Lauren Knight. Because of this consistent data collection, we are able to correlate the flows in our creeks and rivers with rain and snowfall, painting a more complete picture of the health of Tucson's creeks and rivers.

With a severe drought this water year, what have the volunteers seen?

"Our volunteers are amazing, and they get out to their sites as often as they can to capture flow data. Though much of what they have captured this water year is flash flows due to strong, quickly dissipating storms, there are still resilient riparian areas in our city," Lauren continues.

Lower Sabino Creek is an example of this resilience. Flowing through private property after leaving protected forest service land known as Sabino Canyon Recreation Area, this creek's story is one that the Flow365 Monitoring Program has been tracking since its inception in 2016.

"The Flow365 site along Lower Sabino Creek near Wes Miller Park has had surface flow since we began to track it," Lauren explains, "and thanks to volunteer support, we know that it continues to flow even through periods of drought."

Even during a severe drought, this section of the creek still had water present. This tells us that it has a strong connection to groundwater, which can fuel surface flow for lasting periods without rain. With more rain falling in October 2025, we are also seeing surface flow return to more of the area. Flows currently reach south to the confluence of Sabino and Bear Creeks and north past the Wes Miller Park boundaries, totalling at least a half-mile of surface water flow after the recent rains, but most likely more.

We see resilience in this and other areas not only in surface flow, but also in the abundance of life that surrounds these waterways. Filled with cottonwoods, willows, and other plants found in thriving riparian areas, Sabino Creek has continued to thrive even through this severe drought, as you can see in the photos.

The Flow365 Monitoring Program looks forward to gathering more data and telling the story of our rivers with support from the volunteers throughout the Tucson Community.

Join the River Run Network and our Flow365 monitoring team by visiting **Watershedmg.org/RRN**.

*A Water Year is a way of looking at the calendar based on data from all wet seasons and taking into account how the seasonal fluctuations of our winter precipitation and summer monsoons impact flow. For example, the 2025 Water Year began on October 1st, 2024 and ended on September 30th, 2025.

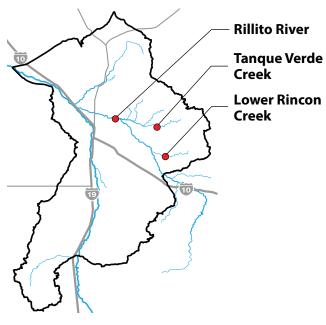
Restoring our River Forests Stabilizing shallow groundwater areas even in times of drought

By Lisa Shipek & Catlow Shipek

Historically, the Tucson area had extensive forests along our creeks and rivers, with towering cottonwoods, willows, and mesquites. These "mesquite bosques" served as cooling corridors and were a haven for wildlife. Tragically, the forests died off as groundwater was mined for development.

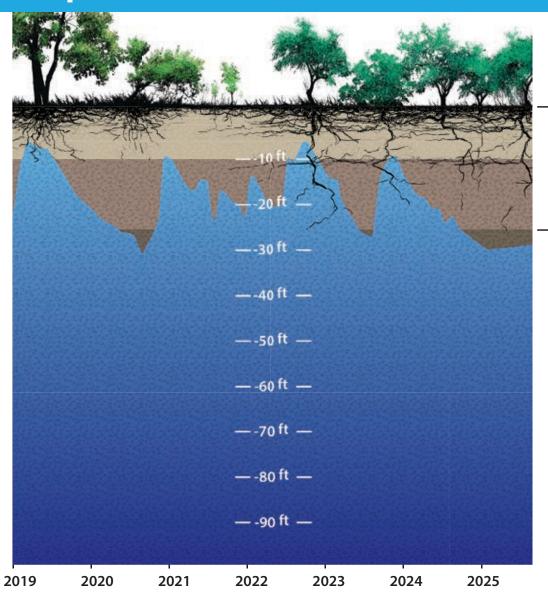
The good news is that with proactive policies and restoration efforts, these forests can be restored, and several areas have had rising groundwater levels. Watershed Management Group is collecting data on groundwater levels in key riparian (river & floodplain landscape) zones to share the data on how these areas can be restored to once again support river forests. These concepts are fundamental to policies supporting resilient watersheds and sustainable water use, especially considering the impact of dry years.

Groundwater Monitoring Wells





Tanque Verde Creek Shallow Groundwater at Tanque Verde Loop Rd



Cottonwood & Willow Tree Root Zone (10 ft deep)

Mesquite Tree Root Zone (26 ft deep)

Historic Flow Status

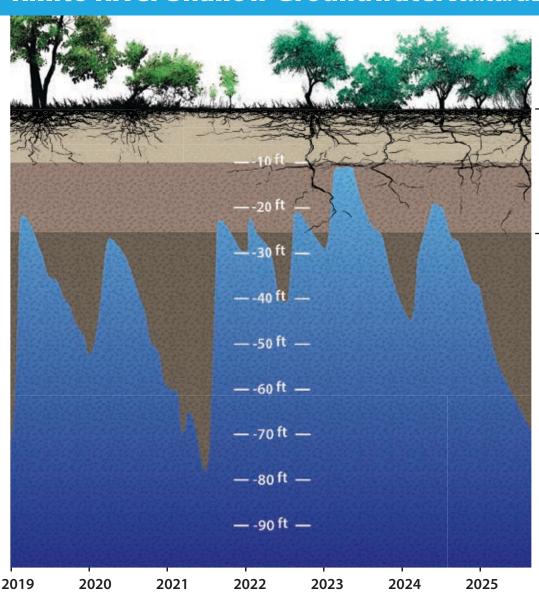
Year-round surface flows supported an extensive wetland with cottonwood and willow trees, Mexican elderberry groves, and giant mesquite trees across the valley bottom. Groundwater levels were within 5 feet of the channel surface even in dry years.

Current Flow Status

Seasonal surface flows are supported by mountain rainfall and snowmelt during winter and springtime. Groundwater levels have stabilized in the last decade, since the 49ers Golf Course switched from pumping groundwater to using reclaimed water.



Rillito River Shallow Groundwater Between Craycroft Rd & Swan Rd



Cottonwood & Willow Tree Root Zone (10 ft deep)

Mesquite Tree Root Zone (26 ft deep)

Historic Flow Status

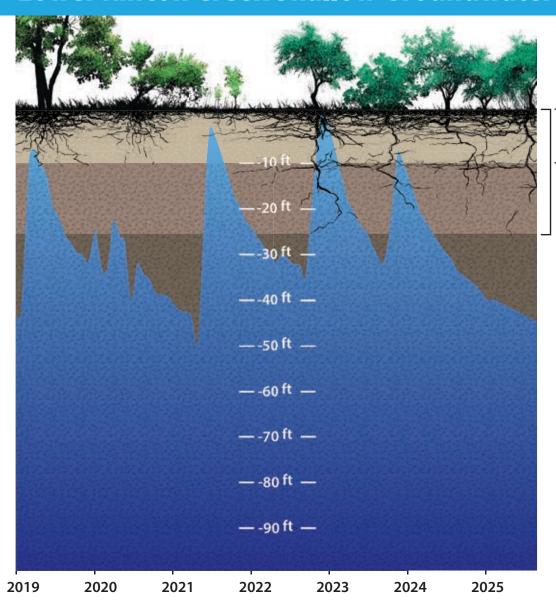
An extensive, permanent wetland was fed by seasonal surface flows and year-round base flows from the Tanque Verde and Pantano creeks. Groundwater levels were within 5 feet of the channel surface throughout the year, supporting a lush cottonwood, willow, and mesquite forest.

Current Flow Status

Seasonal surface flows are supported by mountain rainfall and snowmelt most often during winter and spring months. Few cottonwood trees remain due to lack of connection to groundwater during dry years. Groundwater levels can replenish quickly when the river flows, however the levels drop as groundwater is pumped.



Lower Rincon Creek Shallow Groundwater



Cottonwood & Willow Tree Root Zone (10 ft deep)

Mesquite Tree Root Zone (26 ft deep)

Historic Flow Status

Extensive seasonal surface flows supporting cottonwood, willow, and ash trees along the creek. Groundwater levels were within 5 feet of the channel surface throughout the year.

Current Flow Status

Seasonal surface flows supported by rainfall and mountain snowmelt runoff through winter and spring months. Few cottonwood trees remain due to lack of connection to groundwater during dry years. Extensive groundwater pumping, including downstream of here, contributes to large declines during dry seasons.

A student in Nogales, Sonora celebrates creating a schoolyard rain garden with classmates through Watershed and partners' work in the Borderlands. Photo credit: Tali Keren, Artist in Residence, ASU Water Institute



Cambiando el Chip:

Welcoming the Rain and Nature into Schools and Churches in Nogales, Sonora

By Joaquin Murrieta & Jen Glass



Joaquin estimates that through Watershed and partners' work in Sonora, 400-500 students and 100 church parishioners learned about water harvesting and flood and heat island mitigation In collaboration with schools, universities, and churches, Watershed has been working to cambiar el chip, or to shift perspectives. Cultural Ecologist Director Joaquin Murrieta shares that when he and Green Infrastructure Project Manager Luis Salgado asked middle and high school students in Nogales, Sonora, what image comes to mind when they think of rain, the students mentioned floods washing away cars and people. These students often associate rain with danger and loss of property—or even loss of life.

Interestingly, just across the border in Nogales, Arizona, students feel differently. They associate rain with excitement, joy, and rainbows. How can young people who live so close to one another have such different attitudes toward rain, and how can both communities mitigate flood risk, combat the heat island effect, and build drought resilience by embracing rain as a resource?

Because of increasingly hot and dry weather, a lack of green infrastructure, and an overabundance of asphalt, urban areas like Nogales, Sonora, experience flooding when heavy rains rush across pavement rather than sinking into the earth to replenish aquifers. However, with financial support from the Commission for Environmental Cooperation, a trilateral organization involving Canada, the U.S., and Mexico, Watershed is collaborating with educational partners to help reduce flooding, nurture plants, and cool the landscape by creating rain gardens in community spaces.

Together with Colegio de la Frontera, Arizona State University, and the University of Arizona, Watershed has also been training the trainers. Joaquin says, "We thought it would be best to work with teachers so





Left: Cultural Ecologist Director Joaquin Murrieta-Saldivar provides a group of students and their teacher in Nogales, Sonora, with seeds, tools, and information to help them create a thriving rain garden on their campus. Photo credit: Tali Keren, Artist in Residence, ASU Water Institute. Right: Two students in Nogales, Sonora, work together to welcome rain onto their campus by planting a native tree in their school's new rain garden. Photo credit: Tali Keren, Artist in Residence, ASU Water Institute

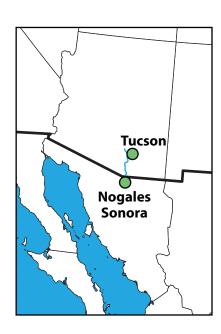
they can train their students on creating and maintaining rain gardens at their school. This training helps achieve flood mitigation and heat island mitigation as well as beautification, enjoyment of the rain, and welcoming nature onto the campuses."

In March of 2025, by teaming up with teachers, WMG installed seven rain gardens at seven schools in one week! Watershed plans to continue collaborating with universities and K-12 schools in the U.S./Mexico Borderlands and to build on the success of the schoolyard rain garden program.

But Watershed's work in the Borderlands extends beyond schools, too. Having previously worked with Padre Claudio Murrieta (no relation to Joaquin) in Cananea on the San Pedro River, Watershed continues to partner with him to offer hands-on rainwater harvesting training to parishioners at two churches within his diocese.

Joaquin estimates that through Watershed and partners' work in Sonora, 400-500 students and 100 church parishioners learned about water harvesting and flood and heat island mitigation, and approximately 50 parishioners volunteered their time and energy to help install rain gardens at their churches. Through community education and implementing rain gardens in community spaces, Watershed has spread awareness that we can welcome nature into our cities and put water to good use nourishing our urban landscapes.

El chip ha comenzando a cambiar. In Nogales, residents are starting to welcome the rain rather than to fear it. By using rain and stormwater efficiently, diminishing the heat island effect, and mitigating flooding, Ambos Nogales is also building long-term resilience.





Our Community Conservation team joined forces with Arizona State University's Canopy for Kids program to nurture young environmental stewards through hands-on learning and tree planting. Together, we have taken the first steps toward creating shaded, thriving spaces where students can connect with nature, learn about climate resilience, and understand the power of trees in shaping healthier communities.

This collaboration will bring students, teachers, and families together to plant native shade trees across several Phoenix-area school campuses. Through workshops, children will learn how trees cool their surroundings, improve air quality, and protect Arizona's precious water resources. Our goal is that students discover that caring for trees is also a way of caring for their future.

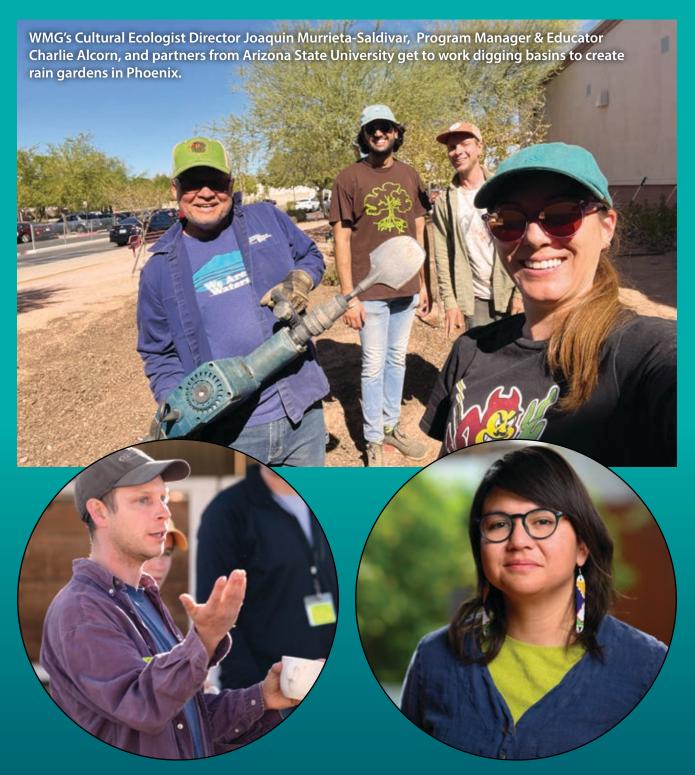
The Canopy for Kids program came to life through a successful grant acquisition led by Watershed board member Amy Flores and Watershed staff Charlie Alcorn and Joaquin Murrieta. Their leadership and collaboration with ASU's College of Global Futures helped secure funding to expand the reach of green stormwater infrastructure (GSI) education to schools across the Valley.

As Watershed's Green Stormwater Infrastructure education program continues to grow, we're also turning a page in our story of community leadership. Charlie Alcorn has been a driving force behind our

GSI work in Phoenix, helping neighborhoods, schools, and community partners reimagine how we use rain and shade to cool our cities. For six years with Watershed, Charlie has built strong relationships, led hands-on projects, and inspired countless people to see that community-based green infrastructure can make a real difference in our desert environment.

As Charlie embarks on a new journey to pursue his own ventures, we're deeply grateful for the foundation he's built and the inspiration he leaves behind. Marci Caballero-Reynolds will be stepping in as our new project manager, bringing her own passion and expertise to carry this important work forward. We're excited to see the next chapter unfold as Marci continues to grow our Canopy for Kids partnership and deepen Watershed's roots in the Phoenix community.

The Canopy for Kids program aligns closely with Watershed's mission to promote hydro-local living—using local resources to meet local needs. By combining rainwater harvesting principles with tree planting, the project demonstrates how urban environments can adapt to heat challenges through sustainable water and landscape practices. We're not just planting trees—we're growing a generation of young conservationists who will understand that every drop of rain and every patch of shade contributes to a more resilient future.



Watershed bids a fond farewell to Program Manager & Educator Charlie Alcorn, after his six years of service inspiring community members to install water harvesting and green infrastructure.

Grow Tucson Intern Marci Caballero-Reynolds is joining Watershed's full-time staff as the Community Conservation Project Manager. We are thrilled to welcome Marci to her new role and look forward to seeing the Canopy for Kids program continue to thrive under her leadership.

A New Cohort of Apprentices, Interns, and Docents Contribute to Watershed Resilience

By Jen Glass, Education and Outreach Manager

Thanks to generous support from donors and grant funds, Watershed Management Group offers training and mentorship to students and professionals eager to build knowledge and skills through paid apprenticeships, internships, and docent roles. Over the past few months, our 2025 cohort has spent Friday afternoons learning together, in addition to working on specific projects with their staff mentors.

Through hands-on workshops, they have learned how to cultivate rainwater-fed gardens where native plants can thrive; turn household waste into resources; and help cool our city by creating shade in their own yards or patios. They have also learned about indigenous perspectives on life-giving water in the desert, seen flows along Lower Sabino Creek, and explored the cultural ecology of the Santa Cruz River.

Become part of the next cohort! Learn more at **Watershedmg.org/Docent** and **Watershedmg.org/Apprentice**.

We asked this dynamic cohort: "What does it mean to you to be a steward of our rivers and contribute to watershed resilience?"



"It is my duty as a community member, Tucsonan, and native person to protect the water future of my home, and I am grateful to be in a position where I feel I can make an impact."



"Getting outside and doing the work; consistency."

> - Lauri Hermosilla-Flores



"Community and being a Tucsonan."

- Henry Schon



"Being a piece of something bigger and being an agent of change."

- Carmina Diamante



"Recognizing how my individual choices impact the whole and bringing this awareness to

- Hannah Heaton

- Issa Mena-Garcia



Jen Glass (bottom, middle) joins
Watershed as the new Education and Outreach
Manager, leading the apprentice, intern, and docent programs. The new cohort visits Lower Sabino Creek together.

"Anyone can be a steward!"

- Micaila DeClouette

"To be intentional and aware of every action."

- Arianna DuPont

"To spread knowledge and make these concepts easy to understand."

-Daniel Blancas

"Restoring water to our animals! They are an equally important user of water in the area and should have their water restored to them."

- Lizbeth Perez



Water Harvesting Certification Course Participants Are Ambassadors of Resilience

By Valerisa Gaddy, Community Conservation Program Director

Across the Southwest, our relationship with water is at a crossroads. The once-reliable rhythms of rain and recharge are shifting under the weight of climate change. Drought cycles are longer, storms more intense, and groundwater levels continue to drop. Yet within this challenge lies an opportunity to return to practices that reconnect us to the land's natural hydrology. That's where the Water Harvesting Design Certification (WHDC) comes in.

In the Fall of 2025, Watershed Management Group certified 38 new Water Harvesting Design participants through our 50-hour training. The WHDC program equipped our participants with the knowledge and hands-on skills to design systems that capture, slow, spread, and sink rainwater – turning scarcity into abundance. Graduates learned to read the landscape and design with nature rather than against it. It's a discipline rooted in both science and stewardship, offering a path to transform hardscapes into living, breathing infrastructure that supports people, plants, and pollinators alike.

Among our Fall cohort was returning mother-son dream team Kristine and Theodore from Boulder, CO. Both have previously graduated from the course but returned to again experience "a sense of community" with others interested in rainwater harvesting, greywater laundry-to-landscape systems, and other nature-based solutions. Kristine says, "We really value and want to share everything you have taught us," and she and Theodore encouraged their fellow Coloradan, Anne, to join the certification course this time. Being able to compare and contrast Boulder's landscape with Tucson's has allowed Kristine, Theodore, and Anne to understand Boulder's challenges and opportunities better and has inspired them to normalize practices such as rainwater harvesting in their own communities.

The importance of this certification goes beyond individual gardens or local green infrastructure projects. Certified practitioners become ambassadors of resilience. They bring conservation-oriented design principles into neighborhoods, schools, and municipalities, shaping how communities plan for water in an era defined by extremes. As Tucson leads the way in incentivizing rainwater harvesting, Watershed is leading the way by training certified designers who will ensure these systems are effective, equitable and enduring.

The Water Harvesting Design certificate isn't just a credential; it's a call to action for anyone ready to help write a new water story – one rooted in restoration, regeneration, and resilience. Feeling inspired? Take the WHDC this 2026 and become an ambassador of resilience through hydrolocal practices in your own community. Visit **Watershedmg.org/WHDC** to learn more.



Certified practitioners become ambassadors of resilience. They bring conservation-oriented design principles into neighborhoods, schools, and municipalities, shaping how communities plan for water in an era defined by extremes.



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