

Currents

Santa Fe Watershed Association

Vol. 21 No. 1 August 2017

From the Executive Director: This Long River Ties Us Together

We are the Santa Fe Watershed Association, not the Santa Fe River Association. This is an important distinction. We take a watershed approach to our river and region, and we recognize that, like the spider's web, if you pull on one strand, you're pulling on all the other strands, too.

Webster's Dictionary defines a watershed as:

- 1) a ridge dividing the areas drained by different river systems;
- 2) the area drained by a river system.

We were taught in school that a watershed is an area within which all of the water drains to one point or body of water.

All of these definitions refer to a surface geography, but what about the underlying aquifers? Yes, water flows where we can see it, but it also generally seeps from the surface to sub-surface aquifers. In the sub-surface world, there are ridges and rivers and lakes that may not coincide with the surface

features at all. It's a tale of two worlds, and the two worlds are absolutely connected.

To take a "watershed approach," we need to include the aquifers. This is challenging, as we can't easily "see" these landscapes, to map and monitor them. But as we notice changes in the

depth of our wells and the flows from our springs, the aquifer issue will "surface" more and more.

In the meantime, I am privileged to sit in on many conversations that pertain to "What's going on in the watershed?"



In La Bajada, Cochiti Pueblo is asserting that it has the right to restrict the access that farmers, who are not of the Pueblo, have had to their acequia headgate and domestic water supply for 200 years.

In La Bajada, I am hearing farmers discussing the new fence that Cochiti Pueblo put across the access road to the farmers' acequia headgate and domestic water supply. The farmers have been there for 200 years. Cochiti Pueblo has been there for much longer than that, but it bought the ranch in question in 1984 and is now asserting that it has the right to restrict the farmers' access.

A little further upstream, in La Cieneguilla, the water that remains in the river comes mainly from the sewage treatment plant – and the residents are glad to get it. The City, however, has completed a new study and may propose to return most of those flows to the Rio Grande by piping it upstream to just above the Buckman Diversion. This would give the City "return flow credits" which, in turn, would allow the City

(continued on page 5)



SFWA Executive Director, Andy Otto



Santa Fe
WATERSHED
ASSOCIATION



In This Issue

From the President	2	Fire & Water Festival	5
SFWA Founder Reflects On the First 20 Years	3	Adopt-an-Arroyo – A Lesson in Erosion	6
Board News	3	Adopt-an-Arroyo – Restoration	7
Climate Masters	4	Adopt-the-River	8

From the President: We Are a Community Inspiring Hope

Dear Friends of the Santa Fe Watershed,

The day that President Trump announced that the U.S. would be withdrawing from the Paris Climate Accords, Santa Fe Mayor Javier Gonzales was one of 76 mayors to declare that they would continue to uphold the Paris commitments within their towns and cities. In the days that followed, 1219 governors, mayors, businesses, investors, colleges and universities representing more than 120 million Americans followed suit.

What we do here, at the local level, matters. Like raindrops in the river, each community's actions can combine into a flash flood with magnificent force.

For the past 20 years, the Santa Fe Watershed Association has been working at the local level to help make our community more environmentally sustainable and resilient. Our work is grounded in this place. The policies we advocate for, the children we teach, and the restoration work we complete are all bounded by the geography of this small watershed. Yet the impacts of our work ripple out further than we can imagine.



Water flows in the Santa Fe River through town, thanks to the City's 2012 Living River Ordinance, the first of its kind in New Mexico.

Thanks to our efforts, Santa Fe became the first city in New Mexico to dedicate water to our living river; other communities are now looking to us as a model. We have helped the City become a leader in building rain gardens to capture and filter stormwater, recharging our aquifer and making the City more resilient to climate change. Our Adopt-the-River and Adopt-an-Arroyo programs are bringing together friends and neighbors to clean and restore Santa Fe's waterways and show the world how a community can care for its natural environment. We have brought thousands of Santa Fe children out of their classrooms and up into the forest, some of them for the very first time, to learn where their water comes from and how they can help keep their watershed healthy.

We are profoundly grateful to everyone who has supported the Santa Fe Watershed Association over the past two decades, and we hope that you will continue to sustain this work for many more. Become a member or renew your membership, and join us out in the watershed for a hike, a rain-garden planting, or a river clean-up – as well as in the halls of your city and county government, advocating for policies that will keep our community thriving for many generations to come.

For it is the actions that we take here, in this place, that will determine how the future unfolds. Based on what I have seen the volunteers and supporters of the Santa Fe Watershed Association accomplish, I see grounds for nothing but hope.



Kristina G. Fisher

THE MISSION of the Santa Fe Watershed Association is to protect and restore the health and vibrancy of the Santa Fe River and its watershed for the benefit of people and the environment. We achieve this through education, restoration, stewardship and advocacy. From the river's headwaters to the Rio Grande, we honor the connection of people and the watershed.

SFWA's Founder Reflects On Where We Started, 20 Years Ago

Does anyone ever think 20 years down the road when they take their first step down a particular path? A more evolved person might take every step with seven generations in mind – the three who came before us, ourselves, and the three who will follow – but the fact is that, back in 1997 when I proposed starting a Santa Fe Watershed Association, I just thought about the satisfaction of putting my Watershed Management degree to use “thinking like a watershed.”

Right away, I found myself called in to unpack the issues surrounding an erosion crisis on the Santa Fe River in Agua Fria. We went from trying to avoid another Corps of Engineers concrete band-aid (we didn't) to working with the community on alternatives to turning their river into a concrete-lined ditch, to whistle-blowing about the sand and gravel mine in the middle of the San Isidro reach, to working with the



Paige Grant with a member of the sixth generation – all ready for water in her rubber boots. What will we pass on to this child and her children? What will be the eco-cultural challenges – and opportunities – of their generations?

County to acquire the land as open space. All this and much more eco-cultural advocacy led to the stable, beautiful San Isidro River Park in Agua Fria today. Along the way, we saw the revival of the blessing of the river, which hadn't been celebrated since WWII. Each spring now, the congregation brings the banner of San Isidro from the church in Agua Fria, singing hymns and creating a river of flowers.

Another early Watershed Association activity was our engagement in planning and outreach around thinning and prescribed burning in the Santa Fe municipal watershed to reduce the danger of catastrophic wildfire. At the time, this concept was treated as somewhere between insanity and heresy by local environmental groups and the community at large. Nowadays, in considerable part as a result of our work, the smell and appearance of a thin veil of smoke in the mountains east of town is widely greeted with appreciation that the forest is receiving a healing burn.

I handed over the reins at SFWA after seven years, and I have watched it grow stronger and more effective as it enters its third decade, poised to contribute meaningfully to community-building solutions to challenges that the watershed faces today. Many thanks to the able, committed staff and volunteers who have kept the dream alive!

— Paige Grant



Board News

Please Help Us Welcome Lindsay Archuleta

Lindsay grew up in Taos, New Mexico and now lives in Santa Fe with her husband, two dogs and a cat. She feels fortunate to have grown up in northern New Mexico, with a great appreciation for our scarce and precious resource, water, and the importance of protecting our watersheds and acequia systems. Lindsay joined our board in February 2017.

Lindsay graduated *summa cum laude* with her M.B.A. from Anderson School of Management at the University of New Mexico, after studying international development for a year abroad at the University of Edinburgh in Scotland.

She began her career working in international development and with indigenous cultures in Kenya and Brazil before settling back in New Mexico in 2011. She is now the manager of donor relations at the School of Advanced Research,

and has worked for more than six years in fundraising for non-profits in New Mexico, including the New Mexico Green Chamber of Commerce and the Georgia O'Keeffe Museum.

In her spare time, Lindsay loves to be outside skiing, backpacking, and hiking with her family, including her dogs.



After 10 Years, Climate Masters Course More Valuable Than Ever

Since the first New Mexico Climate Masters course in 2008, people who are interested in reducing their carbon footprints continue to show up for this inspiring and educational program. Developed in 2007 by the University of Oregon Climate Leadership Initiative and modeled on the Master Gardener program, Climate Masters was run through the New Mexico Environment Department until 2011. The SFWA has managed it since then. Some 100 people have taken the course since 2012, in addition to 150 before then.

The course consists of 30 hours of class time and field trips, and 30 hours of community service. The 2017 course began with an orientation to climate-change science through a screening of *Antarctica: Ice and Sky*, followed by a discussion with Los Alamos National Lab climate scientists. Then, in six weekly evening classes, experts spoke about climate impacts of waste and recycling, carbon ranching, transportation options, green building and remodeling, energy production and use, and water use and conservation.

Field trips included visits to Lauren Kendall's Rooted Leaf farm-to-table organic farm, Reese Baker's lush backyard permaculture garden, and the Upper Santa Fe Watershed. With expert guide Bill Armstrong, a long-time U.S. Forest Service fuels specialist, the watershed hike was a particular treat, as the area has been closed to public access since 1932.



Class members learn from Lauren Kendall at Rooted Leaf Farm. Right: Bill Armstrong explains the mysteries of forest ecology.

Impact at the Personal Level – Easy, Meaningful Changes

Over the course of the 10 class meetings, many inspiring ways to reduce one's personal carbon footprint were presented. 2017 participant Steven Hamp noted, "I find myself recycling more things, watching my water use with the 'eye-on-water' app, ready to get my fourth rain barrel, even changed out the remaining old light bulbs for LED. The class made me more aware of what can be done locally, community-wide and individually, to address climate change."

Gina Aranda, another 2017 participant, said, "I am improving our rain-barrel system to collect even more runoff from our roof to use in the garden, instead of allowing a good portion to run into the street. We also learned how to study the ecological patterns of our particular yard to create self-sustaining edible landscaping. In my yard, this has meant growing different layers to create shade for lower plants, composting in a way that doesn't attract mice, redirecting rainwater, using greywater for the garden, starting the garden earlier in the season by using protective cloth covering, and considering every way to grow more food than before without using more water."

Esha Chiocchio, who runs the Climate Masters program, has observed that, "as people are informed and start making changes in their own lives, their friends and neighbors are often inspired to make similar changes. With the trickle-out effect of all those changes, even a class of 20 people can have a huge impact throughout the community. For example, our energy speaker, Mark Gaiser, handed out LED lightbulbs and said that, if everyone in New Mexico changed to LED lighting, we wouldn't need the Four Corners coal-fired power plant, and individuals would save money in the process."



Impact at the Community Level – Service Projects

The 2017 Climate Masters participants are now developing community-service projects. Gina Aranda is planning a rainwater-collection project for her students in the Gifted Education Program at Turquoise Trail Charter School. She envisions publishing her lesson plans on the Santa Fe Botanical Garden website for school gardens.

Another 2017 participant plans to work with the Santa Fe elementary school system and groups such as Safe Routes to School to re-organize a Bike/Walk to School Day in the coming academic year. Her goal is for the one-day event to inspire as many students as possible to walk or bike to school on a regular basis.

Service projects from previous years include launching Got Sol!, an alternative-energy education group which started the annual Renewable Energy Day at the Roundhouse; creating rain gardens along the River Trail to reduce erosion, catch water and enhance vegetation; and the creation of a listserve of climate-related information and events.

The next Climate Masters course will be held in Spring 2018. For more information, contact SFWA (see back page).

— Nancy Grace, 2017 Climate Masters Class

From the Executive Director *(cont. from page 1)*

to draw additional water, under the terms of the San Juan-Chama diversion agreement.

Many people are advocating for a Regional Water Authority, to help manage water-rights conflicts like this, but why would the City buy into that when it perceives that it stands to lose its own authority?

Still further upstream, the New Mexico Environment Department has begun the process to have the Santa Fe River declared impaired water because the amount of *E.coli* exceeds health standards. *E.coli* is a bacteria that is found in many mammals' excrement (including the homeless who camp and dogs that frequent the river corridor). *E. coli* is very toxic if ingested, for instance by people who play in the river. An "impaired water" declaration would actually be a step in the right direction, because it could allow for funding for projects to clean up the river.

Upper Watershed flows are also under scrutiny. Three acequias depend on water being delivered to them where the river exits the national forest, as prescribed by judicial decree – that is not the issue. The issue for the City is to deliver the water in the most efficient manner possible while not ignoring the Living River Ordinance. To achieve this, the City is proposing to deliver this water directly to the headgates – which means diverting that water to and through the former Two-Mile Dam bypass channel. This would cut off the restored channel of the Santa Fe River, reduce water to the Two-Mile Pond (formerly Two-Mile Reservoir), and reduce some of the water that now flows through the Santa Fe Canyon Preserve.

If this happens, the riverbed in the restored channel will dry out, and we will lose habitat and species that we have striven to restore.

The Upper Watershed of the Santa Fe River (above the lowest dam, Nichols Dam) comprises 17,000 acres or 9% of the watershed, yet it seems to attract the most attention.

There have been continuing discussions between the City and the U.S. Forest Service on updating and improving the watershed access policy called for in the *2010 Municipal Watershed Management Plan*. Therefore, many of the programs that the Santa Fe Watershed Association normally facilitates have been cancelled. We were able to provide about half of our "My Water, My Watershed" fifth-grade classes this past spring. (Thank you, Santa Fe Rotary, La Luz Foundation, and Los Alamos National Lab Foundation, for the grant funding that you provided for these!) Similarly, we have been able to conduct just one of our very popular hikes (Educational Tours) so far this year, whereas, in 2016 we facilitated ten. (Thank you, City of Santa Fe, for funding the one tour so far.) We hope to have access to continue this program by the end of this summer.

And furthest upstream, in the "Upper Upper Watershed" – the steepest 10,000 acres which are in the Pecos Wilderness Area – there has not been any management to date. The U.S. Forest Service is working on a new management objective for that area but has not proposed anything concrete as yet.

I am honored to work for you and to "speak for the watershed," as I track these developments and the implications that they have for all of us – humans, habitat and wildlife, river and watershed alike.



The Second Annual Fire & Water Festival Was a Blast – Thank You All

The Santa Fe Watershed Association held another successful Fire & Water Festival in June at The Bridge at Santa Fe Brewing Company. We are very grateful for the partnership – and fun – that we have had throughout the years with Santa Fe Brewing.

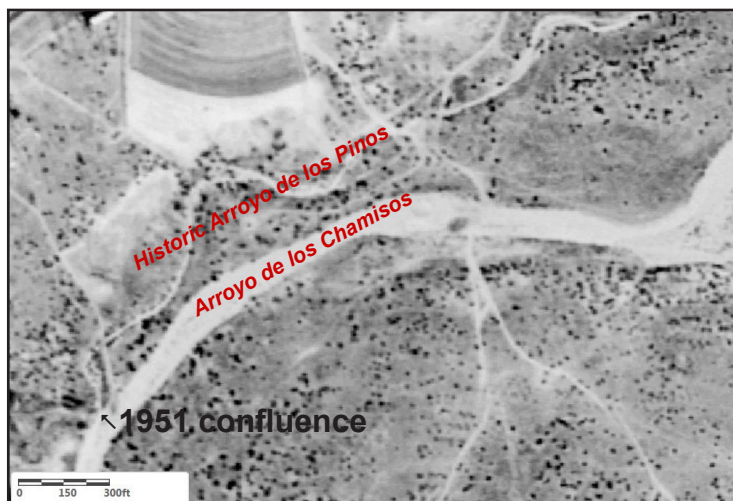
We started the day by participating in the Great American Rivers National River Clean-Up. Approximately 80 volunteers joined us for this community river clean-up, the second of three that we organize every year. (Join us for the third in October!) The volunteers removed more than 100 bags of debris from the Santa Fe River – and at the end of the day, at The Bridge, the Santa Fe River Brew tasted great!

We'd like to thank all of the volunteers, the Santa Fe County Firefighters Association, and the Santa Fe Brewing Company who helped make this dual event so special. Also, thanks to the Quezada Jacobs Family Insurance Agency, the Santa Fe Botanical Garden, *Outside Magazine*, Iconik Coffee Roasters, Kakawa Chocolate House, the Santa Fe Children's Museum, Back Road Pizza, the City of Santa Fe, Agua Fria Village Association, Santa Fe Engineering Consultants, Big Jo True Value Hardware and Santa Fe County for all their generous donations and support!

— Raquel Baca-Tompson,
SFWA Administrative Director
& Adopt-the-River Coordinator

We Shorten the Course of Arroyos – At Our Own Risk

Editor's Note: Retired geologist and SFWA member Larry Gibson compiled this visual lesson on the impact of altering the course of arroyos.



This 1951 photograph shows the historic meandering course of the Arroyo de los Pinos and its confluence with Arroyo de los Chamisos, roughly 1,500 feet further downstream than today's confluence (see aerial image at right).



This 2014 image of the same area shows the impact of urban development on the course of Arroyo de los Pinos. (The square white roof is Sam's Club.)

Shortening and straightening the course of an arroyo causes water to flow at greater velocity, reducing infiltration and leading to increased erosion. Route alterations like this are found in arroyos throughout the Santa Fe area.

The River Changes Us *(cont. from page 8)*

"I stepped back onto the banks of the river through dried flowers, in chase of a piece of paper deep in the trees, which... presented itself as a waterlogged copy of Mark Twain's *Huckleberry Finn*, a book I had read only two summers ago in the comfort of my porch chairs, pool side at Hill Farms or under the lights of my bedroom.

"That book that caused me to imagine the banks of the river as home.... I imagined trying to stay clean for a job the next day or to prepare any kind of meal under a sewage bridge. I imagined not having my house and family to return to after a taxing day – and I couldn't.

"This is what mission trips do for me. They take my knowledge of the way other people live – the kind I know from news reports and facts and figures. They put me face to face with the reality of homelessness and other pressing challenges. But further than that, they provide a way to create change in others' lives, even if it is simply cooking 365 dinners in their year.

"I am so thankful for this opportunity to serve others, but also this opportunity to educate myself. These trips have influenced the way I see the world and connect myself to it, as well as the college path I choose for myself and the way I will live my future...."

— Rowan Conklin, *Freshman, University of Minnesota*



This aerial close-up shows the area within the red frame in the 2014 image (above) in Arroyo de los Pinos near the present-day confluence with Arroyo de los Chamisos. Note the severe erosion that has been caused in part by the shortening of Arroyo de los Pinos. Erosion and slope failure are damaging infrastructure that is adjacent to and/or crossing arroyos throughout the Santa Fe area.

Adopt-an-Arroyo Is for Volunteers to Engage In Restoration

The Mascaras, Torreon, Pinos. These are just a few of the arroyos up for adoption through the Santa Fe Watershed Association. Like puppies at the shelter, each one has its own personality and needs. Some are docile and require only occasional grooming. Others will chew right through hundreds of years of soil development, exposing sewer lines, devouring fences, and generally running up large bills. All of them deserve to be adopted. If you live in Santa Fe, it's worth understanding what makes arroyos both valuable and problematic.

In early June, I started working with SFWA on the Adopt-an-Arroyo program. I probably should have mentioned to the staff that I am not a huge fan of arroyos. Don't get me wrong. Arroyos have many positive qualities in our urban settings. These ephemeral channels are crucial green corridors for wildlife in our urbanized landscapes. The larger trees lining arroyos help cool landscapes, giving us a little relief from urban heat-island effect. Arroyos also serve as important interfaces between surface runoff and shallow groundwater recharge.



The top photo is an example of a drainage area dominated by dense grasses and forbs that help stabilize soil and prevent the formation of an arroyo. The bottom photo shows a landscape impacted by urbanization, resulting in increased stormwater runoff and the formation of an arroyo. The rapid conveyance of water off the landscape through arroyos reduces moisture in the upper soil profile and limits vegetation cover to more drought-tolerant, deeply rooted shrubs and elms.

Most arroyos, however, indicate that a watershed is in disequilibrium. They tell us that the landscape is going through a change – a transition toward drier conditions – even when annual precipitation is above normal. This is sobering, given that we are already living in a place defined by a semi-arid climate and increasing competition for limited water resources.

Unlike the Santa Fe River, most of our arroyos are recent geographic features. Historically, a thick mat of grasses (top photo) significantly intercepted raindrops and allowed them to gently drip on the soil surface. Runoff during high-intensity events had to navigate between the plants, never gaining much momentum as it passed over. These slow, meandering flows allowed for infiltration into topsoil made spongy by the expansive structure of grass roots. This improved soil moisture and helped retain more nutrients in the watershed. These qualities led to a hydrologically productive landscape.

During the past 150 years, short-term periods of drought, compounded by overgrazing and the suppression of wildfire, have all played a role in degrading regional grassland cover. The loss of grass cover has exposed the ground to the direct impact of raindrops, which can seal the soil surface and ultimately reduce infiltration. Add human infrastructure, “hardscape”, to the equation, and today runoff from bare ground, pavement and roofs coalesces to feed the network of deep arroyos where grassy swales once existed.

As the arroyos have incised and lengthened, flow volumes and velocities have increased. Increased discharge has washed fine sediments away, leaving coarse-textured sands that hold less soil moisture. Eventually, deeper-rooted shrubs and trees such as chamisa have replaced the grasses that once held the soil surface together (bottom photo). In essence, miles of arroyos, small and large, have become drains that rapidly convey water and topsoil from the watershed.

I am not trying to create hydrologic despair. I am here because I see remedies. Preserving and rehabilitating arroyos can protect our buildings, roads, and buried utilities from floods and erosion – and can foster a healthier watershed. Improvements will depend on many factors, the most important of which is how much the community understands, cares, and invests in tending our arroyos.

The Adopt-an-Arroyo program seeks people who want to become informed and active stewards of our arroyos. The program is designed to support residents as they develop a relationship with a nearby arroyo. In addition to cleanups, participants will focus on learning to observe, assess, and ultimately develop a plan for improving the conditions of a stretch of arroyo. Project plans could include efforts to enhance vegetation cover and wildlife habitat, reduce channel erosion, protect vulnerable utilities and infrastructure, develop and install benches and informational signage, etc.

For more information, see the SFWA website or contact Keely Jackson-Kennemore (keely@santafewatershed.org).

— Aaron Kauffman, SFWA Director of Watershed Restoration



1413 Second Street, #3
Santa Fe, NM 87505

505/820-1696

Fax: 505/986-9132

info@santafewatershed.org

www.santafewatershed.org

Board of Directors

Kristina Gray Fisher, *President*

Janet McVickar, *Vice President*

Anthony Ricketts, *Secretary*

Loretta Valencia, *Treasurer*

Lindsay Archuleta

Charlie Gonzales

Steven Hamp

Elizabeth Loya

Jesse Roach

Stephen Wiman

Staff

Andy Otto, *Executive Director*

Raquel Baca-Tompson,

Administrative Director &

Adopt-the-River Coordinator

Keely Jackson-Kennemore,

Steward Coordinator

Newsletter

Editor, Design & Production:

Marty Peale

Photos & Illustrations: Staff and

p. 1: of Andy Otto, *Santa Fe*

New Mexican; of Cochiti sign,

D. Muenzberg; banner, M. Peale

• p. 2: both photos, courtesy of

K. Gray Fisher • p. 3: courtesy

of P. Grant and L. Archuleta •

p. 4: E. Chiocchio • p. 6: South-

west Urban Hydrology • p. 7:

L. Gibson • p. 8: M. Peale



Adopt-the-River: As We Tend the River, It Changes Us

As we celebrate our 20th year as an organization and the 15th year of the Adopt-the-River program, we'd like to highlight one of our "Angel Volunteer" groups. A group from Orchard Ridge, Wisconsin came to Santa Fe for their second service trip and, again this year, included our Santa Fe River.

The organization's first project a few years ago focused on a week-long wildfire-preparedness project, thinning dense willow thickets where the Santa Fe River runs through the Upper Canyon Road area adjacent to the municipal watershed.

This summer their task was much different. After a day spent learning about the Southwest and local river issues, they went with us to work along different parts of the river – along East Alameda, central Santa Fe, and a section downstream in the County. Over the course of four days, 35 volunteers covered 2.25 miles of river, removing 57 bags of trash. Items of interest were an ATM receipt with a remaining balance of \$157,000 and the top of a parking meter. The rest belonged in a trash can.

— Keely Jackson-Kennemore,
SFWA Steward Coordinator



Rowan Conklin, an Orchard Ridge volunteer, wrote this:

"It was days into our Watershed [Association]-advised river clean-up project when we reached the fenced-off banks of downtown Santa Fe. We approached this day with the knowledge that its centralized location made it the most [trash] saturated job, but the first steps through the water were still

met with apprehension, as waterlogged jackets and half-eaten Cheeto bags ran over our shoes.

"My initial reaction as I trampled through the abandoned campsites of the homeless under-bridge communities [was] disdain and also exasperation for any person who could destroy nature with litter – and for this feeling I am disappointed in myself....

(continued on page 6)