



TEXAS  
LIVING  
WATERS  
PROJECT

The background of the entire page is a photograph of a young child with light-colored hair, running through shallow water towards the viewer. The child is silhouetted against the bright, golden light of a sunset or sunrise. The water is rippled, and the sky is a warm, hazy orange. In the distance, a dark silhouette of a city skyline is visible across the water.

# INVESTING

in the

# Water Future of Texas

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2021 ANNUAL REPORT



# Dear friends and supporters of the Texas Living Waters Project,



As we brought the whirlwind that was 2021 to a close, I couldn't help but think back to our 2020 commitment to become more resilient in the face of uncertainty. Only a few weeks after we put an optimistic lid on the previous year, 2021 greeted us with Winter Storm Uri. What a tense and difficult time that was for most of us — day after day of living without electricity and/or access to clean water was a stark reminder that water is a precious, foundational resource that serves us daily in myriad ways. Uri was also an important indication that the work started by the Texas Living Waters Project twenty years ago is far from over if we are to achieve our goal of ensuring freshwater for every living thing.

As you'll read throughout this report, the Texas Living Waters team stepped up in a big way in 2021 to influence water policy at the state level in ways that center community equity and help wildlife thrive.

To advance sound investments in much-needed water infrastructure projects, we developed a smart policy agenda with partner organizations that called for the prioritization of grants, equity, resilience, and innovation, emphasizing the urgency in low-income and underserved communities. We reflected on the decade plus of implementation of environmental flows legislation and identified key areas for improvement. We worked with cities to help them pursue integrated water resource plans that sustain healthy waterways through a One Water approach. We developed equity principles to guide our advocacy around nature-based solutions to flooding, and we are currently tackling water affordability questions as it relates to the implementation of One Water plans. We emphasized the importance of conserving our water resources and will soon publish a report on cost effective ways to curb systemic water loss in Texas.

The year was full of surprises and hurdles we could not have imagined, but what did remain constant was our strong and steady drumbeat for improved and sustainable water management. Each time we testified at the Capitol, published our positions, strengthened coalitions, and presented our findings to decision-makers, peers and the public, we helped the state take a step forward in the right direction. We will continue to do that in 2022 to transform the opportunities at hand into a significant downpayment on our shared water future.

We couldn't have met these moments and advanced our goals without the increased capacity that our organizations have developed over the past year thanks to the generous foundations, donors, colleagues, and activists that support our efforts year after year.

With tremendous gratitude,

*Amanda Fuller*

Amanda Fuller  
Director, Texas Coast and Water Program  
National Wildlife Federation

The Texas Living Waters Project is a collaboration of conservation groups working to ensure Texas has the water it needs for thriving communities and abundant fish and wildlife.





# Centering Equity and Climate Change in Texas Water Planning



**ARSUM PATHAK, PHD**  
Adaptation and Coastal Resilience Specialist,  
Texas Coast and Water Program  
National Wildlife Federation

Climate change, for Texas, is a twofold crisis of too much water and too little water. From the drying creeks of the Hill Country to the hurricane-battered Gulf Coast, the state’s treasured springs, rivers, and bays — and the communities and ecosystems that depend on them — are already experiencing the effects of increasing climate variability.

These impacts, however, are not felt equally. Communities of color and low-income neighborhoods are likely to be the worst affected due to their geographic location, lack of wealth, and access to resources — all of which are rooted in decades of disinvestment and systemic inequities.

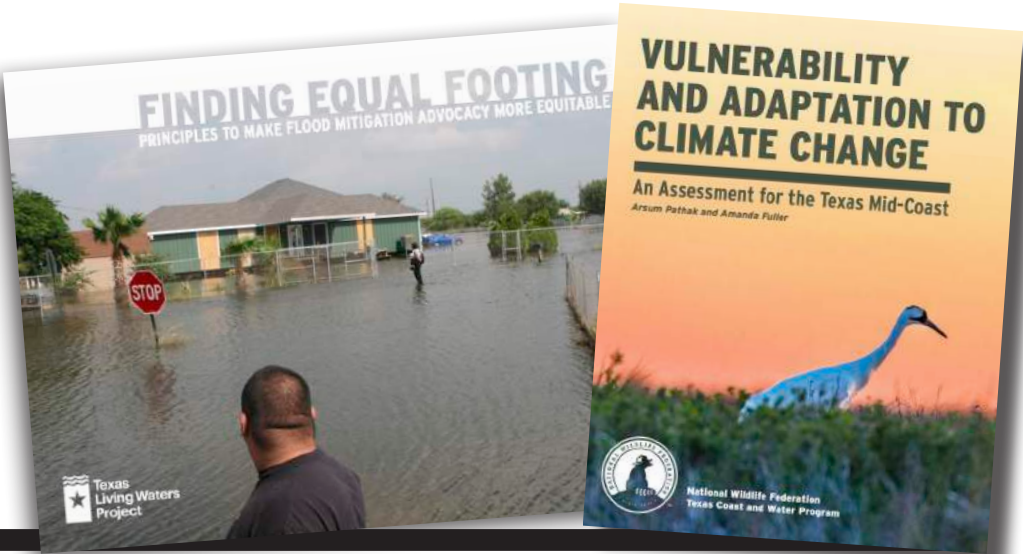
This year, Texas Living Waters made a deep investment in both supporting communities most affected by climate change and urging state leadership to focus on water as the critical medium through which to build a more resilient, equitable future. We published regularly and

extensively to connect the dots between climate and water-related challenges through showcasing the implications of the 2021 IPCC report for Texas, highlighting the impacts of climate change on Texas estuaries, and bringing attention to the climate bills in the legislative session. One of our notable publications, [Vulnerability and Adaptation to Climate Change: An Assessment for the Texas Mid-Coast](#), synthesized climate information and discussed opportunities to take decisive action for safeguarding the bays and estuaries of the Texas Mid-Coast.

Many of these resources gained positive traction from the media, the public, and decision-makers who recognized these impacts and the need for proactive action. Our work did not end at informing these groups.

## SUPPORTING COMMUNITY PLANNING

We strongly advocated for science-based solutions for the communities and leadership to support their resilience planning. We shared the climate risks and promoted equitable nature-based solutions through presentations to the county leadership at the Commissioners Court of Aransas and Refugio counties, representatives of the six Regional Flood Planning Groups, and the teachers of Houston Independent School District.

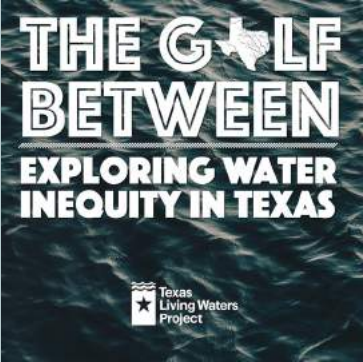


The notion of equity and environmental justice was central to every aspect of our work. At TLW, we recognize that neither water nor climate concerns will be solved until we address the disproportionate impacts on low-income, communities of color and actively include their voices in decision-making. TLW’s focus on equity took center stage at the beginning of 2021 with the release of *The Gulf Between* podcast that highlighted water inequity in Texas and the people leading the fight to overcome it. We continued learning and unlearning equity considerations in our advocacy, outreach, and education efforts throughout the year which culminated in a [formal set of principles](#) co-developed by the TLW staff at the end of this year. These principles, focused on understanding and elevating the needs of the most vulnerable communities, will guide our future work in this space in the years to come.

## PUSHING THE NEEDLE ON CLIMATE SCIENCE AND EQUITABLE POLICY

Continuing our work towards an equitable climate-resilient future in the post-pandemic era is a challenging yet crucial task for the entire state. TLW is well-equipped to push the needle on incorporating climate science and resilience framing, and centering equity in the state’s water planning efforts. We will create and disseminate resources and expand our focus on synthesizing climate information for the Hill Country region and the lower Texas Coast.

There is so much at stake. As climate change exacerbates threats to our water resources and magnifies the vulnerability of historically marginalized communities, TLW’s long run strategy is to make these considerations central to our work. Whether we are advocating for water infrastructure at the Capitol, advancing One Water among communities, or promoting the environmental-flow needs along the coast, we aim to integrate the holistic paradigm of climate resilience and equity in all our future efforts.



In spring 2021 we launched a podcast exploring water equity issues and stories from Texas. Some of our guests included:



**GREG CASAR**  
Austin City Council Member  
*...on water infrastructure and Winter Storm Uri*



**CHRISHELLE PALAY**  
Houston Organizing Movement for Equity (HOME)  
*...on (infra)structural racism and the Houston floodscape*



**MANNY TEODORO**  
University of Wisconsin-Madison  
*...on water affordability in Texas and beyond*



**MARLEEN VILLANUEVA**  
Indigenous Cultures Institute  
*...on indigenous communities and water in Texas*



**DAVID BUGGS**  
Texas Parks and Wildlife  
*...on equalizing access to the outdoors*





# Advancing One Water Across Texas



**JENNIFER WALKER**  
Deputy Director,  
Texas Coast and Water Program  
National Wildlife Federation

Putting the principles and practices in place to ensure Texas communities and ecosystems have the water they need has always been at the heart of the Texas Living Waters Project. In 2021 we continued this commitment, focusing in particular on the implementation of One Water throughout Texas.

We believe One Water holds great promise for Texas. One Water is about making every drop count, being smart about how we design and build in a water-limited region, and ensuring that water is here for people and the environment. We

“One Water planning can be applied at multiple scales and reduces environmental degradation. It’s a lifeline for the Hill Country’s water future.”



**SYDNEY BECKNER**  
Water Program Manager,  
Hill Country Alliance

have prioritized providing technical expertise, connecting communities to resources, and developing tools to support communities as they work to plan for a sustainable water future.

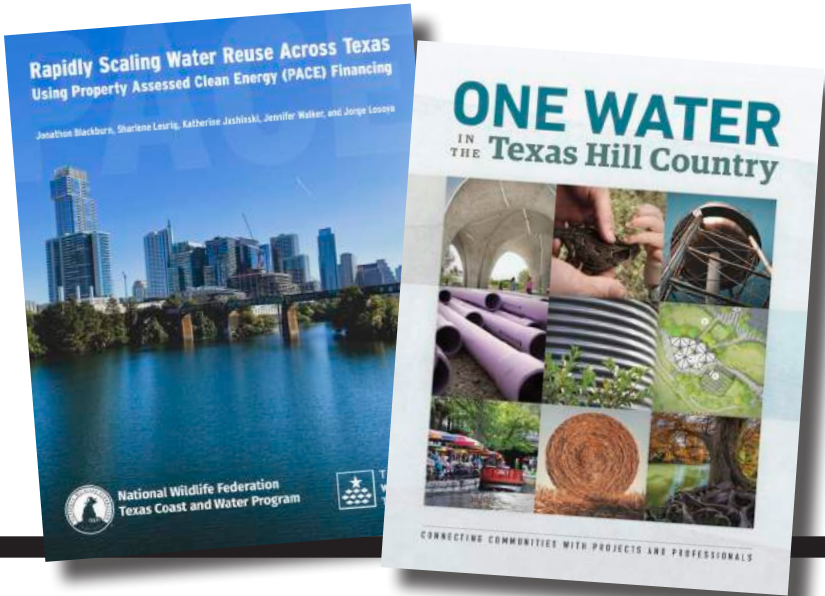
## ONE WATER IN THE TEXAS HILL COUNTRY

A joint project of the Hill Country Alliance and National Wildlife Federation, our [new guidebook](#) connects Hill Country communities facing growth and increased demands for water with professionals experienced in planning and implementation of One Water strategies. The guidebook features selected professionals along with

sample projects completed in Texas. Finding and connecting with consultants who can be trusted with a community’s most precious resource—its water—is a serious undertaking, and we hope this guidebook gives Texas communities a good place to start on the path to proactively manage their water resources with a focus on resilience.

## FINANCING WATER REUSE

*Rapidly Scaling Water Reuse Across Texas Using Property Assessed Clean Energy (PACE) Financing*, a [new report](#) by the National Wildlife Federation and Texas Water Trade, highlights the vast potential of using PACE to finance the upfront capital costs of water reuse. While water reuse projects are a proven solution to the state’s water challenges, many more could be built if developers took greater advantage of financing vehicles such as PACE.



## Living with water

*As the National Wildlife Federation’s One Water & Water Equity Fellow, **Jorge Losoya** spent Fall 2021 deep in research on the intersection between housing and water planning in Texas. We asked him about his reflections on his findings as he prepares to release his in-depth report in 2022.*

**You don’t usually think of housing when you think of large-scale water planning. How can housing factor into urban water planning?**

Water and housing are intimately tied and inform one another. Housing characteristics impact access to water and their vulnerability to water-related disasters. The age and design of a home and community impacts factors such as the cost of water, local flooding, potential for mold, water use, and vulnerability to extreme weather events. These issues offer water management stakeholders an opportunity for collaboration across agencies. Looking at these intertwined issues closely you also find ongoing equity issues.

**To what extent is housing development factoring into water planning in Texas currently?**

Very little. Housing typically falls under land use planning, which conventionally is a separate

sphere from water planning. Recent trends are pointing to more integrated water planning processes that integrate housing and land use. The City of Austin’s *Water Forward* plan addresses this gap by including measures such as landscaping ordinances and onsite water reuse requirements.

**Based on your research, what recommendations do you have for Texas state and city-level planners moving forward?**

Moving forward, planners must envision and realize a built environment in tune with water that centers people. A critical first step should look across housing, land use, and water plans to remove conflicts and increase synergy between them. Additionally, regulations and projects that provide multiple benefits across housing and water goals should be prioritized to reduce costs and maximize benefits. At every step meaningful community engagement should be practiced.

## ENSURING ON THE GROUND IMPLEMENTATION OF ONE WATER PLANS

Successful implementation of Austin’s ground-breaking *Water Forward* plan will not only secure Austin’s water future, but serve as a proof of concept for how we can sustainably manage water supplies across the state. As chair of Austin’s Integrated Water Resource Planning Community Task Force, Jennifer Walker is helping lead the way in ensuring the city implements the first on-

the-ground steps in the ambitious plan. In 2021, the [first key elements](#) of *Water Forward* were adopted by city council. Some are the first of their kind in Texas. The ordinances require new developments to prepare a water budget that will inform water management decisions on the property. Austin’s large commercial developments will need to offset their non-potable water use with water generated onsite. These practical, promising initiatives will preserve and extend Austin’s potable water supply.



# Advocating for Infrastructure Investment



## DANIELLE GOSHEN

Policy Specialist/Counsel,  
Texas Coast and Water Program  
National Wildlife Federation

Barely a month into the 87th Texas Legislative Session, Winter Storm Uri knocked out water service for more than half of all Texans. Many communities faced boil notices for weeks on end. It was the largest disruption to public water supply in Texas history.

Whether through broken mains or flooded subdivisions, failing water infrastructure is at the heart of how Texans are experiencing the mounting twin pressures of breakneck development and climate change.

The root of the problem lies in decades of underinvestment. This year we decided to step up and commit to the broader effort to develop long-term solutions.

In the immediate aftermath of Uri, we re-aligned our legislative priorities and provided extensive recommendations to lawmakers in order to pass meaningful legislation to address future events. We even compiled first-hand accounts of Texans' time without water in our award-winning short film *Water, Interrupted: Houston Remembers Uri*.



TLW's Amanda Fuller testifies to members of the Texas House of Representatives in Fall 2021 about the need to use federal ARPA funds on Texas water infrastructure. [Watch the testimony](#)

When the Legislature largely ignored our fragile water infrastructure during the legislative session, we called out the inaction publicly and re-directed attention towards the new, historic opportunity in federal spending bills heading Texas' way.

One of these bills, the American Rescue Plan Act (ARPA) allocated \$15.8 billion to Texas and explicitly authorized water infrastructure spending.

We helped rally a large coalition of conservation, equity, and rural organizations, and jointly encouraged the state to use these funds for grants to historically underserved communities. We also called for resilient and innovative infrastructure that can better respond to climate variability, with a particular focus on ensuring prioritization of equitable projects that center vulnerable communities' experiences and needs.

We worked to identify state programs where more than \$2 billion in ARPA funds could be allocated effectively, made the case to the public, and advocated in at the Capitol for these investments during the Legislature's third special session.

We continue to press on these priorities as we enter the new year. With the passage of the historic Infrastructure Investment and Jobs Act, we are hard at work ensuring Texas is well-prepared to effectively invest \$2.9 billion in water infrastructure funding. Specifically, we are focused on enhancing the state's implementation of the Drinking Water and Clean Water State Revolving Funds.

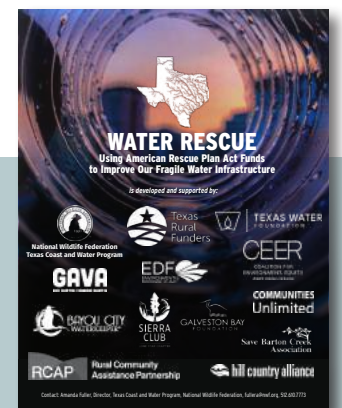
Away from the Capitol, we continued supporting the Regional Flood Planning Groups during

their inaugural planning cycle – calling on regions to adopt flood management strategies, projects, and goals that center equity and nature-based solutions. Our team provided region-specific presentations and resources on nature-based flood mitigation to six priority regions across Texas. We also convened cross-region dialogues for environmental- and public-interest members to share resources and work through impediments to incorporating forward-thinking solutions.

Moving forward, we will equip decision-makers with the data they need to invest in water infrastructure where Texas needs it most. We are set to release major reports on systemic water loss and historic underinvestment in water infrastructure across the state. Our advocacy over the last year has laid the groundwork for significant change that will make Texas a more equitable and resilient place for generations to come.



ABOVE: TLW's Danielle Goshen receives an award from Mayor Sylvester Turner and the City of Houston for our short film *Water, Interrupted* (below). The film captures Houstonians' memories of their time without water during Winter Storm Uri. The film also received an award at the 2021 Water, Texas film festival.



The National Wildlife Federation published a series of legislative briefs in 2021 advocating for, amongst other issues, a renewed focus on water infrastructure. NWF's final brief for the year brought together a coalition of rural, equity, and conservation organizations to advocate for ARPA funding for water infrastructure. Click on each cover above to view.



# Protecting the Flow of Life

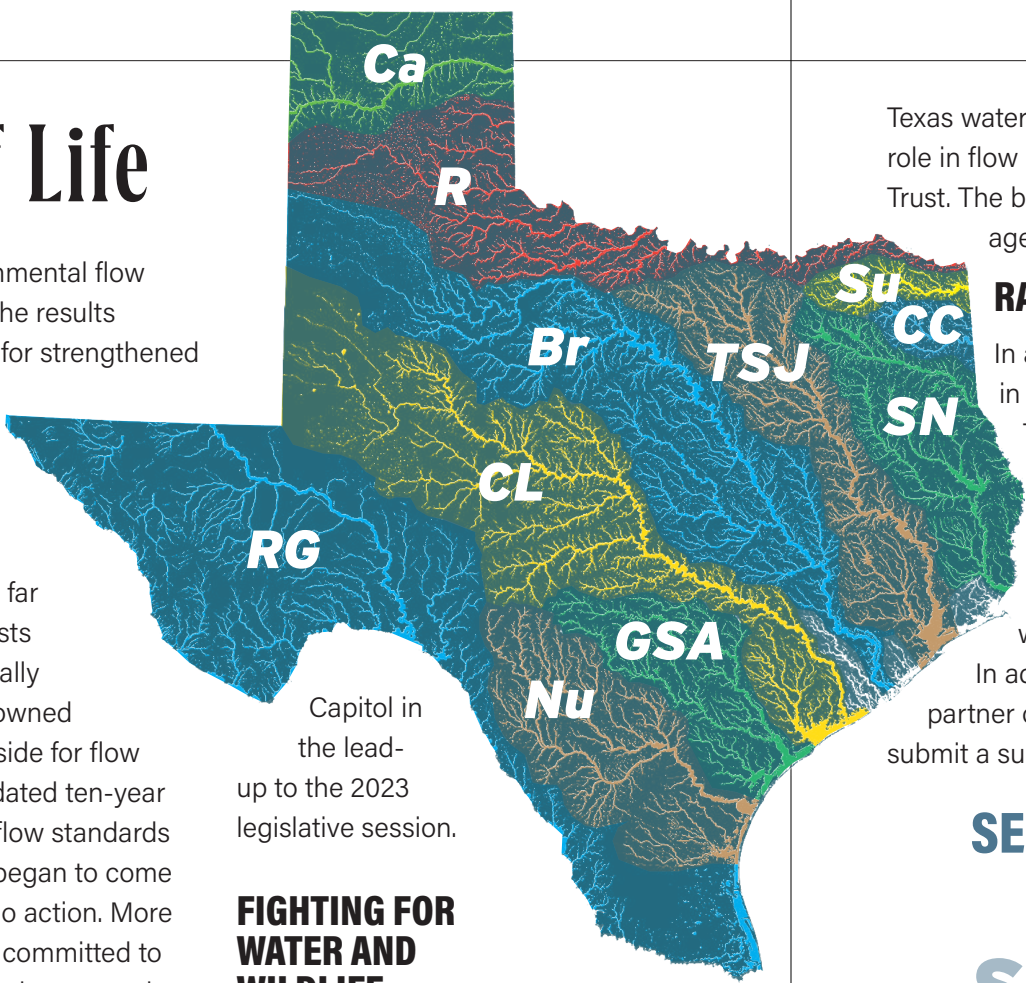
As our name has always suggested, water in Texas is alive. From the regal whooper to the mud-loving fatmucket, fresh water has historically supported a stunning array of life in Texas. With the arrival of settlers, the transformations of industrialization, the current era of rapid sprawl, and our widening climate extremes, much of that living water is increasingly under threat.

From its inception, TLW has fought to protect and restore that life by advocating for freshwater flow protections in Texas waterways and bays. In 2021, that decades-long fight received new energy and new urgency.

## ASSESSING THE STATE OF FLOW PROTECTION IN TEXAS

Led by our co-founder and noted Texas environmental flows expert, Myron Hess, we released a comprehensive [retrospective analysis](#)

of the state of environmental flow protection in Texas. The results showcased the need for strengthened implementation of the 2007 environmental flows legislation (SB 3). Adopted flow standards have fallen far short of levels scientists identified as ecologically necessary. No state-owned water has been set aside for flow protection. And mandated ten-year review deadlines for flow standards for individual basins began to come and go in 2021 with no action. More than ever, we remain committed to protecting the life our rivers sustain. As such, our analysis included detailed recommendations for agencies and decision-makers to get the flow protection processes back on track. Armed with these data and action-steps, we are well-equipped to have substantive conversations at the



## FIGHTING FOR WATER AND WILDLIFE

In fact, many of those informed conversations began in 2021 during the spring legislative session and helped TLW contribute to a major victory for flow protections in Texas waterways. HB 2225, perhaps the biggest legal win for

Texas water in 2021, directs Texas Parks and Wildlife to take an active role in flow protection through expanded use of the existing Texas Water Trust. The bill is an important new tool and we're in conversation with the agency about how to make its implementation impactful.

## RALLYING SUPPORT FOR MUSSELS

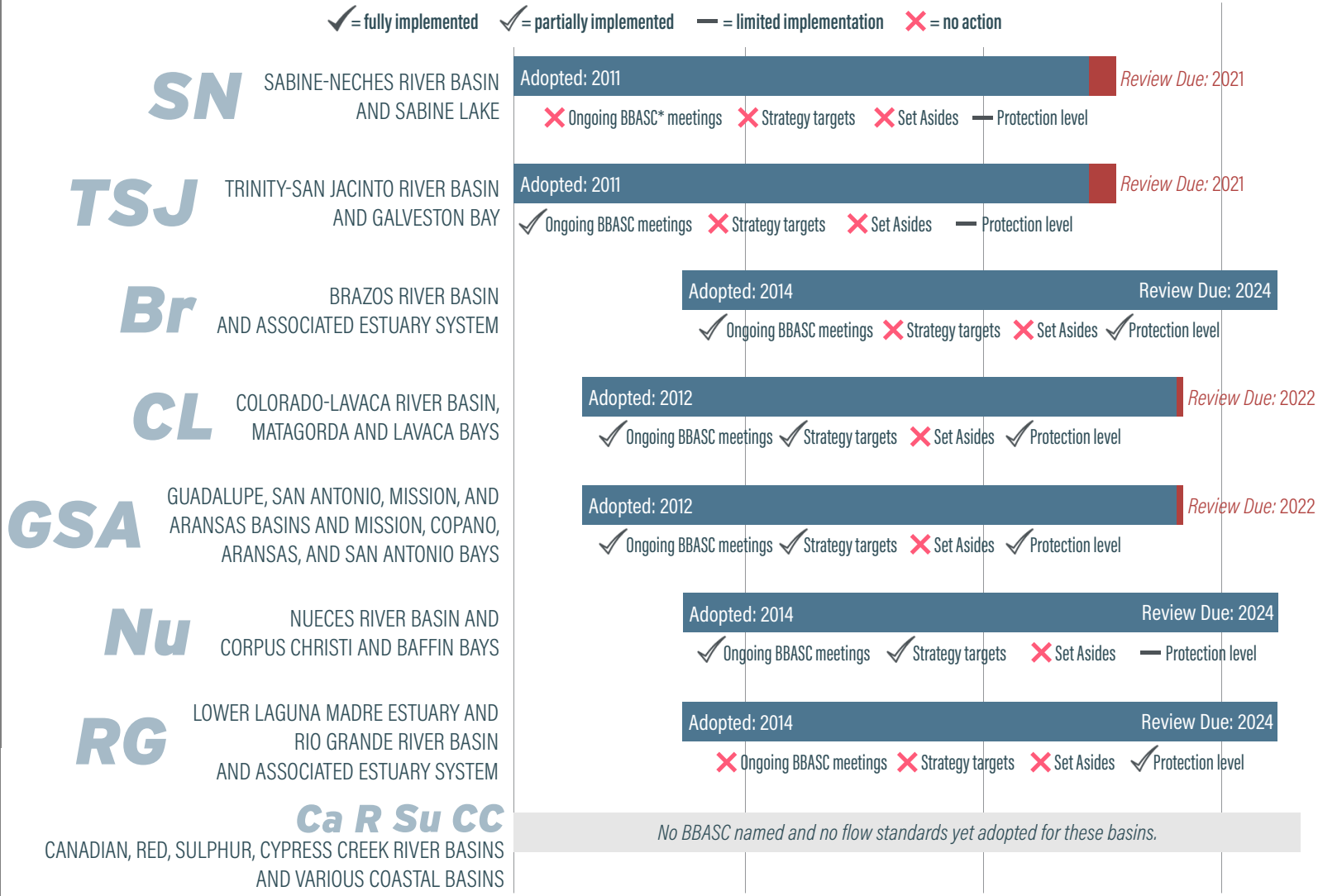
In a final sign of both the concerning state of environmental flows in Texas and the collective power of public advocacy, this fall TLW spearheaded a state-wide effort to support the proposed listing of six separate freshwater mussel species under the Endangered Species Act. All six are native to Central Texas. Mussels are key to improving water quality and sustaining ecosystems in Texas rivers. Through a broad outreach effort, we collected nearly 10,000 signatures in support of the listing. In addition, we drew on the considerable expertise of all four TLW partner organizations, as well as the Texas Conservation Alliance, to submit a substantive set of comments to the U.S. Fish & Wildlife Service.

“HB 2225 was a big win for water in 2021. Our focus now is supporting Texas Parks & Wildlife as they work to implement the legislation and elevate the Texas Water Trust.”



**ALEX ORTIZ**  
Water Resources Specialist,  
Sierra Club, Lone Star Chapter

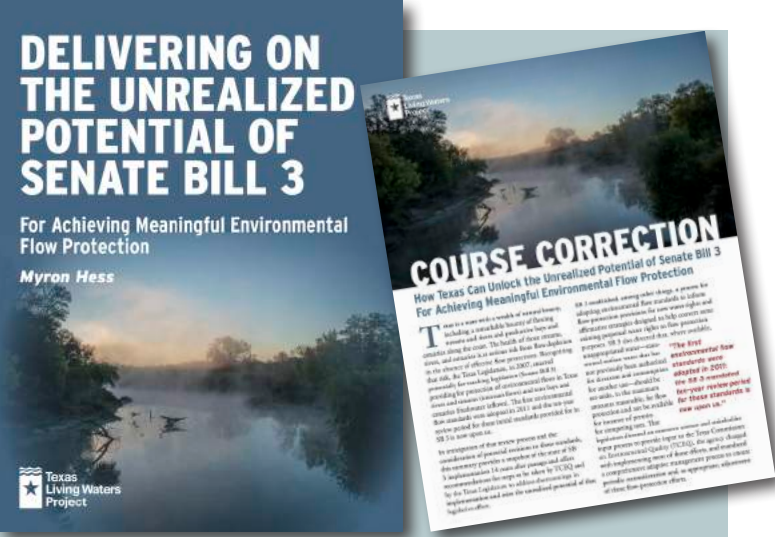
## SENATE BILL 3 BAY AND BASIN PROCESS IMPLEMENTATION



2021 saw TLW publish Myron Hess’ [comprehensive analysis](#) of the first decade of the environmental flow protection process ushered in by 2007’s Senate Bill 3. His conclusions are cause for concern, but the report offers clear recommendations for state decision-makers to get the SB 3 process back on track.



**MYRON HESS**  
Principal,  
Law Office of Myron Hess PLLC;  
Tributary Consulting



\*Bay and Basin Area Stakeholder Committees (BBASC), charged by SB 3 to develop flow standards plans for periodic review at least once every 10 years.



**2001 | TEXAS LIVING WATERS PROJECT FOUNDED**

National Wildlife Federation, Sierra Club Lone Star Chapter, Environment Defense Fund, and Texas Center for Policy Studies launch partnership to ensure state water planning includes robust water conservation components.

**2003 | WATER CONSERVATION TASK FORCE**

TLW's Ken Kramer serves on state task force whose report became the foundation for new administrative, planning, and legislative actions to advance water conservation.

**2004 | BAYS IN PERIL PUBLISHED**

A defining publication for TLW, Bays in Peril provided the first ever in-depth evaluation of how full use of existing water permits could affect freshwater inflows to the Texas coast.

**2007 | ENVIRONMENTAL FLOWS BILL (SB 3) PASSED**

TLW played a foundational role in negotiating the water supplier consensus that was the basis for this landmark bill that set out an ambitious plan for environmental flow standards for Texas river basins and bays.

**2011 | FIRST SB 3 STANDARDS ADOPTED**

After 4 years of participating in advisory and stakeholder processes, TLW played a critical role in ensuring the first SB 3 flow standards were fully adopted.

**2013 | SWIFT FUND CREATED**

TLW played a critical role in the creation and implementation of the State Water Implementation Fund for Texas (SWIFT), a crucial financial vehicle for water conservation projects.

**2016 | FIRST WATER CONSERVATION SCORECARD**

This TLW landmark report provided the first-ever ground-level analysis of water conservation performance across Texas utilities. We published an expanded version in 2020.

**2019 | FLOOD BILLS (SB 7 & 8) PASSED**

TLW has been deeply involved in the implementation of both the state flood planning process and Flood Infrastructure Fund setup in response to Hurricane Harvey.

**2018 | AUSTIN ADOPTS *WATER FORWARD* PLAN**

TLW helped Austin develop its innovative 100-year integrated water resource plan. TLW's Jennifer Walker is now chair of the Water Forward task force and is leading the way in ensuring the city implements the first on-the-ground steps of the plan.

**2021 | HB 2225 PASSED, WATER TRUST ELEVATED**

Championed by TLW, HB 2225 is a critical new tool in the fight to ensure adequate environmental flows in Texas waterways. The enacted bill directs Texas Parks & Wildlife to take an active role in expanding the use of the existing Texas Water Trust to preserve instream flows in the state's rivers and freshwater inflows to our productive coastal bays and estuaries.

**Dear friends,**

As I take my leave of the National Wildlife Federation after 22 years, I have been reflecting on the amazing phenomenon that is the Texas Living Waters Project. We began 20 years ago, as Texas embarked on a long-term water planning process that essentially ignored the health of the state's rivers, springs, and bays, to the detriment of both wildlife and people who depended on them. With strong support from visionary funders, we launched a campaign to fundamentally change how water in Texas is protected, allocated, and conserved. Our aim was to ensure that the state's glorious natural heritage—its iconic rivers, productive bays, life-giving springs, and abundant fish and wildlife—would be passed on intact to future generations. We've accomplished so much! But the work remains, as we grapple with what a changing climate and a growing population will mean for our water resources and our communities. I am so proud to have been a part of this courageous and important effort, and I depart full of confidence in the team carrying the work forward.

With many thanks to all our friends and supporters,

*Susan Kaderka*

Texas Living Waters Project Co-Founder  
Regional Executive Director, South Central Region  
National Wildlife Federation



**Celebrating 20 years of Texas Living Waters**

Illustration by Jorge Losoya, One Water and Water Equity Fellow,  
Texas Coast and Water Program, National Wildlife Federation



# Looking Ahead to 2022

We’re beginning 2022 with excitement and a desire to better understand and address deep rooted issues around sustainable water management in the face of climate change for wildlife and people, and equitable infrastructure investments in communities. In the first half of the year we will be releasing three reports, each tackling a timely topic like cost-effective strategies to reduce water loss, the history of (dis)investment in Texas’ water infrastructure, and a closer look at the relationship between One Water implementation and housing affordability.

Throughout the year, we will continue to shine a light on the nexus between climate change and water in Texas, as the experiences we are having with water in our state are often expressions of warmer temperatures, increased or decreased precipitation, and extreme events driven by climate change. We will maintain our focus on equitable nature-based and hybrid solutions to these issues as potential win-win strategies for wildlife and communities urgently in need of protection ahead of the next storm. As we gear up for the next legislative session, we will work with partners to advance shared goals

through the sunset review process currently underway for the Texas Commission on Environmental Quality and the Texas Water Development Board.

We will also strive to connect Texans with their natural heritage of enjoying the outdoors through fishing, wildlife watching, kayaking, and time with nature - all precious gifts to pass down to the next generation. We will advocate for strong environmental protections in water policy and planning, showcase the history of specific waterways and species, and develop water champions.

# Supporters of Texas Living Waters

- The Meadows Foundation
- The Cynthia and George Mitchell Foundation
- Houston Endowment
- The Jacob and Terese Hershey Foundation
- The Trull Foundation
- Shield-Ayres Foundation
- The Burdine Johnson Foundation
- Pisces Foundation
- Coypu Foundation
- The Rachael and Ben Vaughan Foundation
- Environment Fund of Texas
- Mr. Perry Lorenz

*\*We are also thankful for additional funders not listed above*

## DONATE

Texas Living Waters Project partners are 501(c)(3) organizations that rely on generous donations from people like you.

To make a tax-deductible donation visit [texaslivingwaters.org/get-involved](https://texaslivingwaters.org/get-involved)

Or donate by mail:

Texas Living Waters Project  
National Wildlife Federation  
505 E. Huntland Dr., Suite 485  
Austin, Texas 78752

# The Expanding Texas Living Waters Team



**AMANDA FULLER**  
Director,  
Texas Coast and Water Program  
National Wildlife Federation



**JENNIFER WALKER**  
Deputy Director,  
Texas Coast and Water Program  
National Wildlife Federation



**ARSUM PATHAK**  
Adaptation and Coastal  
Resilience Specialist,  
Texas Coast and Water Program  
National Wildlife Federation



**JONATHAN SEEFELDT**  
Senior Communications Manager,  
Texas Coast and Water Program  
National Wildlife Federation



**DANIELLE GOSHEN**  
Water Policy and  
Outreach Specialist,  
Galveston Bay Foundation  
*\*Joining NWF in 2022!*



**JORGE LOSOYA**  
One Water and Water Equity Fellow,  
Texas Coast and Water Program  
National Wildlife Federation  
*\*New to TLW in 2021!*



**KATHERINE ROMANS**  
Executive Director,  
Hill Country Alliance



**SYNDEY BECKNER**  
Water Program Manager,  
Hill Country Alliance  
*\*New to TLW in 2021!*



**CYRUS REED**  
Conservation Director,  
Sierra Club, Lone Star Chapter



**ALEX ORTIZ**  
Water Resources Specialist,  
Sierra Club, Lone Star Chapter



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Law Office of Myron Hess PLLC;  
Tributary Consulting



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Water Resources Chair,  
Sierra Club, Lone Star Chapter



