

# 2025 Presentations List

## Session A

Moderator: Fouad Jaber

### **Greening Detention Ponds for Multifunctional Landscapes**

Dr. Fouad Jaber, Texas A&M AgriLife

Detention ponds were some of the earliest best management practices to manage stormwater. Dry detention ponds are basically excavated areas with a pipe (orifice) at the bottom that slowed down overflow and reduced peak flows in the receiving channel or stream. Minimal treatment occurs in such systems. Wet detention ponds hold water for longer periods allowing only overflow when new runoff flows into the pond. They reduce total suspended solids from the effluent in addition to peak flow reduction. In this presentation two improved designs that increase volume reduction and pollutants would be presented as alternative more sustainable detention ponds. The first consists of design ponds as parks that integrate bioswales, native plants and recreation trails with a meandering river pattern. The other integrates a constructed wetland in the detention pond that retains and treats small storm events while still performing as a standard detention pond for larger events. Both the designs provide opportunities for greening and recreation that could be an asset in new developments

### **Urban Waters Looking for Native Roots**

Ryan O'Hanlon, Stonefly Aquatic Nursery

Wetland and riparian restoration designs often include many wonderful species, but don't always align with the availability and regular production of species from growers or suppliers. Here, we'll discuss what this looks like from the growers side of the stream. Including considerations for time frame, location, pot size, quantities to fill the project and what we've learned along the way!

### **Assessing Expanded Shale for Urban Runoff Treatment: Integrating Physical Experiments, Flow Visualization, and Numerical Modeling**

Dr. Habib Ahmari, The University of Texas at Arlington

Urbanization and expanding impervious surfaces have increased stormwater runoff, altering its timing and degrading water quality. Urban runoff carries pollutants such as nitrogen, phosphorus, sediments, and heavy metals, affecting the physical properties of receiving waters. Stormwater management programs use Best Management Practices

(BMPs) to mitigate these impacts by retaining and treating runoff. However, in dense urban areas, space and cost limitations often hinder traditional BMPs. This project evaluates a small-scale engineered filtration media made of expanded shale in a controlled lab environment at the University of Texas at Arlington. The setup allowed for rapid, precise testing of different configurations, including inflow-outflow dynamics, bypass mechanisms, filter media dimensions, and pollutant loading rates. Thirty scenarios were tested in a 15-ft plexiglass flume using expanded shale mixed with sandy clay soil, assessing its effectiveness in removing total suspended solids (TSS) and turbidity. Results showed removal efficiencies of 20-82% for TSS and -4% to 61% for turbidity, with expanded shale outperforming traditional materials such as sand and gravel and requiring less channel length. Even at a small scale, expanded shale met the 80% sediment removal standard, highlighting its potential as a highly effective alternative for urban stormwater management. Flow dynamics over the filtration media were analyzed using a Particle Image Velocimetry (PIV) system to capture flow patterns along the flume. Additionally, the Flow-3D model simulated sediment transport under eight scenarios, replicating the lab geometry. Simulation results complemented physical observations, reinforcing the effectiveness of expanded shale as a viable filtration material for managing urban stormwater runoff.

### **Riparian FRODO: Is Controlling Invasive Species Just a Resource Suck?**

Staryn Wagner, City of Austin, Watershed Protection Department

The intention of this discussion is to make possible the presentation of a wide range of thoughts, opinions, and reasoning related to the control of invasive plant species in and along our stream and river corridors. At present there is a long and strong held belief that there is a need for control of invasive plant species in the riparian areas of our waterways. This effort is lengthy, expensive, and everlasting. With great and coordinated efforts headway is made against the onslaught of invasives but is there an end in sight and is there a point where the effort is for naught?

Potential focal points for this conversation:

- What are the realistic goals for removing specific invasive species?
- Are there some locations to put in the effort and others to let go?
- Postage stamp impact. Little spots in a large terrain.
- Never fully taken care of. The forever problem.
- Would the environmental benefit be greater if the resources were used elsewhere?
- Do you lose the support of those focused on the proliferation of native species?
- How do we justify either decision?
- The long-term outcome of invasive plant dominance is not fully known.

## Session B

Moderator: Rebecca Krug

### **Updates from the Solar Field**

Katie Myers, Tarrant Regional Water District

At the 2022 Urban Riparian Symposium, we gathered information, concerns, and (mostly) questions from the water world regarding the expansion of utility-scale solar facilities in Texas. Two years later, we're back to examine how the landscape has shifted. What new information do we know about how various development and management practices affect hydrology and water quality? What research is progress? Where might the industry be headed in Texas? How are we preparing landowners and natural resource professionals for this ongoing land use change?

### **"Hi, N-EWN" in Texas: Collaborating on nature-based solutions from local to international**

**Matthew Berg**, Rachel Roberts, Abel Porras

The Network for Engineering with Nature (N-EWN) is a community of researchers, practitioners and educators who are addressing the major infrastructure challenges facing our society while creating opportunities that align ecological, social and engineering processes to achieve multiple benefits. This team presentation will feature Network partners San Antonio River Authority, City of Austin Watershed Protection Department, and Simfero sharing an overview of N-EWN initiatives across the United States and in our very own Texas riparian systems. Presenters will highlight opportunities to connect urban nature with broader regional and national initiatives, outline innovative watershed modeling approaches, and share lessons learned on implementing nature-based solutions. This energetic session will aim to bring some fun in envisioning more resilient communities and ecosystems.

### **Gaining Ground: Advancing the Use of Erosion Management Structures for Habitat Restoration**

Ryan McGillicuddy, Texas Parks and Wildlife Department

In recent decades, land managers in the Southwest have increasingly embraced the use of low-profile wood and rock structures as treatments for both upland and in-stream erosional features such as gullies, rills, and headcuts. These structures (commonly referred to as "Zeedyk" or "low-tech" structures) slow the flow of water across the landscape, promoting infiltration, soil moisture, and soil capture. The Texas Parks and

Wildlife Department (TPWD) has worked with a private landowner to develop a conservation demonstration site where several of these structures have been installed, and is collaborating with state and federal partners and NGOs to further advance their use and make them eligible for reimbursement through incentive programs.

## **Conservation Easements: A Tool for Protecting Urban Riparian Areas**

Blake Alldredge, Upper Trinity Regional Water District / Upper Trinity Conservation Trust

### Session C

#### Moderator: Melissa Walker

## **Decision Support for Nature-Based Solutions: The Trinity Floodplain Prioritization Tool**

Dr. Justin Kozak, The Nature Conservancy

The Trinity River Basin, with nearly 11 million acres of land and over 715 river miles is the most populous basin in the state and serves as the water source to more than half of all Texans. Water from the Trinity Basin drains into the Galveston Bay and estuary system, considered one of the most productive ecosystems and commercial fisheries in the nation. The basin includes five major Texas ecoregions - Cross-Timbers, Blackland Prairie, Post Oak Savannah, Piney Woods, and Coastal Prairies and Marshes. Floodplain protection and restoration is an important Nature-Based Solution for supporting the health and resilience of communities and ecosystems in this important basin and the Gulf of Mexico. Freely available, the Trinity Floodplain Prioritization Tool is a decision support tool designed to help identify key opportunities for floodplain protection and restoration in the Trinity River Basin. Users are able to specify criteria related to water quality, wildlife habitat, carbon storage, current and future flood risk, and current and projected land use characteristics. The map interface changes in response to the user selections to identify sites that meet the selected criteria and help identify the geographies where floodplain conservation is likely to have the greatest positive impact for the conservation and community priorities selected.

## **Implementing Effective Strategies to Preserve Denton County Riparian Areas**

Blake Alldredge, Upper Trinity Regional Water District / Upper Trinity Conservation Trust

As working agricultural lands transform into urbanized communities, it's important to protect the quality of water in local streams and lakes - - the sources of our drinking water. A coordinated approach to protecting our natural assets (such as riparian areas, wetlands, and other native habitats) is needed to ensure the continued health and

sustainability of North Texas waterways for years to come. As part of its regional Watershed Protection Program, the Upper Trinity Regional Water District collaborates with multiple partners (i.e. cities, counties, utilities and other agencies and organizations) on various programs to advance watershed management in North Texas. In addition, UTRWD established the Upper Trinity Conservation Trust in 2010. The Trust protects land and preserves water resources by receiving and overseeing conservation easements. The Trust's mission is to protect water quality and does this by focusing on riparian corridors in rural and urban watersheds of our local water supply lakes. In 2017, the Trust, along with UTRWD and Denton County, jointly sponsored the development of the Denton County Greenbelt Plan. The Plan identifies and prioritizes areas where preservation efforts should be encouraged, and to create a common vision for voluntary implementation by municipalities and developers. Recommended strategies were included in the Plan to encourage implementation, such as public outreach tools, funding mechanisms, trail designs and other protection measures. Since 2017, 12 entities have adopted the Plan to date. This presentation will discuss the development of the Plan, the recommended strategies that were included to encourage implementation of the Plan by municipalities and developers, and how the Plan has spurred interest from others in riparian protection that have led to additional projects. This presentation will also highlight cities who are currently preserving riparian areas and protecting water quality by various means.

### **Building More Livable Communities - The Riparian Way!**

Aleksander (AJ) Prebensen, City of Fort Worth

The City of Fort Worth has looked at a planned service area of the city and has collaborated with a developer to do a model site plan of a development that preserves the riparian areas and creates more livable neighborhoods that conserve canopy, utilize natural topography, are nature facing, trail oriented, and also address some middle housing issues through granting density in exchange for the preservation of ecosystem services. The city is considering design and development regulations and where we can find flexibility in order to promote more walkable bikable neighborhoods that still deliver a good or better return on investment for the development community, the city, and its residents.

### **Just Stop Mowing! The Trials and Tribulations of Establishing Stream Buffers in Urban Parks**

Michelle Villafranca, City of Fort Worth Park & Recreation Department

In 2021, the City of Fort Worth's Park & Recreation Department embarked upon a stream buffer program. Ten parks with were selected to return vegetated buffers along streams through reduced mowing. Initially, it seemed an easy-to-implement program;

however looks can be deceiving. This presentation will cover the process of selecting the parks, developing a Natural Areas program, developing policy and maintenance procedures, working with mow contractors, developing a stream health monitoring program, and educating the public on the benefits of vegetated buffers.

## **Waller Creek Project and Downtown Revitalization of Urban Water Way and Trail System**

Melissa Carugati

### Session D

Moderator: Nikki Dictson

## **River Road Park Bank Stabilization Project - City of Boerne**

Tami Norton, Ecosystem Planning and Restoration

The River Road Park Bank Stabilization project is located along the north bank of the Cibolo Creek in Boerne, Texas and was completed in April 2024. This presentation will detail the design approach for stabilizing 1,550-LF of riverbank using natural techniques such as boulder toe protection, a native plant and vegetation buffer, and limiting pedestrian access. The design analysis, criteria, and permitting requirements will be discussed. In addition to the bank stabilization, the City of Boerne removed sediment that had accumulated behind the dam located at the downstream end of River Road Park and, working with Texas Parks and Wildlife and the local high school welding program, installed fish habitat feature to improve water quality within the Cibolo Creek. The goal of this presentation is to demonstrate the benefits of natural approaches and challenges of implementation.

## **Integration of Transportation and Stormwater Infrastructure (TSI): A Proactive Approach to North Central Texas Growth and Development**

Aaron Hoff, Tarrant Regional Water District

This initiative utilizes proactive planning to address increasingly flooded roadways, neighborhoods, and critical infrastructure in the rapidly-developing areas of North Central Texas contending with intense rainfall and escalating stormwater impacts. The study integrates stormwater, transportation, and environmental planning in a unique effort to reduce risk in a region growing by 150,000 people per year. Focusing on these 'exurban' areas, the study seeks to provide enhanced technical models and emergency management solutions to guide more informed development decisions. This will be accompanied by a planning menu for sustainable transportation design and stormwater

detention that blend traditional stormwater features with nature-based solutions. Tools that quantify the financial benefits of adopting these higher building standards will also be integrated into the study. The multi-year study is funded with more than \$10 million from state and federal agencies. Study partners include the North Central Texas Council of Governments, US Army Corps of Engineers, academia, and impacted communities and organizations. Study goals include: 1. Reduced infrastructure flooding within and downstream of rapid development areas 2. Tools identifying the financial benefit of adopting higher standards 3. Enhanced technical models and emergency management capabilities 4. Planning menu for transportation design, stormwater detention, and environmental features

### **Integration of Community Forest Management in Watershed Protection Strategies**

Julia Schmidt, Texas A&M Forest Service

This presentation will focus on the integration of community forest management in watershed protection strategies, discussing the benefits of trees in urban settings, various methods to manage stormwater runoff, and why this is important. The goal of the presentation is to give both corporate and individual's ways to contribute to our water systems health and share background to the importance of trees in society. By reviewing green infrastructure, low impact development practices, and how an individual's landscaping can enhance stormwater quality, we can give power to the public in a tangible and obtainable way. This presentation will demonstrate how anyone can take matters into their own hands and begin to make a difference even in their own backyard.

### **Connecting Community to Urban Streams and Forests through Restoration, Conservation Corps, and Stewardship Events**

Emily Finley, Jordan Forbis, Beaver Watershed Alliance

The Watershed Conservation Resource Center (WCRC), a nonprofit watershed restoration group, has been awarded \$2.67 million through the Inflation Reduction Act and the USDA Forest Service's Urban and Community Forestry Program to undertake an extensive riparian restoration project within an urban park in Fayetteville, Arkansas. The project is in year one, this presentation will share initial steps taken to form partnerships, develop process-based conservation methods, build a framework for conservation workforce development and deliver strategies to engage the local community. The project, "Connecting Community to Urban Streams and Forests in a Low-Income Neighborhood at Walker Park, Fayetteville, AR," focuses on the comprehensive restoration of 3,300 feet of Spout Spring and its associated riparian zone, along with 22 acres of adjacent forest. Situated in a historically Black community, this riparian restoration effort aims to revitalize the stream, thereby improving ecological

health and community access. Key components of the riparian restoration include the design and implementation of natural stream channel design techniques for restoration and riparian habitat enhancement. Collaboration is central to the project's success. Beaver Watershed Alliance, a nonprofit watershed group, is assisting the WCRC in developing a conservation workforce in coordination with the Arkansas Conservation Corps, coordinating volunteer stewardship and community engagement events. The Alliance will share their experience with these outreach and education efforts, interfacing with a municipality to coordinate project work and next steps for the project. Through these riparian restoration efforts, the project aims to increase public access to nature, enhance wildlife habitats, and protect water quality in the Beaver Lake watershed, as well as reconnect residents of this historically disadvantaged community with their natural environment. Project Partners include Watershed Conservation Resource Center, Beaver Watershed Alliance, City of Fayetteville, Beaver Water District, Northwest Arkansas Black Heritage, American YouthWorks, and the USDA Forest Service.

## **Cooling Our Cities: Urban Reforestation and Citizen Science Unite to Combat Heat**

Kirsten Vernin, HARC

The health of our communities and green spaces are intertwined. ForUsTree is about collectively tending to green spaces and reinvigorating communities' access to natural areas and urban forests in an equitable manner. The Initiative will help combat high temperatures and prepare communities for a changing climate, while also bringing training and workforce development, access to paid employment, and established pathways for green careers. This project will grow the urban tree canopy by 54,310 trees, cultivate the workforce by hiring and training 83 Community Engagement and Environmental Education Interns and Youth Work Crew Members, and reap climate resilience and community benefits by improving forest health and removing 2,040 hazardous trees. Urban and extreme heat are among the most significant health and climate issues facing Houston and Harris County. In August of 2024, 157 community volunteer scientists took to the streets to find the areas in Houston and Harris County most susceptible to the "urban heat island effect." Using thermal sensors mounted on their cars, these volunteers traveled along pre-determined routes to record ambient temperatures and humidity at three specific times. Together, they drove a total of 3,446 miles within disadvantaged communities in Houston and Harris County, making it the largest single-day heat mapping campaign in the United States. An outcome is the direct involvement of the community in producing street-by-street heat data to identify where, on a granular level, heat is most severe. This presentation will cover the pre-campaign planning, campaign day, and share key findings based on the heat mapping results. All data will be publicly available, allowing local communities to use this data and access strategic planning reforestation resources to help find solutions for their own



neighborhoods. By collaborating across sectors, this project is committed to increasing tree canopy equity in Houston and Harris County.

## Session E

### Moderator: Blake Alldredge

#### **Grow Zone Hot Topics: Key issues after 15 years of riparian restoration**

Staryn Wagner, City of Austin, Watershed Protection Department

In this presentation we discuss the origin and past decade of the Grow Zone Program (a municipal riparian restoration effort). Then present the result of an inter-departmental meeting set on identifying issues and concerns (Hot Topics) that have arisen over the past twelve years. The goal which is presently underway is to use inter-departmental groups to focus on each of the Hot Topics and establish protocols for addressing them. The results from these groups will then be written into the updated Grow Zone guidelines.

#### **Retrospective of 7,071 E.coli samples from Bull Creek District Park and Barton Springs, Austin TX**

Andrew Clamann, City of Austin, Watershed Protection Department

Over the past 20 years, Austin's Public Health department has collected >7,000 water samples for weekly *E. coli* analysis from two popular aquatic recreation locations in Austin, Texas: Barton Springs Pool and the Bull Creek District Park. The resulting large data set has provided dependable insight into the spatial and temporal trends of these waterbodies. Both water bodies show reduced concentrations of E.coli over time, and the data shows fascinating trends in both temporal and spatial context that have ramifications for the management of contact recreation of these are other locations. Long term, dense, and focused data sets like this are hard to come by, and there are lessons to be learned from the sample protocol and experimental design.

#### **FRODO: Urban Ag Technical and Financial Assistance**

Wilma Tichelaer, USDA NRCS

Common urban agricultural best management practices in relation to resource concerns that are commonly found in urban settings. This will be geared towards Urban Riparian areas and the opportunities for NRCS technical and financial assistance.

## Session F

Moderator: Ryan McGillicuddy

### **Water Education: Audiences and Messaging**

Melissa Walker, City of Arlington Stormwater Educator/Texas Master Naturalist/Texas Riparian Association Board Member

Understanding different audience questions and their related messages are an important component of a quality water education program. Students, teachers, residents, business owners, rural landowners, developers and government employees all have a different perspective on their role in water quality. Learning how to provide appropriate education messages in a clear and concise way to these various listeners can improve your education goals.

### **ACCESS Water: K-12 Watershed Education Programs**

Dr. Kelly Albus, Texas Water Resources Institute

The ACCESS Water Teacher Education program (TWRI) delivers watershed-based educational programming for teachers across the state focused on non-point source pollution. With place-based, hands-on learning through citizen science, the ACCESS Water program uses research-based techniques to increase the quality of watershed-related content for middle and high school students and increase student engagement through local action. This presentation will focus on sharing successes, tips, tricks and lessons learned from the ACCESS Water team related to water quality programming for K-12 audiences, and include a facilitated discussion about the future of water education in Texas.

### **Project WET (Water Education Today) in Texas**

Melissa Mullins – Baylor University Center for Reservoir and Aquatic Systems Research

Project WET (Water Education Today) is dedicated to solving critical environmental challenges by teaching the world about water. Project WET provides hands-on, science-based water education resources to formal and non-formal educators around the world. These resources encourage environmental stewardship and promote meaningful action. Social justice and sustainability are at the heart of every water lesson and activity. Come learn about how Project WET works globally, at the national level, and in Texas from a Project WET Coordinator and an educator who has long used PWET activities. We might even have time to look at a Project WET activity or two!

## **Engagement and Partnership to Beautify the Brazos**

Mark Keeley – City of Waco

The health of our communities and green spaces are intertwined. ForUsTree is about collectively tending to green spaces and reinvigorating communities' access to natural areas and urban forests in an equitable manner. The Initiative will help combat high temperatures and prepare communities for a changing climate, while also bringing training and workforce development, access to paid employment, and established pathways for green careers. This project will grow the urban tree canopy by 54,310 trees, cultivate the workforce by hiring and training 83 Community Engagement and Environmental Education Interns and Youth Work Crew Members, and reap climate resilience and community benefits by improving forest health and removing 2,040 hazardous trees. Urban and extreme heat are among the most significant health and climate issues facing Houston and Harris County. In August of 2024, 157 community volunteer scientists took to the streets to find the areas in Houston and Harris County most susceptible to the “urban heat island effect.” Using thermal sensors mounted on their cars, these volunteers traveled along pre-determined routes to record ambient temperatures and humidity at three specific times. Together, they drove a total of 3,446 miles within disadvantaged communities in Houston and Harris County, making it the largest single-day heat mapping campaign in the United States. An outcome is the direct involvement of the community in producing street-by-street heat data to identify where, on a granular level, heat is most severe. This presentation will cover the pre-campaign planning, campaign day, and share key findings based on the heat mapping results. All data will be publicly available, allowing local communities to use this data and access strategic planning reforestation resources to help find solutions for their own neighborhoods. By collaborating across sectors, this project is committed to increasing tree canopy equity in Houston and Harris County.