SUMMARY

TSI Technical Advisory Group Meeting
Friday, January 24, 2025
10AM – 11:30 AM, Virtual Meeting via Microsoft Teams

I. Update on Current Project Progress

Kate Zielke from NCTCOG provided an update on the project's progress, noting that there have been three sets of stakeholder meetings within the study area, and this marks the 7th Technical Advisory Group meeting. Additionally, six steering committee meetings have been held with local officials such as mayors and city managers. Kate mentioned that three workshops have already been conducted, with another one in the planning stages. More details about the upcoming workshop will be shared later. The team has also conducted several site visits to cities and counties to better understand their challenges.

On the technical side, the study is progressing, with further details to be provided in upcoming presentations.

II. Guest Presentation: Texan By Nature – Environmental Restoration Tool

Jenny Burden, Director of Development at Texan By Nature, introduced the organization's mission to advance conservation across Texas by connecting business and conservation efforts. Texan By Nature is a nonprofit that collaborates with a wide range of partners, believing that conservation and economic growth can complement each other. Their goal is to demonstrate that investing in conservation not only benefits the environment but also offers economic value, promoting long-term voluntary actions.

Jenny highlighted the organization's extensive work with 173 nonprofit groups focused on critical conservation areas such as wildlife, water, and landscape preservation. A key initiative she discussed was their annual Conservation Summit, which brings together industry leaders and conservation partners to exchange best practices and tackle shared challenges. The next Summit, set for October 21, 2025, will be a hybrid event in Dallas, offering both in-person and virtual participation.

Jenny also noted the recent release of their highly anticipated Return on Conservation™ report. This report, the result of years of rigorous research, seeks to quantify the financial benefits of voluntary conservation efforts. Based on 2019 data, it revealed that $639 million invested in conservation led to an impressive $2.8 billion in returns—a remarkable 4.3:1 return on investment.

While some regions like the Edwards Plateau showed particularly high returns, others like the Blackland Prairies had lower, but still positive, returns.

Jenny noted that conservation investment in Texas currently represents only 0.03% of the state's GDP, far below its potential. She suggested that increasing this investment to 0.5% of the GDP could generate $10 billion for conservation and a $40 billion return.

Additionally, Texan By Nature released a Casemaker tool, an Excel spreadsheet designed to help professionals calculate the return on conservation for specific projects. Jenny encouraged attendees to use and provide feedback on the tool. She concluded by inviting anyone with questions or experiences to share to reach out, as the organization is eager to amplify success stories and learn from feedback.

III. **Outreach to Local Governments**
   a. Equity Based Outreach Site Visits
   b. Developer and Real Estate Outreach
   c. Economic Development Stakeholder Engagement
   d. County Watershed Workshop

Kate Zielke provided an update on the importance of the Return on Conservation™ report to the TSI project, emphasizing its relevance to local governments, economic development professionals, and developers. The report's return on investment (ROI) component is crucial for these stakeholders, aligning with their interests. Kate also highlighted outreach efforts, including a FEMA grant focused on equity in outreach, which helps the team engage communities that meet FEMA's equity criteria. Over the past year, this outreach has addressed topics like developer relationships, growth challenges, flooding, and green stormwater infrastructure, with visits to various communities planned.

The ROI component is particularly significant for outreach to developers and real estate professionals, as the team has worked with the Urban Land Institute to identify challenges in communicating TSI concepts. Some resistance was noted toward green stormwater infrastructure and the perception that flooding is not a major concern in the region. To address this, the team plans to emphasize ROI, offer tools, and provide education, with a developer meeting scheduled for Spring 2025 and a workshop on green infrastructure in development.

Outreach efforts also target economic development stakeholders, focusing on costs, conserving open space, and integrating sustainable development. Kate mentioned a presentation to the North Central Texas Economic Development District Board on February 3rd, encouraging participation. Additionally, a

workshop for counties will cover topics like planning, floodplain management, and how planning areas intersect. This workshop will follow up on a 2017 NCTCOG-hosted event and help counties engage legal and planning staff. Interested parties were encouraged to contact Jai-W Hayes-Jackson for further information.

IV. Technical Advisory Group Discussion Items
a. West Study Area H&H Pilot Study

Matt Lepinski from the U.S. Army Corps of Engineers (USACE) provided an update on the hydrologic and hydraulic modeling efforts for the TSI pilot study in the West Study Area, emphasizing the role of land use data in flood risk assessments. The study compares current land use (2020) with projected development over the next 40-50 years in the DFW Metroplex, using data from NCTCOG and EPA to model future flood risks. This land use data is essential for accurate hydrologic modeling, which also depends on precipitation and InFRM watershed data.

One challenge identified is the large sub-basin scale of the InFRM dataset, which provides fewer discharge data points for smaller regions. To address this, the study has developed a standard operating procedure (SOP) to enhance data granularity, allowing for more detailed analysis in areas like Eagle Mountain and Mary's Creek. The models integrate hydrologic and hydraulic data using software like HEC-HMS and HEC-RAS, which are freely available.

The hydrologic analysis is divided into regions, with USACE leading hydrology in some areas and additional partners in others. The team is also improving hydraulic models by adding data on infrastructure such as culverts and bridges, which were missing in the base-level engineering data. These enhancements provide a more detailed understanding of flood risks, including water depth and base flood elevation, which are valuable for communities and homeowners.

Matt also discussed how urbanization can impact valley storage and flood risk, as development may alter areas that previously stored water. The study plans to conduct a case study to analyze the loss of valley storage due to future development. Ultimately, these data enhancements will provide communities with more detailed information for better flood risk management and decision-making.

b. North Study Area H&H Study

Sam Sarkar, Deputy Project Manager and Technical Lead for the TSI North Study Area at Halff Associates, provided an update on the hydrology and hydraulics (H&H) modeling efforts. The team, in the early stages of the process, is working on H&H models for the 10 watersheds within the TSI North area, which includes both the core study area and the contributing area. They are following the methodologies and SOPs established by the USACE team. Data collection has been completed, and the team has begun the initial steps, such as delineating sub-basins and identifying key points, using publicly available datasets. These points are in draft form and will undergo further review before finalization.

The next steps include developing the HEC-HMS hydrology models for the TSI North Study Area, following the established SOPs. Any issues will be addressed with input from USACE or NCTCOG, and quality assurance and quality control will be performed on the models once the sub-basin delineations are complete. Sam also mentioned the ongoing Pecan Creek study in Denton County, which will provide valuable data for the TSI North modeling. The study report and models are expected soon and will be incorporated into the modeling as it follows the same SOP methodologies for the TSI west and north study areas.

c. Optimization Study Update

Jerry Cotter from the University of Texas at Arlington (UTA) provided an update on the Storage Optimization Study, which aims to identify optimal locations and sizes for detention ponds to mitigate flooding risks from ongoing growth and development. The study focuses on both distributed detention storage (smaller ponds spread across the basin) and regional detention storage (larger centralized areas), with an exploration of incorporating green stormwater infrastructure, though modeling for these solutions is still under development.

The study has gathered necessary data through partnerships with USACE, FEMA, and other agencies. Mathematical algorithms have been developed to optimize detention storage, with completed work on distributed storage across sub-basins and ongoing review of regional detention locations. The next steps include combining both solutions into an optimal plan.

The importance of detention storage was emphasized, particularly in the large Trinity River watershed, which already has six flood control

reservoirs. However, these reservoirs can only manage a portion of stormwater, and with increasing development, the need for more storage is critical. Jerry pointed out that several cities are taking steps to preserve flood storage, which will be vital for managing future growth.

While the study currently focuses on pilot areas, UTA plans to extend the approach to the entire TSI area once the methods are established. Future work will include mapping the benefits of detention basins in reducing flooding, which will be integrated into an economic model. Ultimately, the study aims to provide a roadmap for effective flood mitigation strategies, blending green and gray infrastructure to address long-term challenges.

d. Stacking Model Update

Yufan Zhang from Texas A&M AgriLife Extension Service presented a stacking model to prioritize flood risk areas by combining flood susceptibility and vulnerability. Using a GIS tagging model and a literature review, factors affecting flood risk were identified, and their significance was determined through the Analytic Hierarchy Process (AHP) with expert input. This approach resulted in two maps—flood susceptibility and vulnerability—which are combined to create a flood control prioritization map, helping to allocate resources efficiently.

The next steps include developing a flood inventory map using data from the National Weather Service to validate the model, and considering factors like space, cost, and future land use changes in flood management strategies. The goal is to assess the effectiveness of mitigation measures, such as detention ponds or green stormwater infrastructure, in reducing flood risks over time, with projections for future years like 2045.

V. Next Steps & Upcoming Events

Kate Zielke shared information about upcoming events and webinars for TSI stakeholders. She promoted a webinar on groundwater protection on February 12th. Kate also mentioned that Matt Lepinski from USACE will present TSI-related concepts during a FEMA Lunch and Learn webinar on January 28th, with a registration link provided. She highlighted the Urban Riparian Symposium in Waco, scheduled for February 19th–21st, with a link shared by Blake. Lastly, Kate confirmed that presentations would be posted on the TSI website in the coming days.

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*This content was co-created with the use of a Generative AI tool and has been reviewed by staff for accuracy.

Attendance List	
Name	Organization
Susan Alvarez	NCTCOG, E&D
Blake Alldredge	UTRWD
Shannon Abolmaali	UTA
Erin Blackman	NCTCOG, E&D
Lisa Biggs	City of Fort Worth
Jenny Burden	Texan By Nature
Jack Cearley	Texas Land Conservancy
Jerry Cotter	UTA
Christina Derr	City of Springtown
Kevin Feldt	Halff Associates
Sarah Fulton-Smith	American Farmland Trust
Vincent Geracci	USACE
Stephanie Griffin	Halff Associates
Bret Higginbotham	USACE
Aaron Hoff	TRWD
Katie Hunter	NCTCOG, E&D
Fouad Jaber	AgriLife
Matthew Lepinski	USACE
Qing Li	TxDOT
Sugam Mahat	UTA
Maribel Martinez	NCTCOG, Emergency Preparedness
Jeffrey Neal	NCTCOG, Transportation
Craig Ottman	TRWD
Sugam Mahat	UTA
Elizabeth Rophael	NCTCOG, Transportation
Sam Sarkar	Halff Associates
Devin Schexnayder	Texas Trees Foundation
Rakib Siddique	IEA
Bill Smith	City of Weatherford
Barbara Wyse	Highland Economics
Yufan Zhang	AgriLife
Kate Zielke	NCTCOG, E&D