

North Central Texas
Council of Governments

Integrating Planning for Transportation and Stormwater Infrastructure

Annual Public Works Roundup | September 29, 2023

Kate Zielke

Project Overview

WHY THE REGION NEEDS A STUDY ON INTEGRATING
TRANSPORTATION AND STORMWATER INFRASTRUCTURE

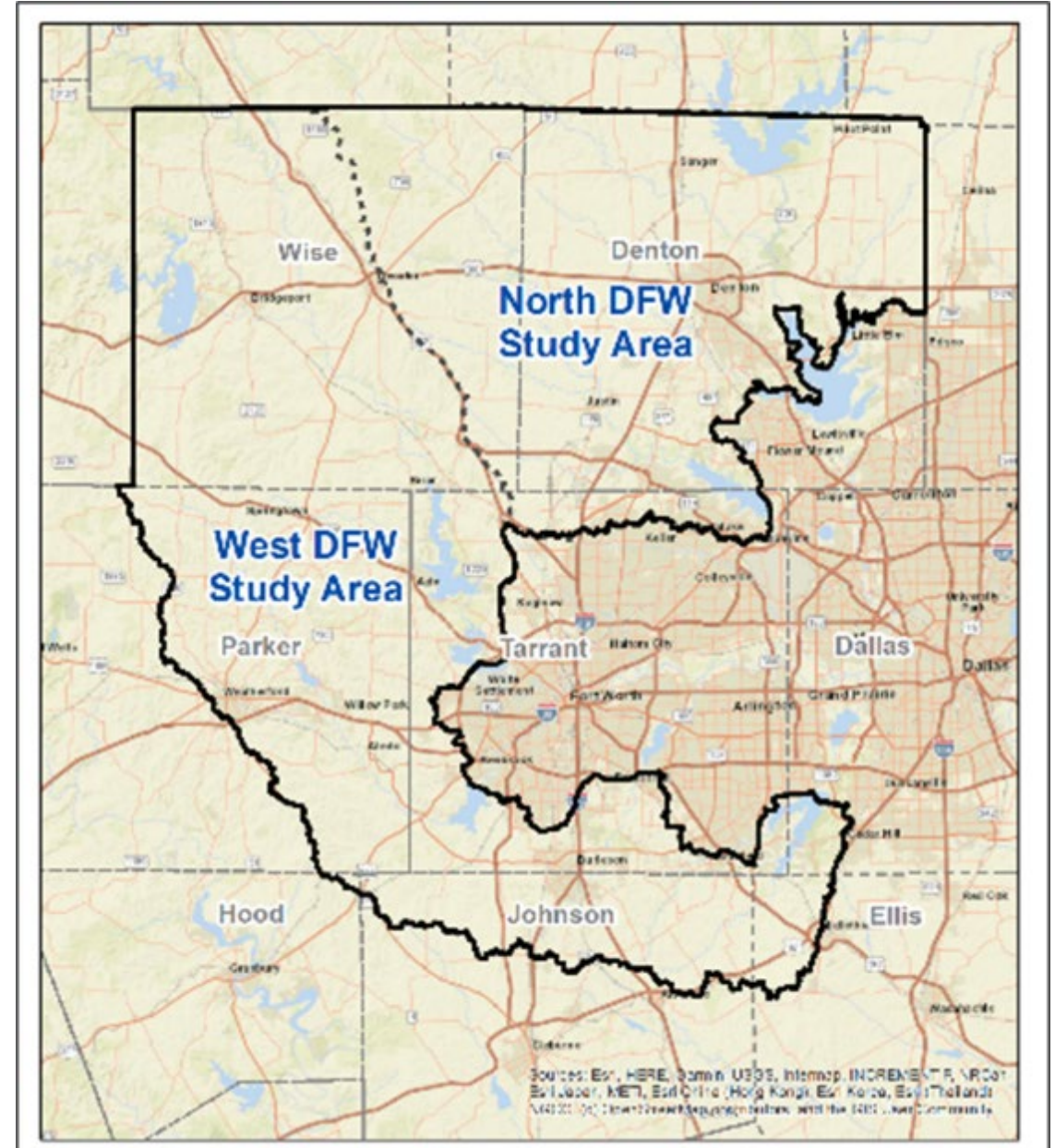
Project Details

Purpose

- Prevention vs. response
- Integrate stormwater management, urban development, transportation, and environmental planning
- Develop plan for risk awareness and resiliency
- Identify impacts and alleviate risks from flooding

Timeline & Budget:

- Official kickoff March 2023
- Completion date for first phase: June 2025
- Funding for first phase: \$6 million



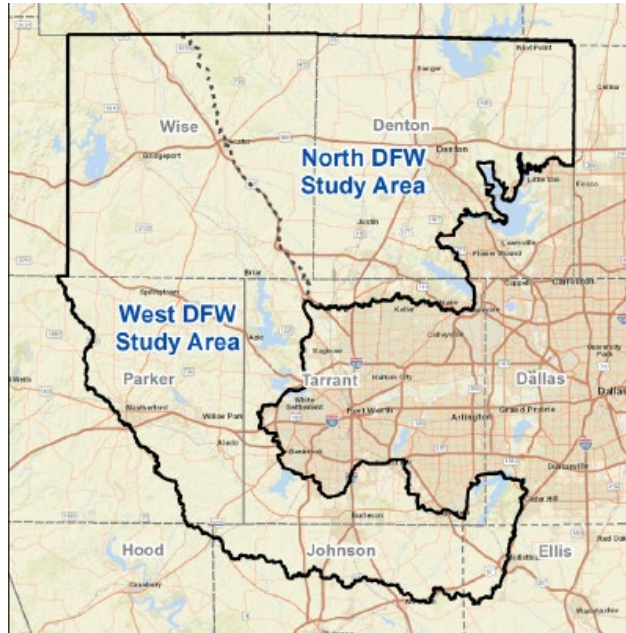
Project Team Members



North Central Texas
Council of Governments



US Army Corps
of Engineers®



Funding Partners

Texas Water Development
Board

Texas Department of
Transportation/Federal Highway
Administration

Federal Emergency
Management Agency

Why TSI?

Fatalities by State for 2012 – 2017

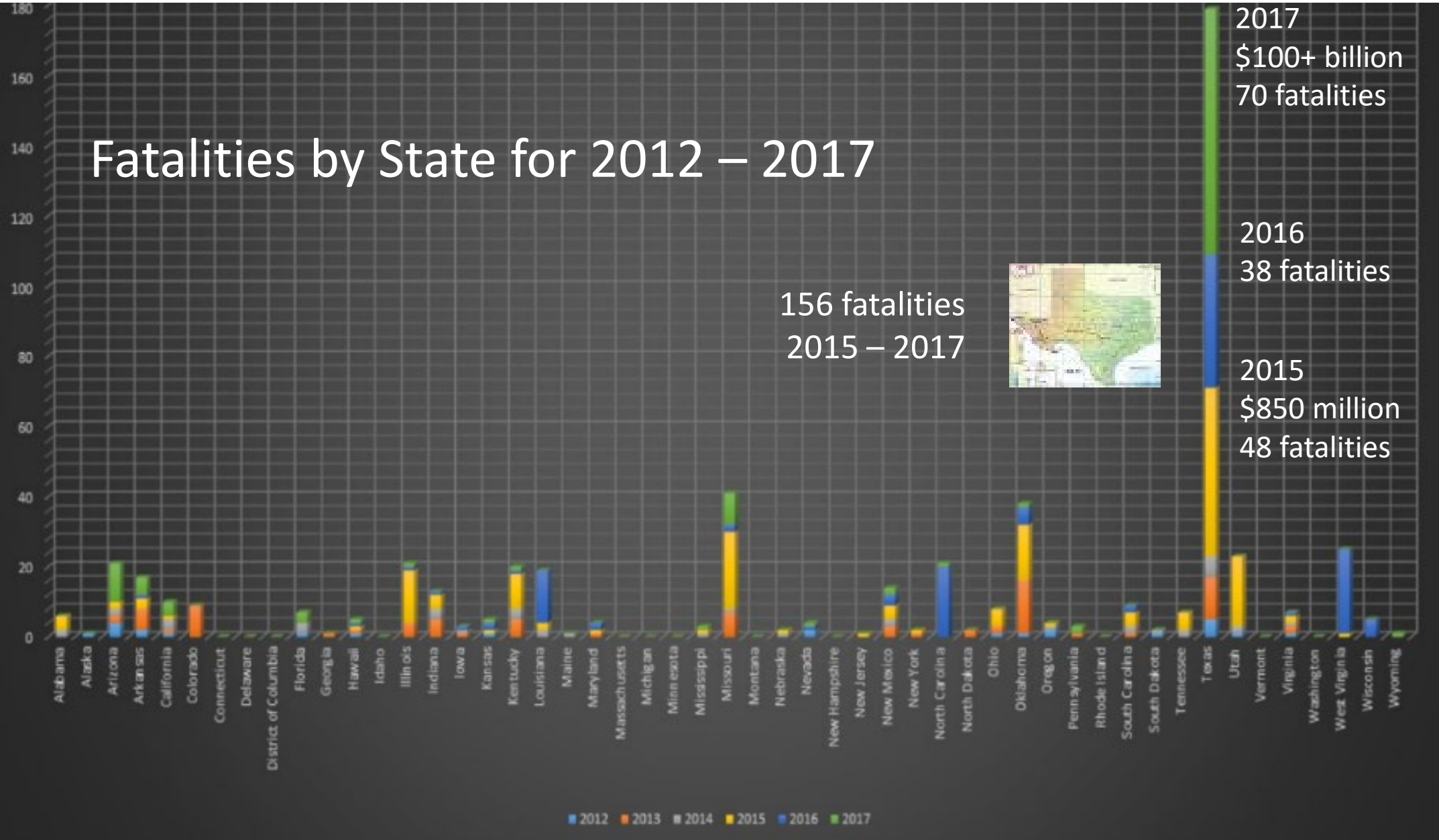
156 fatalities
2015 – 2017



2017
\$100+ billion
70 fatalities

2016
38 fatalities

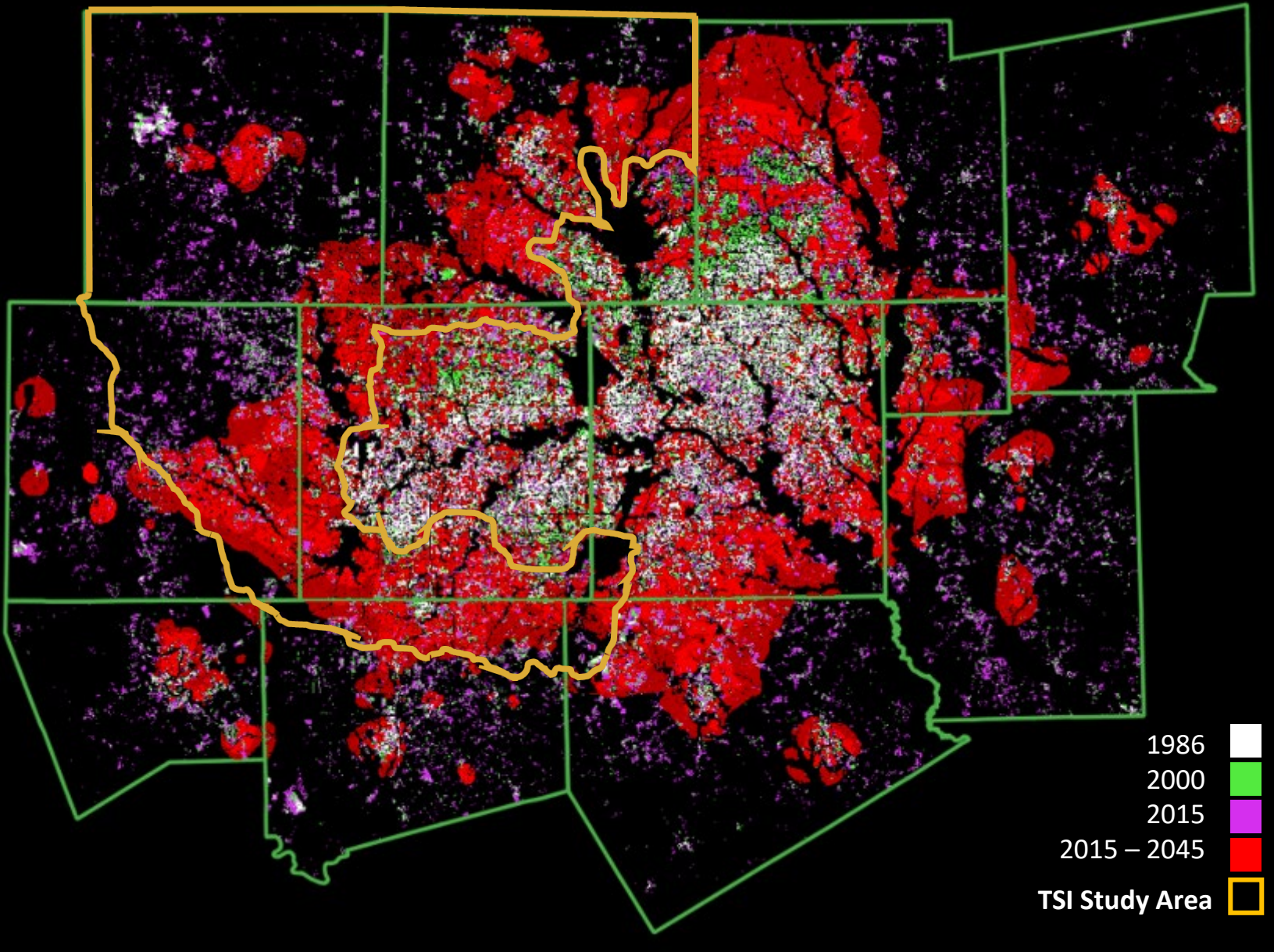
2015
\$850 million
48 fatalities



Source: Gregory Waller, Service Coordination Hydrologist, NWS – West Gulf River Forecast Center, <http://www.nws.noaa.gov/om/hazstats.shtml>

Why TSI?

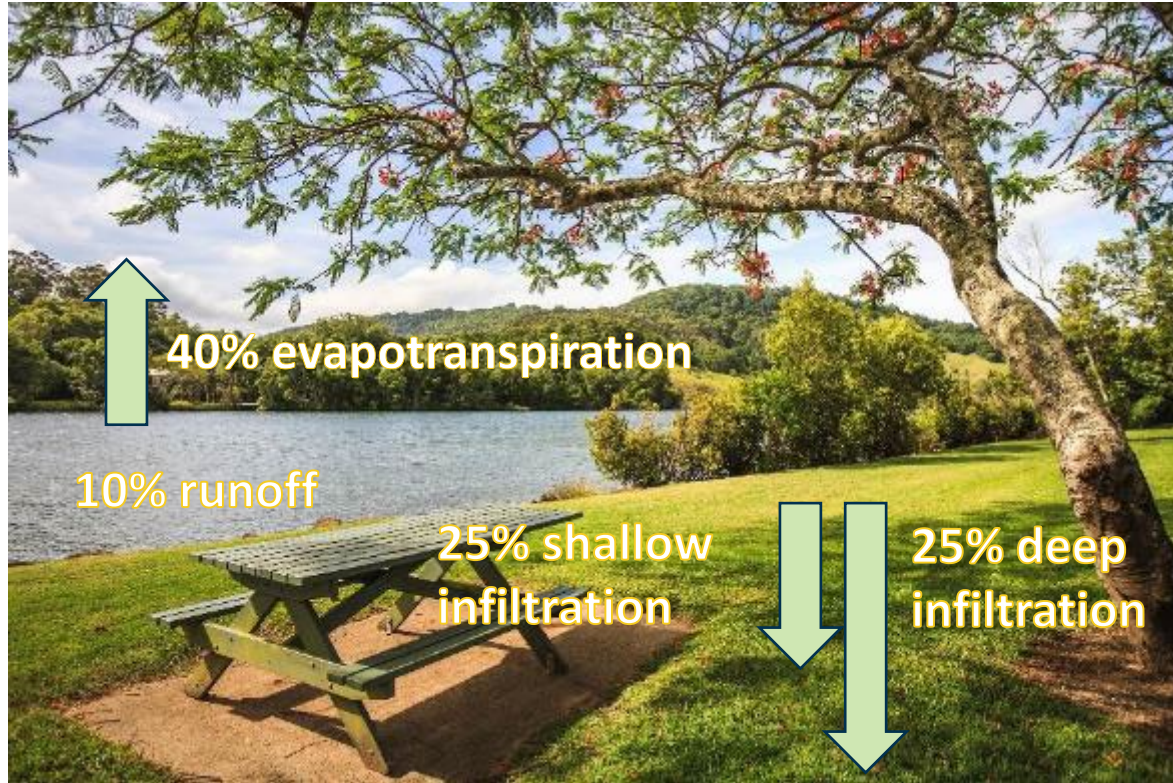
- 60% undeveloped (2015)
- 19% growth in impervious surface (2006 – 2016)
- 126% increase in population (2020 – 2045)
- >7,000 miles of streams
>274,000 acres of 100-year floodplain



Challenges

URBANIZATION, WATER QUANTITY, STORMWATER, AND TRANSPORTATION

Urbanization Challenges



BEFORE (Natural Ground Cover)



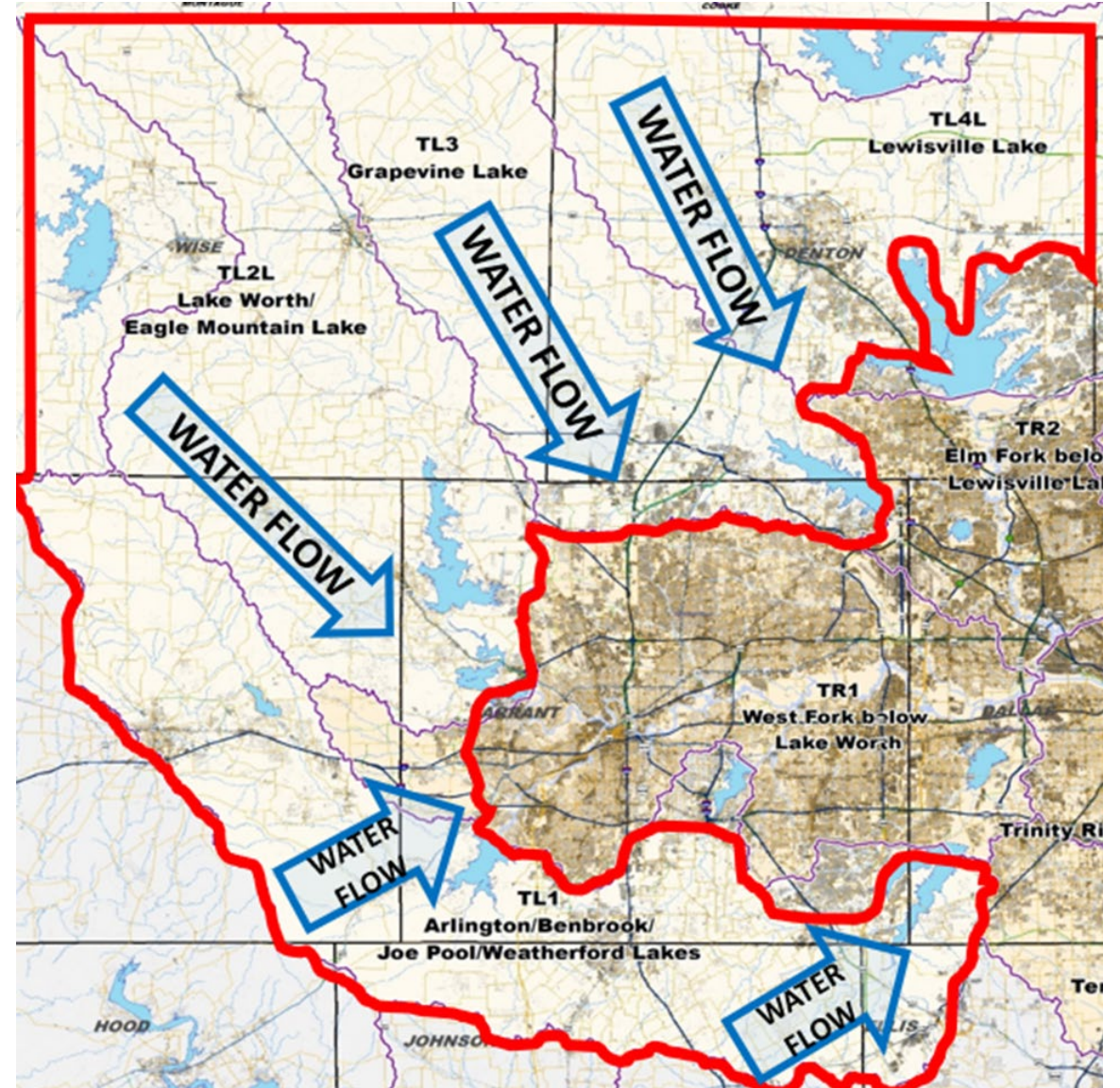
After (75%-100% Impervious Cover)

Water Quality Challenges



Stormwater Challenges

- No regionwide data
- Piece-meal/lacks connectivity
- NOAA Atlas 14 rainfall estimates
 - Required for infrastructure design, planning, and delineation of flood risk
 - 2022 FLOODS Act
 - 10-year updates



Transportation Challenges

- Transportation spending is high and growing
- Rate of deterioration for transportation infrastructure increasing
- Needs can outweigh resources for local governments

Exhibit 2-4: Major Expenditures

Mobility 2045 Update Planning Approach	
Infrastructure Maintenance*	\$42.8
Management and Operations	\$9.6
Growth, Development, and Land Use Strategies	\$1.5
Rail and Bus**	\$44.9
HOV/Managed Lanes + Freeways/Tollways and Arterials	\$49.5
Total, Actual \$, Billions	\$148.3

Values may not sum due to independent rounding

*Includes transit system maintenance

**Transit capital expenditures, including those using innovative revenue sources such as public-private partnerships

Source: NCTCOG, Mobility 2045 Update

Mapping, Modeling, and
Policy Recommendations



Technical Methodology

ENGINEERING SOLUTIONS TO INCREASED IMPERVIOUSNESS
AND FLOOD RISK



How Can *WE* Accomplish This?

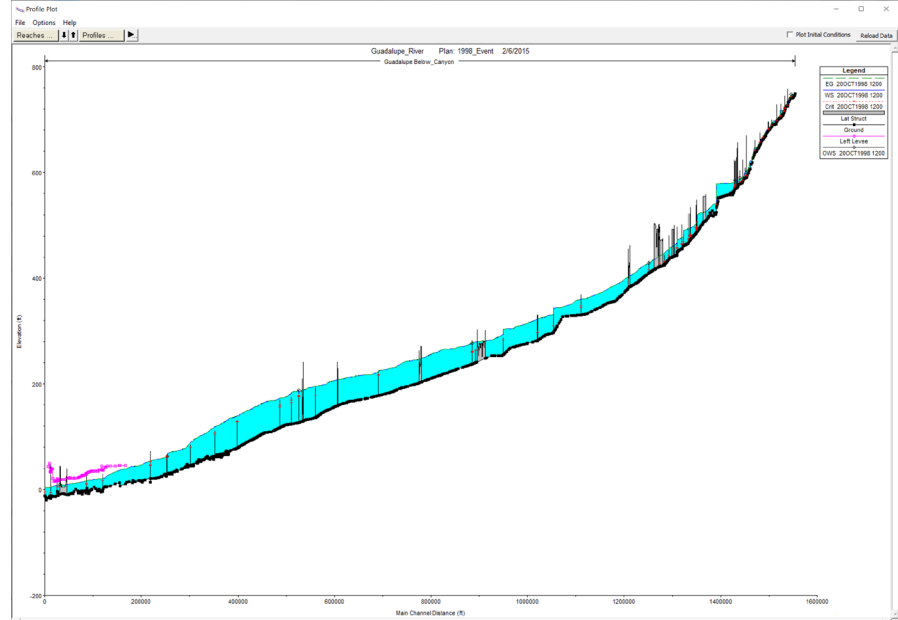
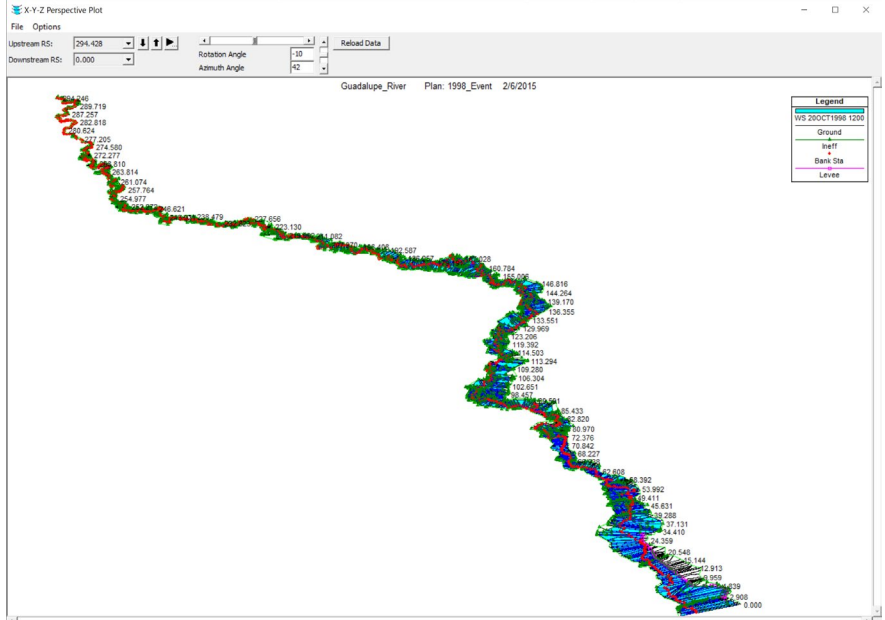
- TSI benefits from valuable flood hazard awareness and resiliency information that has helped reduce uncertainty related to flood risk
- Enables us to further enhance and integrate this information at a regional scale
- Without this information, it would require extensive effort on the front end of the project to get here

Leverage existing Flood Risk Management initiatives...

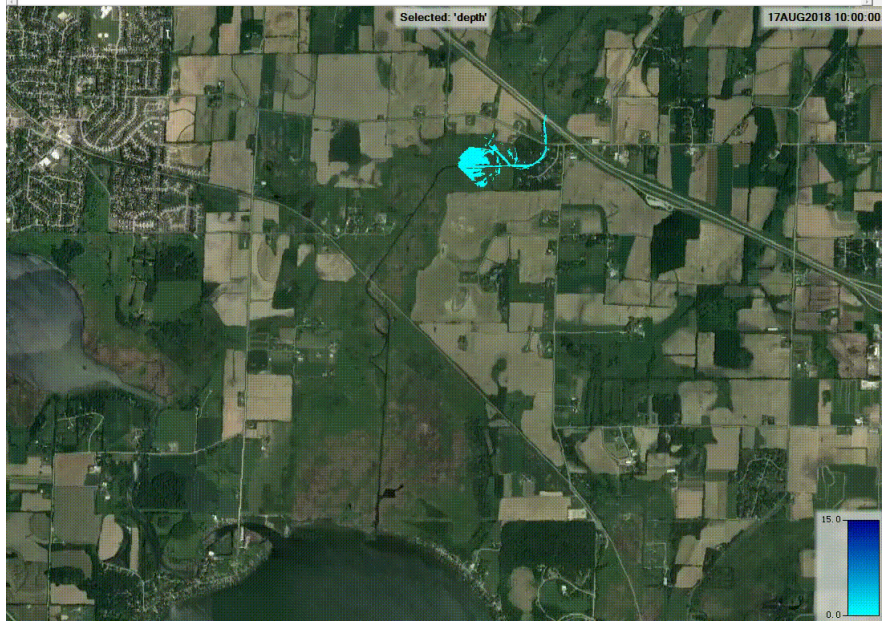


... to innovate at a regional scale

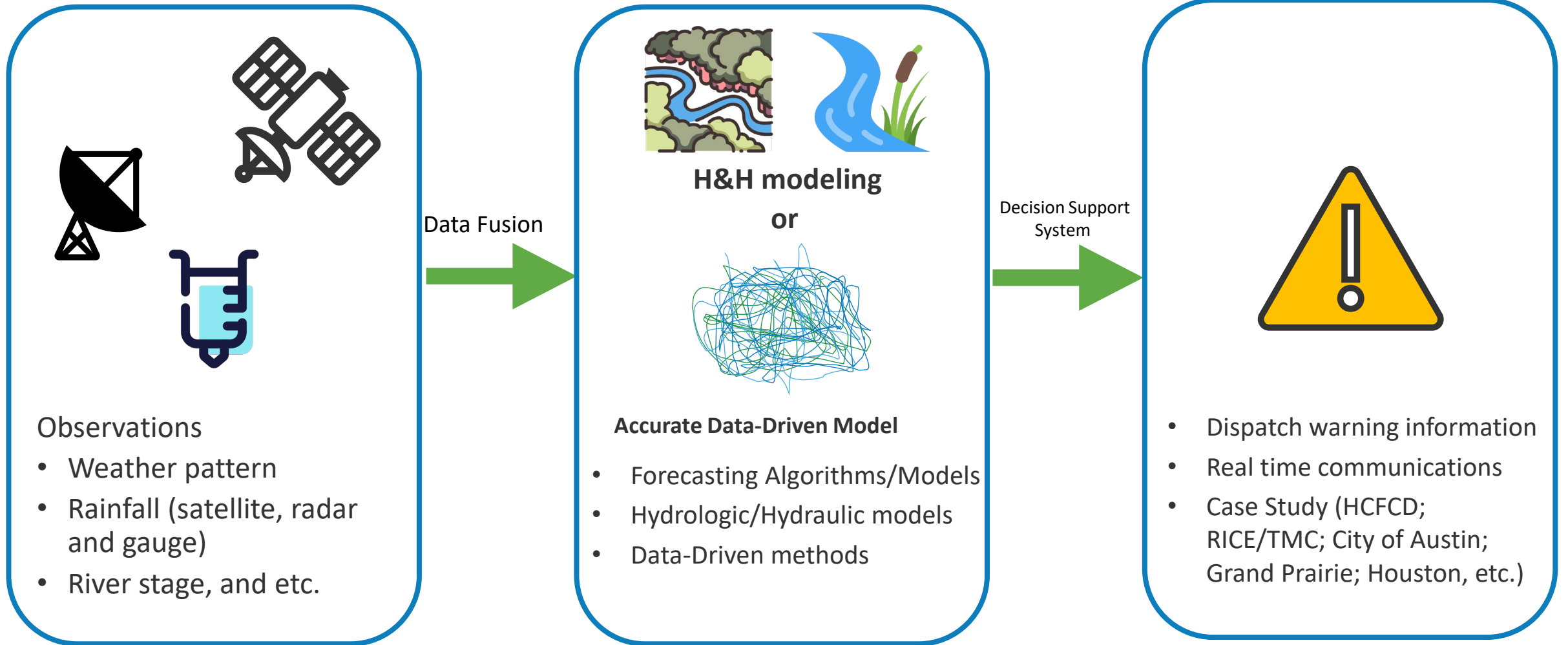
1D



2D

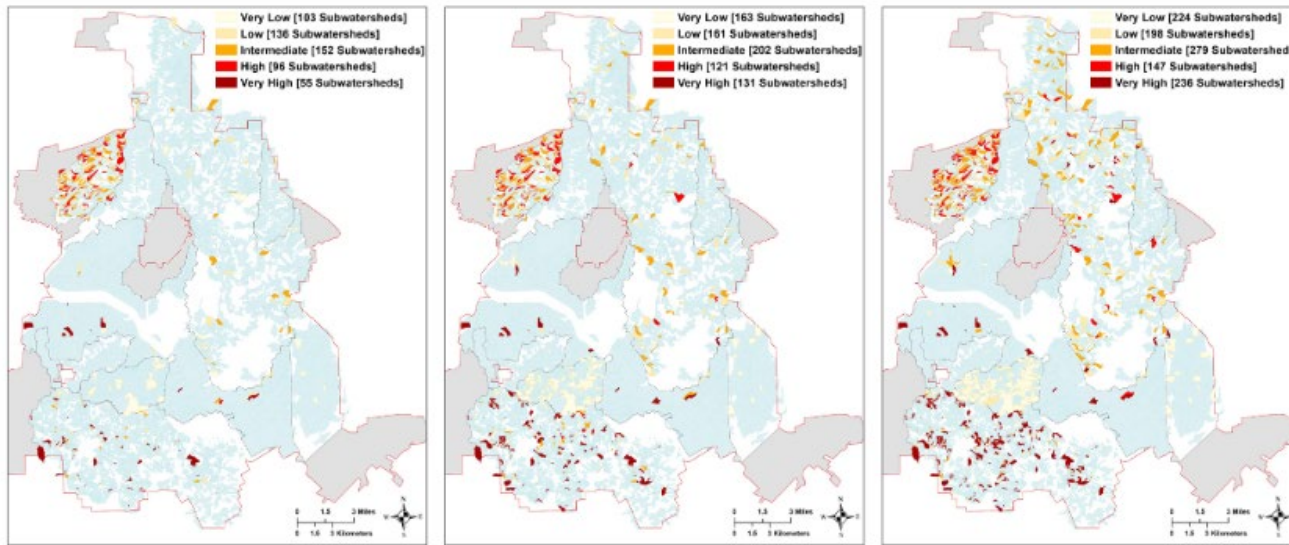


Flood ALERT System



Modeling Green Stormwater Infrastructure

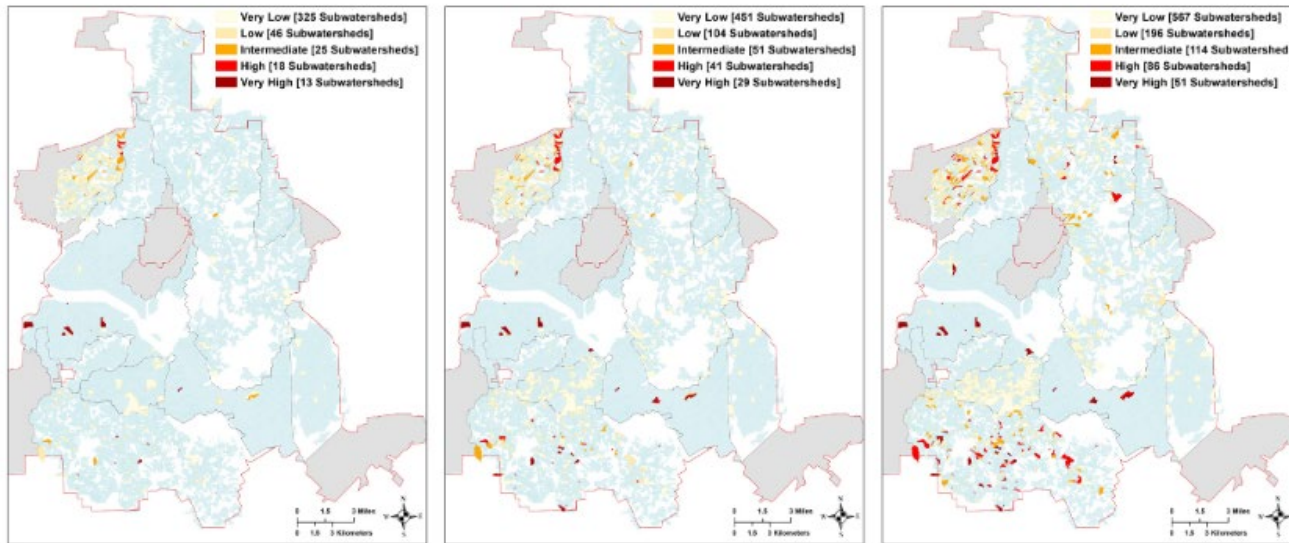
- GSI reduces modeled overflows for all storms in Dallas study
- GSI 77% less costly than gray infrastructure alone
- Bioretention provides biggest bang for buck



2-year (50%)

10-year (10%)

100-year (1%)



Questions
and Discussion



integrating **Transportation**
& **Stormwater Infrastructure**

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