



North Central Texas
Council of Governments

Prevention vs. Response:

Integrated Transportation and Stormwater Infrastructure (TSI) Initiative In North Texas

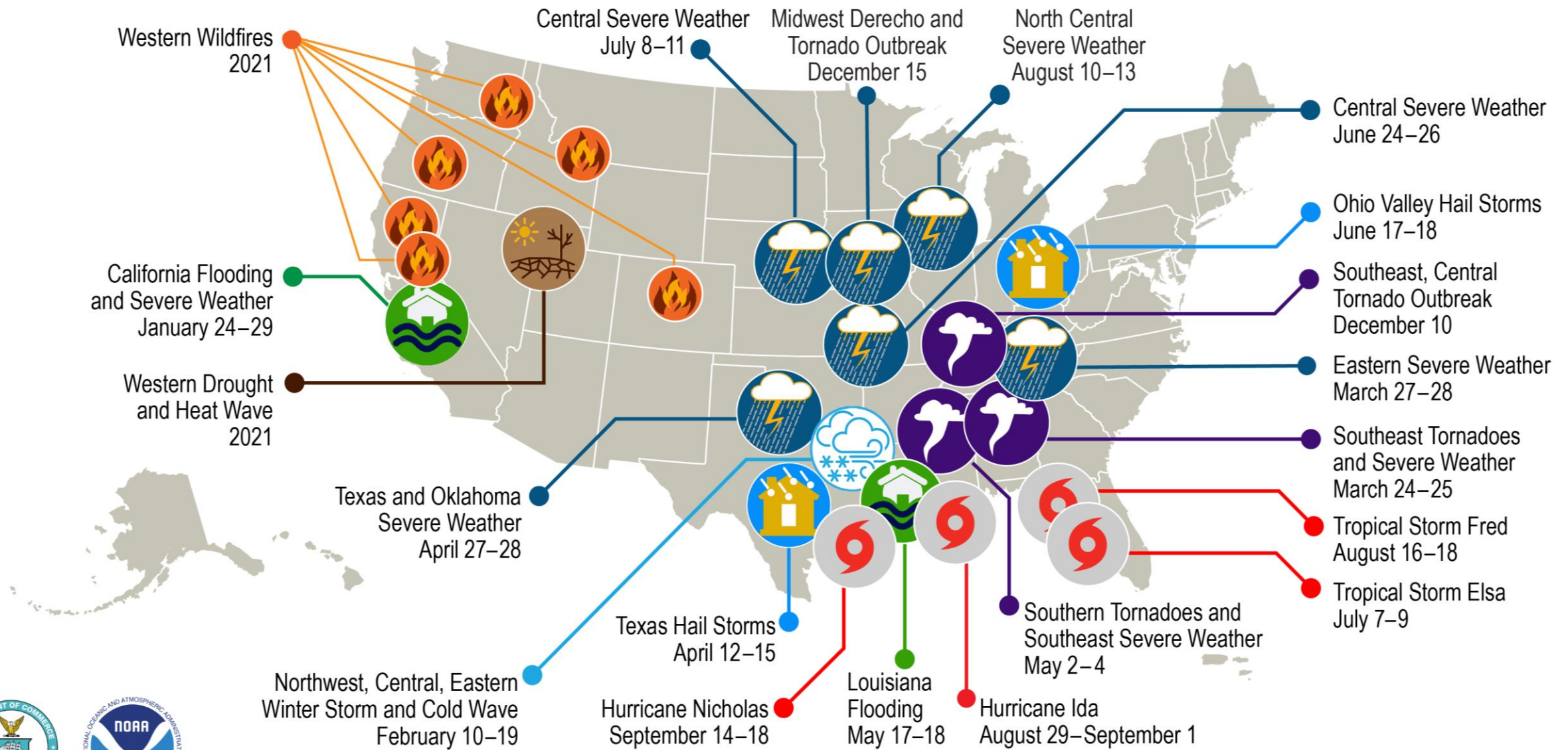
TMDL Monitoring Coordination Forum Meeting

March 9, 2023

Why the Region Must Plan for Flooding

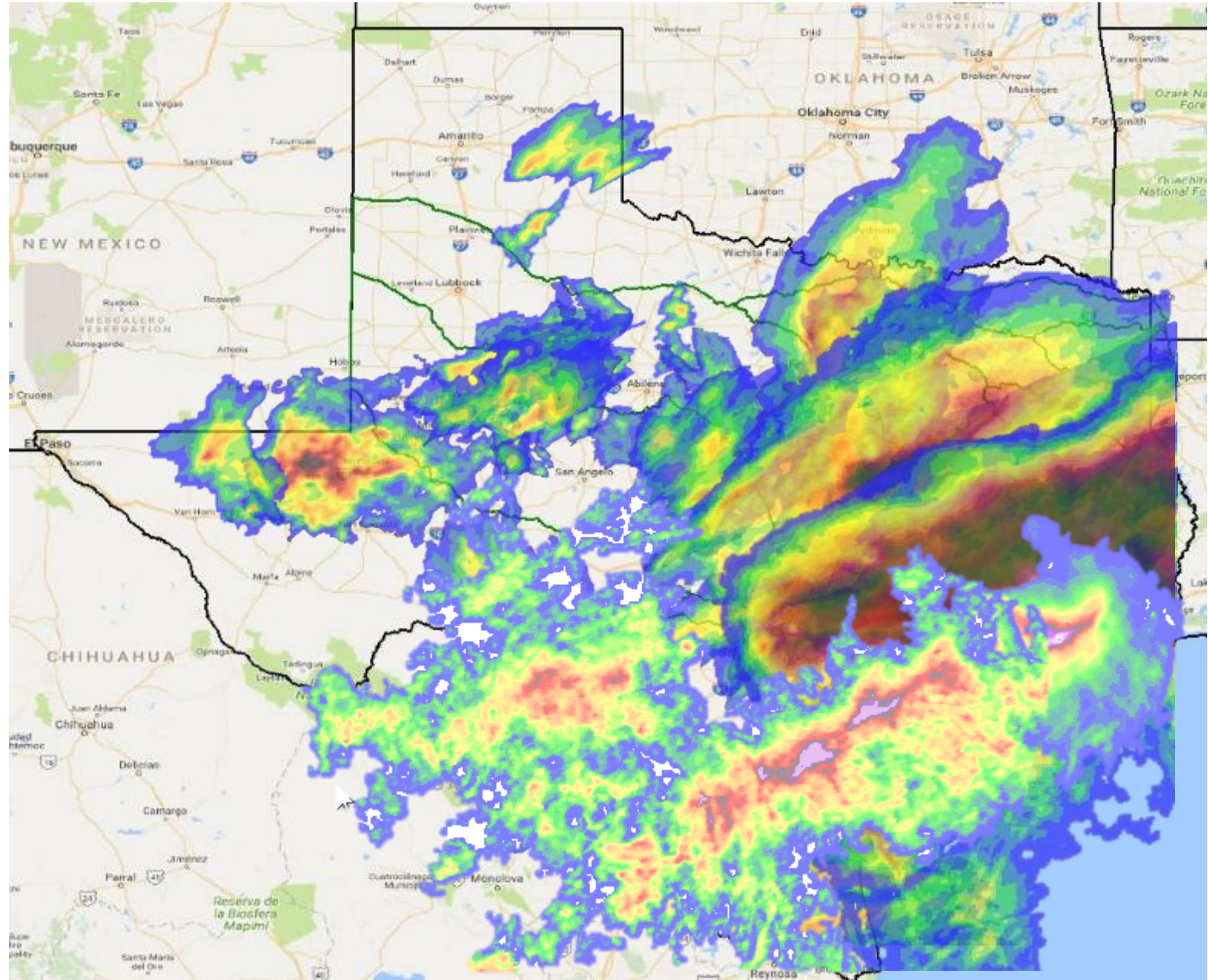


Billion-Dollar Disasters in 2021



*This map denotes the approximate location for each of the **20 separate billion-dollar weather and climate disasters that impacted the United States in 2021***

Extreme Storms (2010-2019)



Urbanization Challenges

Minimal mitigation of new impervious surfaces

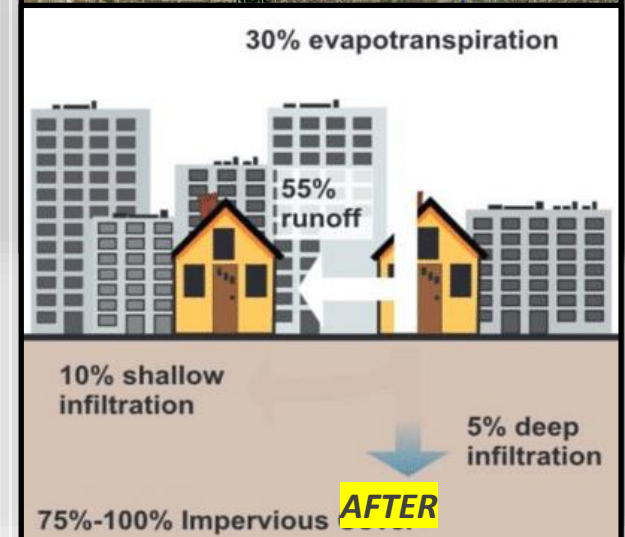
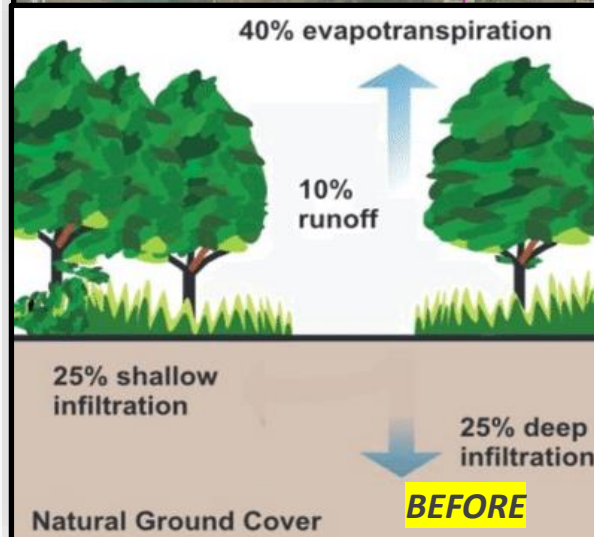
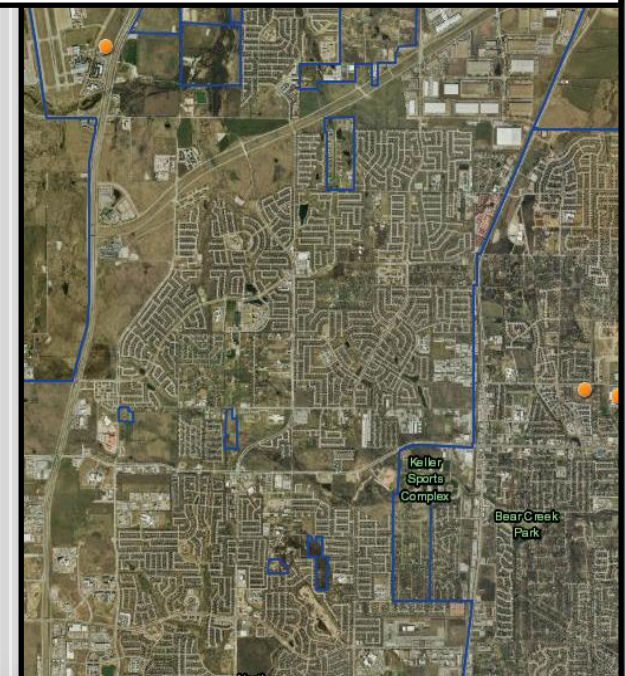
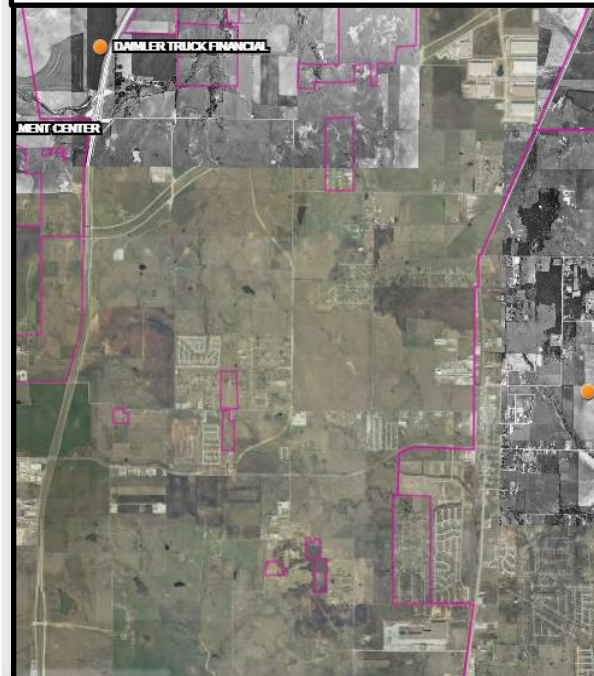
Minimal evaluation of impact on watershed scale

Ineffectiveness of “100-year-flood” metric

Piece-meal use/analysis of nature-based solutions

Additional water quality impacts

Case Study: Development in Fort Worth, TX (North)



Stormwater Challenges

No regionwide data

No flood control district

NOAA Atlas 14 rainfall estimates

- Required for infrastructure design, planning, delineating flood risk
- Outdated – although updated in 2018 for Texas
- 2022 FLOODS Act
- 10-year updates
- Consultation with local and state governments



Transportation Challenges

City/county transportation spending is high and growing

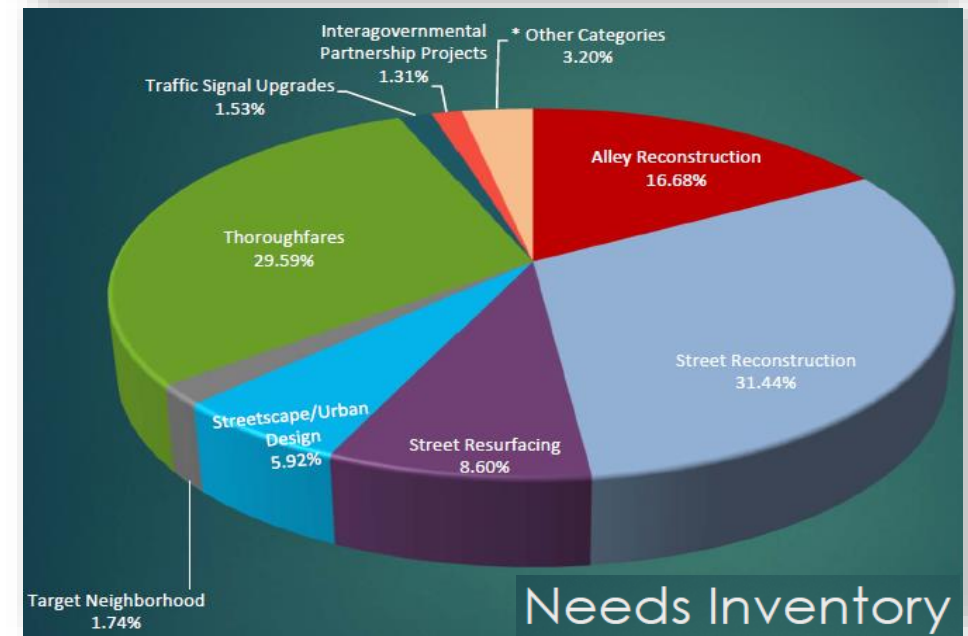
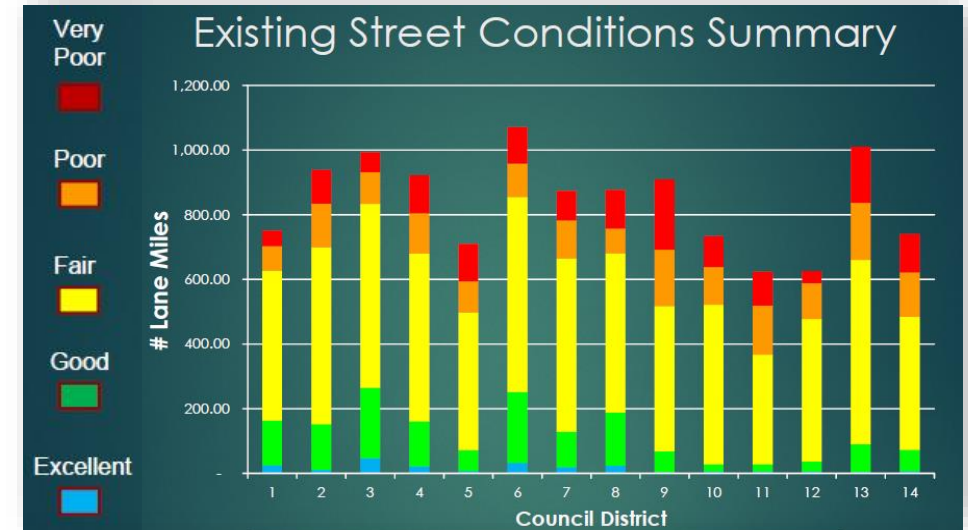
Local governments report increasing asset deterioration rates over time (travel demand, utilities, incidents, severe weather, etc.)

Increasing fund shares directed toward preservation / rehabilitation

Needs vastly outweigh resources and condition goal attainability is difficult amidst many development pressures:

- \$1.66 billion shortage over 10 years to meet “Zero Degradation” of pavement – City of Dallas (2019)
- > \$800 million/year to maintain average pavement condition index (PCI) score – City of Irving (2017) – Pavements (1,440 lane-miles)

Source: Dallas 2017 Bond Program – <http://www.dallasbond.com/>



Existing Flood-Related Programs



A Work in Progress - Transportation

US Department of Transportation (USDOT) FY 2018-22 Strategic Plan: “DOT will increase its effectiveness in ensuring that infrastructure is resilient enough to withstand extreme weather.”

Federal Highway Administration (FHWA) requires resilience to be considered in:

- FHWA programs and policies (Order 5520)
- Transportation Asset Management Plans (23 CFR 515)
- Transportation planning (23 CFR 450)
- Roads and bridges repeatedly damaged by emergency events (23 CFR 667)

Bipartisan Infrastructure Law: Promoting Resilient Operations for Transformative, Efficient, & Cost-Saving Transportation (PROTECT) program

- Guaranteed funding and competitive grant funding
- Transportation resiliency projects

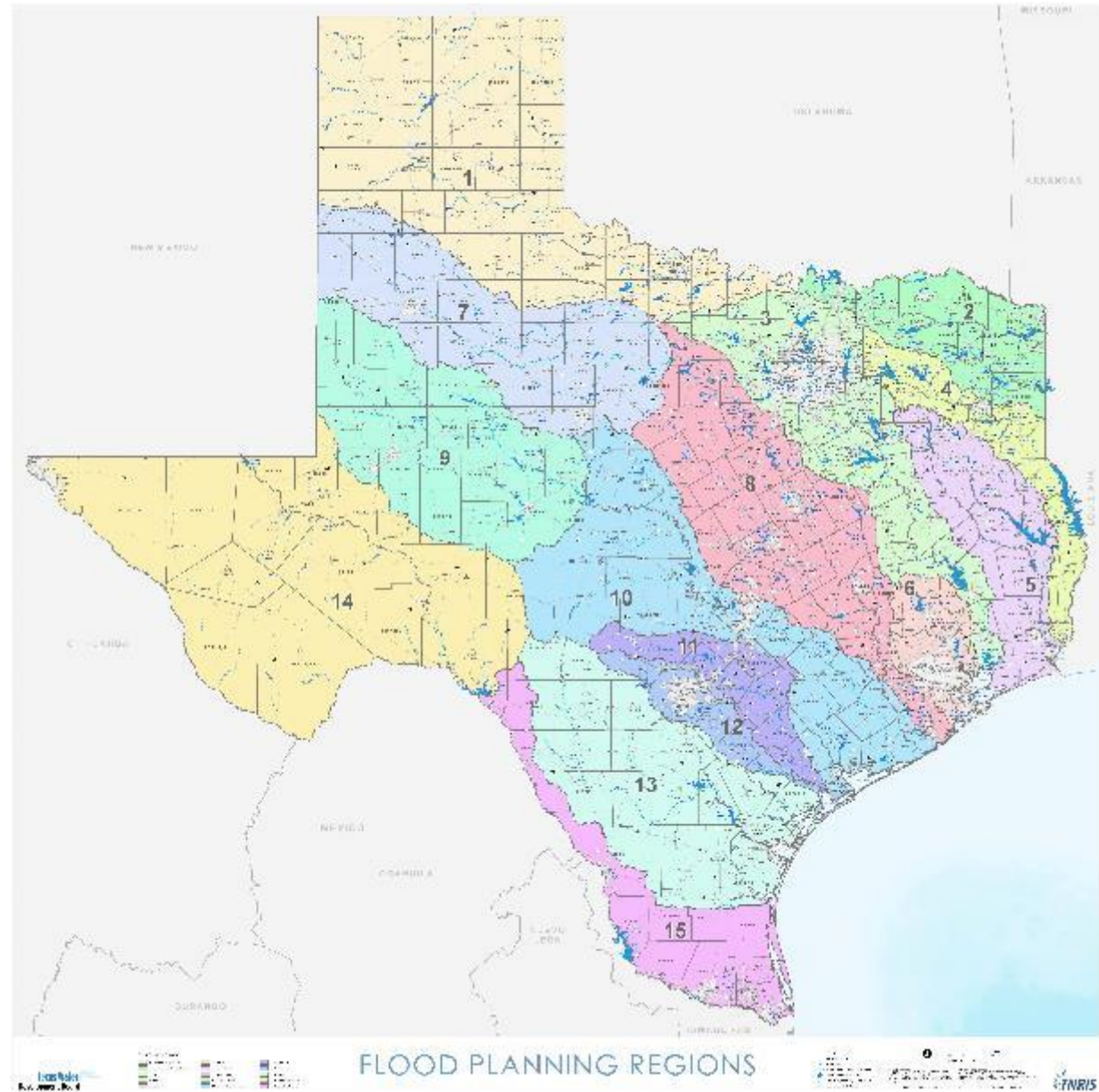


A Work in Progress – Federal and State

FEMA Future of Flood Risk Data

FEMA Cooperating Technical Partnership program

FEMA Community Rating System



Integrating Planning for Transportation and Stormwater Infrastructure

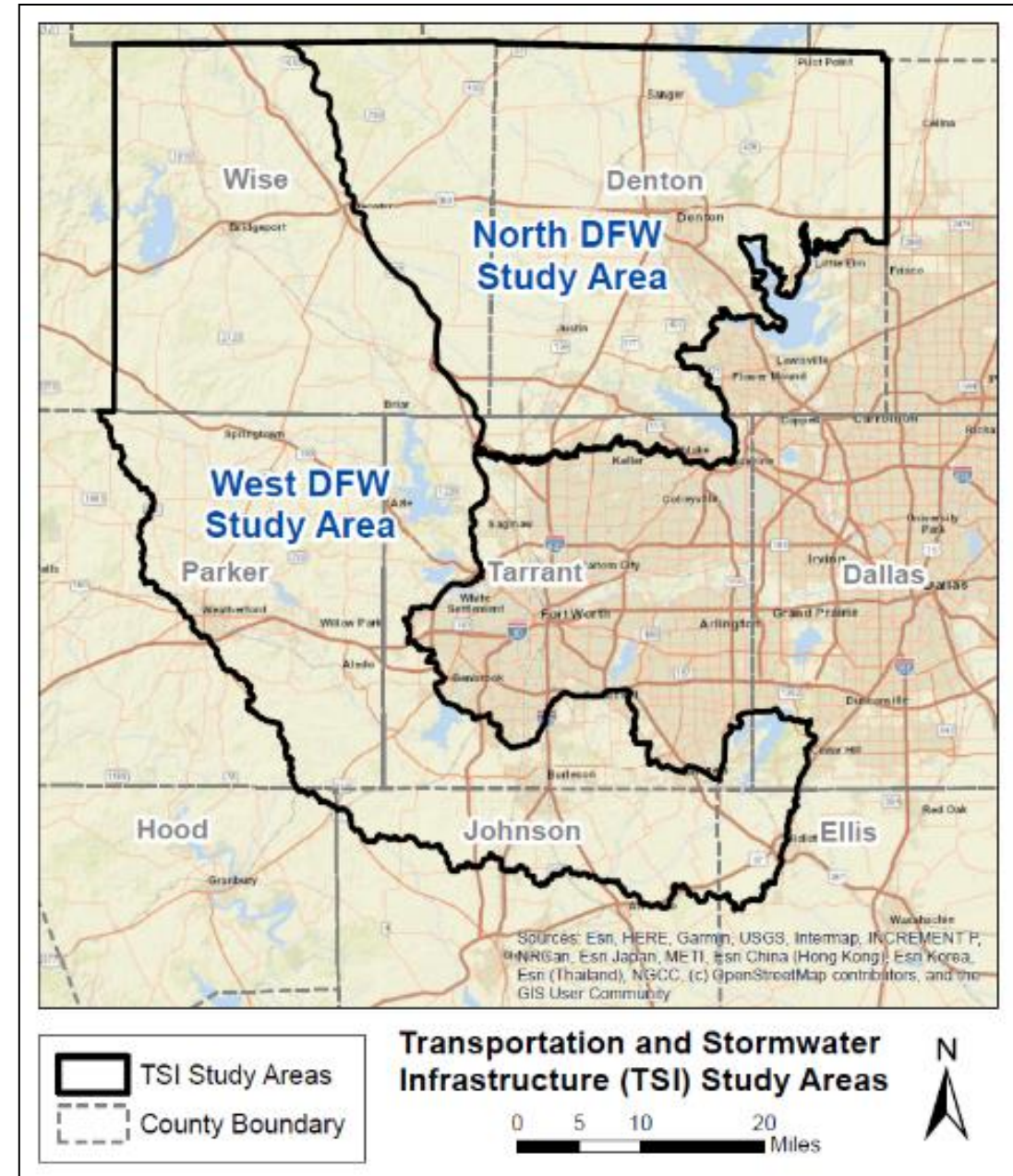


Integrated Transportation and Stormwater Infrastructure (TSI) Initiative

Integrate stormwater management, urban development, transportation, and environmental planning

Develop plan for risk awareness and resiliency

Identify impacts and alleviate risks from flooding



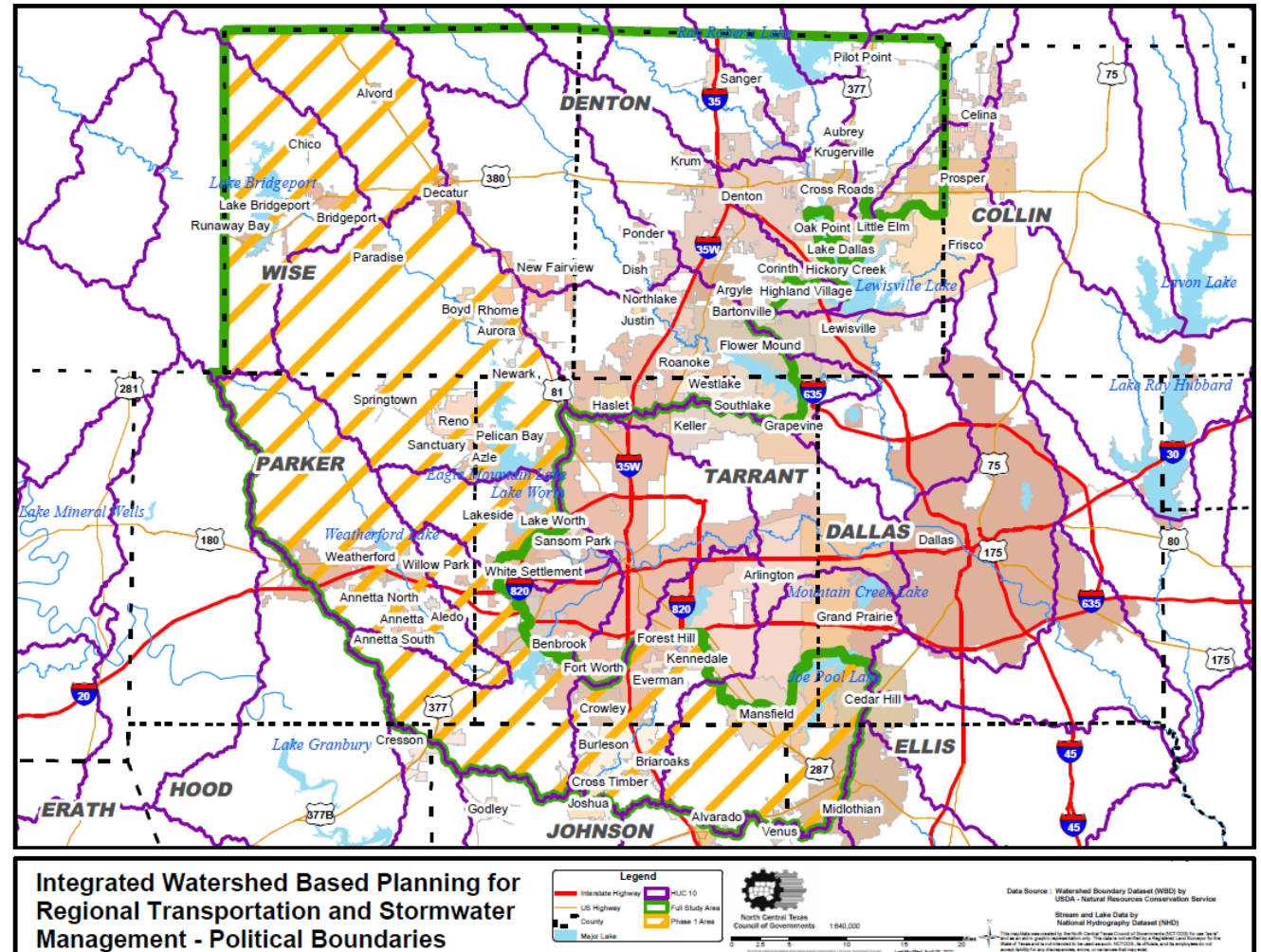
West DFW Study Area

Project Lead: NCTCOG is lead agency for project with subrecipients

Subrecipients: US Army Corps of Engineers, Tarrant Regional Water District, Texas A&M AgriLife, University of Texas at Arlington

Timeline & Budget: 3 years and \$6 million

Funders: Texas Water Development Board, Federal Highway Administration, Texas Department of Transportation, Federal Emergency Management Agency



North DFW Study Area

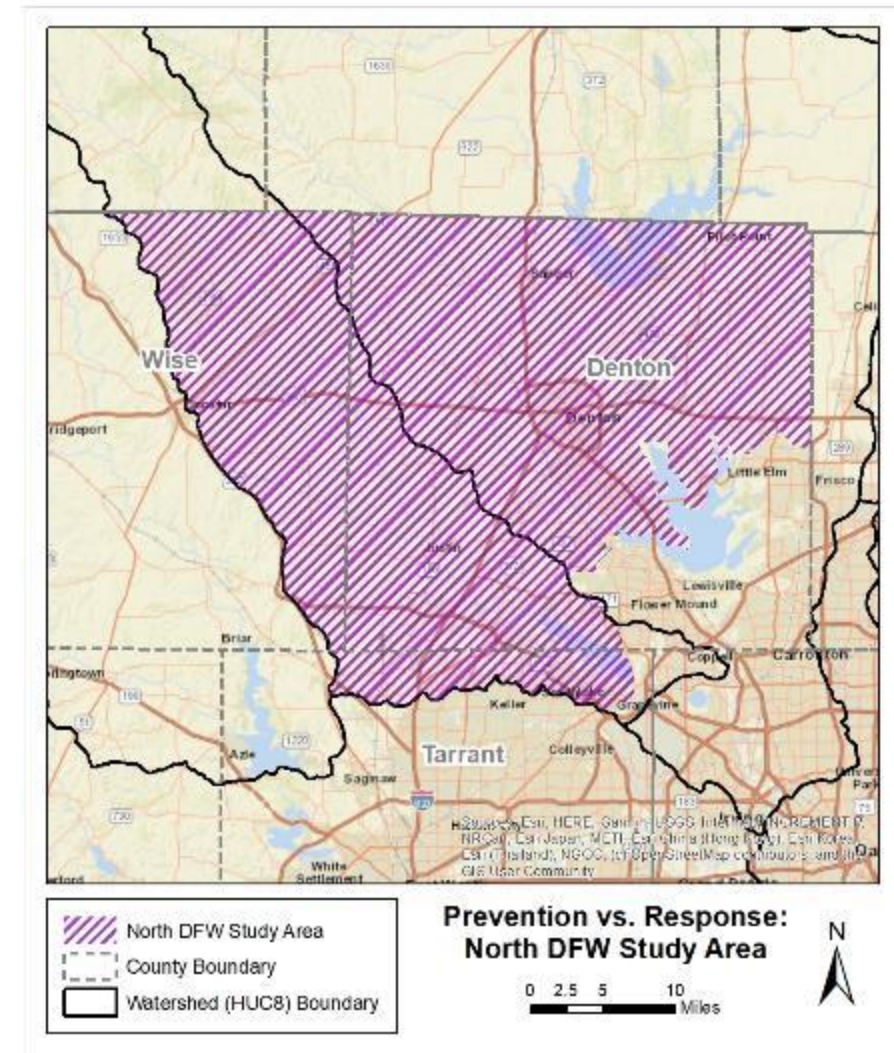
Project Lead: US Army Corps of Engineers

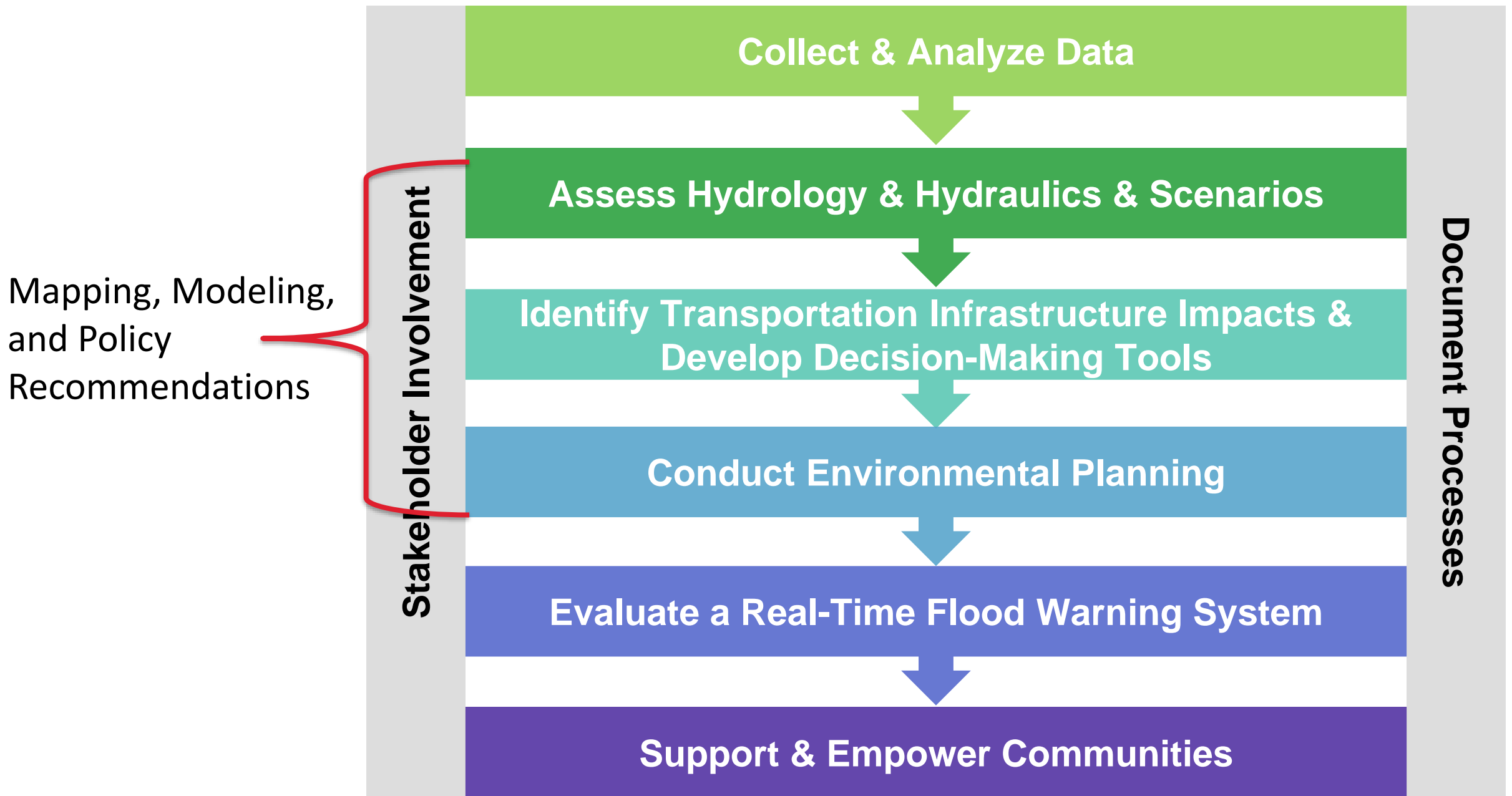
Subrecipients: To be determined

Additional Tasks: Pilot projects

Timeline & Budget: 5 years and \$4 million

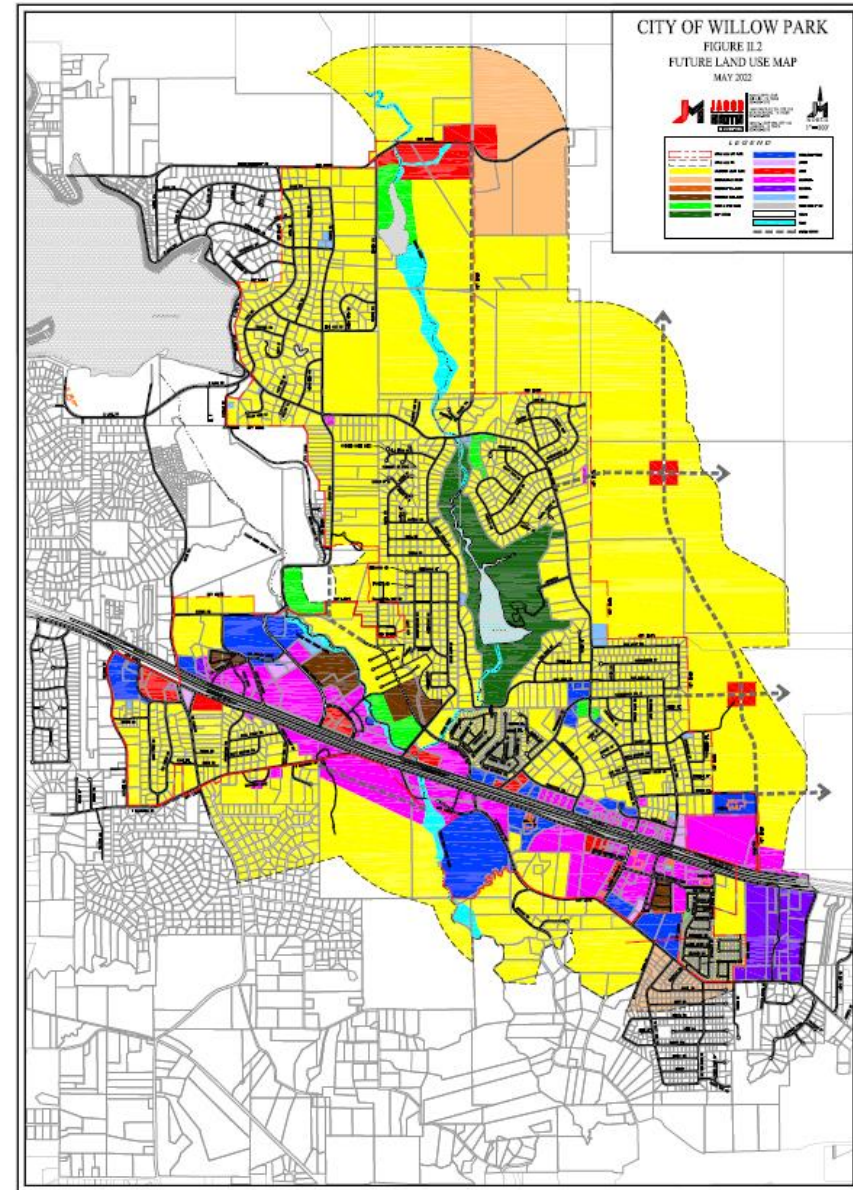
Funder: Texas General Land Office





Collect and Analyze Data

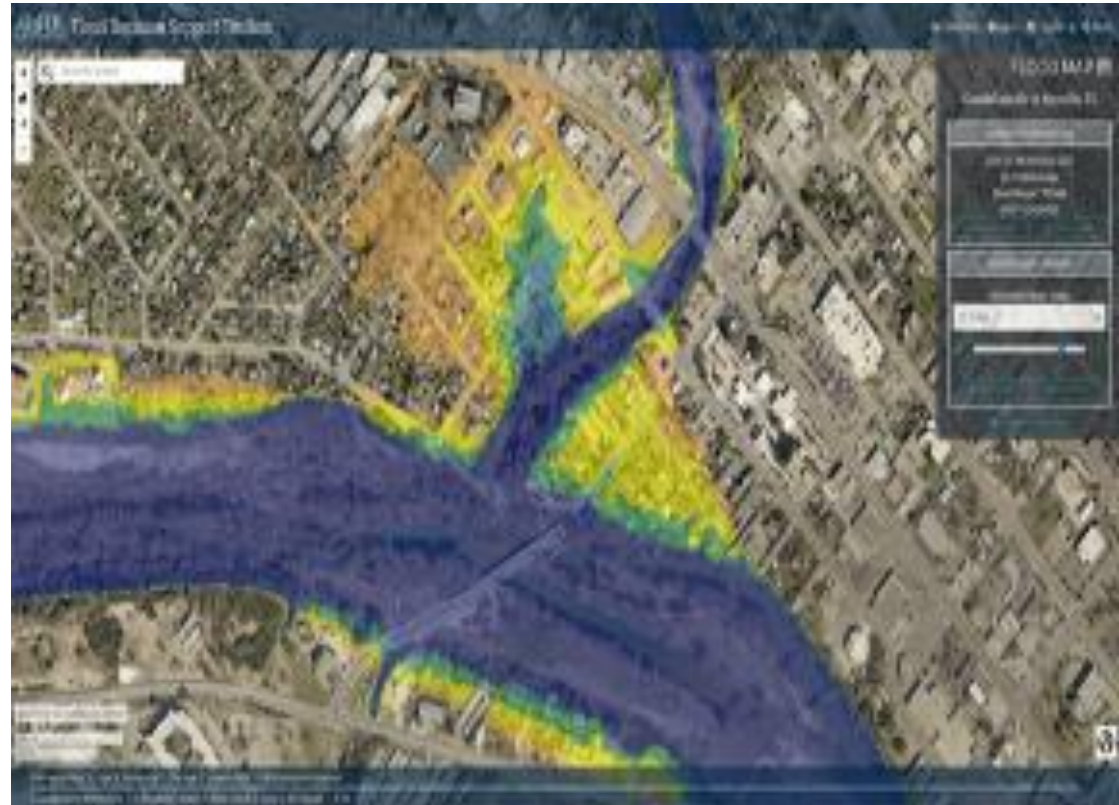
- Existing literature, data, reports, and case studies
- Best practices/lessons learned of similar studies
- Project data inventory



Mapping, Modeling, and Policy Recommendations

Mapping Deliverables

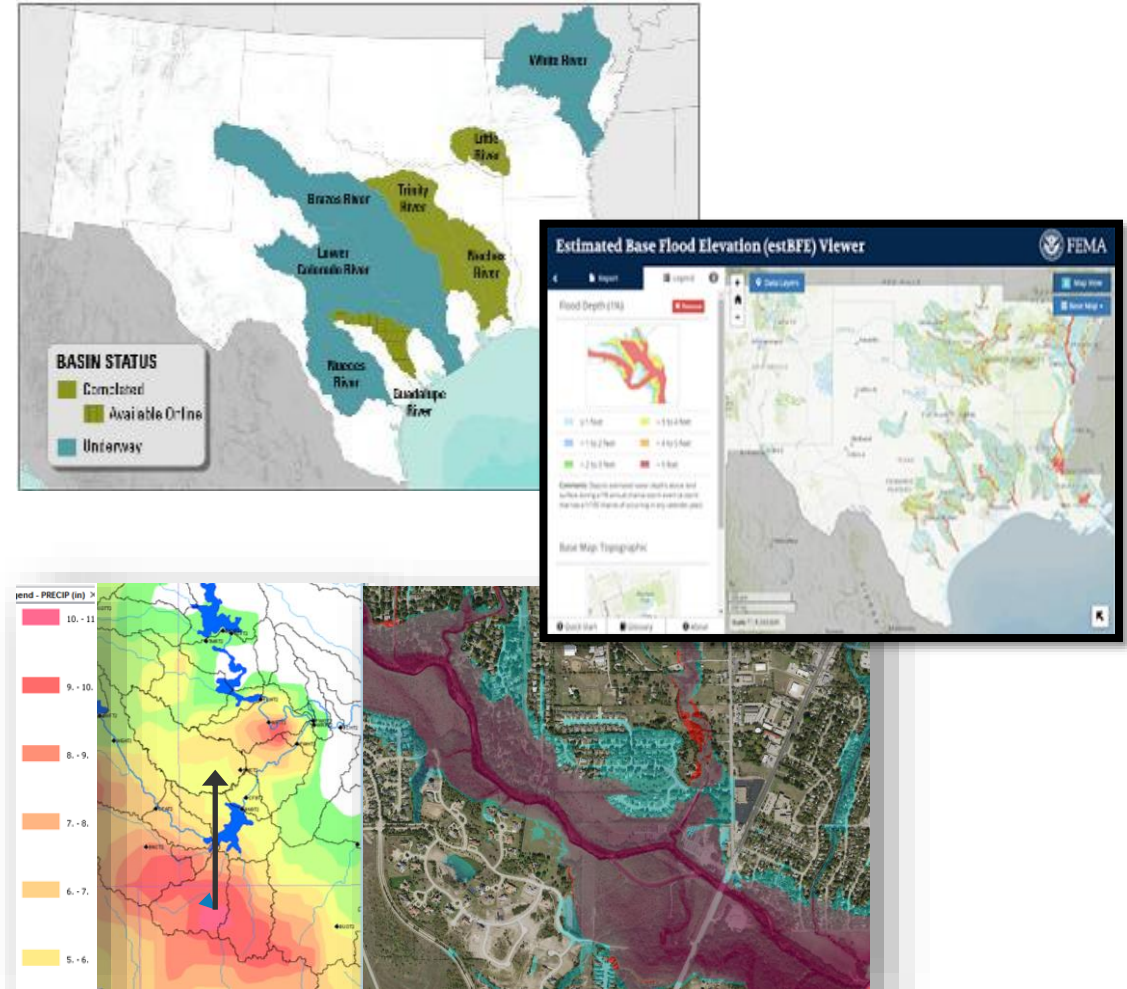
- Flood prone areas/ideal locations for green infrastructure
- Transportation/stormwater infrastructure data sets from existing maps/future plans
- Future vulnerable areas for mitigation



Mapping, Modeling, and Policy Recommendations

Modeling Deliverables

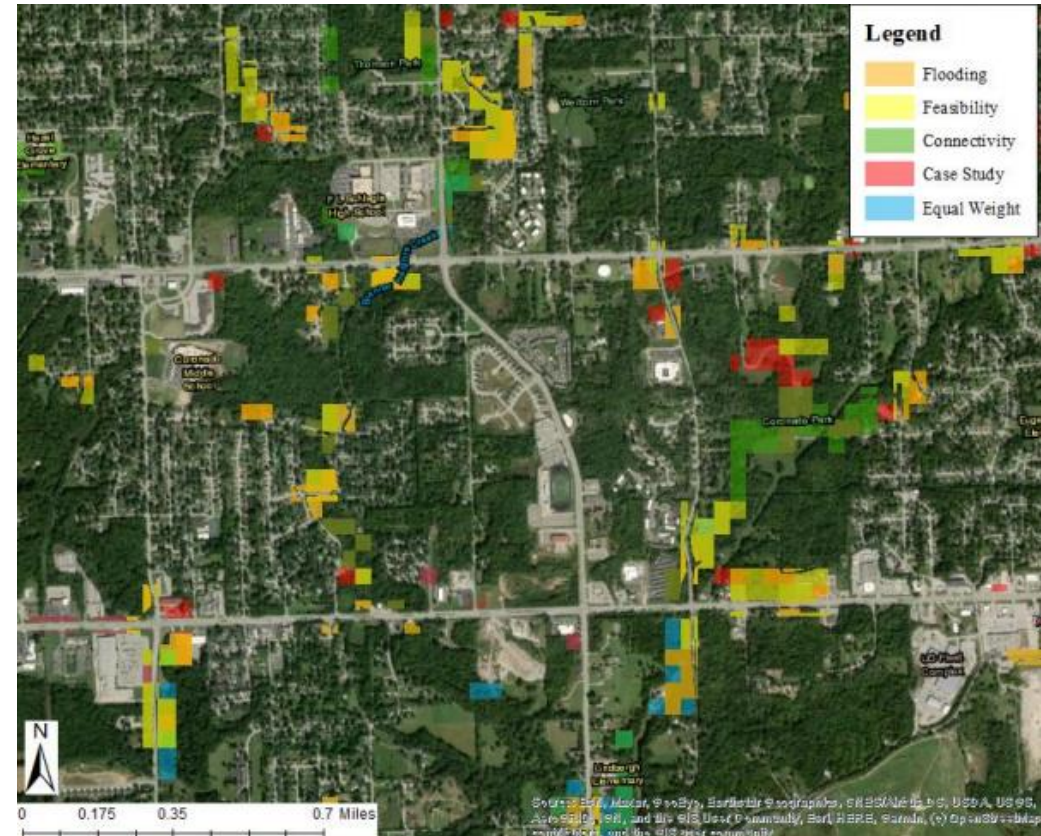
- Model recommendations for transportation/stormwater integration
- Hydrologic/hydraulic model improvements
- Regional storm shifting and other alternative scenarios



Mapping, Modeling, and Policy Recommendations

Policy Recommendations

- Improved design, location, and selection process for transportation projects
- Recommended methods to address future flood risk, mitigation in transportation studies
- Model development code and recommended floodplain management ordinances



Green Infrastructure Site Suitability Analysis – Kansas City

An aerial photograph of a suburban neighborhood. A river flows through the center of the image. To the left of the river, there is a large commercial building with a white roof, labeled 'Evergreen Structures, LLC' and 'Evergreen Structures - Engineering'. The surrounding area is filled with houses and parking lots.

Evergreen
Structures, LLC
Evergreen Structures
- Engineering

How will this business
be impacted by
flooding?





Evergreen
Structures, LLC
Evergreen Structures
- Engineering

How long and high
should this bridge be?





Evergreen
Structures, LLC
Evergreen Structures
- Engineering

This is a wide aerial photograph of a suburban neighborhood. A river flows through the center of the image. To the left of the river, there are several large industrial or commercial buildings, including one with a red roof. To the right of the river, there are rows of residential houses. A road runs diagonally across the image, intersecting the river. The text 'Evergreen Structures, LLC' and 'Evergreen Structures - Engineering' is overlaid on the left side of the image.



How will extreme
storms affect this
neighborhood?

An aerial photograph of a suburban neighborhood. A river flows through the center of the image. To the left of the river, there are several large, light-colored industrial or commercial buildings. One of these buildings is labeled with text. To the right of the river, there is a dense residential area with many houses. In the upper right corner, there is an inset image showing a closer view of an electrical substation. A blue callout box with white text points to the substation in the inset image.

Evergreen
Structures, LLC
Evergreen Structures
- Engineering

What is a safe
elevation for this
electrical substation?

Stakeholder Engagement



Subarea, Technical Advisory Group, and Steering Committee Meetings

Upcoming Subarea meetings
in late April, early May

Webinar on flood-risk
reduction programs, June-ish

Technical Advisory Group
meetings at least quarterly,
June-ish

Steering Committee meetings
TBA



Contact Information and Discussion



Contact



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Questions & Discussion