



integrating **Transportation & Stormwater Infrastructure**



### CONTEXT

Recent flood events in Texas have highlighted the need for more comprehensive stormwater planning. This is important in the upstream portions of the Trinity watershed, where the population is expected to grow significantly.

### PROJECT PURPOSE

Proactively integrate regional stormwater management, urban development, transportation, and environmental planning in the face of rapid development, resulting in a transferable 'roadmap' for risk awareness and resiliency.

### IMPORTANCE

To learn from past mistakes that have resulted in flooded roadways, neighborhoods, and critical infrastructure, and to assist communities with an improved approach to efficiently minimize these impacts before they occur.

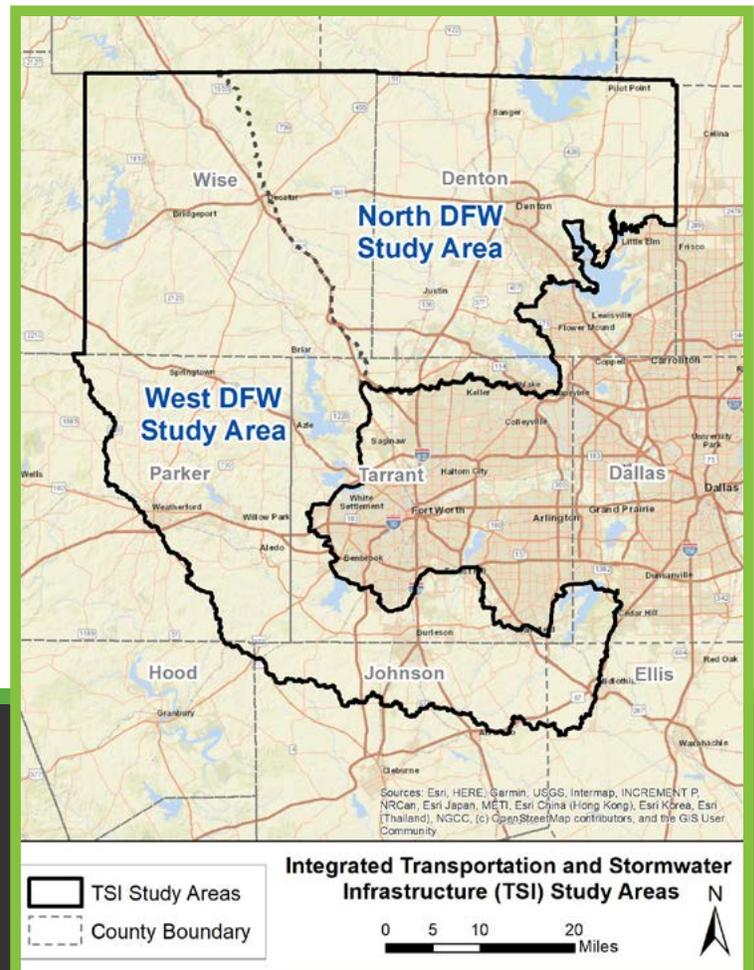
## About the Project

The North Central Texas Council of Governments (NCTCOG) and the United States Army Corps of Engineers (USACE), along with several other key partners, are collaborating on the Upper Trinity River Basin Integrated Transportation and Stormwater Infrastructure (TSI) project to address the long-term planning needs of communities in North Central Texas. This multi-year effort in these North and West DFW study areas will include transferable TSI plans to aid communities in identifying projects and policies that:

- Address vulnerable and critical infrastructure assets.
- Reduce flood risk.
- Minimize overall lifecycle costs.
- Provide environmental and ecosystem benefits to accommodate future population growth.
- Respond to changing storm frequency, duration, and intensity.

## Project Area Facts

- 85 cities and portions of 8 counties
- Expected to grow to 2,000,000 residents by 2045 (126% increase from 2020)
- 19% growth in impervious surface from 2006 – 2016
- 60% undeveloped (2015)



LEARN MORE AT [WWW.NCTCOG.ORG/TSI](http://WWW.NCTCOG.ORG/TSI)

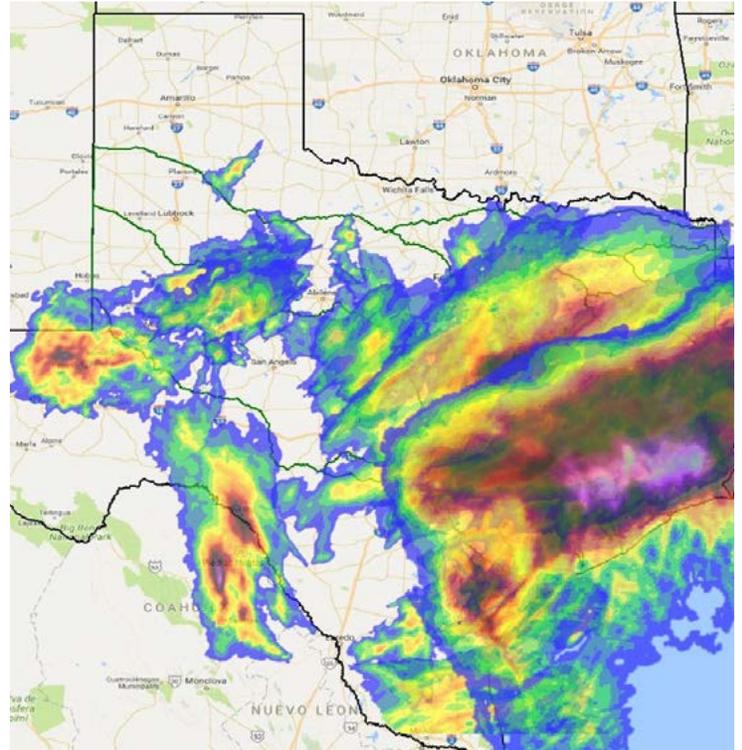
# How Will We Accomplish This?

## 1. Research, Identify, and Analyze Critical Information

We will perform a comprehensive literature review of similar studies or study components across the nation, documenting best practices and lessons learned. We will collect or develop relevant data sets for the entire project area, including Base Level Engineering (BLE) and Watershed Hydrology Assessment (WHA) data, transportation plans, future land use maps, population projections, etc., and identify data sets that are not available but desired/needed. We will process the collected data, including development of relevant Geographic Information Systems (GIS) layers.

### WHAT WE WILL DELIVER:

- Review of existing literature, data, reports, and case studies
- Identify similar studies that have been completed as well as document best practices and lessons learned
- Gather existing data for the entire project area and create a project data inventory



## 2. Engage and Partner with Key Stakeholders

We will ensure local government representatives and partner organizations remain engaged in the process and take ownership of the final project outcomes and implementation actions via various engagement opportunities, including a Technical Advisory Committee, training and scenario planning workshops, surveys, project updates, and a public information campaign and associated outreach materials.

### WHAT WE WILL DELIVER:

- Establishment of a Technical Advisory Group with associated processes and documentation
- CHARM (Community Health And Resource Management) workshops, including agendas, presentations, policy/project recommendations, etc.
- Training workshops with associated processes and documentation
- Regional Project Update Workshops with associated processes and documentation
- Public information including web site, fact sheets, FAQ's, etc.



## 3. Mapping, Modeling, & Policy Recommendations for Stormwater, Transportation, and Environmental Planning

We will develop an Upper Trinity River Basin Transportation – Stormwater Infrastructure Plan that is based on integrated, comprehensive planning of stormwater infrastructure, transportation infrastructure, and environmental facilities and features, including assessment of Green Stormwater Infrastructure (GSI) and Nature-Based Solutions (NBS) applications, regulatory tools for implementation, and funding strategies.

### POLICY RECOMMENDATIONS

- Develop a GSI and NBS suitability index using geological, social, and environmental parameters
- Prepare reports of land use tools, sustainable development best practices and potential benefits of green infrastructure strategies
- Identify scenario options, strategies, and predictable return on investment (ROI) parameters to adopt for higher protection levels for existing and proposed transportation projects
- List performance measures, evaluation criteria, and benefit-cost ratio methodologies to inform transportation project selection process for future regional transportation plans
- Report on delivery, management, and maintenance strategies aimed at improving operational capabilities and reducing risk from flooding
- Explore methodologies for addressing future flood risks, mitigation, and equity issues in project-level transportation National Environmental Policy Act studies

### MAPPING DELIVERABLES

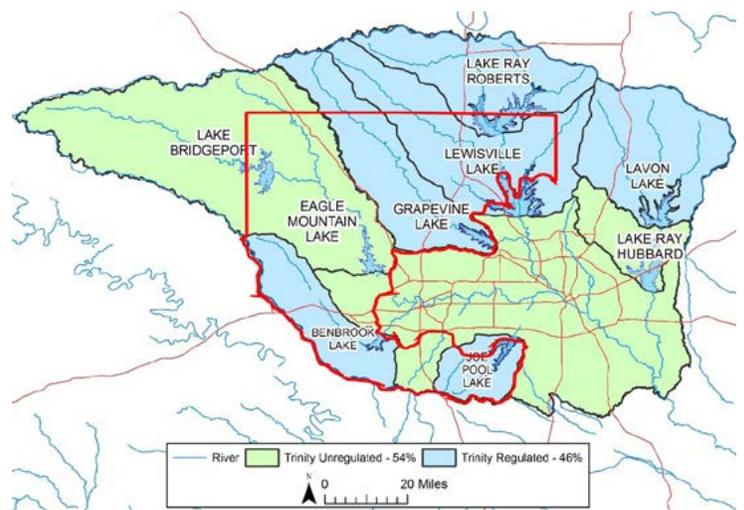
- Develop a web-based map that identifies both flood prone areas and ideal locations for GSI and NBS applications
- Gather transportation/stormwater infrastructure data sets from existing maps and future plans
- Map future vulnerable areas for design mitigation and develop planning tools for design criteria for existing and future infrastructure investments

### MODELING DELIVERABLES

- Produce model recommendations for transportation and stormwater integration
- Investigate and add detail to the Trinity River Watershed Hydrology Assessment (WHA) hydrologic model
- Investigate and update FEMA generated BLE hydraulic models

### OTHER DELIVERABLES

- Investigate real-time flood warning system alternatives, including organizational requirements
- Manage land through strategic planning and development regulations:
  - Explore and document options for conservation of flood-prone and environmentally sensitive areas
  - Evaluate stormwater management fees
  - Develop a model development code and recommend floodplain management ordinances
  - Propose list of city planning and development policies to incorporate project outcomes into, including comprehensive plans, building code updates, design criteria manuals, capital improvement programs, development review checklists, etc.
- Catalog community floodplain regulations, develop a consistent set of floodplain management regulations, and encourage community adoption



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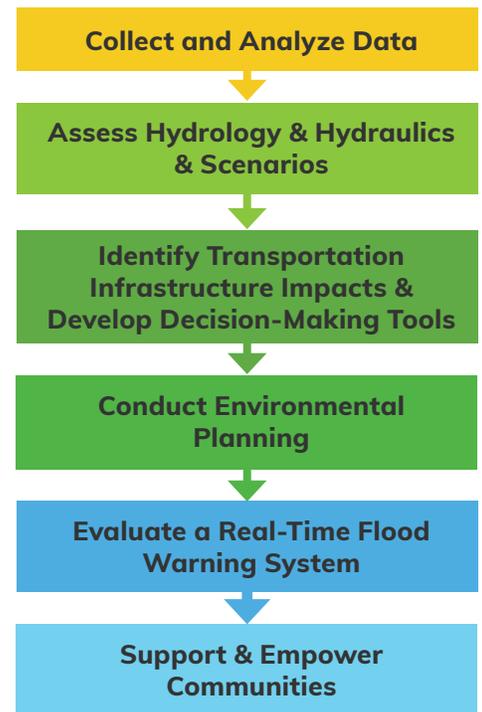


## 4. Replicate & Amplify

We will document the processes developed throughout this project including data, methods, tools, analyses, and standard practices required to integrate transportation and stormwater infrastructure planning. The standard operating procedures, or planning model template documents, will allow for easy replication and for the duplication and amplification of the project outcomes in other portions of the state and nation by any type of entity and at varying geographic scales.

### REPLICATION AND AMPLIFICATION DELIVERABLES:

- Document the standard processes, methods, tools, outreach and analyses
- Assemble workplans and develop detailed scopes of work
- Document procurement processes
- Report on existing and proposed regulations including cataloging and proposing new stormwater and development regulations



### PARTNER ORGANIZATIONS



### FUNDING PARTNERS

Texas Water Development Board

Texas Department of Transportation/  
Federal Highway Administration

Texas General Land Office

Federal Emergency Management Agency

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