



North Central Texas Council of Governments

**NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS
METROPOLITAN PLANNING ORGANIZATION**

REQUEST FOR PROPOSALS

**Engineering Services to support the Transportation and Stormwater Infrastructure (TSI)
Hydrologic & Hydraulic Assessment**

December 15, 2023

INTRODUCTION

The North Central Texas Council of Governments (NCTCOG) is requesting written proposals from qualified firms(s) with the background, expertise, skills, and capability to provide Hydrologic and Hydraulic Engineering Services and Related Services to the NCTCOG Transportation and Stormwater Infrastructure (TSI) planning study.

The purpose of this Request for Proposals (“RFP”) is to solicit responses that result in a contract with a qualified Respondent who can demonstrate that they have the resources, experience, and qualifications to provide hydrologic and hydraulic engineering services and other related planning services.

Respondents must be able to conduct hydrologic and hydraulic analysis to support flood risk reduction and environmental planning activities. Current professional registration with the Texas Board of Professional Engineers and Land Surveyors in the pertinent fields for both the responding engineering firm, and key project participants, is required for participation in this project opportunity.

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

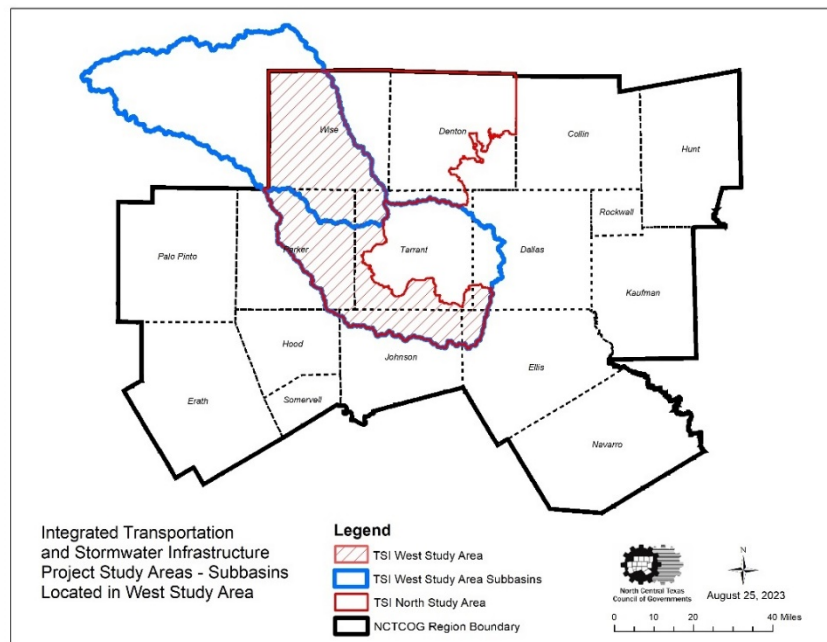
The North Central Council of Governments (NCTCOG) is a voluntary association of, by, and for local governments, and was established to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. NCTCOG’S purpose is to strengthen both the individual and collective power of local governments and to help them recognize regional opportunities, eliminate unnecessary duplication, and make joint decisions.

Since 1974, NCTCOG has served as the Metropolitan Planning Organization (MPO) for transportation in the Dallas-Fort Worth (DFW) Metropolitan Area. NCTCOG’S Transportation Department is responsible for regional transportation planning for all modes of transportation. The Department provides technical support and staff assistance to the Regional Transportation Council (RTC) and its technical committees, which compose the MPO policy-making structure. In addition, the Department provides technical assistance to the local transit providers of North Central Texas in planning, programming, coordinating, and implementing transportation decisions.

BACKGROUND

Recent flood events in Texas garnered the attention of the State for the need for comprehensive planning in urban areas. This is particularly important in the Upper Trinity River Basin, where significant population growth and increased impervious cover will lead to a number of challenges in the TSI West Study Area (see Figure 1) and the downstream DFW metroplex, including increased runoff and flooding, long-term transportation infrastructure maintenance, increased stream erosion, water quality degradation, increased sediment deposition in downstream reservoirs, and loss of open space. While comprehensive regional transportation planning is performed on a regular cycle, stormwater and environmental infrastructure improvements are generally not part of the planning focus.

Figure 1: Subbasins located in the TSI West Study Area



PURPOSE AND NEED

The purpose of the TSI planning study is to increase flood risk awareness and resiliency in the TSI West Study Area, which includes parts of HUC8 subbasins of the Upper West Fork Trinity and Lower West Fork Trinity. Increased awareness and resiliency will be accomplished through innovative planning-level analysis and integration (where appropriate) of transportation, environmental, and stormwater planning. Specific tasks include data collection and analysis, stakeholder engagement, hydrologic and hydraulic (H&H) assessment and scenarios, assessment of transportation infrastructure and decision-making tools, environmental planning, flood warning system analysis, tools for managing land through strategic planning and

development, project management, and project replication documentation that can help communities understand and take action to increase resiliency against future flooding events.

It is the North Central Texas Council of Governments (NCTCOG) intention to award one contract for all work identified within the Scope of Work. The prime consultant may utilize subconsultants for tasks or portions of tasks within the scope of work.

PROJECT SUPPORT

The project will be conducted under the guidance and supervision of a Project Review Committee. The responsibilities of the Project Review Committee will be to serve as the principal technical review committee for this project. NCTCOG shall serve as project manager to implement a mutually agreed upon scope of work, monitor the progress of consultant activities; and serve as a liaison between the consultant and other partners. The selected consultant will enter into a contract with NCTCOG for the agreed upon scope and budget. NCTCOG shall also serve as the contract manager and procurement administrator for the project.

SCOPE OF WORK

The scope of work is summarized by the tasks outlined below. Proposers are encouraged to exercise creativity in responding to the project needs. Modifications to the tasks and task sequencing which will improve the effectiveness of the project effort, while containing costs, are encouraged.

SCOPE OF WORK

The following tasks comprise the essential elements of the desired services:

- Hydrologic Analyses
- Hydraulic Analyses
- Support for Planning to Integrate Transportation and Stormwater Infrastructure
- Documentation
- Project Management

The baseline information, data, and models that will be provided by NCTCOG to the firm selected for this work is as follows:

- Documentation from the TSI Project Team that describes the recommended process for completing many of the technical tasks listed below.

- The foundational Hydrologic and Hydraulic datasets needed to complete the tasks below, including the Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment and Base Level Engineering models, current/future land use information, hydraulic structure data, and other relevant information.
- Access to comprehensive TSI scopes of work, detailed H&H, transportation, and environmental planning information, research findings, and lessons learned from ongoing TSI pilot studies.

Task #1: Hydrologic Analyses

Respondents should detail their specific skill sets and/or range of capabilities for carrying out the following tasks in their proposal for Task #1:

1. Replicate methods and scripts developed by the U.S. Army Corps of Engineers and University of Texas at Arlington to apply hydrologic analyses to the TSI West Study Area for multiple scenarios and recurrence intervals.
2. Assist U.S. Army Corps of Engineers in enhancing the output of the InFRM Trinity Basin Watershed Hydrology Assessment, including:
 - a. Delineating additional subbasins to generate more discharge points; and,
 - b. Adjusting imperviousness, lag times, loss rates, and other hydrologic model parameters, and completing calibrations as necessary; and,
 - c. Developing baseline conditions and future conditions (with and without TSI recommendations) hydrologic models; and,
 - d. Assisting in regional storm shifting analysis to simulate the impact of multiple regional storms/scenarios; and,
 - e. If time and budget allow, completing further hydrologic model enhancements to account for estimated changes in future precipitation.
3. Serve as a reviewer and consultant for hydrologic analyses/methods and attend meetings related to hydrologic analyses.

Deliverables for this task include:

1. Document and share results (memo and data) for adding detail to the Trinity Basin Watershed Hydrology assessment, in collaboration with USACE and UT-Arlington; and,
2. Generate and share updated baseline (current) and future conditions discharges and hydrologic model outputs for multiple recurrence intervals using HEC-HMS or similar software; and,

3. Ensure technical reviews are completed within requested timeframe and sufficient representation at meetings related to hydrologic analysis.

Task #2: Hydraulic Analyses

Respondents should detail their specific skill sets and/or range of capabilities for carrying out the following tasks in their proposal for Task #2:

1. Replicate methods and scripts developed by the U.S. Army Corps of Engineers and University of Texas at Arlington to apply hydraulic analyses to the TSI West Study Area.
2. Add detail to hydraulic underlying 1D and 2D base level engineering models, including coordinating with local, state, and federal entities to incorporate channel survey/bathymetry data (as appropriate) and structure data including bridges, culverts, dams, weirs, and levees;
 - a. Provide support to defining a process and incorporating updated flows from the hydrologic scenarios developed in Task 1; and,
 - b. Calibrate hydraulic models (as needed) to available observed data, such as USGS rating curves, flow and stage hydrographs, and high water marks; and,
 - c. Develop baseline conditions and future conditions (with and without proposed TSI modifications) using enhanced base level engineering models, including accounting for current/future land use data, transportation networks, hydraulic structures, as well as potential channel and floodplain modifications.
3. Serve as a reviewer and consultant for hydraulic analyses/methods and attend meetings related to hydraulic analysis.

Deliverables for this task include:

1. Document and share results (memo and data) for adding detail to the Base Level Engineering hydraulic models, in collaboration with USACE and UT-Arlington; and,
2. Generate and share updated baseline (current) and future conditions hydraulic model outputs for multiple recurrence intervals using HEC-HMS or similar software; and,
3. Ensure technical reviews are completed within requested timeframe and sufficient representation at meetings related to hydraulic analysis.

Task #3: Support for Planning to Integrate Transportation and Stormwater Infrastructure

Respondents should detail their specific skill sets and/or range of capabilities for carrying out the following tasks in their proposal for Task #3:

1. Provide support to hydrologic and hydraulic modeling to identify on-stream and off-stream integration options and vulnerability of current and planned transportation facilities in the TSI West Study Area; and,
2. Provide support to hydrologic and hydraulic analyses to identify on-stream and off-stream integration options that incorporate proposed nature-based solutions and green stormwater infrastructure; and,
3. Provide support to hydrologic and hydraulic modeling to enhance a real-time flood warning system; and,
4. Provide support to mapping and Geographic Information Systems data creation and visualization, including generating and displaying non-regulatory flood maps and datasets of the various TSI scenarios and model outputs; and,
5. In collaboration with USACE, will provide support in preparing potential project alternatives for incorporation into the TWDB Regional Flood Planning initiative (see more detail in the deliverables section below). Each feasible flood mitigation alternatives evaluated must identify and compare cost and benefits of projects. Quantification of cost will include engineering, permitting, easement and/or property acquisition, capital cost, operation and maintenance, and other costs as applicable; and,
6. Provide support to evaluating the most efficient ways to connect the various data inputs/outputs in Tasks 1-3, including appropriate computational infrastructure, software, numerical models, computer system, automation process (i.e., scripting, artificial intelligence and/or machine learning).

Deliverables for this task include:

1. Provide final approach and results (H&H models, documentation, etc.) for identifying on-stream and off-stream stormwater, transportation, and environmental integration recommendations and vulnerability assessments; and,
2. Provide necessary H&H analysis outputs (models/data) and guidance (documentation) to assist USACE and other TSI team members in exploring a RTS (Real Time Simulation) forecast system that can feed into new or existing real-time flood warning system(s) ; and,
3. Provide a complete list of mapping products to visualize interim and final TSI results and recommendations (i.e., GIS datasets, interactive story maps, web-based storage, etc.)

4. Provide comprehensive analysis (data) and documentation that identifies TSI alternatives that align with alternative analysis evaluations of flood risk reduction solutions and flood mitigation projects described in TWDB “Technical Guidelines for Regional Flood Planning.”

Quantification of benefit of the project will include the following items, as applicable:

- a. Number of structures with reduced 100-year (1% annual chance) flood risk.
- b. Number of structures removed from 100-year (1% annual chance) flood risk.
- c. Number of structures removed from 500-year (0.2% annual chance) flood risk.
- d. Residential structures removed from 100-year (1% annual chance) flood risk.
- e. Estimated Population removed from 100-year (1% annual chance) flood risk.
- f. Critical facilities removed from 100-year (1% annual chance) flood risk (#).
- g. Number of low water crossings removed from 100-year (1% annual chance) flood risk (#).
- h. Estimated reduction in road closure occurrences.
- i. Estimated length of roads removed from 100-year flood risk (miles).
- j. Estimated farm & ranch land removed from 100-year flood risk (acres). Estimated farm & ranch land at 100-year flood risk (acres) should only include farm and ranch land that are negatively impacted by flooding events and should not include land that benefits from floodplains for example rice fields.
- k. Estimated reduction in fatalities (if available).
- l. Estimated reduction in injuries (if available).
- m. Pre-Project Level-of-Service.
- n. Post-Project Level-of-Service.
- o. Cost/Structure removed.
- p. Percent Nature-based Solution (by cost).
- q. Negative Impact (Y/N).
- r. Negative Impact Mitigation (Y/N).
- s. Social Vulnerability Index (SVI).
- t. Water Supply Benefit (Y/N).
- u. Traffic Count for Low Water Crossings.

The recommended solutions must be permissible, constructable, and implementable.

The recommended flood risk reduction solutions must have no negative effect on neighboring areas in accordance with statutory requirements for regional flood plans (Texas Water Code § 16.062(i) and (j)(2)). Recommended flood risk reduction solutions, including flood mitigation projects, must meet the definition and requirements regarding no negative effect identified in Exhibit C to the Regional Flood Planning Contracts, Technical Guidelines for Regional Flood Planning, which can be found at: <https://www.twdb.texas.gov/flood/planning/planningdocu/2023/index.asp>. The flood mitigation projects identified from this Flood Infrastructure Fund Category 1 study must comply with 'no negative effect' in order to be included in the regional flood plans.

5. Provide documentation (memorandum) that summarizes the most efficient ways to connect the various data inputs/outputs in Tasks 1-3, including findings on the appropriate computational infrastructure, software, numerical models, computer system, automation process (i.e., scripting, artificial intelligence and/or machine learning).

Task #4: Documentation

Respondents should detail their specific skill sets and/or range of capabilities for carrying out the following tasks in their proposal for Task #4:

1. Summarize applicable processes, methods, tools, and analysis for inclusion in monthly and final reports; and,
2. Serve as primary quality assurance and quality control (QA/QC) reviewer for technical data and provide input on study reports and replication documentation.

Deliverables for this task include:

1. Provide monthly memorandums to NCTCOG that describe lessons learned and applicable processes, methods, tools, and analysis; and,
2. Provide reviews and input during requested timelines on study research, interim/final TSI data outputs, reporting, and replication documentation. Will submit a final QA/QC report that summarizes their QA/QC process certification that the final TSI data has been reviewed and is appropriate for public consumption.

Task #5: Project Management

Respondents should detail their specific skill sets and/or range of capabilities for carrying out the following tasks in their proposal for Task #5:

1. Submit monthly Request for Reimbursements, also referred to as invoices.

PROJECT SCHEDULE AND BUDGET

NCTCOG anticipates a total contract term of approximately two (2) years, with no option to renew. Contract execution is anticipated to occur in April 2024. Below is the expected schedule and budget:

This project is expected to conclude on June 30, 2026, and a budget of approximately \$975,000 has been allocated to conduct this project.

CONSULTANT SELECTION CRITERIA

The Consultant Selection Committee (CSC) will review all proposals and select a consultant it considers qualified to undertake the project. The following criteria will be used to evaluate the proposals:

- | | |
|--|------------|
| 1. Project Understanding | 30 percent |
| 2. Scope of Services | 25 percent |
| 3. Project Managers/Staff Qualifications | 20 percent |
| 4. Knowledge of the Dallas-Fort Worth Area | 10 percent |
| 5. Firm Qualifications/Consultant References | 10 percent |
| 6. Schedule | 5 percent |

If the CSC determines that interviews will be required before a final decision can be made, the interviews will take place **via Microsoft TEAMS the week of February 19, 2024**. Proposers should be willing and able to attend these interviews in person or via web conference, if necessary. Consultants who are invited to an interview will be notified by the close of business on **Monday, February 12, 2024**, that an interview has been scheduled. Costs for developing the proposal and costs attributed to interviews (and subsequent negotiations) are at the proposer's own expense and will not be reimbursed by NCTCOG.

CONTRACT AWARD

Following final negotiations of the work plan and costs satisfactory to NCTCOG, the consultant will be asked to execute a contract with NCTCOG. If applicable, a Notice to Proceed will be issued upon execution of the contract. NCTCOG reserves the right to reject any and all proposals, to contract for any or all portions of the project with the selected consultant, or to hire multiple firms.

The successful responder(s) to this Request for Proposals is expected to provide qualified personnel to accomplish each portion of the work in this study. NCTCOG will maintain the right to request the removal of any personnel found, in its opinion, during the course of work on this project, to be unqualified to perform the work.

The Sample Contract, provided in this transmittal, contains federal requirements which must be included with all proposals submitted. Appendices C through J of the Sample Contract contain compliance requirements and certification forms which must accompany the proposal. **Failure to comply with these requirements may result in finding the Proposal non-responsive.**

The Texas Legislature has adopted House Bill 1295. In short, the law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties (Form 1295) to our agency at the time of a signed contract. As part of contract development, the Consultant will be asked to complete the disclosure of interested parties electronically and submit through the Texas Ethics Commission website. NCTCOG will provide a specific contract number associated with the award for inclusion in the submittal. Once submitted, the Consultant will be requested to return an e-mail confirmation of submittal to NCTCOG. For more information about the process, please visit the following website for Frequently Asked Questions:

https://www.ethics.state.tx.us/resources/FAQs/FAQ_Form1295.php.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

The Disadvantaged Business Enterprise participation must meet the thirty-two (32%) percentage goal identified for this type of procurement. Proposers should also include an Affirmative Action Plan is included in the proposal. Failure on the part of the majority contractor to meet this goal or show meaningful good faith efforts may be grounds for finding the proposal nonresponsive.

QUESTIONS AND ANSWERS

All questions regarding the RFP shall be directed in writing by e-mail to TransRFPs@nctcog.org by the close of business on **Friday, December 22, 2023**. **A pre-proposal conference will be conducted, at the NCTCOG offices, at 616 Six Flags Drive, Centerpoint Two, in Arlington, Texas on Friday, January 5, 2024, at 2:00 pm in the Transportation Council Room.**

Attendance is not mandatory at the pre-proposal conference but is strongly encouraged to benefit potential proposers from the discussion and answers provided to questions. Questions submitted in advance of the pre-proposal conference will be answered at the pre-proposal conference. All questions and responses will be posted on the NCTCOG website at www.nctcog.org/rfp by the close of business on **Monday, January 8, 2024**. The questions and answers at the pre-proposal conference will be in English; translation services will not be provided for potential proposers. NCTCOG reserves the right to respond to inquiries as it deems necessary.

OVERALL PROCUREMENT SCHEDULE

This RFP shall be used to accept, review, and score proposals based on the following schedule with the intent of awarding a Cost-Plus Fixed Fee contract. The following represents the schedule of procurement activities leading to contract award:

Issue Request for Proposals	December 15, 2023
Last Day to Submit Questions	December 22, 2023
Pre-Proposal Conference	January 5, 2024
NCTCOG Q&A Posted to Website	January 8, 2024
Proposals Due & Proposal Public Opening	January 26, 2024
Consultant Selection Committee	week of February 12, 2024
Interviews (if needed)	week of February 19, 2024
NCTCOG Executive Board Approval	March 28, 2024
Execute Contracts	April 2024

NCTCOG reserves the right to make changes to the above-mentioned schedule. All such changes shall be made by an amendment to the RFP and shall be posted on NCTCOG's website at www.nctcog.org/rfp. It is the responsibility of the consultant to frequently check this website for information concerning amendments to the RFP.

*Public opening of the proposals will be done via Microsoft Teams on January 26, 2024, at 5:05pm. A link to the Microsoft Teams meeting is below. Microsoft Teams is integrated with audio so you will only need to use the conference call number (below) if you are unable to access the Microsoft Teams App. The Teams App is available for download [HERE](#).

Public Opening of Proposals via Microsoft Teams:

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Or call in (audio only)

[+1 903-508-4574](#)

Phone Conference ID: 939 188 179#