

**PLANNING ASSISTANCE TO STATES PROGRAM
LETTER OF AGREEMENT
BETWEEN
FORT BEND COUNTY, TEXAS
AND
U.S. ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
FOR THE
BRAZOS RIVER EROSION MANAGEMENT PROJECT**

THIS AGREEMENT, entered into this day ___ of _____, 2016, by and between the United States of America (hereinafter called the "Government"), represented by the District Engineer for the Galveston District, U.S. Army Corps of Engineers; and Fort Bend County, Texas (hereinafter called the "Sponsor").

WITNESSETH, THAT

WHEREAS, Section 22 of the Water Resources Development Act of 1974 (Public Law 93-251), as amended, authorizes the Secretary of the Army, acting through the Chief of Engineers, to assist the states in the preparation of comprehensive plans for the development, utilization and conservation of water and related land resources; and

WHEREAS, Section 319 of the Water Resources Development Act of 1990 (Public Law 101-640) authorizes the Secretary of the Army to collect from non-Federal entities fees for the purpose of recovering 50 percent of the cost of the program established by Section 22; and

WHEREAS, the Sponsor has reviewed the State's comprehensive water plans and identified the need for planning assistance as described in the Scope of Study incorporated into this Agreement; and

WHEREAS, the Sponsor has the authority and capability to furnish the cooperation hereinafter set forth and is willing to participate in the study cost-sharing and financing in accordance with the terms of this Agreement;

NOW THEREFORE, the parties do mutually agree as follows:

1. The Government, using funds contributed by the Sponsor and appropriated by the Congress, shall expeditiously prosecute development of a study and report containing water resource information, substantially in compliance with the attached Scope of Study and in

conformity with applicable Federal laws and regulations and mutually acceptable standards of engineering practice.

2. The Government shall contribute in cash 50 percent of the total study cost, and the Sponsor shall contribute in cash and/or in-kind services 50 percent of the total study cost, which total study cost is currently estimated to be \$280,000.00; provided, that, if applicable, the Government shall not obligate any cash contribution toward Study costs, until such cash contribution has actually been made available to it by the Sponsor.

3. No Federal funds may be used to meet the local Sponsor's share of study costs under this Agreement unless the expenditure of such funds is expressly authorized by statute as verified by the granting agency.

4. Before any Party to this Agreement may bring suit in any court concerning any issues relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation or other form of nonbinding alternative dispute resolution mutually acceptable to the Parties.

5. This Agreement shall terminate upon the completion of the Study; provided that prior to such time and upon thirty (30) days written notice, either party may terminate or suspend this Agreement without penalty. It is further understood and agreed that if the Study is not completed within 12 months of receipt of Federal funds, or cannot be completed within the estimated total study cost of \$280,000.00, this Agreement may be renewed or amended by the mutual written agreement of the parties.

6. Within ninety days after termination of this Agreement, the Government shall prepare a final accounting of the study costs, which shall display (1) cash contributions by the Federal Government, (2) cash and work-in-kind contributions, as applicable, by the Sponsor, and (3) disbursements by the Government of all funds. Subject to the availability of funds, within thirty days after the final accounting, the Government shall reimburse the Sponsor for non-Federal cash contributions that exceed the Sponsor's required share of the total study costs. Within thirty days after the final accounting, the Sponsor shall provide the Government any cash contributions required to meet the Sponsor's required share of the total study costs.

7. In the event that any (one or more) of the provisions of this Agreement is found to be invalid, illegal, or unenforceable by a court of competent jurisdiction, the validity of the remaining provisions shall not in any way be affected or impaired and shall continue in effect until the Agreement is completed.

8. This Agreement shall become effective upon the signature of both Parties.

FOR THE SPONSOR:

By: _____

Robert Hebert
County Judge
Fort Bend County, Texas

Date: _____

Attest:

By: _____

Date: _____

(Seal)

ATTACHMENT: Scope of Study

FOR THE GOVERNMENT:

By: _____

Richard. P. Pannell
Colonel, U.S. Army
District Engineer

Date: _____

CERTIFICATE OF AUTHORITY

I, Robert E. Hebert, do hereby certify that I am the principal legal officer for Fort Bend County, Texas, and that Fort Bend County, Texas is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between Fort Bend County, Texas and the U.S. Army Corps of Engineers, Galveston District in connection with the Brazos River Erosion Management Project, and that the person(s) who have executed this Agreement on behalf of Fort Bend County, Texas have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this _____ day of _____, 2016.

Robert E. Hebert
Principal Legal Officer
Fort Bend County, Texas

**Statement of Work for
“BRAZOS RIVER EROSION MANAGEMENT PROJECT”**

1.0 Purpose.

The U.S. Army Corps of Engineers (USACE), Galveston District (SWG) has been engaged by Fort Bend County through the Planning Assistance to States (PAS) program to ascertain technical data necessary to develop design alternatives to retard the degradation rate of the Brazos River banks and to safeguard historically and culturally significant areas and public infrastructure (e.g., flood control levees, utilities, roads and railroad bridges).

Specific infrastructure within the project area include: US Highway 90A, Union Pacific Railroad Bridge, Fort Bend County Justice Center, Morton Cemetery, and Mirabeau B. Lamar Homestead Park and Archeological Site. This Statement of Work (SOW) is to help determine elements of this study, covering the limits of the Brazos River shown in Figure 1, which is approximately four river miles. The analyses will be documented in a memorandum and will be used to help guide investment in future phases of this project.



Figure 1 – Map of Study Area and Limits

2.0 Background

2.1 General Requirement

The City of Richmond is located within Fort Bend County. Fort Bend County's Commissioners' Court unanimously supports a partnership between the County and SWG to address the ongoing problem and is the non-Federal Sponsor (NFS) for this project. The City of Richmond also supports the project but has deferred to County leadership on the issue. Fort Bend County will perform their portion of the work/PAS study with in-kind services that contribute towards the final deliverable.

The SWG portion of the work will focus on preparing the survey and mapping data parameters of the erosion problem, as well as defining and evaluating the geomorphological properties of the project area. SWG will develop a technical memorandum documenting this work, which will provide the input needed for the final comprehensive technical memorandum report.

Fort Bend County's portion of the work will include a review of existing hydraulic modeling, geotechnical borings and related laboratory analysis. The County will evaluate anticipated environmental and cultural resource permitting and develop the final deliverable associated with this PAS study. This deliverable will be a technical memorandum summarizing the hydraulic, geotechnical, geomorphological, environmental and cultural resource information developed under this study. This study will help jumpstart efforts to develop a permanent solution to manage the erosion of the Brazos River for the protection of historically and culturally significant sites and public infrastructure.

2.2 Project History and Proposed Method

Within the past 70 years, the City of Richmond, Texas, located in Fort Bend County, has experienced river migration and significant erosion along various stretches of the Brazos River cut-bank. One of the more pronounced areas is a two-mile river section of the Brazos River between US Highway 90A and the Mirabeau B Lamar Homestead Park. Average annual erosion rates in this area have been approximated to be in the range of 4-feet per year, resulting in approximately 400-feet of river channel movement. The observed erosion appears to be particularly associated with peak storm events with greater than ten feet of lateral bank loss resulting from singular events. Figure 2 shows the locations of these areas.

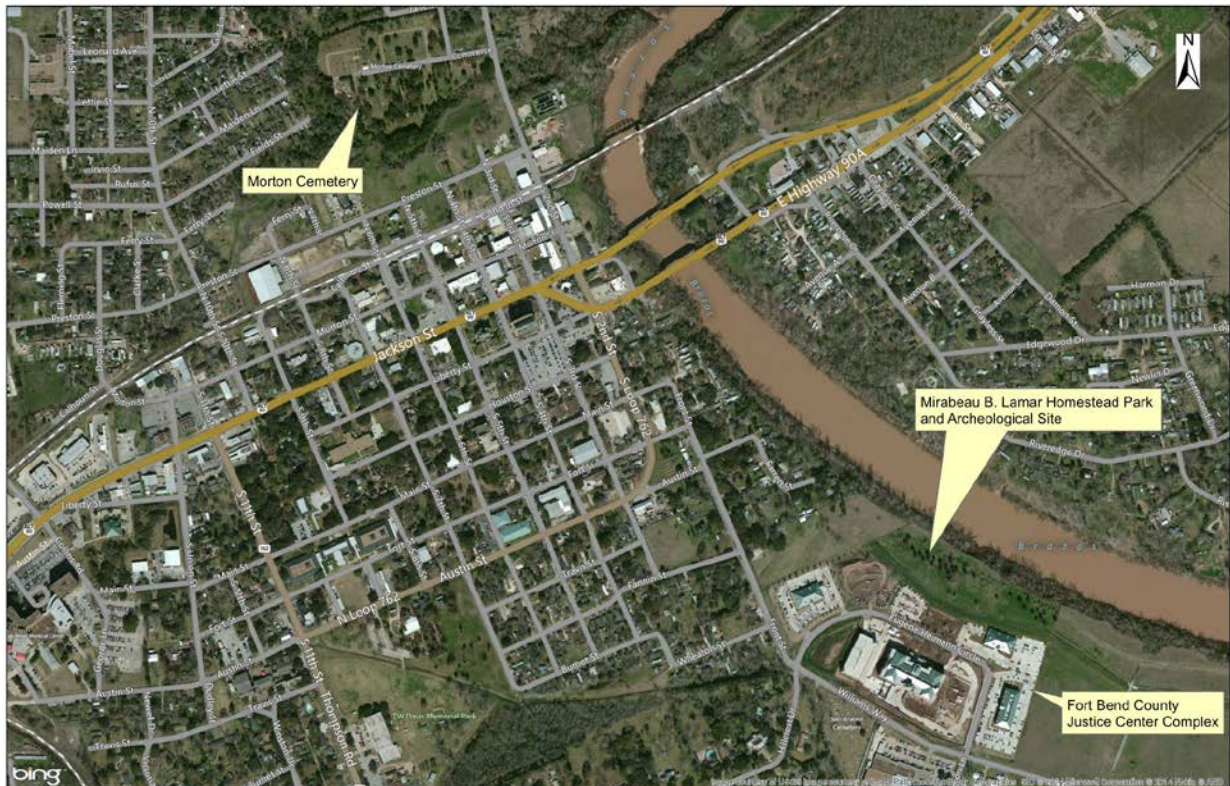


Figure 2 – Locations of Significant Erosion

The study will result in performing and compiling the analyses needed to further develop a recommended long term plan for managing the erosion to prevent degradation of the river banks. To achieve this goal, the following general activities will be performed:

1. Review and finalize previous studies and analysis
2. Perform site visits, geotechnical investigations, and surveys
3. Investigate cultural resources
4. Understand geomorphological and environmental conditions
5. Formalize and document the findings

3.0 Objectives.

This study consists of the following objectives:

1. Identify needs for the protection of historical sites and public infrastructure within the project limits
2. Describe physical processes and environmental conditions
3. Document all of the analysis within a GIS platform and in a final technical memorandum

4.0 Scope of Work.

Task 1: Project Management (SWG/Fort Bend County)

This task will include establishing and managing the project schedule and coordinating efforts between Fort Bend County, their subconsultant (Freese and Nichols, Inc. [FNI]) and the SWG. This task also includes quality control and quality assurance. As part of this effort, there will be a kickoff meeting, progress meetings via teleconference, schedule updates, and reporting. Additionally, monthly progress reports will be provided by SWG and FNI on behalf of Fort Bend County. FNI will record all meeting minutes and coordinate reviews. Anticipated meetings are as follows:

- Fort Bend County, FNI and SWG– Project Kickoff Meeting (with focus on SWG’s H&H work from the Flood Plain Management Study (FPMS) phase)
- Fort Bend County, FNI, and SWG – status update teleconferences
- Fort Bend County, FNI, and SWG – various field inspections within project limits
- Fort Bend County and FNI – discussion of FNI’s draft technical memorandum
- Fort Bend County, FNI and SWG – discussion of SWG’s technical memorandum
- Fort Bend County, FNI and SWG – discussion of comments associated with the final draft technical memorandum deliverable

Task 2: Review of Flood Plain Management Study Report (Fort Bend County)

This task includes Fort Bend County’s subconsultant (FNI) reviewing and commenting on the draft hydraulic report developed by SWG as part of the FPMS phase of the project. Comments will be inputted in to Dr. Checks.

Task 3: Respond to Comments and Finalize FPMS Report (SWG)

This task includes responding to Fort Bend County’s subconsultant (FNI) and providing an updated report for incorporation into the final technical memorandum.

Task 4: Field Inspections (SWG/Fort Bend County)

SWG and Fort Bend County’s subconsultant (FNI) to participate in a joint site visit immediately subsequent to the kickoff meeting in order to better define existing conditions and assist with the various analyses that are to be performed.

Task 5: Geomorphological Investigation and Analysis (SWG)

This task includes providing a geomorphologist with experience in large riverine systems to conduct a field inspection of the project area. SWG will be responsible for incorporating this information in to their technical memorandum. Major subtasks include:

- Utilize data collected during the field inspection as well as available information pertaining to the Brazos River along the project area to analyze the geomorphology of existing conditions.
- Identify the regional behavior of the riverbanks and fluvial patterns manifested in bank erosion.
- Assess the evolution of the river meanders on clay and alluvium.

- Perform a soil erodibility analysis on the active fluvial plain and the Pleistocene clays.
- Identify river training techniques (submerged vanes, dikes, wing dams, palisades) and traditional bank stabilization and armoring engineering methods (revetments) that could serve to reduce erosion and/or protect the study area.
- Perform a high-level evaluation of the river training techniques and traditional bank stabilization and armoring engineering methods with regards to their hydraulic capacity and geomorphological integrity.

Task 6: Survey and Mapping (SWG)

This task includes preparing multiple survey deliverables for the project area. The survey limits will begin two miles upstream of the US Highway 90A bridge near Richmond, Texas and continue two miles downstream of the bridge. The deliverables for the surveying services will include a continuous plan view of the field data in AutoCAD release Civil 3D 2014 (or later), ASCII point file, an .XML file, and a copy of any/all field notes associate with each of the survey tasks. SWG will develop a GIS workmap to compile data gathered from the investigations, studies, and analysis conducted by both SWG and Fort Bend County over the course of the FPMS and PAS phases of this project.

The required survey deliverables are as follows:

- Abstract Map
- Control Survey
- Topographic Survey
- Bathymetric Survey

The required GIS workmap will include, but not be limited to, the following data associated with the project area:

- Current and historical aerials and LiDAR data along with any DEMs or TINs produced from the LiDAR and used to generate topography.
- The applicable parameters and results of the hydraulic analysis performed by SWG.
- The location of the geotechnical borings drilled by Fort Bend County's subconsultant (FNI/TerraCon). The boring log information and laboratory test results should also be included and/or linked to these boring locations.
- The location (and footprint) of any/all areas, landmarks, etc. that will require environmental and cultural resource permitting coordination.
- The property ownership, topographic, and bathymetric information collected by SWG. All surveyed cross sections should be clearly located. Additionally, locations demonstrating significant slope failure and/or erosion should be clearly identified on the workmap. The vertical accuracy and datum information for the topographic data shall be documented with appropriate Federal Geographic Data Committee (FGDC) metadata.

- The pertinent geomorphological information collected by SWG. All locations of important observations, collected soil samples, site visit photographs, etc. should be clearly located.

Task 7: Investigation of Cultural Resources and Environmental Permitting Considerations (Fort Bend County)

This task will include Fort Bend County's subconsultant (FNI) engaging Biowest to perform the investigations. BioWest will provide a technical report documenting the identified cultural and environmental resources within the project area. The report will contain multiple maps, GIS information and data sets, the Environmental Processes Flowchart (EPPF), and recommendations of additional efforts that are necessary in subsequent phases of the project. FNI will perform a review of this work prior to incorporating it into the final technical memorandum.

Task 8: Geotechnical Investigation and Analysis (Fort Bend County)

This task will include Fort Bend County's subconsultant (FNI) engaging Terracon Consultants, Inc. to perform a preliminary geotechnical investigation and analysis. A preliminary geotechnical engineering report will be provided that documents the results of the testing performed and provides boring logs and a Boring Location Plan. FNI will perform a review of this work prior to incorporating it into the final technical memorandum.

Task 9: Identification and Recommendation of Future Investigations, Analysis, and Studies (Fort Bend County)

This task will include Fort Bend County's subconsultant (FNI) proposing recommendations and associated cost estimates for future phases of this project.

Task 10: Develop Sections for Input in to Technical Memorandum (SWG)

Drawing upon tasks 3, 4, 5 and 6, this task will include SWG developing portions of the technical memorandum for Fort Bend County's subconsultant (FNI) to review and incorporate into a comprehensive technical memorandum.

Task 11: Final Report (Fort Bend County)

This task will include Fort Bend County's subconsultant (FNI) documenting all findings from all tasks into a technical memorandum. The results will be presented at a team meeting at Fort Bend County offices. SWG will perform a technical review of the draft deliverable and upload comments to Dr. Checks. The sections of this memorandum will include:

- Project Background
- Summary of FPMS Phase
- Summary of Field Inspection
- Summary of Investigation of Cultural Resources and Environmental Permitting Considerations
- Summary of Geotechnical Investigation and Analysis
- Summary of Survey and Mapping of the Project Area
- Identifications and Recommendation of Future Investigations, Analysis, and Studies

5.0 Cost. Cost estimate and breakout of tasks is shown in Table 1.

Table 1 – Estimated Cost

Task Name	Fort Bend County Cost	SWG Cost	Total Cost
Task 1: Project Management	\$30,000	\$30,000	\$60,000
Task 2: Review of Flood Plain Management Study Report	\$2,500	\$0.00	\$2,500
Task 3: Respond to Comments and Finalize FPMS Report	\$0	\$4,000	\$4,000
Task 4: Field Inspections	\$7,000	\$7,000	\$14,000
Task 5: Geomorphological Investigation and Analysis	\$0.00	\$14,500	\$14,500
Task 6: Survey and Mapping	\$0	\$77,500	\$77,500
Task 7: Investigation of Cultural Resources and Environmental Permitting Considerations	\$30,000	\$0	\$30,000
Task 8: Geotechnical Investigation and Analysis	\$60,000	\$0	\$60,000
Task 9: Identification and Recommendation of Future Investigations, Analysis, and Studies	\$3,000	\$0	\$3,000
Task 10: Develop Sections for Input in to Final Technical Memorandum	\$0.00	\$7,000	\$7,000
Task 11: Final Technical Memorandum	\$7,500	\$0	\$7,500
TOTALS:	\$140,000	\$140,000	\$280,000

6.0 Schedule

- The kick off meeting will be conducted within 60 calendar days of receipt of federal and non-federal funds.

- The site visit will be conducted within 90 calendar days of receipt of federal and non-federal funds.
- SWG Sections for Input in to Final Technical Memorandum will be provided within 300 calendar days of receipt of federal and non-federal funds.
- The Comprehensive Draft Technical Memorandum will be provided within 365 calendar days of receipt of federal and non-federal funds.

7.0 Deliverables. Deliverables, associated with tasks, are described below. All deliverables will be in electronic format only.

- Task 1: Site visit and progress meeting minutes in memo format.
- Task 10: Report in a technical memorandum format for input in to the comprehensive final technical memorandum
- Task 11: Comprehensive report in technical memorandum format

8.0 Sponsors Responsibilities. Sponsor responsibilities will be performed as in-kind services as documented in Section 4.0.

9.0 Progress Reporting. Monthly progress reports will be made via email by both SWG and FNI on behalf of Fort Bend County. Reports will list work complete, outstanding action items, and upcoming deadlines.