

## AGREEMENT FOR ENGINEERING SERVICES

THE STATE OF TEXAS   §  
                                   §  
 COUNTY OF HARRIS    §

THIS AGREEMENT is made, entered into, and executed by and between the **Harris County Flood Control District**, a body corporate and politic under the laws of the State of Texas, hereinafter called "District" or "HCFCD," and **Carollo Engineers, Inc.**, a Delaware corporation, hereinafter called "Engineer."

WITNESSETH

WHEREAS, the District desires to construct regional detention and channel improvements upstream of FM 1960 on Harris County Flood Control Unit Q100-00-00, hereinafter called the "Project"; and

WHEREAS, the District desires that the Engineer perform Preliminary Engineering Services in connection with the Project; and

WHEREAS, the Engineer represents that it is capable and qualified to perform the services and prepare the items set forth herein.

NOW, THEREFORE, the District and the Engineer, in consideration of the mutual covenants and agreements herein contained, do mutually agree as follows:

### SECTION 1

#### SCOPE OF AGREEMENT

The Engineer agrees to perform professional engineering services in connection with the Project, as stated in the sections to follow, and for rendering such services the District agrees to pay the Engineer compensation, as stated in the sections to follow.

### SECTION 2

#### CHARACTER AND EXTENT OF SERVICES

The Engineer shall perform the services with regard to the Project listed in Appendix A hereto, hereinafter referred to as "Basic Services." The services furnished hereunder shall be completed to the satisfaction of the District.

### SECTION 3

#### ADDITIONAL SERVICES

Upon written request from the Executive Director of the District or designee ("Director"), the Engineer shall furnish Additional Services for the Project, as described in Appendix B hereto. All Additional Services shall be completed to the satisfaction of the District.

It is expressly understood and agreed that the Engineer shall not furnish any of the Additional Services without first obtaining written authorization from the Director. The District shall have no

obligation to pay for Additional Services that have been rendered without prior written authorization from the Director.

SECTION 4

TIME FOR PERFORMANCE

All Basic Services shall be completed within 386 calendar days of the notice to proceed. It is understood and agreed that the time during which the Engineer's work is under review by the District shall not be included in the calendar day time allowed for completion. All Additional Services shall be completed within the time set forth in the applicable work authorization.

Where the Director determines that good cause exists, the Director may extend the time for performance of Basic Services or Additional Services. Any extensions of time granted by the Director shall be in writing.

SECTION 5

THE ENGINEER'S COMPENSATION

For and in consideration of the Basic Services performed by the Engineer, as set forth in Section 1, the District shall pay the Engineer a fixed fee of \$572,986.00, with monthly payments toward same based on the percentage of each task completed during the preceding calendar month, subject to acceptance by the District. The fee allocation by task to be used for billing purposes is as follows:

	<u>Amount</u>
A.1 Project Management and Coordination	\$114,300.00
A.2 Preliminary Engineering Report	<u>\$458,686.00</u>
	\$572,986.00

Adjustments to the fee allocation may be made within the Total Basic Services Fee with prior review and written approval by the Director.

The District shall reimburse the Engineer according to the following rates for Additional Services provided pursuant to Section 3 by employees of the Engineer:

<u>Responsibility</u>	<u>Maximum Hourly Rate</u>
Principal .....	\$305.00
Senior Technical Reviewer .....	\$295.00
Project Manager .....	\$270.00
Lead Project Professional .....	\$290.00
Senior Professional .....	\$220.00
Project Professional .....	\$195.00
Staff Engineer .....	\$175.00
Senior Engineer-in-Training (EIT) .....	\$150.00
Staff Professional / EIT .....	\$135.00
Senior GIS / Senior CADD Designer.....	\$175.00
GIS Analyst / CADD Drafter .....	\$125.00
Document Processing .....	\$100.00

The District may also authorize Additional Services to be compensated on a fixed fee basis upon acceptance by the Engineer. The District shall pay the Engineer a prorated amount of the fixed fee monthly, based on the percentage of the task completed during the preceding calendar month, subject to acceptance by the District. Where authorization of Additional Services is made on a fixed fee basis, the hourly rates set out above shall not apply.

Notwithstanding anything that may be construed to the contrary herein, in no event shall the Engineer be entitled to compensation and reimbursement in excess of \$785,814.00 for performing Additional Services hereunder. Nor shall the Engineer be required to perform Additional Services hereunder after becoming entitled to compensation and reimbursement of \$785,814.00 for Additional Services.

Adjustments to the Additional Services budget allocation may be made with written approval by the Director.

It is expressly understood that the Engineer shall neither seek reimbursement nor will the District be obligated to pay or reimburse the Engineer for normal business expenses such as overtime, postage, messenger services, delivery charges, mileage within Harris County, parking fees, facsimile (fax) transmissions, computer time on in-house computers and graphic systems, blue-line drawings or photocopies specifically required in Section 2, or other costs or expenses, except those for which reimbursement is specifically provided in the following sentence. If approved in writing by the Director prior to their being incurred, the Engineer may be reimbursed the reasonable and necessary cost of the following, to the extent they are incurred in providing services hereunder: services performed by a subcontractor pursuant to authorization for such expenses and as permitted by the County Purchasing Act, copies of reports or other documents to be delivered to the District or in accordance with instructions of the District in excess of the number specifically required by Section 2, costs of travel outside of Harris County, rental costs of transportation equipment necessary to gain access to the Project site, costs of presentation materials (i.e., charts, slides, transparencies), costs of abstracting, and costs of photographic and video services.

## SECTION 6

### TIME OF PAYMENT

During the performance of the services provided herein, at intervals of not fewer than thirty (30) days each, the Engineer shall submit to the District a statement sworn to by the Engineer or an officer of the Engineer, in a form acceptable to the Harris County Auditor and in compliance with Section 5, setting forth the services completed and the compensation due for the same, plus the amounts payable under Section 3 (Additional Services and Charges) that have not been previously billed or paid. All hourly charges shall be itemized on the basis of the hourly rates and shall be certified in writing by the Engineer to be true and correct. The Director and the Harris County Auditor shall approve the statement after review, with such modifications as may be deemed appropriate. The District shall pay each statement approved within thirty (30) days after approval by the Director and the County Auditor, provided that the approval or payment of any such statement shall not be considered to be evidence of performance by the Engineer to the point indicated by such statement, or of the receipt of or acceptance by the District of the work covered by such statement. The Engineer shall in no case submit an invoice for less than \$500.00, except where the invoice is for the final payment.

Time sheets corroborating the information provided in the statement, signed by individuals performing services under this Agreement and their supervisor(s), showing the name of each individual performing services hereunder, the date or dates that he or she performed said services, his or her hourly rate, the total amount billed for each individual, and the total amount

billed for all individuals, and including such other details as may be requested by the Harris County Auditor for verification purposes, shall be kept and maintained by the Engineer for a period of five (5) years after the completion of performance hereunder. The Director and/or the County Auditor shall have the right, after giving written notice, to review any and all documents or other data in the custody of the Engineer, in connection with any statement submitted by the Engineer to the District for approval and payment by the District.

## SECTION 7

### TERMINATION

The Director may terminate this Agreement at any time by notice in writing to the Engineer. Upon receipt of such notice, the Engineer shall discontinue all services in connection with the performance of this Agreement. As soon as practicable after receipt of notice of termination, the Engineer shall submit a statement showing in detail the services performed under this Agreement to the date of termination. The District shall pay the Engineer that proportion of the total fee which the services actually performed under this Agreement bear to the total services called for herein, less such payments on account of the charges as have been previously made. Copies of all complete or partially complete designs, plans, specifications, and other documents prepared or obtained under this Agreement shall be delivered to the District when and if the Agreement is terminated.

## SECTION 8

### NOTICES AND COMMUNICATIONS

All notices and communications under this Agreement shall be mailed by certified mail, return receipt requested, or delivered to the Engineer at the following address:

Carollo Engineers, Inc.  
10375 Richmond Avenue  
Houston, Texas 77042  
Attn: Meera Victor, P.E.

All notices and communications under this Agreement shall be mailed by certified mail, return receipt requested, or delivered to the District at the following address:

Harris County Flood Control District  
9900 Northwest Freeway  
Houston, Texas 77092  
Attn: Executive Director

## SECTION 9

### LIMIT OF APPROPRIATION

The Engineer clearly understands and agrees, such understanding and agreement being of the absolute essence to this Agreement, that District shall have available the total maximum sum of \$1,358,800.00 specifically allocated to fully discharge any and all liabilities that may be incurred by District pursuant to the terms of this Agreement, and that the total maximum compensation the Engineer may become entitled to hereunder and the total maximum sum the District shall become liable to pay to the Engineer hereunder shall not under any conditions, circumstances, or interpretations hereof exceed the said total maximum sum provided for in this Section and certified as available therefor by the County Auditor as evidenced by the issuance of a purchase order from the Harris County Purchasing Agent.

## SECTION 10

## SUCCESSORS AND ASSIGNS

The District and the Engineer bind themselves and their successors, executors, administrators, and assigns to the other party of this Agreement and to the successors, executors, administrators, and assigns of the other party, in respect to all covenants of this Agreement. Neither the District nor the Engineer shall assign, sublet, or transfer its or his interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of any public body that may be a party hereto.

## SECTION 11

## PUBLIC CONTACT

The Engineer shall under no circumstances release any material or information developed in the performance of services hereunder, without the prior express written permission of the Director. Contact with the news media, private citizens, or community organizations shall be the sole responsibility of the District. Inquiries concerning this Agreement or Project shall be referred to the Director.

## SECTION 12

## COMPLIANCE AND STANDARDS

The Engineer agrees to perform the work hereunder in accordance with generally accepted standards applicable thereto and shall use that degree of care and skill commensurate with the Engineer's profession to comply with all applicable state, federal, and local laws, ordinances, rules, and regulations relating to the work to be performed hereunder and the Engineer's performance. The Engineer represents that, prior to performing hereunder, he has or shall obtain all necessary licenses, ownership, or permission for use of any and all proprietary information, materials, or trade secrets employed in the performance of work hereunder for the District and agrees that it shall not copy, reproduce, recreate, distribute, or use any such proprietary information, materials, or trade secrets of any third party, except to the extent permitted by such third parties, or as otherwise authorized by law.

In accordance with TEX. GOV'T CODE ANN. § 2271.002, the Engineer warrants and represents that it does not boycott Israel and agrees that it will not boycott Israel during the term of this contract.

The Engineer represents and certifies that, at the time of execution of this Agreement, the Engineer (including, in this provision, any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the same) is not listed by the Texas Comptroller of Public Accounts pursuant to Chapters 2252 or 2270 of the Texas Government Code, nor will the Engineer engage in scrutinized business operations or other business practices that could cause it to be listed during the term of this Agreement.

The Engineer warrants and represents, in accordance with Tex. Gov't Code Ann. § 2274.002, that unless the Engineer meets an exemption under subsection (c), then, as required by subsection (b), the Engineer's signature on this Agreement constitutes the Engineer's written verification that it does not boycott energy companies and will not boycott energy companies during the term of the contract.

The Engineer warrants and represents, in accordance with Tex. Gov't Code Ann. § 2274.002,

that unless the Engineer meets an exemption under subsection (c) or section 2274.003, then, as required by subsection (b) of section 2274.002, the Engineer's signature on this Agreement constitutes the Engineer's written verification that it does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and will not discriminate against a firearm entity or firearm trade association during the term of the contract.

#### SECTION 13

##### LICENSE REQUIREMENTS

The Engineer shall have and maintain any licenses or certification required by the State of Texas or recognized professional organization governing the services performed under this Agreement.

#### SECTION 14

##### CERTIFICATE OF INTERESTED PARTIES

In compliance with Government Code § 2252.908, the Engineer must submit a completed Certificate of Interested Parties Form 1295, including an unsworn declaration and the Certification of Filing, printed after completing the electronic filing requirements on the Texas Ethics Commission website (see [www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](http://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm)), to the District along with this signed Agreement.

#### SECTION 15

##### CONFLICT OF INTEREST CERTIFICATION

The Engineer certifies that the Engineer has complied with Chapter 176 of the Texas Local Government Code by completing and filing any required conflict of interest disclosures or questionnaires (see [www.ethics.state.tx.us/forms/CIQ.pdf](http://www.ethics.state.tx.us/forms/CIQ.pdf)). If this certification is materially incomplete or inaccurate, the Engineer acknowledges that the District shall have the right to terminate this Agreement without prior notice.

#### SECTION 16

##### INDEMNIFICATION

**TO THE EXTENT ALLOWED BY LAW, THE ENGINEER AGREES TO INDEMNIFY AND HOLD HARMLESS THE DISTRICT, ITS OFFICERS, EMPLOYEES, AND AGENTS FROM LIABILITY, LOSSES, EXPENSES, DEMANDS, REASONABLE ATTORNEYS' FEES, AND CLAIMS FOR BODILY INJURY (INCLUDING DEATH) AND PROPERTY DAMAGE TO THE EXTENT CAUSED BY THE NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT OF THE ENGINEER (INCLUDING THE ENGINEER'S AGENTS, EMPLOYEES, VOLUNTEERS, AND SUBCONTRACTORS/CONSULTANTS UNDER CONTRACT, OR ANY OTHER ENTITY OVER WHICH ENGINEER EXERCISES CONTROL) IN THE PERFORMANCE OF THE SERVICES DEFINED IN THIS AGREEMENT. THE ENGINEER SHALL ALSO SAVE THE DISTRICT HARMLESS FROM AND AGAINST ANY AND ALL EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES, IN PROPORTION TO THE ENGINEER'S LIABILITY, THAT MIGHT BE INCURRED BY THE DISTRICT, IN LITIGATION OR OTHERWISE RESISTING SUCH CLAIMS OR LIABILITIES.**

## SECTION 17

## INSURANCE REQUIREMENTS

Coverage and Limits. During the Term of this Agreement and any extensions thereto, the Engineer at its sole cost and expense shall provide insurance of such type and with such terms and limits as may be reasonably associated with this Agreement. As a minimum, the Engineer shall provide and maintain the following coverage and limits:

- (a) Workers Compensation, as required by the laws of Texas, and Employers' Liability, as well as All States, United States Longshore & Harbor Workers Compensation Act and other endorsements, if applicable to the project, and in accordance with state law.

Employers' Liability		
(i)	Each Accident	\$1,000,000
(ii)	Disease – Each Employee	\$1,000,000
(iii)	Policy Limit	\$1,000,000

- (b) Commercial General Liability, including but not limited to, the coverage indicated below. This policy will provide coverage for personal and bodily injury, including death, and for property damage, and include an endorsement for contractual liability. Coverage shall not exclude or limit the Products/Completed Operations, Contractual Liability, or Cross Liability. Where exposure exists, the District may require coverage for watercraft, blasting, collapse, explosions, blowout, cratering, underground damage, pollution, and other coverage. *The District shall be named Additional Insured on primary/non-contributory basis.*

(i)	Each Occurrence	\$1,000,000
(ii)	Personal and Advertising Injury	\$1,000,000
(iii)	Products/Completed Operations	\$1,000,000
(iv)	General Aggregate (per project)	\$2,000,000

- (c) Professional Liability/Errors and Omissions, in an amount not less than One Million Dollars (\$1,000,000) per claim and in the aggregate.

- (d) Umbrella/Excess Liability in an amount not less than One Million Dollars (\$1,000,000) per occurrence and in the aggregate. *The District shall be named Additional Insured on primary/non-contributory basis.*

- (e) Automobile Liability insurance to include the Engineer's liability for death, bodily injury, and property damage resulting from the Engineer's activities covering use of owned, hired, and non-owned vehicles, with combined single limit of not less than One Million Dollars (\$1,000,000) for each accident. *The District shall be named Additional Insured on primary/non-contributory basis.*

- (f) Any other coverage required of the Engineer pursuant to statute.

Delivery of Policies. Immediately upon execution of this Agreement and before any services are commenced by the Engineer, the Engineer shall provide the District evidence of all of the above coverage on forms and with insurers acceptable to the District. The Engineer must maintain a valid Certificate of Insurance as described herein on file with the District at all times during the term of this Agreement. The Engineer must either (1) mail the Certificate of Insurance to the District at 9900 Northwest Freeway, Houston, TX 77092, Attn: Contract Management or (2) submit it by email to [HCFCD\\_AdminServices@hcfcd.hctx.net](mailto:HCFCD_AdminServices@hcfcd.hctx.net).

**Issuers of Policies.** Coverage shall be issued by company(s) licensed by the Texas Department of Insurance to do business in Texas, unless said coverage is not available or economically feasible except through an excess or surplus lines company, in which case the company(s) should be registered to do business in Texas. Companies shall have an A.M. Best rating of at least A-VII.

**Certificates of Insurance.** The Engineer shall provide unaltered Certificates of Insurance which evidence the required coverage and endorsements and satisfy the following requirements:

- (a) Be less than 12 months old;
- (b) Include all pertinent identification information for the Insurer, including the company name and address, policy number, NAIC number or AMB number, and an authorized signature;
- (c) Include the project name and reference numbers and indicate the name and address of the Project Manager in the Certificate Holder Box; and
- (d) Be appropriately marked to accurately identify:
  - (i) All coverage and limits of the policy;
  - (ii) Effective and expiration dates;
  - (iii) Waivers of subrogation, endorsement of primary insurance and additional insured language, as described herein.

**Certified Copies of Policies and Endorsements.** Upon request, the Engineer shall furnish certified copies of insurance policies and endorsements to the District.

**Renewal Certificates.** Renewal certificates are due to the District at least thirty (30) days prior to the expiration of the current policies.

**Subcontractors.** If any part of the Agreement is sublet, insurance shall be provided by or on behalf of any subcontractor, and shall be sufficient to cover their portion of the Agreement. The Engineer shall furnish evidence of such insurance to the District as well.

**Additional Insured.** The Engineer shall include the District and its respective officers, directors, agents, and employees as an Additional Insured on the Commercial General Liability, Automobile Liability, and Umbrella/Excess Liability insurance certificates. The Engineer's coverage shall be primary insurance to any similar insurance maintained by the District and must contain an endorsement stating such. Coverage to the District as an Additional Insured on any of the Engineer's insurance coverage shall not be subject to any deductible.

**Deductibles.** The Engineer shall be responsible for and pay any claims or losses to the extent of any deductible amounts applicable under all such policies and waives any claim it may have for the same against the District, its officers, directors, agents, or employees.

**Claims-made Policies.** All insurance policies written on a claims-made basis, including Professional Liability/Errors and Omissions, shall be maintained for a minimum of two (2) years following completion of all services under this Agreement ("Extended Reporting Period"). The Engineer shall obtain or maintain full prior acts coverage at least to the effective date of this Agreement in the event of a carrier or policy change.

**Waiver of Subrogation.** The Engineer waives any claim or right of subrogation to recover against the District, its officers, directors, agents, and employees ("Waiver of Subrogation"). Each policy required under this Agreement must contain a Waiver of Subrogation endorsement.

**Notice of Cancellation, Non-Renewal, or Material Change.** The Engineer shall provide the District with thirty (30) days' minimum written notification in the event of cancellation, non-renewal, or material change to any or all of the required coverage.

Remedies for Noncompliance. Failure to comply with any part of this Article is a material breach of this Agreement. The Engineer could immediately, and without notice, have all compensation withheld or suspended, be suspended from providing further services, or be terminated from this Agreement for any lapse in coverage or material change in coverage which causes the Engineer to be in noncompliance with the requirements of this Article.

## SECTION 18

### OWNERSHIP OF PLANS, COPYRIGHT

The District shall be the absolute and unqualified owner of any information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, computations, computer input/output information, and other documents or materials prepared pursuant to this Agreement, including source codes therefor, with the same force and effect as if the District prepared the same. The District shall have an exclusive and perpetual copyright in and to any and all materials produced for the District pursuant to this Agreement and the Engineer shall convey and assign, and does hereby convey and assign, to District all right, title, and interest, including but not limited to copyright, the Engineer may have or may acquire in and to such materials. The Engineer agrees that work performed hereunder for the District will be deemed to have been done, to the extent authorized by law, on a "works made for hire" basis. In the event and to the extent such works are determined not to constitute "works made for hire" as that term is understood in copyright law, the Engineer hereby irrevocably assigns and transfers to the District all right, title, and interest in and to such works, including, but not limited to, copyrights. The Engineer agrees to promptly deliver to the District copies, in a form acceptable to the Director, of any and all such information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, documents, materials and/or data, including the source codes therefor, upon request from the District. Copies of all complete or partially complete information, programs, Mylar reproducibles, plans, preliminary layouts, sketches, reports, cost estimates, inventions, software, firmware, designs, computer applications, and other documents and materials, including source codes therefor, prepared pursuant to this Agreement, shall also be delivered to the District when and if the Agreement is terminated, or upon completion of performance hereunder, whichever occurs first. The Engineer may retain one (1) set of reproducible copies of such documents and materials, but such copies shall be for the Engineer's use in the preparation of studies or reports for the District only. The Engineer is expressly prohibited from selling, licensing, or otherwise marketing or donating such documents or materials, or using the same in the preparation of work for any other client without the express written permission of the Director. The Engineer does not intend or represent that construction documents or materials will be suitable for reuse. If the District reuses the same, such action shall be at the District's risk and without liability to the Engineer. If the Engineer furnishes partially complete plans, layouts, sketches, specifications, or other documents and materials by virtue of termination under Section 7 above, the Engineer shall not be held accountable or responsible for the completeness of any document or material so produced.

## SECTION 19

### MODIFICATIONS

This instrument contains the entire Agreement between the parties relating to the rights herein granted and obligations herein assumed. Any oral or written representations or modifications concerning this instrument shall be of no force or effect, excepting a subsequent modification in writing signed by both parties.

EXECUTED on \_\_\_\_\_.

APPROVED AS TO FORM:

HARRIS COUNTY FLOOD CONTROL DISTRICT

CHRISTIAN D. MENEFFEE  
Harris County Attorney

DocuSigned by:  
*Emily Kunst*  
By \_\_\_\_\_  
ED17653073344AD...  
EMILY KUNST  
Assistant County Attorney

By \_\_\_\_\_  
LINA HIDALGO  
County Judge

ATTEST:

CAROLLO ENGINEERS, INC.

DocuSigned by:  
*Amber Batson*  
\_\_\_\_\_  
A5E7CA193A884F5...  
Amber Batson  
\_\_\_\_\_  
Name  
Associate VP  
\_\_\_\_\_  
Title

DocuSigned by:  
*Scott Hoff*  
\_\_\_\_\_  
DBA4204E5BC6473...  
Scott Hoff  
\_\_\_\_\_  
Name  
Senior VP  
\_\_\_\_\_  
Title

## APPENDIX A GENERAL SCOPE OF BASIC SERVICES

### GENERAL

The intent of the basic services is to prepare a Preliminary Engineering Report (PER) and conceptual design for Cedar Bayou Regional Detention and Channel Improvements Upstream of FM 1960 (Project ID Q100-00-00-E003). The scope of services for basic services is as follows:

#### Reference Materials and Standards:

- Harris County Flood Control District:
  - Criteria Manual for the Design of Flood Control and Drainage Facilities in Harris County.
  - Policy and Design Criteria Manual for the Design of Flood Control and Drainage Facilities.
  - Surveying Guidelines.
  - HCFCD Drawing and Graphic Standards.
  - Geotechnical Guidelines.
  - Harris County Floodplain Reference Marks (<http://www.harriscountyfrm.org/>).
- Wherever there are differences in requirements between the reference materials and standards and this scope, the Engineer shall perform services in accordance with the stricter requirements.
- Units of Measure - This Project shall be prepared using English units.
- Deliverables in Electronic Format: In addition to the hard copy Project deliverables required below, the Engineer shall submit electronic copies of intermediate and final reports, documents, plans and other work products on Compact Disks (CDs) or other suitable media.
  - Submit text files in Microsoft Word 97 or later version.
  - Submit design drawing files and exhibits in AutoCAD Civil 3D 2011 or later version format.
  - Submit a duplicate of text and drawing files in PDF format using Acrobat 5.0 or later version.
  - Submit photographs in a digital format converted to a JPEG image and stored on the CD. Images shall have a resolution no lower than 1024 X 768.

#### 1. PROJECT MANAGEMENT DURING BASIC SERVICES

Perform Project management and administration necessary for completion of the Project. Services shall include, but are not limited to, the following:

- Provide sub-consultant contract management.
  - The Engineer shall not subcontract any part of its Contract without approval by the Director.
  - The Engineer shall evaluate Sub-Consultant proposals to the same extent as if the services were performed by the Engineer.
  - The Engineer shall be responsible for services performed by Sub-Consultants to the same extent as if the services were performed by the Engineer.
  - The Engineer shall replace any Sub-Consultant when requested to do so by the Director, who shall state the reasons for such request.

- The Engineer shall provide the Director with a copy of any of its Consultant subcontracts at the Director's request.
- Attend Project kickoff meeting and monthly status meetings. Provide an agenda for each meeting. BIMT will provide meeting minutes for the kickoff meeting. Engineer shall provide meeting minutes for each monthly status meeting.
- Attend virtual bi-weekly status calls with BIMT PM.
- Develop and maintain a Project Performance Certification (PPC) that will be submitted on a monthly basis sharing project status updates and an updated project schedule.
- The BIMT will develop and maintain a Primavera P6 project schedule. The Engineer will provide updated schedule information on a monthly basis and coordinate with the BIMT.
- Submit a pdf file of the report, plans, exhibits, and CAD files as requested by the HCFCD project manager. Interim submittals include, but are not limited to, the following:
  - Data Collection Memo
  - Existing Conditions Modeling Memo
  - Proposed Alternatives Memo
  - Draft Preliminary Engineering Report

## 2. PRELIMINARY ENGINEERING REPORT

Prepare a comprehensive Preliminary Engineering Report (PER) that provides detail regarding the analysis described in the following section and a recommended solution for implementation. Engineering drawings and/or exhibits included in the report shall be in accordance with HCFCD's latest Drawing and Graphic Standards, and Surveying Guidelines. The report preparation shall follow Quality Assurance/Quality Control (QA/QC) procedures that meet or exceed the District's own requirements (written procedure available upon request). The Engineer may choose to use the District's procedures or submit their own for approval prior to proceeding with design. The document shall be prepared to include the following as a minimum, and additional report requirements and applicable subject matter can be found in Section 19 of the District's Policy Criteria & Procedure Manual.

- A. Evaluation of Existing Site Conditions: Conduct onsite review of existing site conditions and existing problems and identify any constraints. Research/collect/review previous drainage studies, geotechnical reports, construction plans, public and private utility data, right-of-way information, and adjacent land use. Review on-going and planned projects in the Project area. Procure new topographic survey, geotechnical investigation, geomorphic assessment, Waters of the United States delineation, threatened and endangered species analysis, and utility investigation as necessary throughout the alternatives analysis and preliminary engineering effort.

Field investigations will be phased based upon when information is necessary to the alternatives analysis/preferred alternative selection process. Other environmental and archeological assessments will be performed by BIMT. Coordinate with BIMT and HCFCD Environmental group to ensure all appropriate Rights-of-Entry and environmental investigations have been obtained/conducted prior to commencing any fieldwork.

Submit a Data Collection Memo to BIMT for review.

- B. Existing Conditions Hydrologic and Hydraulic (H&H) Analysis: Review the Existing Conditions MAAPnext HEC-HMS models provided by HCFCD and proposed conditions modeling developed as part of the Cedar Bayou Flood Risk Reduction Study (Halff 2018). No updates to the hydrologic model are anticipated; however, adjustments to flow application may require proportioning flow from hydrologic model results.

Review the MAAPnext 2D, unsteady HEC-RAS model provided by BIMT. Modify the model to further refine representation of existing conditions as appropriate. Modifications may include truncating the model, adjusting the 2D modeling as needed and incorporating topographic survey data collected for the project. Changes to the model will be discussed with BIMT prior to implementation.

Analysis will be performed utilizing MAAPnext (ATLAS 14) storm events for the 2-yr (50% annual exceedance probability (AEP)), 5-year (20% AEP), 10-year (10% AEP), 25-year (4% AEP), and 100-year (1% AEP) storm events. These events all assume the newly adopted Atlas 14 rainfall. Unsteady 2D HEC-RAS is anticipated to be used for each project.

Updated models will be submitted with a memorandum documenting the assumptions used and updates made; the memorandum will be consistent with HCFCD report standards. Model submittals will be reviewed by the Engineer prior to submittal to BIMT, and documentation of the reviews will be provided with the submittal package. BIMT will provide review and comment on the updated models. Engineer will respond to comments and update the model as applicable. Engineer will await BIMT approval of existing conditions analysis before proceeding into Task 1.C.

This effort assumes that the watershed delineations and assumed land use cover incorporated in the HEC-HMS models are considered to be sufficient and will not be updated. The updated model will not include areas beyond the project reach or outside of the geography within the models provided.

- C. Concept Development and Alternatives Identification: Identify no more than five (5) potential flood reduction measures that may be further evaluated in Task 1.D. Flood reduction measures may include combinations of channel modifications and detention basins in different segments of the project reach. Engineer will provide high-level information regarding anticipated benefits, channel level of service, detention requirements, costs relative to the other measures, right of way needs, environmental impacts and potential mitigation measures, maintenance accessibility, and utility constraints. Proposed flood reduction measures presented shall achieve the intended goals of the project and shall not create negative impacts.

Engineer will prepare a presentation, exhibits, and other materials and facilitate one (1) concept development workshop. The workshop will cover:

- i. Project and Area Background
- ii. Existing hydraulic conditions, flooding issues, and impacts
- iii. Conceptual flood risk reduction alternatives
- iv. Design constraints
- v. Recommendations for no more than three (3) alternatives to further study

The efforts conducted as part of Task 1.C will be documented as part of the Proposed Alternatives Memo delivered as part of Task 1.D. Engineer will await BIMT approval of recommended alternatives before proceeding into Task 1.D.

- D. Proposed Alternatives H&H and Results Analysis: Provide quantification of the analysis results/benefits for each of the three (3) alternatives with a detailed narrative and supporting tables, exhibits, and appendices. These alternatives will be further developed to identify differentiating characteristics within a modeling context (e.g., shape, Manning's n value, etc.), and preliminary engineering properties will be estimated. All alternatives should include an assessment of the benefits for each storm event. Tasks include:

- 1) Evaluate the alternatives with HEC-RAS and HEC-HMS modeling to understand the project requirements, channel and detention sizes, and benefits of each alternative.
- 2) Consider Natural Stable Channel Design, as part of the alternative process. Stormwater Quality (SWQ) features will be considered during the evaluation of the Preferred Alternative.
- 3) Identify the existing and estimate the proposed ROW requirements, number of parcels/structures impacted, inundation area (including regulatory floodplain) impacted, and miles of roadway impacted.
- 4) Provide corresponding engineering opinion of probable construction cost with right-of-way acquisition costs, environmental mitigation, and construction management costs as necessary per HCFCD requirements.
- 5) Submit a Proposed Alternatives Memo, based on HCFCD report standards, to BIMT for review and respond to BIMT comments.
- 6) Coordinate model revisions with BIMT.
- 7) Prepare a presentation, exhibits, and other materials and facilitate one (1) proposed alternatives workshop with BIMT and relevant HCFCD staff. The workshop will be used to discuss the modeled alternatives and analysis findings and determine which alternative will be the preferred flood reduction alternative. BIMT will perform a review of presentation materials prior to the workshop, and Engineer will update the materials as applicable.

Engineer will await BIMT approval of the proposed alternatives analysis before proceeding into Task 1.E.

E. Preferred Flood Reduction Alternative: Conduct the following tasks:

- 1) Develop the preferred alternative to include a conceptual (30%) design, including plan view and grading for the proposed channel alignment and/or detention basin(s). Where detailed topographic survey data is not yet available, incorporate the latest LiDAR data in the conceptual design. Further, conceptual design will be based on geotechnical data and analysis available at the time.
- 2) Optimize the hydraulics of the preferred alternative to maximize project benefits.
- 3) Review environmental, geotechnical, and utility information to minimize conflicts and determine if the proposed channel modification and detention pond(s) can maintain slope stability.
- 4) Review and update ROW requirements based on review of preferred alternative in Task 1.D
- 5) Identify multi-use benefits, including recreational and environmental opportunities, and potential stormwater quality features for the Preferred Alternative.
- 6) Update the terrain dataset with the proposed project grading in accordance with the model management guidelines.
- 7) Update the engineer's opinion of probable construction cost per HCFCD requirements.
- 8) Update existing and proposed ROW requirements, number of parcels/structures impacted, inundation area (including regulatory floodplain) impacted, and miles of roadway impacted, then complete HCFCD Project Scoring Form.
- 9) Prepare a phasing plan for improvements if necessary and include an evaluation of phase costs and an interim conditions assessment. No more than three phases will be evaluated.

The efforts conducted as part of Task 1.E will be documented as part of the Preliminary Engineering Report delivered as part of Task 1.F.

- F. Findings and Recommendations (Preliminary Engineering Report): Prepare a Preliminary Engineering Report that describes the project analysis, including existing conditions, concept development of alternatives, proposed alternatives, and preferred flood reduction alternative. Present factors of comparison such as operation, cost, constructability, environmental impacts and mitigation measures, utility conflicts, maintenance requirements, safety, and aesthetics. Include 30% plans of the recommended alternative for final design and implementation.
- 1) Coordinate with BIMT during development of Draft PER. PER format must meet HCFCD and BIMT standards prior to submittal to HCFCD.
  - 2) Provide Draft PER for BIMT review. Address BIMT comments and provide comment response log to address all comments.
  - 3) Upon approval of the draft report by the BIMT, submit draft PER to HCFCD for review. Address HCFCD comments and provide comment response log to address all comments.
  - 4) Provide Final PER draft to BIMT and HCFCD including models, shapefiles, opinions of probable construction cost, and any other backup information.
  - 5) Deliver three (3) final report hard copies, as well as a pdf file of the report, plans, exhibits, and CAD files as requested by the HCFCD Project Manager.
- G. Project Summary Report: Provide summary report for public distribution that provides an overview of the project area, analysis performed and finding during the development of the PER, PER recommendation and project prioritization scoring.

## APPENDIX B

## GENERAL SCOPE OF ADDITIONAL SERVICES

The Engineer shall render the following Additional Services in connection with the Project when authorized in writing by the Director:

## 1. COMMUNITY ENGAGEMENT SERVICES

- A. Provide support services required to plan, prepare for, and conduct a community engagement meeting related to the Project in accordance with District guidelines and in collaboration with HCFCD and BIMT.
  - 1) Participate in up to 3 preparation meetings.
  - 2) Attend and provide technical representation at one public meeting.
  - 3) Coordinate with the HCFCD community engagement team as needed to support other community engagement activities.
  - 4) Attend up to 2 stakeholder meetings.

## 2. SURVEY SERVICES

- A. Perform survey in accordance with the District's Surveying Guidelines and other District design requirements as designated in writing by the Director.
- B. Provide new District monumentation as required.
- C. Develop a control survey; collect LIDAR control data; perform abstracting and existing right-of-way determination for pertinent areas of the upper reach of Cedar Bayou.
- D. Provide cross sections and topographic survey within the existing channel right-of-way, extending 25-feet beyond the proposed right-of-way width. Provide topographic survey in a 100-ft grid of up to two detention pond parcel sites estimated to be 100 acres in total area.
- E. For this conceptual design effort, it is assumed that existing LIDAR data from HCFCD will be used as the basis for topographic information on any detention basin(s) and that survey of adequate detail for future detention basin(s) will be incorporated in subsequent design phases of the project under separate contract.
- F. Provide parcel acquisition support including parcel survey sketches with metes and bounds descriptions for up to 20 right-of-way parcels that may be required for channel widening and up to two detention pond parcels totaling 100 acres.

## 3. GEOTECHNICAL INVESTIGATION

- A. Perform in accordance with the District's Geotechnical Investigation Guidelines and other District requirements.
- B. Perform field reconnaissance, field exploration, laboratory testing, engineering analyses, and formal report preparation to support the evaluation of conceptual alternatives and preliminary engineering of the preferred alternative.
- C. For the channel alignment, this may include up to 12, 30-foot-deep borings that will be selected in consultation with HCFCD and BIMT in paths accessible due to the existing HCFCD right-of-way. Up to 6 piezometers at a depth of 20-feet each will be installed.
- D. For up to the detention basin location(s), up to 18 borings will be performed at a depth of 20-ft each, with up to 6 piezometers installed at a depth of 20-feet each.
- E. Perform up to 31 hand augers to a depth of 10-15 feet along the length of the channel (estimated to be 750 feet apart along the 23,000 feet of the channel). Locations will be selected in consultation with HCFCD and BIMT that are accessible via existing public right-of-way using a small ATV 4-wheel drive vehicle.

- F. Each geotechnical soil boring will be accompanied by laboratory testing including the following: visual classification and water content determinations, unit dry density, liquid and plastic limits, mechanical gradation and/or percent passing No. 200 Sieve, crumb tests, double hydrometer, unconfined compressive triaxial, unconsolidated-underdrained triaxial, consolidated-underdrained triaxial, and specific gravity.
- G. Perform a Phase I geologic fault desktop review for proposed detention basin(s).
- H. Provide engineering analysis and recommendations in both draft and final report versions.
- I. For this conceptual design effort, it is assumed that data from the geotechnical evaluation for the channel will be considered as representative of potential nearby detention basin(s) and thus the basis of conceptual design. Geotechnical investigations for the actual selected location(s) of the detention basin(s) will be incorporated in subsequent design phases of the project under separate contract.

#### 4. ENVIRONMENTAL INVESTIGATION

- A. Perform in accordance with District requirements.
- B. Assess existing fluvial geomorphological conditions and potential restoration opportunities within the project reach of Cedar Bayou to support the development of the PER.
- C. Perform a watershed geomorphic assessment as necessary to evaluate and document the existing fluvial geomorphologic conditions of Cedar Bayou's main channel (from the confluence of the East Fork Cedar Bayou downstream to FM 1960) and contributing watershed and develop a hypothesis for the cause(s) of disturbance and departure from potential reference condition within the project reach. This includes review of available data, field investigations, a geomorphic survey of the main channel sufficient for conceptual planning level efforts, various stream measurements, and the development of a Fluvial Geomorphic Conditions Report.
- D. Perform a limited geomorphic evaluation of the three upstream tributaries via desktop analysis and limited "windshield assessment" to evaluate the stability of the tributaries, the anthropogenic modification to the tributaries, the departure of the tributaries from potential reference conditions, and potential areas of concern.
- E. Provide natural stream channel design input on the five concepts, the three alternatives, and the preferred alternative for conceptual evaluation.
- F. Provide permitting services for stream components which could include wetland delineation, threatened and endangered species evaluation, and USACE verification.
- G. Provide permitting services for detention components which could include wetland delineation, threatened and endangered species evaluation, and USACE verification.
- H. Support development of environmental-related portions of the Preliminary Engineering Report.
- I. Provide alligator snapping turtle presence/absence survey.

#### 5. SUBSURFACE UTILITY EXPLORATION (SUE)

- A. Conduct where appropriate a subsurface utility exploration (SUE) to locate potential utilities (public and private) that are in conflict with the Project. Locates for this preliminary design effort could include SUE Quality Level B locates with survey in 2 locations and/or Level A test holes (estimated 6 test holes) per ASCE Standard 38-02.

## 6. COORDINATION WITH OTHER AGENCIES

- A. Coordinate with other agencies as needed to support alternatives analysis and preliminary engineering effort which may include TxDOT, local railroads, utilities, and other permitting agencies.

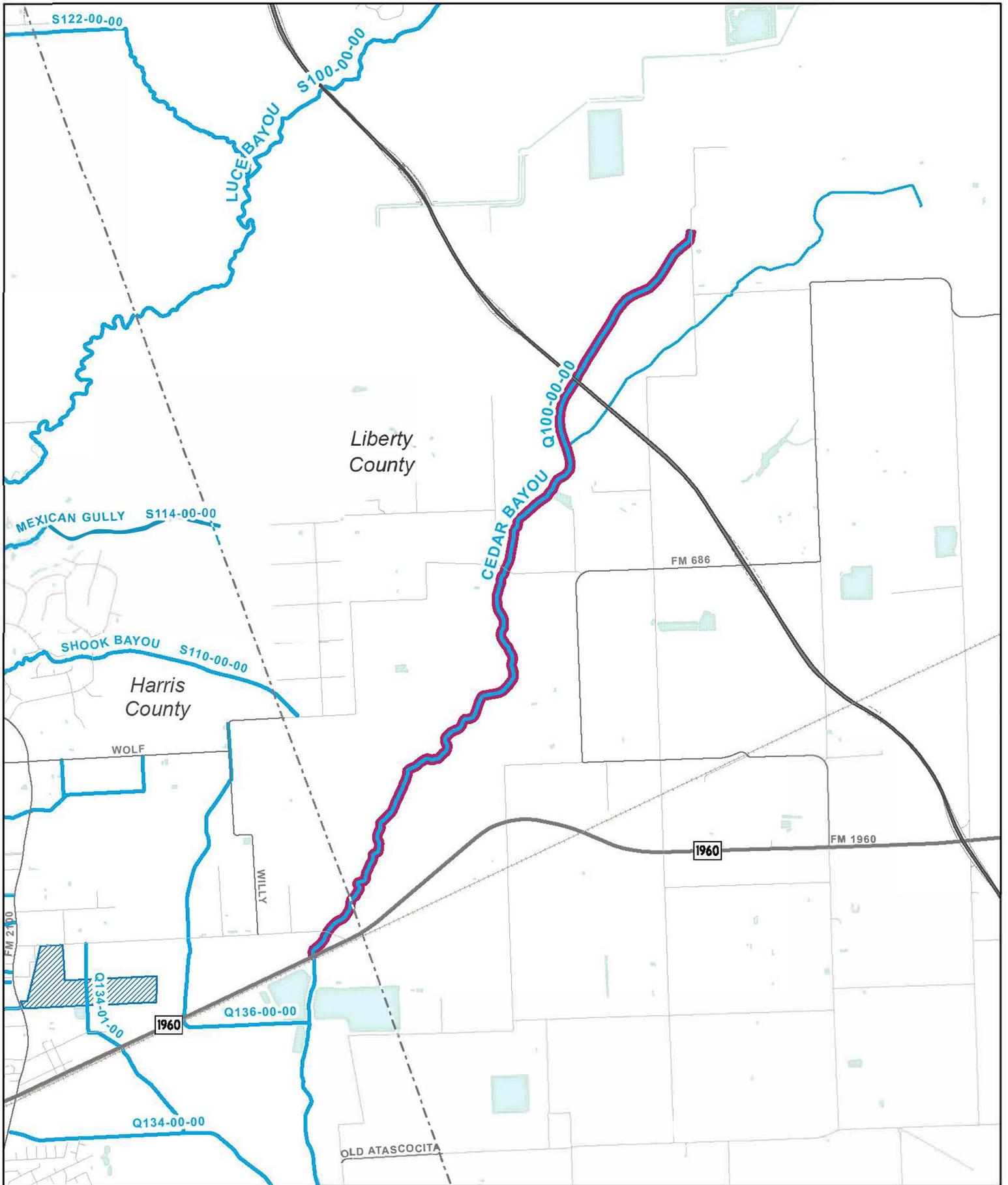
## 7. REVISIONS

- A. Make requested revisions to documents and materials prepared under this Agreement. Provide such engineering services necessary for such revision, when they are not necessitated by any fault of the Engineer and such revisions are inconsistent with approvals or instructions previously given by the District or are made necessary by the enactment or revision of codes, laws, or regulations issued subsequent to the preparation of such documents.



**Section 3:** County Judge Lina Hidalgo is hereby authorized to execute for and on behalf of the Harris County Flood Control District, an Agreement by and between the Harris County Flood Control District and Carollo Engineers, Inc. for a maximum fee to be paid by the District of \$1,358,800.00, said Agreement being incorporated herein by reference for all purposes as though fully set forth verbatim herein.

pln carollo Q100-E003 2022-92.docx



**Project ID: Q100-00-00-E003**  
**Watershed: Cedar Bayou**  
**Precinct: 3**

- Project Boundary
- Harris County Precincts**
- Judge Lina Hidalgo
- 1 - Rodney Ellis
- 2 - Adrian Garcia
- 3 - Tom S. Ramsey, P.E.
- 4 - Lesley Briones

