



Mr. Mark Vogler
District Engineer
Fort Bend County Drainage District
1124 Blume Rd.
Rosenberg, TX 77471

March 18, 2022

Re: Rice/SSPEED Proposal to Review County-wide Watershed Study Submittals

Mr. Vogler:

The Fort Bend County Drainage District (FBCDD) had contracted with Freese and Nichols, Inc. (FNI) to conduct a County-wide Watershed Study for updating the hydrologic and hydraulic models and associated floodplains for various streams and creeks throughout the county, including developing master drainage plans for these creeks, as well as updating the FBCDD's Drainage Criteria Manual. Part of the reason for this update was to incorporate the new Atlas 14 statistical rainfall data, that were published a few years ago following the Harvey 2017 storm event, to better reflect the flood risks in the county.

FNI has recently been completing this work and submitting its final products for most of the watersheds that were studied. In conducting this update, FNI introduced some new methodologies for both the hydrologic and hydraulic analyses that differ from those that have been adopted and used by the FBCDD for decades. Apparently, there have been some issues raised regarding how applicable these new methodologies are for the undeveloped portions of the county and the accuracy of their results.

As a result, the SSPEED Center at Rice University is submitting this proposal to review these new methodologies associated with the submittals for the County-wide Watershed Study, particularly as to the undeveloped watersheds in the county, recommend any changes that may be appropriate to better reflect the flood risks in those portions of the county, and then update the submittals as appropriate. The Proposed Scope of Work associated with this proposal, along with an estimated budget and timetable for completing this work, is provided herein as Attachment 1.

Thank you for considering this proposal to assist the FBCDD in its efforts to improve its understanding of the flood risks facing the county.

Sincerely,

Philip B. Bedient, Director SSPEED Center
Chair, Civil and Envi Engineering (713 303 0266)
Rice University, Houston, Tx 77005

SSPEED Center - ATTACHMENT 1

Scope of Work for FBCDD re: review of County-wide Watershed Study

- 1. Review and Recommend any modifications/adjustments to study submittals for Selected Watersheds/Creeks listed below**
 - A. HMS models**
 - i. Infiltration methodology (i.e. Green & Amp parameters)**
 - ii. Unit Hydrograph methodology (i.e. BDF equations)**
 - B. RAS models**
 - i. 1D/2D composite**
 - ii. Optional - 1D unsteady**
 - iii. Optional - 2D – channel and floodplain only**
 - iv. Optional - 2D entire watershed (hydrology and hydraulics)**
 - C. Floodplain mapping (100-yr and 500-yr)**
 - D. Master Drainage Plans**
 - E. Submit interim report summarizing results of review and recommendations**
- 2. Incorporate all approved modifications/adjustments into study submittals**
 - A. Develop updated/revised models for Selected Watersheds/Creeks**
 - B. Run Atlas 14 rainfall for 2, 5, 10, 25, 50, 100 and 500-yr storms using updated/revised models**
 - C. Update floodplain mapping for 100- and 500-yr events using results from updated/revised models**
 - D. Update Master Drainage Plans for Selected Creeks using updated/revised models**
 - E. Update Drainage Criteria Manual Sections 2, 6 and 8 based on updated/revised models for Selected Watersheds/Creeks and other models for the remaining watersheds/creeks in the county**
- 3. Submit report summarizing work performed to update study information based on modifications/adjustments to study submittals**
 - A. Provide updated models for Selected Watersheds/Creeks**
 - B. Provide updated floodplain maps for Selected Creeks**
 - C. Provide updated Master Drainage Plans for Selected Creeks**
 - D. Provide updated DCM Sections 2, 6 and 8**
- 4. Attend at least monthly meetings with FBCDD staff to provide status of work**

This Scope of Work is estimated to be completed within 6 months of obtaining authorization to proceed from Fort Bend County.

The budget for the above Scope of Work is estimated for Tasks 1-4 to be as follows:

1. \$ 90,000
2. \$ 150,000
3. \$ 100,000
4. \$ 10,000
- \$ 350,000

Only Bold-faced Fort Bend County Watersheds/Creeks to be Studied/Reviewed

1. Harris County
 - A. Willow Fork Buffalo Bayou
 - B. Keegans Bayou
 - C. Brays Bayou
 - D. Sims Bayou
 - E. Clear Creek
2. **Brazos River Watershed**
 - A. Brazos River
 - B. **Big Creek/Dry Creek/Fairchilds Creek/Seaborne Creek/Coon Creek/Cottonwood Creek/Deer Creek/II-B-7/II-B-9/Gapps Slough/ Dutch John**
 - C. Bessie's Creek/Brookshire Creek/Hody Creek
 - D. Jones Creek/Flewellen Creek/Andrus Creek
 - E. Oyster Creek/Red Gully/Stafford Run/Long Point/Flatbank Creek/Mustang Creek
 - F. Bullhead Bayou/Ditch H
 - G. Rabbs Bayou
 - H. **Robinowitz Ditch**
 - I. Pleasant Gully
 - J. Briscoe Ditch
 - K. **Cow Creek/Bee Creek/Turkey Creek**
3. **San Bernard River Watershed**
 - A. **San Bernard River**
 - B. **Snake Creek**
 - C. **Turkey Creek**
 - D. **Dry Branch**
 - E. **Cedar Creek/Buffalo Creek**
 - F. **Mound Creek/Guy Creek**