

**SUPPLEMENTAL WORK AUTHORIZATION NO. 3
TO
WORK AUTHORIZATION NO. 2**

**WILLIAMSON COUNTY ROAD BOND PROJECT:
Flood Plain Maps Update - Brushy Creek Basin Study**

This Supplemental Work Authorization No. 3 to Work Authorization No. 2 is made pursuant to the terms and conditions of the Williamson County Contract for Engineering Services, being dated March 23, 2021 (“Contract”) and entered into by and between Williamson County, Texas, a political subdivision of the State of Texas, (the "County") and AECOM Technical Services, Inc (the "Engineer").

WHEREAS, the County and the Engineer executed Work Authorization No. 2 dated effective July 14, 2021 (the “Work Authorization”);

WHEREAS, pursuant to Article 14 of the Contract, amendments, changes and modifications to a fully executed Work Authorization shall be made in the form of a Supplemental Work Authorization; and

WHEREAS, it has become necessary to amend, change and modify the Work Authorization.

AGREEMENT

NOW, THEREFORE, premises considered, the County and the Engineer agree that the Work Authorization shall be amended, changed and modified as follows:

- I. The Services to be Provided by the Engineer that were set out in the original Attachment “B” of the Work Authorization are hereby amended, changed and modified as shown in the attached revised Attachment “B” (must be attached).
- II. The Work Authorization shall terminate on December 31, 2025. The Services to be Provided by the Engineer shall be fully completed on or before said date unless extended by an additional Supplemental Work Authorization. The revised Work Schedule is attached hereto as Attachment “C” (must be attached).
- III. The maximum amount payable for services under the Work Authorization is hereby increased from \$3,624,626 to \$4,122,426.00. The revised Fee Schedule is attached hereto as Attachment “D” (must be attached).

Except as otherwise amended by prior or future Supplemental Work Authorizations, all other terms of the Work Authorization are unchanged and will remain in full force and effect.

This Supplemental Work Authorization does not waive the parties’ responsibilities and obligations provided under the Contract.

IN WITNESS WHEREOF, the County and the Engineer have executed this Supplemental Work Authorization, to be effective as of the date of the last party's execution below.

ENGINEER:
AECOM Technical Services, Inc.

COUNTY:
Williamson County, Texas

By: _____
Signature

Tom Wright

Printed Name

Associate Vice President

Title

22MAY2025

Date

By: _____
Signature

Printed Name

Title

Date

LIST OF ATTACHMENTS

Attachment B - Services to be Provided by Engineer

Attachment C - Work Schedule

Attachment D - Fee Schedule

APPROVED

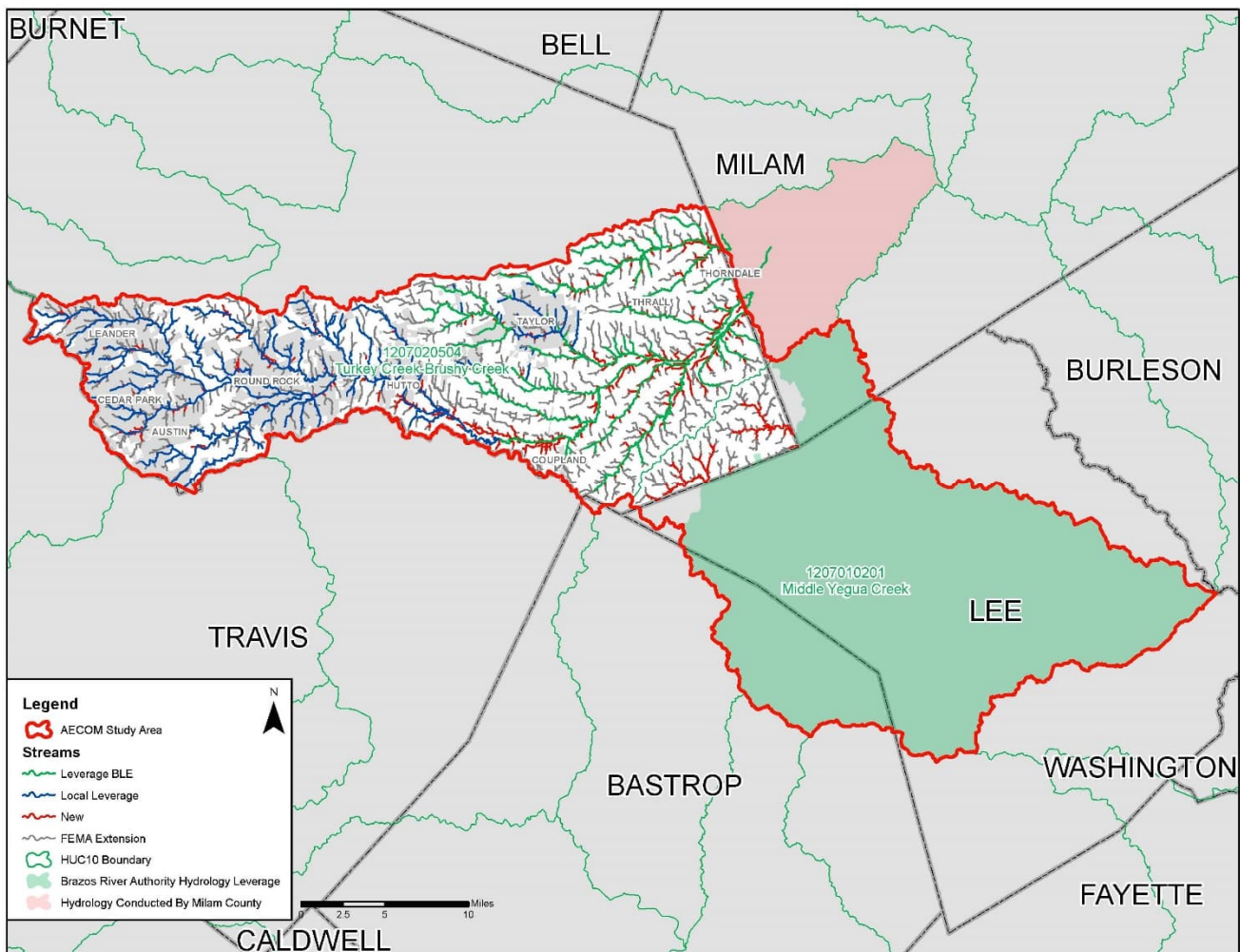
By Christen Eschberger at 9:39 am, May 27, 2025

ATTACHMENT B
SERVICES TO BE PROVIDED BY THE ENGINEER
FOR Atlas 14 Floodplain Mapping
Work Authorization No. 2 – Supplemental Work Authorization No. 3
Study Area LiDAR Update of Unincorporated Areas
in Brushy Creek and Middle Yegua Creek

PROJECT DESCRIPTION

Project Area

Areas within the Williamson County Atlas 14 Floodplain Mapping Project for Brushy and Middle Yegua Creek watershed extents. The primary area is Williamson County with hydrology including portions of Milam, Bastrop, and Lee Counties.



Proposed Project

Conduct existing condition hydrology, hydraulics, and mapping updates utilizing newly available 2024 LiDAR in areas where significant changes have occurred. All analysis shall be in accordance with the

Williamson County bulleted Technical Standards developed specifically for the Atlas 14 Floodplain Mapping Project. The analysis shall also be in accordance with FEMA guidance and mapping standards.

The analysis will include the streams shown in the Project Area graphic. Table 1 displays the study stream types and associated stream miles. The recurrence intervals listed in Table 2 shall be used to develop the hydrologic and hydraulic models and associated floodplain mapping products.

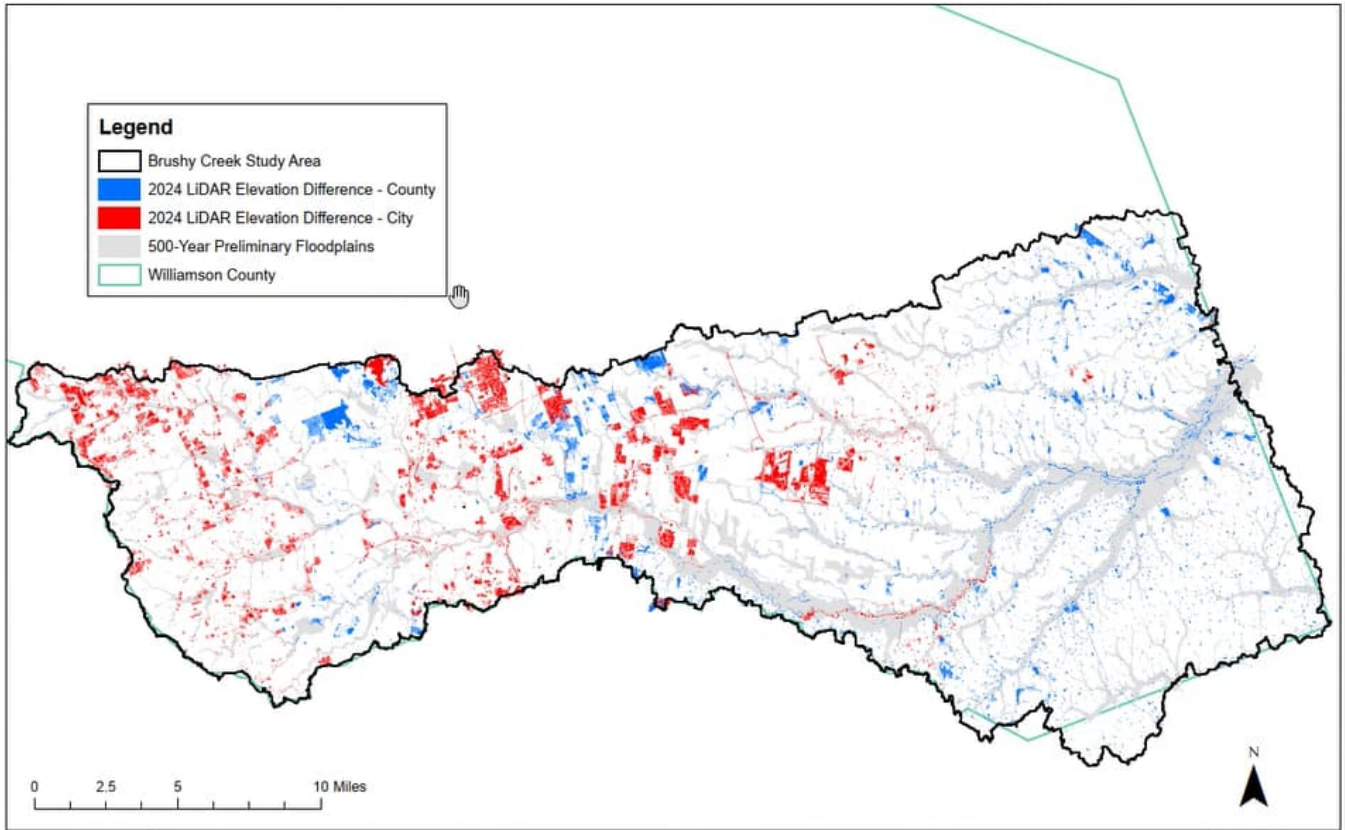
Table 1. Study Stream Types and Mileage

Study Classifications	Stream Miles
Zone AE	175
Zone A	26
Total	400

Table 2. Study Requirements for Modeling and Mapping

(F = required by FEMA)		Land-Use Conditions					
(W = required by Wilco)		Existing Conditions					
Recurrence Interval Years (Annual % Chance Event)		2 (50%)	10 (10%)	25 (4%)	50 (2%)	100 (1%)	500 (0.2%)
Models	Hydrology	W	F	F	F	F	F
	Hydraulics	W	F	F	F	F	F
Detailed Analysis (Zone AE) Products	Floodplains					F	F
	Water Surface Elevation Grids					F	F
	Depth Grids					F	F
Limited Detailed Analysis (Zone A) Products	Floodplains					F	
	Water Surface Elevation Grids					F	
	Depth Grids					F	

The analysis for Williamson County includes hydrologic updates at ~250 Brushy Creek and Middle Yegua Creek watershed locations (including both unincorporated and incorporated areas). The hydraulic updates for Williamson County unincorporated areas include approximately 60 hydraulic models. The budget covers updated modeling and mapping for these areas, shown in the map below.



PROJECT SCOPE

1. PROJECT MANAGEMENT & COORDINATION

- a. Monthly Progress Report, Invoices, and Billings (12 months assumed):
 - 1. Submit monthly progress status reports to the General Engineering Consultant (GEC). Progress reports will include: deliverable table, tasks completed, tasks/objectives that are planned for the upcoming periods, lists or descriptions of items or decisions needed from the County and its representatives. Subconsultant progress will be incorporated into the monthly progress report. A copy of the monthly progress report will be uploaded to ProjectWise.
 - 2. Prepare correspondence, invoices, and progress reports on a monthly basis in accordance with current County requirements.
- b. Project Coordination & Administration:
 - 1. Prepare and maintain routine project record keeping including records of meetings and minutes. Correspondence and coordination with outside entities will be handled through and with the concurrence of the GEC.
 - 2. Manage project activities (including documenting emails, phone and conference calls, maintain project files for the length of the project, meeting agendas, meeting minutes, and schedule meetings), direct Engineer's team/staff, coordinate and review subconsultant work, correspond with the County and its representatives, and assist the County and its representatives in preparing responses to project-related inquiries.
- c. Stakeholder Meetings (2 virtual stakeholder meetings):
 - 1. Attend two (2) coordination meetings with study area project stakeholders (Williamson County, GEC, Technical Program Manager, TWDB, local and state partners) throughout the duration of the project. Ideally these two meetings would include a kickoff with the validation of the LiDAR update modeling methodologies as well as a flood risk meeting near the end of the project to review draft mapping and reporting.
- d. Progress/Coordination Meetings:
 - 1. Plan and attend up to twenty-four (24) half-hour, virtual coordination meetings with the County Technical Program Management (TPM) and GEC to advance project implementation. Schedule is anticipated bi-weekly but may vary as appropriate throughout the duration of the project. AECOM Technical Services, Inc. is responsible for the development of meeting minutes and posting of the minutes in ProjectWise for these coordination meetings.

DELIVERABLES:

- 1. Up to 12 Monthly Invoices and Progress Reports
- 2. Up to 24 County/TPM Coordination Meeting Minutes

2. DATA COLLECTION

a. Terrain Comparison (study area only):

1. Using the provided difference raster; identify locations where the terrain changes warrant updates to subbasin boundaries and hydraulic models. Generate a polygon shapefile indicating areas where existing condition models will be updated with 2024 LiDAR.
2. Evaluate final hydraulic terrain generated by Halff and Associates, Inc. and make adjustments or provide comments as needed for hydrologic and hydraulic modeling and mapping.

b. Field Reconnaissance:

1. Conduct field reconnaissance of approximately 80 bridges and culverts (unincorporated) identified in the study area. Note: Only structures which also correspond to an identified hydraulic model update will be field measured and incorporated under this work authorization.
2. Produce and compile field measurement data for study area.
3. Conduct internal QA/QC of the terrain and field measurement data prior to submission to Williamson County for review.
4. Reconcile County comments or reach a mutual agreement regarding comment resolution and re-submittal of final survey deliverables.

DELIVERABLES:

1. Polygon shapefile indicating areas where models have been updated
2. Updated study area hydraulic DEM (mosaic of 2017/2015 LiDAR with 2024 LiDAR)
3. Field Measurement Data/Reports

3. HYDROLOGIC ANALYSIS

This effort includes leveraging the existing condition hydrologic analysis conducted in a prior work authorization. Minor hydrologic updates will be conducted on the existing condition hydrology to reflect updated 2024 LiDAR. Consistent with Table 2 above, updated existing condition hydrologic analysis shall include evaluation of the 2-, 10-, 25-, 50-, 100-, and 500-year frequency events. Specific tasks include:

a. Update Prior Existing Condition Hydrologic Analysis:

1. Utilizing the polygon areas identified under Task 2a, evaluate and refine subbasin delineations for approximately 250 subbasins to reflect updated LiDAR. This analysis requires including both incorporated and unincorporated areas. Only in these locations, perform subbasin delineation adjustments where model results will have a measurable (5%) impact.
2. For only the subbasins that were altered, compute updated hydrologic parameters (updates to existing land use, curve number, percent impervious, flow path, time of concentration, and routing) following technical methodologies consistent with the prior existing condition analysis.
3. Update the prior existing condition hydrologic analysis to compute updated/new existing condition hydrologic results for the 2-, 10-, 25-, 50-, 100-, and 500-year frequency events.

b. Internal QA/QC:

1. Conduct internal QA/QC of the updated existing condition hydrologic results prior to submission to Williamson County for review. Two milestone reviews are anticipated for existing condition hydrologic updates.
 - Subbasin and Parameter Adjustments – Review of 2024 LiDAR adjusted subbasin delineations and computed hydrologic parameters for adjusted subbasins relative to the prior hydrologic analysis.
 - Updated Existing Conditions Hydrology – Review of updated hydrologic models, calculation/comparison spreadsheets, supporting data, and reporting.
2. Submit hydrologic data and internal review checklists for county review. It is anticipated that these two (2) hydrologic milestone reviews include one initial review and one backcheck to clear comments. It also assumes two (2) virtual coordination meetings to efficiently coordinate QC comments and resolution.
3. Reconcile county comments or reach a mutual agreement regarding comment resolution and re-submittal of final hydrologic deliverables.

DELIVERABLES:

1. Bulleted summary of existing condition hydrologic changes
2. Internal QA/QC forms
3. Reconciled external QA/QC forms
4. Updated existing condition hydrologic memorandum and dataset submittal (hydrologic modeling notebook, reporting support, hydrologic model, supporting calculation spreadsheets, and GIS files – final updated land use, soils, subbasins, and longest flow paths)

4. HYDRAULIC ANALYSIS AND MAPPING

This effort includes leveraging the existing condition hydraulic analysis conducted in a prior work authorization. Minor hydraulic updates will be conducted on the existing condition hydraulics to reflect updated 2024 LiDAR. Existing condition hydraulic analysis shall include evaluation of the 2-, 10-, 25-, 50-, 100-, and 500-year frequency events. Consistent with the existing condition analysis, all hydraulic analysis will include one-dimensional (1D), steady-state modeling using detailed analysis (Zone AE) for 175 stream miles and limited detailed analysis (model-backed Zone A) for 26 stream miles (stream mileage inclusive of entire study area). Specific tasks include:

a. Update Prior Existing Condition Hydraulic Analysis:

1. Utilizing the polygon areas identified under Task 2a, evaluate cross-section alignments within areas that are greater than 0.25 acres in size and have more than 0.5 feet of elevation difference between the 2024 and 2017 LiDAR datasets to reflect updated LiDAR. Only in these locations, perform cross-section alignment adjustments.
2. For only the cross-sections that were altered, compute updated hydraulic parameters (elevations, roughness coefficients, expansion/contraction coefficients, ineffective areas and blocked obstructions) following technical methodologies consistent with the prior existing condition analysis.

3. This task assumes the inclusion of up to 80 new unincorporated crossings when they align with the hydraulic model updates identified in Task 2a (both field measure and from as-built plans provided by the County). It is assumed no manual terrain modifications are necessary for this update.
4. Update the prior existing condition hydraulic analysis with updated hydrologic flows to compute updated/new existing condition hydrologic results for the 2-, 10-, 25-, 50-, 100-, and 500-year frequency events. This update will only be applied to those models whose cross sections are also being altered due to terrain differences between the 2024 and 2017 LiDAR datasets. This task also assumes model adjustments to uncross profiles and ensure model containment.
5. Update the existing condition floodplain mapping, including depth and water surface grids, to ensure alignment with LiDAR modeling updates. Additionally, ensure smooth tie-ins and cross-section alignments at confluences.

b. Internal QA/QC:

1. Conduct internal QA/QC of the updated existing condition hydraulic results prior to submission to Williamson County for review. Two milestone reviews are anticipated for existing condition hydraulic updates.
 - Updated Existing Conditions Hydraulics – Review of updated hydraulic models including adjustments to cross-section alignments.
 - Updated Existing Conditions Mapping – Review of updated mapping, updated depth and water surface grids, and reporting.
2. Submit hydraulic data and internal review checklist for county review. It is anticipated that these two (2) hydraulic milestone reviews include one initial review and one backcheck to clear comments. It also assumes two (2) virtual coordination meetings to efficiently coordinate QC comments and resolution.
3. Reconcile County comments or reach a mutual agreement regarding comment resolution and re-submittal of final hydrologic deliverables.

DELIVERABLES:

1. Bulleted summary of existing condition hydraulic changes
2. Internal QA/QC forms
3. Reconciled external QA/QC forms
4. Updated existing condition hydraulic memorandum and dataset submittal (hydraulic modeling notebook, reporting support, hydraulic models, supporting GIS files – centerlines, cross-sections, n-values, floodplains, water surface elevation grids, and depth grids)

5. DOCUMENTATION

This effort includes preparation of an addendum memorandum for the prior Atlas 14 Floodplain Study report. The memorandum shall provide a thorough explanation of all updated procedures, assumptions, special considerations, comparisons, checkpoints, independent QA/QC, and planning results. Specific tasks include:

a. Documentation (Study Area):

1. Prepare an existing condition addendum memorandum documenting the updated existing condition study approach, data collection, hydrologic analysis, hydraulic analysis, and modeling results.
2. Prepare supporting digital information including computation spreadsheets, hydrologic models, hydraulic models, and supporting geospatial data. A digital copy of the memorandum will also be provided.

DELIVERABLES:

1. Draft existing condition addendum memorandum submittal describing the methods, assumptions, and results of the study area including supporting information, models, and GIS datasets.
2. Final existing condition addendum memorandum with reconciled independent QA/QC comments.

PROJECT ASSUMPTIONS

General Project Assumptions

1. The Outreach Consultant will be responsible for all administrative tasks related to stakeholder and public outreach, such as scheduling, advertisement, recording/documentation, meeting minutes, reproduction, and other duties as needed.
2. In the Brushy Creek and Middle Yegua Creek watersheds within Williamson County, approximately 250 subbasins and 60 hydraulic models require updates to reflect terrain changes. If additional areas are identified, a change order will be required for existing condition modeling and mapping updates in those areas.
3. No wholistic existing condition modeling updates will be conducted such as broad updates of the existing condition land use layer, roughness coefficients, hydrologic routing, or adjustments to the Atlas 14 rainfall totals.
4. Natural LiDAR deviations due to vegetative cover, seasonal permanent pool fluctuations, channel erosion, base flow, etc. will not warrant modeling or mapping updates.
5. It is assumed that new developments planned or constructed after the 2024 LiDAR collection date (requiring manual development of DEMs based on construction plans) will not be included.
6. It is assumed that LiDAR updates are not necessary for areas outside of Williamson County.
7. Approximately 200 structures across the study area have been identified for field measurements. Costs were included for the collection of field measurement data for approximately 80 structures in unincorporated areas.
8. All hydrologic updates for both incorporated and unincorporated will be performed during this phase due to complexities and the possibility for future rework of separating out hydrologic updates by incorporated versus unincorporated areas.
9. Routing updates will focus on subbasins that were altered with updated hydrologic parameters. No or very minimal updates to hydrologic routing will be performed due to hydraulic updates.
10. The 2024 LiDAR will be Geoid adjusted from Geoid 18 back to Geoid 12B by the TPM to align with the existing terrain.
11. Flows will only be updated in hydraulic models that also have geometry updates due to the new LiDAR dataset.

12. Review for crossing profiles and cross section containment and necessary model adjustments will only be performed for hydraulic models with updated discharges.
13. If additional areas outside of this scope are identified by the TPM or during the QC process a change order will be required.

Project Exclusions

1. Support and attendance of public meetings
2. Field survey and field reconnaissance
3. Manual development of DEMs
4. Update of gage analysis, historical simulations, or comparisons to any other newly available datasets beyond the comparisons in the prior existing condition analysis
5. Flood risk mitigation analysis
6. Grant application development

ATTACHMENT C
WORK SCHEDULE
FOR Atlas 14 Floodplain Mapping
Work Authorization No. 2 – Supplemental Work Authorization No. 3
Study Area LiDAR Update
Brushy Creek and Middle Yegua Creek

TASK	DURATION (calendar days)	START	END
<i>Notice to Proceed</i>	<i>1</i>	29-May-25	29-May-25
1. Project Management	185	29-May-25	30-Nov-25
2. Data Collection	47	29-May-25	15-Jul-25
3. Hydrologic Analysis	62	29-May-25	30-Jul-25
4. Hydraulic Analysis	185	29-May-25	30-Nov-25
5. Documentation	29	01-Nov-25	30-Nov-25

ATTACHMENT D
Fee Schedule
FOR Atlas 14 Floodplain Mapping
Work Authorization No. 2 – Supplemental Work Authorization No. 3
Study Area LiDAR Update
Brushy Creek and Middle Yegua Creek

LABOR TASK	Senior Project Manager III	Technical Advisor I	Senior Engineer I	Engineer III	Engineer II	Engineer I	EIT III	CAD / GIS V	Project Admin II	TOTAL HOURS	TOTAL
<i>Hourly Rate:</i>	\$263.00	\$252.00	\$186.00	\$165.00	\$143.00	\$126.00	\$110.00	\$120.00	\$94.00		
1. Project Management											
a. Communication	32	16			16					64	\$14,736
b. Monthly Progress Report, Invoices, and Billings (7 months)	36	18			18				72	144	\$23,346
c. Project Coordination & Administration	80	60	30		120	60			72	422	\$73,228
d. Progress/Coordination Meetings and Public Meetings	40	40			40					120	\$26,320
TASK TOTAL:	188	134	30		194	60			144	750	\$137,630
2. Data Collection											
a. Evaluation of Terrain Differences				8	8	24				40	\$5,488
b. Hydraulic Terrain Adjustments	8				12	12		24		56	\$8,212
c. Field Measurements				40	140	32				212	\$30,652
d. Internal/External QA/QC				4	16					20	\$2,948
TASK TOTAL:	8			52	176	68		24		328	\$47,300
3. Hydrologic Analysis											
a. Update Existing Studies with new LiDAR	0	75	20		280	180	20			575	\$87,540
b. Model Calibration/Validation										N/A	N/A
c. Internal/External QA/QC	12	38	40		100	80	19			289	\$46,642
TASK TOTAL:	12	113	60		380	260	39			864	\$134,182
4. Hydraulic Analysis & Mapping											
a. Update Existing Studies with new LiDAR	30	30			140	160	100			460	\$66,630
b. Model Calibration/Validation										N/A	N/A
c. Floodplain mapping and Depth Grids			40		40	40				120	\$18,200
d. Internal/External QA/QC	22	14		50	149	106	60			401	\$58,830
TASK TOTAL:	52	44	40	50	329	306	160			981	\$143,660
5. Documentation											
a. Hydrologic Technical Reporting/Documentation			12		24					36	\$5,664
b. Hydraulic Technical Reporting/Documentation	18	48	24		30	30				150	\$29,364
TASK TOTAL:	18	48	36		54	30				186	\$35,028
TOTAL HOURS:	278	339	166	102	1133	724	199	24	144	3,109	
TOTAL PROJECT COST:	\$73,114	\$85,428	\$30,876	\$16,830	\$162,019	\$91,224	\$21,890	\$2,880	\$13,536		\$497,800