EXHIBIT A – SCOPE OF WORK

On-Call Professional Engineering Services for Stormwater Systems Projects
Task Order No. 3 - El Paso County Interior Drainage Study
July 9, 2018

Background

As a new Time and Materials work authorization (with a Not-to-Exceed amount of $210,600) under the Master Services Agreement, "On-Call Professional Engineering Services for Stormwater Systems Projects," El Paso Water (EPW) has requested an interior drainage analysis in support of the Federal Emergency Management Agency (FEMA) levee accreditation process undertaken by EPW and El Paso County (COUNTY) through a joint partnership. The analysis is required for the Rio Grande through El Paso County, along approximately 65 river miles, as shown in **Figure 1**.

AECOM (ENGINEER) will provide a report to EPW to support levee accreditation packages for reaches of levee systems that meet or do not currently meet the technical requirements for levee accreditation. The final report will document methodology and results of existing condition interior drainage analyses for Rio Grande levee segments within the CITY limits and within the COUNTY limits, irrespective of whether the existing levee segments can be accredited by FEMA at this time or in the future.

The purpose of an interior drainage analysis is to identify the source(s) of the flooding, the extent of the flooded area, and depict the water-surface elevations(s) of the base flood on the landward side of a levee when the depth of flooding exceeds 1 foot. This analysis must be based on the joint probability of interior and exterior flooding and the capacity of gravity outlets, pump stations, and storage areas to evacuate these interior flood waters. The submittal will include a description of the storage and pumping systems and a topographic work map showing the extent of the 1% Annual Chance (100-year) flooded area greater than 1 foot in depth.

Operational information for storage and pumping facilities is to be included in O&M plans, which will be submitted for the applicable levee systems under a separate contract. Additional analyses associated with levees that cannot be accredited at this time, conducted as described by FEMA's Levee Analysis and Mapping Procedure (LAMP) are not included in this scope, but a separate proposal can be developed upon request.

Previous hydrologic and hydraulic analyses will be utilized as a starting point for the interior drainage analysis to the extent possible to avoid duplication of previous modeling efforts. It is anticipated that significant updates to these models and/or creation of similar but new models will be necessary to meet the FEMA requirements of joint probability analysis. Two of these studies, located within CITY limits and shown as "Studied Levee Length" in **Figure 1**, have existing FLO-2D models already developed that have the potential to be used for FEMA levee accreditation with minor or no modifications:

- International Boundary and Water Commission (USIBWC) Interior Drainage and River Hydraulics Analysis for Courchesne and Nemexes Reach Canalization Project, URS, 2013;

- USIBWC Interior Drainage Hydrologic and Hydraulic Analysis for El Paso, TX International Dam to Riverside Weir, URS, 2016;

Other known existing models and studies include, but are not limited to, the following:

- USIBWC American Canal Hydrologic and Hydraulic Analysis, Replacement of American Canal Lining Project, 2015;
- U.S. Army Corps of Engineers (USACE) Caballo Dam Study, 2005;
- Conde, Inc. Preliminary Engineering Analysis Rio Grande Outlet Structures, 2007
- USACE Doniphan Corridor Study, Onoing;
- USACE Northwest El Paso Flood Risk Study, Ongoing;
- Texas Department of Transportation (TXDOT) Re-imagine I-10 Study, Ongoing; and
- CITY Stormwater Master Plan, 2009; and
- FEMA Natural Valley Analysis Pre-LAMP Report, 2016.

Scope of Project

The work to be performed by the ENGINEER consists of engineering services for the development of a Rio Grande Interior Drainage Study (STUDY) covering the river reach through the COUNTY, from the northwest corner of the COUNTY line to the southeast corner of the COUNTY line. The STUDY will be performed in compliance with the technical requirements of the National Flood Insurance Program (NFIP) Code of Federal Regulations, Title 44, Section 65.10 (44 CFR § 65.10). This STUDY is intended to include hydrologic and hydraulic analysis of the levee system along the Rio Grande, within COUNTY and CITY limits, including areas where levee systems do not meet the technical requirements for accreditation. The STUDY does not include interior drainage analysis of upland levee systems not associated with the Rio Grande. However, these upland levee systems can be studied as an addendum to this work authorization, once specific levee systems have been identified by the CITY and COUNTY.

The ENGINEER shall coordinate through EPW with governmental agencies involved with the STUDY including, but not limited to El Paso County Water Improvement District No. 1 (EPCWID#1), City of Socorro, Village of Vinton, FEMA, USIBWC, USACE, CITY, and COUNTY.

The STUDY area shall be divided at a minimum of three (3) sections following the CITY and COUNTY limits and/or divisible by watershed divides of previous study areas, as agreed upon in coordination with EPW. See **Figure 1** for a depiction of Rio Grande segments divided by CITY, COUNTY, and existing studies anticipated to be suitable for FEMA levee accreditation (pending detailed review of methods and assumptions).

TASK 1 – DATA COLLECTION

1.1 RESEARCH ONGOING AND PREVIOUS STUDIES

The ENGINEER assumes that EPW and the other stakeholders of the STUDY will make all relevant reports, models and calculations available to support this STUDY. The ENGINEER shall collect, review and evaluate readily available floodplain information and studies from FEMA, USACE, USIBWC, local municipalities, and other governmental agencies. If previous interior drainage studies meet the requirements of 44 CFR § 65.10, the ENGINEER will

consider excluding those areas from the STUDY or incorporating hydrologic and hydraulic (H&H) modeling information into the STUDY, pending the ENGINEER's review of methods and results documented in the previous studies.

The existing hydrologic models associated with previous studies will be reviewed for the following:

- Software used;
- Rainfall data (i.e., continuous historical record, frequency storm, etc.);
- Topography used to delineate watersheds and watershed size;
- Hydrologic parameter development (i.e., routing method, loss method, etc.);
- Completeness of existing dam information; and
- Completeness of existing channel routing information, including coordination with FEMA Region 6 to ensure hydrologic methods are applicable to desert southwest regions.

The existing hydraulic models from previous studies will be reviewed for the following:

- Software used;
- Rainfall data (i.e., continuous historical record, frequency storm, etc.);
- Grid cell size used for computation;
- Outflow estimated for Caballo Dam;
- Rio Grande cross-section placement;
- Hydraulic structure information (i.e., bridge rating tables, diversion dam rating tables);
- Other discharge structure information into the Rio Grande (i.e., gravity outlets, pump stations); and
- Calibration accuracy.

1.2 TOPOGRAPHIC DATA REVIEW

Best available topographic data will be collected and reviewed before incorporating into the STUDY. Costs associated with the collection of survey data for this STUDY are not included and are assumed to be covered by EPW. It is likely that only survey of specified pipe inlets/outlets would be necessary as LiDAR may not be able to accurately pick up those elevations. Subtasks to be performed by the ENGINEER include, but are not limited to, the following:

- Coordination with EPW surveyors to identify areas needing new survey;
- Review of survey data to be collected by EPW for the STUDY; and
- Collection and review of best available LiDAR for El Paso County, Texas covering the STUDY area.

1.3 INFRASTRUCTURE DATA REVIEW

The ENGINEER assumes that EPW and the other stakeholders of the STUDY will make all relevant spatial data, as-built plans, and requested infrastructure information available to support this STUDY. Review of infrastructure data will be performed by the ENGINEER to assess which storm drains to include in the STUDY and identify any data gaps that may exist. The ENGINEER will only model storm drain systems connected to outfalls to the Rio Grande.

Only outfalls to the Rio Grande that accept stormwater runoff will be modeled. The ENGINEER will need to gather the following to complete the modeling effort:

- Operation and Maintenance (O&M) information related to all pump stations and gravity discharge points along the Rio Grande;
- Best available storm drain system as-built plans;
- Complete inventory of pump stations and gravity discharge points along the Rio Grande, including pump capacity curve, culvert outlet capacity, presence of gates, etc.;
- Best available City/County GIS and AutoCAD data;
- Best available TXDOT GIS/CAD infrastructure data;
- Dam geometry and/or elevation-storage-discharge data;
- Updated cross-sections for areas that have already been improved (i.e., new or replaced floodwalls and levees); and
- Additional interior drainage features such as channel geometry (as necessary).

DELIVERABLE

- Data Gap Technical Memorandum (draft and final).

1.4 FIELD RECONNAISSANCE

The ENGINEER shall develop a Health and Safety Plan and present to EPW, if applicable, to conduct field reconnaissance and collect data, including a photographic record (to be maintained in ENGINEER's office) of notable existing features.

- It is assumed that 3 consecutive days in the field will be needed for the lead hydraulic modeler and an Engineer-in-Training (EIT), who will fly from Austin to El Paso to perform the work.
- It is assumed that a total of 5 days of field work by local El Paso AECOM staff will be needed throughout the STUDY.

TASK 2 – HYDROLOGIC AND HYDRAULIC ANALYSES

2.1 DEVELOP DETAILED INTERIOR MODELING APPROACH

A prescribed interior drainage modeling approach applicable to a large area is not available per FEMA guidelines. The variety of approaches that can be used to analyze interior areas is described in USACE EM 1110-2-1413 and includes three main alternatives: continuous record simulation, discrete historical or hypothetical event simulation, or coincident frequency analysis.

The USACE EM 1110-2-1413 guidance states "The selection of procedures for hydrologic analyses of interior flooding is dependent upon the relationship of several factors, such as the nature of the study, characteristics of the study area, local institutional policies and practices, and experience of the analyst. Several of these factors are interrelated in that there is generally a relationship between the type of study and complexity of the physical system. Items of institutional policies and professional staff experience are often the overriding factors. It is also important to acknowledge that several methods may be applied with varying amounts and accuracy of data so that it is possible to tailor the procedures to the stage of an investigation."

Following completion of Task 1, a draft and final detailed joint probability modeling approach technical memorandum will be developed to describe the modeling methods and approach that will be used to complete the interior drainage analysis. At this time, it is anticipated that HEC-HMS (or most appropriate FEMA-approved hydrologic modeling software) will be used to simulate discrete storm event(s) on the interior areas. FLO-2D (or most appropriate FEMA-approved hydraulic modeling software) will be employed to hydraulically model the interior drainage areas using the storm event hydrographs developed with HEC-HMS and map the extent of interior flooding. Due to differences in the lag time between the Rio Grande peak elevations and the much shorter interior drainage area's lag time, the Rio Grande will likely be modeled as a tailwater condition at all storm outlets (i.e., culverts, floodgates, etc.) for the 100-year storm event within the FLO-2D hydraulic model. Both HEC-HMS and FLO-2D software are accepted per FEMA guidelines. It is likely that multiple HEC-HMS and FLO-2D models will be required to efficiently model this area (i.e., reduce computation time) due to the decreased grid cell size and the additional rating tables required for all identified discharge structures.

Before proceeding with Tasks 2.2 and 2.3, all involved parties will have the opportunity to review and comment on the proposed interior drainage modeling approach.

DELIVERABLES

- Modeling Approach Technical Memorandum (draft and final).

2.2 HYDROLOGIC MODELING

Portions of the STUDY area, with the exception of Canutillo, Courchesne, and other areas previously modeled by the El Paso Stormwater Master Plan (URS, 2009) may require new HEC-HMS models to determine interior drainage area flows. The best available topography will be utilized to delineate new or refine existing watersheds and lag times. Initial loss, lag time, and watershed routing methodologies will be identified at the completion of Task 2.1. The discrete frequency storms (e.g., 100-year, 24-hour event) will be computed and the runoff hydrograph(s) for each watershed will be estimated.

ASSUMPTIONS

- All hydrologic modeling of interior watersheds will be performed using HEC-HMS, or most appropriate FEMA-approved software.
- Existing City of El Paso dams discharge infrastructure will be modeled in the as-built condition unless a recent study and/or upgrade has been performed and documented within the last 5 years. If elevation-storage curves are available from a recent study within the past 5-years, it will be used. Otherwise, best available LiDAR will be used to generate the elevation-storage curves for best available data.
- A decision on whether to model any non-NRCS dams, significant regional detention/retention ponds, and debris basins will be vetted with EPW and the COUNTY during the Data Collection task.

DELIVERABLE

- Final Hydrologic Models and associated spatial data (to be delivered on a DVD)
- Detail Check form for Quality Assurance/Quality Control (QA/QC)

2.3 HYDRAULIC MODELING

The ENGINEER will develop hydraulic models of existing conditions of the Rio Grande, adjacent levees, and all associated drainage structures as they exists today. At this time, the ENGINEER will not study future conditions of the Rio Grande, adjacent improved levees, and all associated structures as they will exist when construction of all phases is complete. A scope and fee can be prepared for this additional task upon request, after an initial assessment of certifiable levee segments and review of future planned improvements has been completed under a separate work authorization.

The ENGINEER will create an elevation grid system within 2D modeling areas and select an appropriate grid element size based upon the number of FEMA-approved 2D models required, and the area of each model, to achieve a realistic computational efficiency.

The ENGINEER will export the hydrographs from the HEC-HMS model and place corresponding Inflow Nodes at a reasonable upstream limit within the associated watershed. This will allow the model to identify the flood impact to the local area.

The ENGINEER will apply existing condition levee information from best available hydraulic models and as-built plans, where applicable.

The ENGINEER will develop hydraulic structure rating tables for inclusion into the model that represent all closure structures that convey flow from the land side (interior) to the river. These rating tables will be established based on a base flow river condition for tailwater within Bentley's CulvertMaster (or the most appropriate FEMA-approved software). USIBWC and local stakeholders shall provide a comprehensive list during the data collection phase of all structures and their associated design information that will be required for inclusion within the interior drainage hydraulic analysis. The required design information should, at a minimum, include the following:

- Size;
- Material;
- Length;
- Upstream and downstream inverts; and
- Design flow rate (cfs).

For pump stations, operation will be assumed at full capacity and the combined discharge capacity will be subtracted from the HEC HMS inflow hydrographs.

The Existing Conditions model will be calibrated as necessary with any historic data as provided by USIBWC, the COUNTY, and/or EPW.

Utilizing the mapping capabilities within FLO-2D (or FEMA-approved software), the ENGINEER will provide flood limit delineations for both scenarios at an interval similar to FEMA floodplain delineation requirements for EPW and local stakeholder use in evaluation of the flood impacts to the local areas.

All of the documents provided to the ENGINEER are/shall remain property of EPW and shall be returned at the end of the project. Information provided by EPW or USIBWC in the form of reports or data cannot be used for work outside of the current scope without written consent of

EPW. All information or models developed for this analysis will be provided to EPW for their use.

DELIVERABLE

- Final Hydraulic Models and Associated Spatial Data
- Detail Check Form for Quality Assurance/Quality Control (QA/QC)

TASK 3 – DOCUMENTATION

3.1 PREPARATION OF DRAFT INTERIOR DRAINAGE REPORTS

A draft report will be prepared documenting the interior drainage analysis methodology, data sources, modeling inputs, description of the storage and pumping systems, calibration efforts (if included), and modeling results, including a topographic work map showing the extent of the flooded area greater than 1-foot in depth. The report will be prepared in compliance with the FEMA levee accreditation process. EPW, the COUNTY, and USIBWC will be provided a copy of the draft report to edit and provide comments.

DELIVERABLE

- Draft Interior Drainage Report
  - 4 hard copies for EPW, 2 hard copies for IBWC, and 1 electronic copy
- Detail Check Form for Quality Assurance/Quality Control (QA/QC)

3.2 PREPARATION OF FINAL INTERIOR DRAINAGE REPORTS

The ENGINEER will review and incorporate changes and responses based upon all comments provided by EPW, the COUNTY, and USIBWC. A final report will be prepared and delivered to EPW, the COUNTY, and USIBWC in the form of electronic files and a total of three (3) hard copies.

DELIVERABLE

- Finalize the Interior Drainage Report, and submit three (3) original paper copies with a DVD of the PDF report along with all models used and any spatial files used.
- Detail Check Form for Quality Assurance/Quality Control (QA/QC)

TASK 4 – PROJECT MANAGEMENT AND ADMINISTRATION

4.1 MANAGERIAL TIME

Project management includes administrative tasks such as invoicing, budget management, and resource allocation as well as delivery of monthly progress reports and invoices.

DELIVERABLES

- Detailed Monthly Progress Reports and Schedule Updates (draft and final);
- Monthly Invoices

4.2 STAKEHOLDER COORDINATION

Stakeholder Coordination includes communication with appropriate STUDY stakeholders as necessary, with approval by EPW. A Stakeholders Register will be provided.

TASK 5 – MEETINGS

5.1 PROJECT KICKOFF MEETING

The ENGINEER shall participate in a Project Kickoff Meeting to discuss the project locations and limits, analysis frequency criteria and requirements. The meeting will also involve coordination through EPW with the STUDY stakeholders including, but not limited to the CITY, COUNTY, FEMA, USACE, and USIBWC.

DELIVERABLES

- Exhibits/PowerPoint (draft and final);
- Meeting Minutes (draft and final); and
- Sign-in sheets.

5.2 STAKEHOLDER COORDINATION MEETING

After finalizing the Interior Drainage Report, the ENGINEER will participate in a stakeholder coordination meeting including representatives from EPW, the CITY, the COUNTY, USIBWC, USACE, and FEMA. The purpose of the meeting will be to discuss the results of the interior drainage report and discuss the approach to developing appropriate documentation of the STUDY in levee accreditation submittal packages for selected levee segments.

After the stakeholder coordination meeting is held, the ENGINEER will complete the necessary forms and documentation required to confirm that an interior drainage study has been completed for applicable levee segments. Under a separate contract, this documentation will be included in levee submittal packages that will eventually be delivered to FEMA by EPW for levee accreditation.

DELIVERABLES

- Exhibits/PowerPoint (draft and final);
- Meeting Minutes (draft and final); and
- Sign-in sheets.
- Documentation to be included in submittal Package for FEMA Levee Accreditation.

5.3 PROGRESS MEETINGS

Meeting Preparation – Includes developing maps, reports, and model outputs for EPW to review

during working meetings. The ENGINEER assumes there will be a total of 4 progress/coordination conference call/WebEx meetings. These 4 meetings do not include the kickoff meeting or the stakeholder meeting.

DELIVERABLES

- Exhibits/PowerPoint (draft and final);
- Meeting Minutes (draft and final); and
- Sign-in sheets.

Staffing Plan

The following is a listing of all key persons proposed for the project along with their proposed position titles for these individuals. Full Resumes for these individuals will be provided upon request.

- Program Manager – Steve Ainsa, PE
- Principal in Charge – Jeff Irvin, PE;
- Project Manager – Chris Wright, PE;
- Lead H&H PE – Clint Kimball, PE
- Senior Professional Engineer – Gilbert Andujo, PE;
- Senior H&H Professional Engineer – Monica Wedo, PE;
- Engineer-in-Training – Samagra Rana, EIT;
- Engineer-in-Training – Alyssa Ruiz, EIT;
- Senior GIS Technician – John Wade.

Schedule

A detailed schedule is shown in **Exhibit B**.

Cost Estimate

A detailed cost estimate is shown in **Exhibit C**. The total cost of this STUDY ($210,600) is broken down into two costs to allow funding through a joint partnership between EPW (34.8% = $73,321) and the COUNTY (65.2% = $137,279). These costs were divided according to the number of previously studied and unstudied river miles in the CITY and COUNTY. Studied river miles (extents shown in **Figure 1)**, are considered areas where previous interior drainage studies have been completed with FEMA-approved software (such as FLO-2D), and would likely require minimal modification to the existing condition FLO-2D models (pending detailed review of the models). Sections of the Rio Grande that have not been studied previously (with 2D interior drainage models developed) are expected to require approximately three times more effort than sections of the Rio Grande that have been studied, with 2D interior drainage models developed. References for the two studies considered within CITY limits are the following:

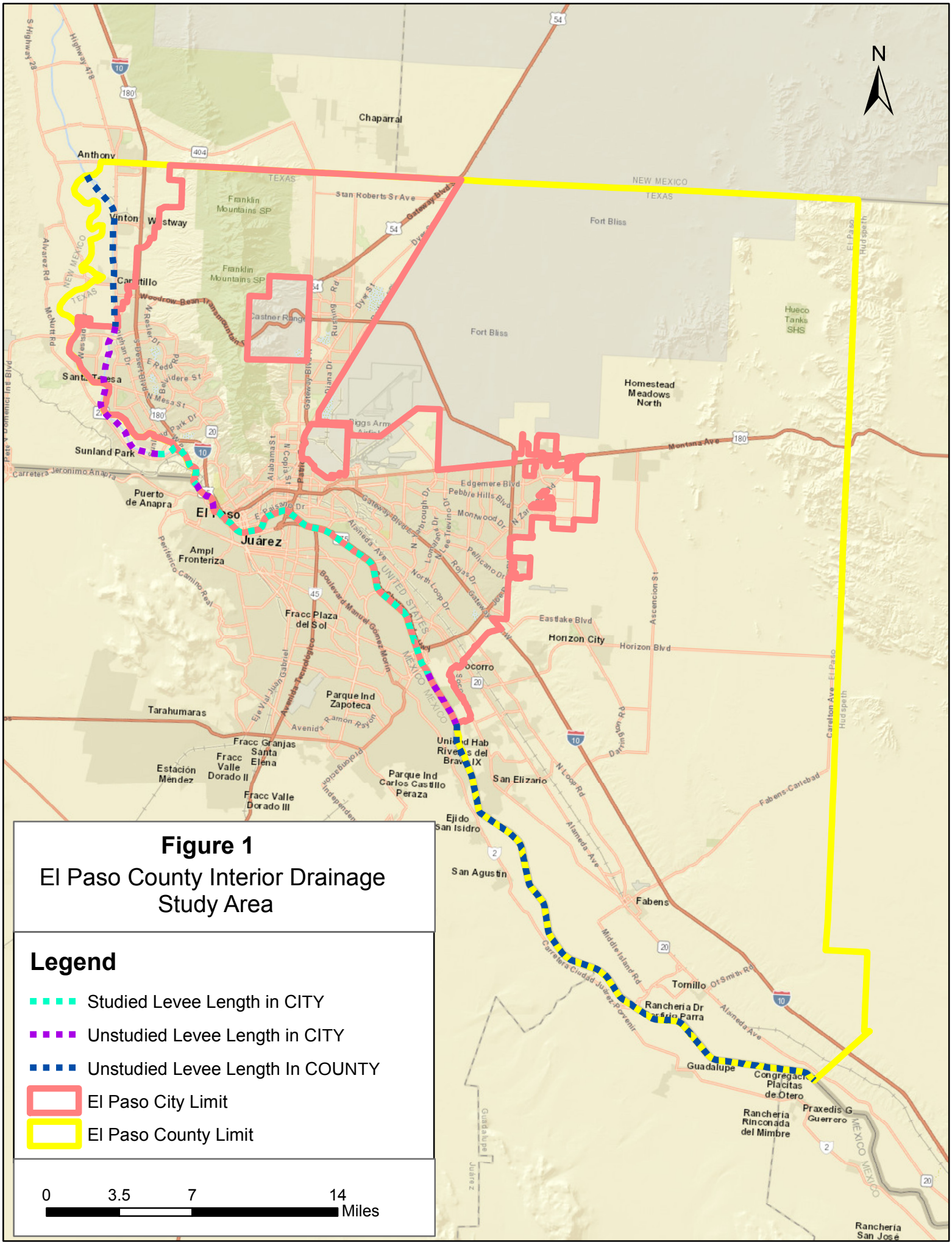
- International Boundary and Water Commission (USIBWC) Interior Drainage and River Hydraulics Analysis for Courchesne and Nemexes Reach Canalization Project, URS, 2013;

- USIBWC Interior Drainage Hydrologic and Hydraulic Analysis for El Paso, TX International Dam to Riverside Weir, URS, 2016;

These costs are broken out by the number of levee miles at the bottom of Exhibit C. The total number of levee miles in each row were divided by the Overall Total Number of Levee Miles and multiplied by the Total Cost to come up with the Divided Cost. To simplify complexities associated with invoicing, budget tracking, progress reports, etc., it is proposed that invoices and monthly progress reports include percent complete according to Tasks 1 through 5, documented in this scope, with total monthly invoice amounts multiplied by 34.8% for EPW funding responsibility, and multiplied by 65.2% for COUNTY funding responsibility.

Organizational Chart

An organizational chart for the project team is shown in **Exhibit D**.


N
Chaparral
Anthony
TEXAS
NEW MEXICO
Franklin Mountains SP
Fort Bliss
Vinton
Westway
Canutillo
Castner Range
Hueco Tanks SHS
Homestead Meadows North
Santa Teresa
Sunland Park
Puerto de Anapra
El Paso
Juárez
Ampl Fronteriza
Fracc Plaza del Sol
Horizon City
Parque Ind Zapoteca
Tarahumaras
Fracc Granjas Santa Elena
Fracc Valle Dorado II
Fracc Valle Dorado III
Estación Méndez
Parque Ind Carlos Castillo Peraza
San Elizario
Ejido San Isidro
San Agustin
Fabens
Tornillo
Guadalupe
Congregación Placitas de Otero
Rancheria Rinconada del Mimbre
Praxedis G Guerrero
Rancheria San José
MEXICO
UNITED STATES
Figure 1
El Paso County Interior Drainage Study Area
Legend
Studied Levee Length in CITY
Unstudied Levee Length in CITY
Unstudied Levee Length In COUNTY
El Paso City Limit
El Paso County Limit
0
3.5
7
14
Miles

On-Call Professional Engineering Services for Stormwater Systems Projects
Work Authorization No. 3: El Paso County Interior Drainage Study
Exhibit B: Project Schedule

Task	Start	End
Notice to Proceed (Assumed)	5/14/2018	2/4/2019
Task 1 - Data Collection	5/14/2018	7/13/2018
Task 2 - Hydrologic And Hydraulic Analyses	7/13/2018	10/15/2018
Task 3 - Documentation	10/15/2018	1/4/2019
Task 4 - Project Management and Administration	5/14/2018	2/4/2019
Task 5 - Meetings	5/14/2018	2/4/2019

On-Call Professional Engineering Services for Stormwater Systems Projects
Exhibit C - Fee Table
Work Authorization No. 3: El Paso County Interior Drainage Study

LABOR

Work Auth. No. 3		El Paso County Interior Drainage Study	Principal in Chg AECOM Jeff Irvin		Program Mgr AECOM Steve Ainsa		Project Mger AECOM Chris Wright		Lead H&H PE AECOM Clint Kimball		EIT AECOM Rana/Ruiz		Sr GIS AECOM John Wade		Admin Assist II AECOM Tom Geear		Senior PE AECOM Gilbert Andujo		Sr H&H PE AECOM Monica Wedo		Project Secretary AECOM Pam Bradley		Total AECOM	
			Hrs.	$76.77	Hrs.	$79.72	Hrs	$59.50	Hrs.	$40.86	Hrs.	$29.57	Hrs.	$39.70	Hrs.	$39.89	Hrs.	$62.50	Hrs.	$52.89	Hrs.	$31.76	Hrs.	$
Task No.		**Task Name**																						
1		**Data Collection**																						
	1.1	*Research Previous &Ongoing Studies*	4	$307.08		$0.00	8	$476.00		$0.00	32	$946.24		$0.00		$0.00		$0.00	8	$423.12		$0.00	52	$2,152.44
	1.2	*Topographic Data Review*		$0.00		$0.00	4	$238.00	16	$653.76	16	$473.12	8	$317.60		$0.00		$0.00		$0.00		$0.00	44	$1,682.48
	1.3	*Infrastructure Data Review*		$0.00	4	$318.88	8	$476.00	32	$1,307.52	54	$1,596.78	8	$317.60		$0.00		$0.00	8	$423.12		$0.00	114	$4,439.90
	1.4	*Field Reconnaissance*		$0.00	4	$318.88	8	$476.00	24	$980.64	32	$946.24	8	$317.60		$0.00	36	$2,250.00		$0.00		$0.00	112	$5,289.36
		Subtotal - Task 1	4	$307.08	8	$637.76	28	$1,666.00	72	$2,941.92	134	$3,962.38	24	$952.80	0	$0.00	36	$2,250.00	16	$846.24	0	$0.00	322	$13,564.18
2		**Hydrologic And Hydraulic Analyses**																						
	2.1	*Develop Detailed Interior Modeling Approach*	8	$614.16	2	$159.44	20	$1,190.00	32	$1,307.52	16	$473.12	4	$158.80		$0.00		$0.00	8	$423.12	4	$127.04	94	$4,453.20
	2.2	*Hydrologic Modeling With HEC-HMS*	6	$460.62		$0.00	40	$2,380.00	80	$3,268.80	120	$3,548.40	8	$317.60		$0.00	8	$500.00	20	$1,057.80		$0.00	282	$11,533.22
	2.3	*Hydraulic Modeling With FLO-2d*	6	$460.62		$0.00	40	$2,380.00	80	$3,268.80	200	$5,914.00	16	$635.20		$0.00	8	$500.00	20	$1,057.80		$0.00	370	$14,216.42
		Subtotal - Task 2	20	$1,535.40	2	$159.44	100	$5,950.00	192	$7,845.12	336	$9,935.52	28	$1,111.60	0	$0.00	16	$1,000.00	48	$2,538.72	4	$127.04	746	$30,202.84
3		**Documentation**																						
	3.1	*Preparation of Draft Interior Drainage Report*	4	$307.08	4	$318.88	40	$2,380.00	80	$3,268.80	40	$1,182.80	24	$952.80		$0.00		$0.00	8	$423.12	16	$508.16	216	$9,341.64
	3.2	*Preparation of Final Interior Drainage Report*	4	$307.08	4	$318.88	20	$1,190.00	32	$1,307.52	16	$473.12	16	$635.20		$0.00		$0.00	4	$211.56	2	$63.52	98	$4,506.88
		Subtotal - Task 3	8	$614.16	8	$637.76	60	$3,570.00	112	$4,576.32	56	$1,655.92	40	$1,588.00	0	$0.00	0	$0.00	12	$634.68	18	$571.68	314	$13,848.52
4		**Project Management and Administration**																						
	4.1	*Managerial Time*	4	$307.08	4	$318.88	60	$3,570.00	8	$326.88		$0.00		$0.00	32	$1,276.48		$0.00		$0.00		$0.00	108	$5,799.32
	4.2	*Stakeholder Coordination*		$0.00	16	$1,275.52	32	$1,904.00		$0.00		$0.00		$0.00		$0.00	20	$1,250.00		$0.00		$0.00	68	$4,429.52
		Subtotal - Task 4	4	$307.08	20	$1,594.40	92	$5,474.00	8	$326.88	0	$0.00	0	$0.00	32	$1,276.48	20	$1,250.00	0	$0.00	0	$0.00	176	$10,228.84
5		**Meetings**																						
	5.1	*Project Kickoff Meeting*	2	$153.54	2	$159.44	8	$476.00	4	$163.44	4	$118.28	2	$79.40		$0.00	2	$125.00	2	$105.78		$0.00	26	$1,380.88
	5.2	*Stakeholder Coordination Meeting*	4	$307.08	8	$637.76	20	$1,190.00	8	$326.88	8	$236.56	8	$317.60		$0.00	8	$500.00		$0.00		$0.00	64	$3,515.88
	5.3	*Progress Meetings (Assume 4)*	8	$614.16	8	$637.76	24	$1,428.00	12	$490.32	8	$236.56		$0.00		$0.00	8	$500.00		$0.00		$0.00	68	$3,906.80
		Subtotal - Task 5	14	$1,074.78	18	$1,434.96	52	$3,094.00	24	$980.64	20	$591.40	10	$397.00	0	$0.00	18	$1,125.00	2	$105.78	0	$0.00	158	$8,803.56
		Subtotal Hours and Salary Cost	50	$3,839	56	$4,464	332	$19,754	408	$16,671	546	$16,145	102	$4,049	32	$1,276	90	$5,625	78	$4,125	22	$699	1716	$76,647.94
		Overhead																					139.14%	$106,647.94
		Subtotal labor																						$183,295.88
		Profit																					12.00%	$21,995.51
		Total Labor																						$205,291.39

EXPENSES

Expenses	Rate	Quantity		Details	Subtotal		
Plane Ticket	$400.0	6			$2,400.0		
Hotel	$140.0	9			$1,260.0		
Rental Car	$50.0	5			$250.0		
Gasoline	$20.0	10			$200.0		
Airport Parking	$20.0	6			$120.0		
Drainage Report Photocopies Color (8 X 10)	$1.0	200			$200.0		
Drainage Report Photocopies Color (11 X 17)	$1.5	200			$300.0		
Overnight Mail-oversized box	$35.0	2			$70.0		
Meals	$50.0	10			$500.0		
Total Expenses							$5,300.00

SUMMARY

Labor	$205,291
Subconsultants	$0
Expenses	$5,300
Total	**$210,600**

Cost Division Between CITY and COUNTY	Levee Miles	2X Levee Miles Unstudied	Total No. of Levee Miles	Divided Cost		
Studied Levee Length in CITY	18.4	0.0	18.4	$	24,264.50	
Unstudied Levee Length in CITY (3X cost of studied)	12.4	24.8	37.2	$	49,056.48	**Total Cost to EPW:** **$73,321**
Studied Levee Length in COUNTY	0.0	0.0	0.0	$	-	
Unstudied Levee Length in COUNTY (3X cost of studied)	34.7	69.4	104.1	$	137,279.02	**Total Cost to COUNTY:** **$137,279**
Overall Total :	**65.5**	**94.2**	**159.7**	**$**	**210,600.00**	

On-Call Professional Engineering Services for Stormwater Systems Projects
Work Authorization No. 3 - El Paso County Interior Drainage Study
Exhibit D - Project Organization