

# Draft Technical Memorandum

TO: Region 3 Trinity Regional Flood Planning Group (RFPG) DATE: December 9, 2021

(The recipient will be adjusted to be sent to Mr. Jeff Walker, Executive Administrator of TWDB when it is distributed for public review and comment.)

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SUBJECT: Region 3 Trinity Regional Flood Plan  
Task 4C – Technical Memorandum

## Process Overview

In 2019, the 86th Texas Legislature enacted Senate Bill 8 directing the creation of the first State Flood Plan. The Texas Legislature also adopted changes to the Texas Water Code §16.061 to establish the regional and state flood planning processes that are overseen by the Texas Water Development Board (TWDB). The State Flood Plan follows a region-driven, bottom-up approach that has been used for the State Water Plan in Texas for over 20 years. As outlined by the Texas Water Code, the purpose of the Regional and State Flood Plans is to:

- Provide orderly preparation and response to flood conditions to protect against loss of life and property;
- Guide state and local flood control policy; and
- Contribute to water development, where possible.

TWDB established 15 flood planning regions based on river basin boundaries. **Figure 1** shows the delineation of the 15 flood planning regions as well as the boundaries of the Trinity Flood Planning Region (Region 3). The Trinity Region encompasses all of the Trinity River and its tributaries, covering an area of 17,845 square miles. Over 290 municipalities and 38 counties are included in the Trinity River Basin.

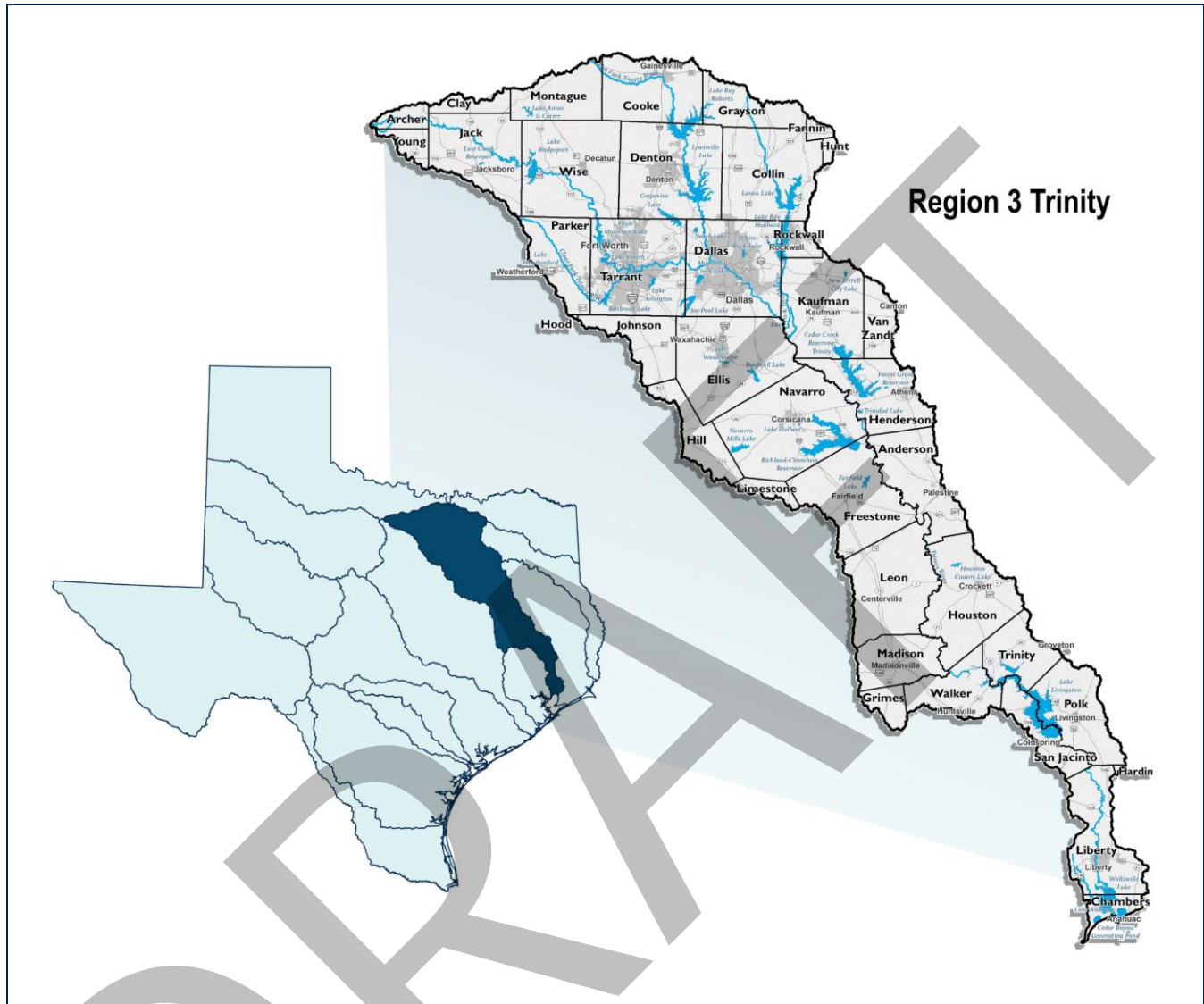


Figure 1: Trinity Flood Planning Region

The TWDB established the required scope of work that each RFPG must complete. TWDB also allocated funding for each RFPG to use to complete its Regional Flood Plan. Each RFPG selected a contract administrator to serve on its behalf in contracts with the TWDB and with the RFPG's selected consultant team.

TWDB appointed the original RFPG members representing 12 interest categories, as listed.

- Agriculture
- Counties
- Electric Generation Utilities
- Environmental Interests
- Flood Districts
- Industry
- Municipalities
- Public
- River Authorities
- Small Businesses
- Water Districts
- Water Utilities

As depicted in the regional flood planning schedule in **Figure 2**, the draft Regional Flood Plans are due to TWDB by August 1, 2022 with final Regional Flood Plans to be adopted by the RFPGs and submitted to the TWDB by January 10, 2023. The TWDB will roll up the fifteen Regional Flood Plans to create the first Texas Flood Plan, ready for adoption by TWDB by September 1, 2024. Subsequently, the Regional Flood Plans and State Flood Plan will be updated on a five-year cycle.

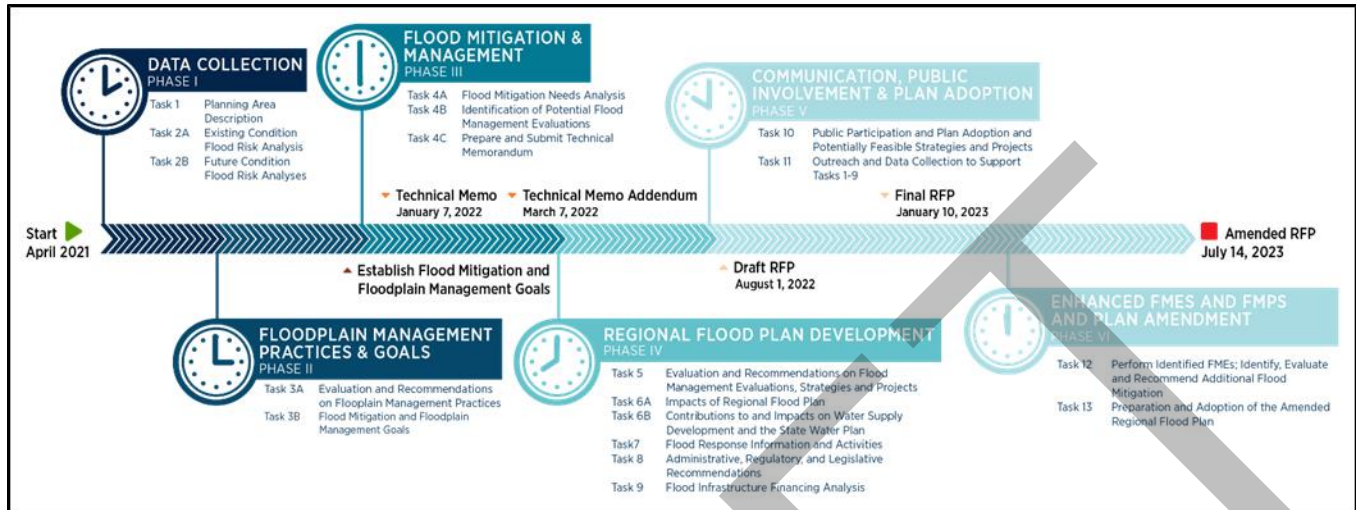


Figure 2: Regional Flood Planning Timeline

## Regional Flood Planning Tasks

TWDB guidance, scope of work, and technical guidelines for regional flood planning prescribes a process consisting of ten tasks as outlined in **Table 1**.

Table 1: Regional Flood Planning Tasks

Task	Description
1	Planning Area Description
2	Existing and Future Condition Flood Risk Analysis
3	Floodplain Management Practices and Flood Mitigation and Floodplain Management Goals
4	Flood Mitigation Needs Analysis and Identification and Evaluation of Potential Flood Management Evaluations (FMEs), Potentially Feasible Flood Management Strategies (FMSs), and Flood Mitigation Projects (FMPs)
5	Recommendation of FMEs and FMSs and Associated FMPs
6	Impacts of Regional Flood Plan and Contributions to and Impacts on Water Supply Development and the State Water Plan
7	Flood Response Information and Activities
8	Administrative, Regulatory, and Legislative Recommendations
9	Flood Infrastructure Financing Analyses
10	Public Participation and Plan Adoption

Task 1 through Task 4 comprise the initial phase of regional flood planning, concluding with the preparation of this Technical Memorandum. The Technical Memorandum must be approved by the RFPG and submitted to TWDB on or before January 7, 2022. Per TWDB guidelines, the Technical Memorandum must include the following:

- Identification of existing political subdivisions with flood-related authority/responsibility (Task 4C.1.a);
- Previous flood studies and models considered relevant for the plan (Tasks 4C.1.b and 4C.1.f);
- Adopted flood mitigation and floodplain management goals (Task 4C.1.g);
- Process used to identify potentially feasible FMSs and FMPs (Task 4C.1.h);
- List of potential FMEs and potentially feasible FMSs and FMPs (Task 4C.1.i);
- List of infeasible FMSs and FMPs with reason of exclusion (Task 4C.1.j); and
- Associated geospatial database

To accommodate the delayed release of the Fathom data associated with the TWDB's floodplain quilt (TWDB Data Hub, 2021), TWDB extended the deadline for completion and submittal of three subtasks associated with the Technical Memorandum to be submitted as an addendum by March 7, 2022. The Technical Memorandum Addendum includes:

- Existing and future condition flood risk (Task 4C.1.c);
- Floodplain mapping gaps (Task 4C.1.d); and
- Hydrologic and hydraulic model availability (Task 4C.1.e)

## Task 4C – Technical Memorandum Deliverables

The following sections introduce the technical memorandum deliverables associated with the first TWDB submittal for the Trinity Region. Several attachments are included at the end of this document. **Table 2** indicates which subtasks and information is contained in each one.

*Table 2: Technical Memorandum Attachments*

Attachment	TWDB Task	Description
1	4C.1.a	List of existing political subdivisions with flood-related authority/responsibility
2	4C.1.b; 4C.1.f	List of previous flood studies and models relevant to plan development
3	4C.1.g	Flood mitigation and floodplain management goals adopted by the RFPG
4	4C.1.h	Process to identify potentially feasible FMSs and FMPs
5	4C.1.i	List of potential FMEs
6	4C.1. i	List of potentially feasible FMPs
7	4C.1. i	List of potentially feasible FMSs
8	4C	Geodatabase

### ***4C.1.a – List of existing political subdivisions with flood-related authority/responsibility***

The TWDB provided a list of 596 political subdivisions, or entities, that were thought to have some degree of flood-related authority in the region. It is important to note that in the broadest sense, “authority” could be any entity or agency that plans, regulates, constructs, or maintains flood infrastructure. In a narrowed sense, “authority” would only indicate entities with the authority to enact and enforce floodplain regulations, such as municipalities, counties, and river authorities. The Trinity Region researched entities whose responsibility for flood control was less obvious. Some data was provided via entities that contacted the RFPG while other information was found on entity websites. **Table 3** provides a summary of the entity types within the region. A complete list of entities is located in **Attachment 1**.

Table 3: Political Subdivisions with Potential Flood-Related Authority

Entity Type	Number of Entities Originally Provided by TWDB	Number of Entities Determined to have Flood-Related Authority <sup>1</sup>	NFIP Participants <sup>2</sup>
Municipality	289	290	287
County	38	38	38
River Authority	11	10	-
Flood Control, WCIDs, Drainage Districts, Ports, Navigation Districts	285	40	-
Water Supply, Water Authority, Water District, Improvement District, Management District, Utility Districts, MUDs, WSDs, FWSDs, MWDs, SUDs, COGs		247	-

<sup>1</sup> Count of entities determined to have flood-related authority is based on the Region's research but is subject to change based on future input.

<sup>2</sup> Only municipalities and counties are eligible to participate in the NFIP program. Number of NFIP participating entities is as of October 2020.

The associated geospatial files are included in the geodatabase located in **Attachment 8**. The geodatabase feature classes titled 'Entities' and 'ExFpMP' provide a spatial representation of existing political subdivisions with flood-related authorities or responsibilities.

#### ***4C.1.b and 4C.1.f – List of previous flood studies and models relevant to plan development***

A list of previous studies was compiled using collected and researched information as displayed in **Attachment 2**. The compiled flood studies and associated models were identified as studies that were used to refine the region's floodplain quilt and/or identify and validate potential evaluations, strategies, and/or projects. In addition to submittal through the data collection tool, studies were also collected through online research and consultant team experience in the region.

As the planning process continues, the list of available studies and associated models will be enhanced to document sources of information relevant to plan development within the Trinity Region.

#### ***4C.1.c, 4C.1.d and 4C.1.e – Lists, maps, and geodatabase of existing and future condition flood risk and gaps***

These three subtasks are highly dependent on the Fathom data that TWDB provided to the RFPG on October 29, 2021. The Trinity Region is currently reviewing and assessing the data provided to enhance the information gathered through its data collection effort in Summer 2021. The TWDB recognizes the need for additional time to incorporate the data it recently provided and is allowing these three subtasks to be prepared, approved, and submitted by the RFPG by March 7, 2022. Therefore, these items are not included as a part of this Technical Memo.

#### ***4C.1.g – Flood mitigation and floodplain management goals adopted by the RFPG***

The Trinity RFPG began working on its goals for its Regional Flood Plan in June 2021. The goals discussions are of significant interest to the planning group. In August 2021, the Trinity RFPG established a Goals Subcommittee who



met on August 31, 2021 to refine the overarching goals and specific goal statements. On September 23, 2021, the RFPG approved seven (7) draft goals with specific goal statements for inclusion the Trinity Regional Flood Plan. Following the meeting, the RFPG posted the approved draft goals on its website and distributed them to the list of interested parties with a request to provide feedback on the adopted draft goals by October 27, 2021. The only response received was from one city within Region 3 that submitted a comment in support of the draft goals for this first round of regional flood planning.

At its September 23, 2021 meeting, the RFPG approved the **recommendation** of six (6) minimum floodplain management standards to be applicable regionwide for this first round of regional flood planning. Recommended standards are encouraged but are not required in order for an entity's FME, FMS and/or FMP to be included in the Regional Flood Plan. The standards were also posted to the website and distributed to the list of interested parties requesting feedback on the recommendations by October 27. No one submitted any comments on the regionwide standards.

The draft goals and the flood mitigation and flood management recommendations that were approved in September 2021 are included in **Attachment 3**.

The approved recommendations include short-term and long-term measurements that may be further refined to include quantifiable standards through flood plan development.

#### ***4C.1.h – Process to identify potentially feasible FMSs and FMPs***

TWDB requirements for Task 4B state that each RFPG is to develop and receive public comment on a "... proposed process to be used by the RFPG to identify and select flood management evaluations, flood mitigation strategies, and flood mitigation projects." The proposed process was designed to conform with TWDB requirements as expressed in rules, scope of works, and technical guidelines for regional flood planning.

The proposed process for screening, evaluation, and recommendation of potential evaluations (FMEs), strategies (FMSs), and projects (FMPs), was introduced during the August 19, 2021 RFPG meeting. On September 23, 2021, the RFPG reviewed and discussed the proposed process and accepted public comment. No public comments were provided. At the November 18<sup>th</sup> RFPG meeting, the RFPG approved of the proposed process as provided in **Attachment 4**. This attachment also includes the memos developed as part of Task 4A and Task 4B.

#### ***4C.1.i – List of potential FMEs and potentially feasible FMSs and FMPs***

The data collection effort included soliciting information from survey participants regarding flood-related studies (FMEs) and projects (FMPs) that were planned and/or known to be needed by a specific entity. The region also used GIS and other tools to determine where potential studies and projects might be warranted. Using the screening process outlined in **Attachment 4**, the Trinity RFPG developed an initial list of potential FMEs and potentially feasible FMPs and FMSs provided in **Attachments 5, 6 and 7**, respectively. These lists are subject to revisions as Task 4B is completed in the near future.

#### ***4C.1.j – List of FMSs and FMPs that were determined infeasible***

As the RFPG is still soliciting potentially feasible FMSs and FMPs, none have been determined to be infeasible at this time. The screening process outlined in **Attachment 4** will be applied to each potentially feasible FMS and FMP to filter out infeasible solutions. As of now, the primary reasons that an FMS or FMP might be considered infeasible is if it does not align with one of the goals for this plan or the TWDB requirements for FMPs or FMSs. No attachment was created.

#### *4C – Technical Memorandum Geodatabase*

As outlined in the TWDB Extension of Time to Complete Technical Memorandum dated August 17, 2021 and associated Technical Memorandum Data Deliverable Clarification dated October 29, 2021, documentation in **Attachment 8** outlines geodatabase deliverables included in this Technical Memorandum as well as spatial files and tables. Specific data deliverables are in alignment with the TWDB's Exhibit D: Data Submittal Guidelines for Regional Flood Planning. The geodatabase files require ArcGIS software to be used to view the files. The RFPG can provide these files to anyone requesting said files by emailing [info@trinityrfg.org](mailto:info@trinityrfg.org). Please keep in mind that these files will continue to be updated and enhanced throughout the development of the Regional Flood Plan and simply reflect a snapshot in time of the project as it stands today.



## Attachment 1

Task 4C.1a – List of Existing Political Subdivisions with Flood-Related Authority/Responsibility

DRAFT

Entity	Entity Type	Floodplain Responsibilities
Cities		
Aledo	City	Yes
Allen	City	Yes
Alma	City	Yes
Alvarado	City	Yes
Alvord	City	Yes
Ames	City	Yes
Anahuac	City	Yes
Angus	City	Yes
Anna	City	Yes
Annetta South	City	Yes
Arlington	City	Yes
Athens	City	Yes
Athens	City	Yes
Aubrey	City	Yes
Aurora	City	Yes
Azle	City	Yes
Balch Springs	City	Yes
Bardwell	City	Yes
Barry	City	Yes
Bartonville	City	Yes
Beach City	City	Yes
Bedford	City	Yes
Bedias	City	Yes
Benbrook	City	Yes
Blooming Grove	City	Yes
Blue Mound	City	Yes
Bowie	City	Yes
Boyd	City	Yes
Briaroaks	City	Yes
Bridgeport	City	Yes
Buffalo	City	Yes
Burleson	City	Yes
Bynum	City	Yes
Callisburg	City	Yes
Caney City	City	Yes
Canton	City	Yes
Carl's Corner	City	Yes
Carrollton	City	Yes
Cedar Hill	City	Yes
Celina	City	Yes
Centerville	City	Yes
Chico	City	Yes
Cockrell Hill	City	Yes
Coldspring	City	Yes
Colleyville	City	Yes
Collinsville	City	Yes
Combine	City	Yes
Coolidge	City	Yes
Coppell	City	Yes
Copper Canyon	City	Yes
Corinth	City	Yes
Corral City	City	Yes
Corsicana	City	Yes
Cottonwood	City	Yes
Cove	City	Yes
Coyote Flats	City	Yes
Crandall	City	Yes
Cresson	City	Yes
Crockett	City	Yes
Cross Roads	City	Yes
Cross Timber	City	Yes
Crowley	City	Yes
Dallas	City	Yes
Dalworthington Gardens	City	Yes
Dawson	City	Yes
Dayton	City	Yes
Dayton Lakes	City	Yes
Decatur	City	Yes
Denton	City	Yes
DeSoto	City	Yes
Devers	City	Yes
Dish	City	Yes
Dorchester	City	Yes
Double Oak	City	Yes
Duncanville	City	Yes
El Lago	City	Yes
Enchanted Oaks	City	Yes

Entity	Entity Type	Floodplain Responsibilities
Ennis	City	Yes
Eules	City	Yes
Eureka	City	Yes
Eustace	City	Yes
Everman	City	Yes
Fairfield	City	Yes
Farmers Branch	City	Yes
Farmersville	City	Yes
Fate	City	Yes
Ferris	City	Yes
Forest Hill	City	Yes
Forney	City	Yes
Fort Worth	City	Yes
Frisco	City	Yes
Frost	City	Yes
Gainesville	City	Yes
Garland	City	Yes
Garrett	City	Yes
Glenn Heights	City	Yes
Godley	City	Yes
Goodlow	City	Yes
Goodrich	City	Yes
Grand Prairie	City	Yes
Grandview	City	Yes
Grapeland	City	Yes
Grapevine	City	Yes
Grays Prairie	City	Yes
Groveton	City	Yes
Gun Barrel City	City	Yes
Gunter	City	Yes
Hackberry	City	Yes
Haltom City	City	Yes
Hardin	City	Yes
Haslet	City	Yes
Heath	City	Yes
Hebron	City	Yes
Hickory Creek	City	Yes
Highland Village	City	Yes
Howe	City	Yes
Hubbard	City	Yes
Hudson Oaks	City	Yes
Hunstville	City	Yes
Hurst	City	Yes
Hutchins	City	Yes
Iola	City	Yes
Irving	City	Yes
Italy	City	Yes
Itasca	City	Yes
Jacksboro	City	Yes
Jewett	City	Yes
Joshua	City	Yes
Justin	City	Yes
Kaufman	City	Yes
Keene	City	Yes
Keller	City	Yes
Kemp	City	Yes
Kenefick	City	Yes
Kennedale	City	Yes
Kerens	City	Yes
Kirvin	City	Yes
Krugerville	City	Yes
Krum	City	Yes
Lake Bridgeport	City	Yes
Lake Dallas	City	Yes
Lake Worth	City	Yes
Lakewood	City	Yes
Lancaster	City	Yes
Latexo	City	Yes
Lavon	City	Yes
Leona	City	Yes
Leonard	City	Yes
Lewisville	City	Yes
Liberty	City	Yes
Lincoln Park	City	Yes
Lindsay	City	Yes
Little Elm	City	Yes
Livingston	City	Yes
Log Cabin	City	Yes

Entity	Entity Type	Floodplain Responsibilities
Lovelady	City	Yes
Lowry Crossing	City	Yes
Lucas	City	Yes
Mabank	City	Yes
Madisonville	City	Yes
Malakoff	City	Yes
Malone	City	Yes
Mansfield	City	Yes
Maypearl	City	Yes
McKinney	City	Yes
Mclendon-Chisholm	City	Yes
Melissa	City	Yes
Mertens	City	Yes
Mesquite	City	Yes
Mexia	City	Yes
Midlothian	City	Yes
Midway	City	Yes
Mildred	City	Yes
Milford	City	Yes
Mobile City	City	Yes
Mont Belvieu	City	Yes
Muenster	City	Yes
Murphy	City	Yes
Mustang	City	Yes
Navarro	City	Yes
Nevada	City	Yes
New Fairview	City	Yes
Newark	City	Yes
Normangee	City	Yes
North Richland Hills	City	Yes
Oak Grove	City	Yes
Oak Leaf	City	Yes
Oak Point	City	Yes
Oak Ridge	City	Yes
Oakwood	City	Yes
Old River-Winfree	City	Yes
Onalaska	City	Yes
Ovilla	City	Yes
Palestine	City	Yes
Palmer	City	Yes
Pantego	City	Yes
Paradise	City	Yes
Parker	City	Yes
Payne Springs	City	Yes
Pecan Hill	City	Yes
Pelican Bay	City	Yes
Penelope	City	Yes
Pilot Point	City	Yes
Plano	City	Yes
Point Blank	City	Yes
Post Oak Bend	City	Yes
Powell	City	Yes
Princeton	City	Yes
Prosper	City	Yes
Red Oak	City	Yes
Reno (Parker Co)	City	Yes
Retreat	City	Yes
Rhome	City	Yes
Rice	City	Yes
Richardson	City	Yes
Richland	City	Yes
Richland Hills	City	Yes
River Oaks	City	Yes
Riverside	City	Yes
Roanoke	City	Yes
Rockwall	City	Yes
Rosser	City	Yes
Rowlett	City	Yes
Runaway Bay	City	Yes
Sachse	City	Yes
Saginaw	City	Yes
Saint Jo	City	Yes
Sanctuary	City	Yes
Sanger	City	Yes
Sansom Park	City	Yes
Scurry	City	Yes
Seagoville	City	Yes
Seven Oaks	City	Yes

Entity	Entity Type	Floodplain Responsibilities
Seven Points	City	Yes
Shepherd	City	Yes
Southlake	City	Yes
Springtown	City	Yes
Star Harbor	City	Yes
Streetman	City	Yes
Talty	City	Yes
Teague	City	Yes
Tehuacana	City	Yes
Terrell	City	Yes
The Colony	City	Yes
Tioga	City	Yes
Tom Bean	City	Yes
Tool	City	Yes
Trenton	City	Yes
Trinidad	City	Yes
Trinity	City	Yes
University Park	City	Yes
Valley View	City	Yes
Van Alstyne	City	Yes
Venus	City	Yes
Watauga	City	Yes
Waxahachie	City	Yes
Weatherford	City	Yes
Weston	City	Yes
Westover Hills	City	Yes
Westworth Village	City	Yes
White Settlement	City	Yes
Whitesboro	City	Yes
Willow Park	City	Yes
Wills Point	City	Yes
Wilmer	City	Yes
Wortham	City	Yes
Wylie	City	Yes
Counties		
Anderson County*	County	Yes
Archer County*	County	Yes
Chambers County*	County	Yes
Clay County*	County	Yes
Collin County*	County	Yes
Cooke County*	County	Yes
Dallas County	County	Yes
Denton County	County	Yes
Ellis County	County	Yes
Fannin County*	County	Yes
Freestone County*	County	Yes
Grayson County*	County	Yes
Hardin County	County	Yes
Henderson County*	County	Yes
Houston County*	County	Yes
Hunt County*	County	Yes
Jack County*	County	Yes
Johnson County*	County	Yes
Kaufman County*	County	Yes
Leon County*	County	Yes
Liberty County*	County	Yes
Limestone County*	County	Yes
Madison County*	County	Yes
Montague County*	County	Yes
Navarro County	County	Yes
Parker County*	County	Yes
Polk County*	County	Yes
Rockwall County*	County	Yes
San Jacinto County*	County	Yes
Tarrant County	County	Yes
Trinity County*	County	Yes
Van Zandt County*	County	Yes
Walker County*	County	Yes
Wise County	County	Yes
Young County*	County	Yes
Drainage Districts		
Ellis County Drainage District 1	Drainage District	Invalid
Liberty County Drainage District	Drainage District	Yes
Old River Drainage District 1-Liberty County	Drainage District	No info
Raywood Drainage District 2	Drainage District	Yes
Environmental		
Aquilla Hackberry Creek CD	Environmental	Invalid

Entity	Entity Type	Floodplain Responsibilities
Dixon Water	Environmental	Unspecified
Friends of Lake Livingston - Texan by Nature	Environmental	Unspecified
Gulf Coast Waste Disposal Authority	Environmental	No
Public Lab	Environmental	No
Southeast Texas Agricultural Development District	Environmental	Invalid
Texas A&M Agrilife Extension Anderson County	Environmental	No
Texas A&M Agrilife Extension Archers County	Environmental	No
Texas A&M Agrilife Extension Chambers County	Environmental	No
Texas A&M Agrilife Extension Clay County	Environmental	No
Texas A&M Agrilife Extension Collin County	Environmental	No
Texas A&M Agrilife Extension Cooke County	Environmental	No
Texas A&M Agrilife Extension Dallas County	Environmental	No
Texas A&M Agrilife Extension Denton County	Environmental	No
Texas A&M Agrilife Extension Ellis County	Environmental	No
Texas A&M Agrilife Extension Fannin County	Environmental	No
Texas A&M Agrilife Extension Freestone County	Environmental	No
Texas A&M Agrilife Extension Grayson County	Environmental	No
Texas A&M Agrilife Extension Grimes County	Environmental	No
Texas A&M Agrilife Extension Hardin County	Environmental	No
Texas A&M Agrilife Extension Henderson County	Environmental	No
Texas A&M Agrilife Extension Hill County	Environmental	No
Texas A&M Agrilife Extension Hood County	Environmental	No
Texas A&M Agrilife Extension Houston County	Environmental	No
Texas A&M Agrilife Extension Hunt County	Environmental	No
Texas A&M Agrilife Extension Jack County	Environmental	No
Texas A&M Agrilife Extension Johnson County	Environmental	No
Texas A&M Agrilife Extension Kaufman County	Environmental	No
Texas A&M Agrilife Extension Leon County	Environmental	No
Texas A&M Agrilife Extension Liberty County	Environmental	No
Texas A&M Agrilife Extension Limestone County	Environmental	No
Texas A&M Agrilife Extension Madison County	Environmental	No
Texas A&M Agrilife Extension Montague County	Environmental	No
Texas A&M Agrilife Extension Navarro County	Environmental	No
Texas A&M Agrilife Extension Parker County	Environmental	No
Texas A&M Agrilife Extension Polk County	Environmental	No
Texas A&M Agrilife Extension Rockwall County	Environmental	No
Texas A&M Agrilife Extension San Jacinto County	Environmental	No
Texas A&M Agrilife Extension Tarrant County	Environmental	No
Texas A&M Agrilife Extension Trinity County	Environmental	No
Texas A&M Agrilife Extension Van Zandt County	Environmental	No
Texas A&M Agrilife Extension Walker County	Environmental	No
Texas A&M Agrilife Extension Wise County	Environmental	No
Texas A&M Agrilife Extension Young County	Environmental	No
Trinity Bay Conservation District	Environmental	Yes
Van Zandt County Waste Disposal District	Environmental	Invalid
Federal Entities		
Federal Emergency Management Agency	Federal	Yes
National Weather Service / West Gulf River Forecast Center	Federal	Yes
U. S. Army Corps of Engineers - Fort Worth District	Federal	Yes
U. S. Army Corps of Engineers - Galveston District	Federal	Yes
Flood Control Districts		
Dallas County FCD 1	Flood Control	Yes
Irving Flood Control District Section 1	Flood Control	Yes
Irving Flood Control District Section 3	Flood Control	Yes
Northwest Dallas County FCD	Flood Control	Yes
Freshwater Supply Districts		
Belmont FWSD 1 of Denton County	Water Supply District	Has Drainage Responsibilities
Belmont FWSD 2 of Denton County	Water Supply District	Has Drainage Responsibilities
Bistone Municipal Water Supply District	Water Supply District	No
Bowie Water Supply District	Water Supply District	No info
Denton County FWSD 10	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 10	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 11-A	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 11-B	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 11-C	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 1-A	Water Supply District	Invalid
Denton County FWSD 1-B	Water Supply District	Invalid
Denton County FWSD 1-C	Water Supply District	Invalid
Denton County FWSD 1-D	Water Supply District	No info
Denton County FWSD 1-E	Water Supply District	Invalid
Denton County FWSD 1-F	Water Supply District	No info
Denton County FWSD 1-G	Water Supply District	Invalid
Denton County FWSD 1-H	Water Supply District	No info
Denton County FWSD 2-A	Water Supply District	Invalid
Denton County FWSD 2-C	Water Supply District	No info
Denton County FWSD 3	Water Supply District	No info
Denton County FWSD 4-A	Water Supply District	Has Drainage Responsibilities



Entity	Entity Type	Floodplain Responsibilities
Denton County FWSD 6	Water Supply District	No
Denton County FWSD 7	Water Supply District	No
Denton County FWSD 7	Water Supply District	No
Denton County FWSD 8-A	Water Supply District	Has Drainage Responsibilities
Denton County FWSD 8-B	Water Supply District	Has Drainage Responsibilities
East Cedar Creek FWSD	Water Supply District	No
East Fork FWSD 1	Water Supply District	No info
Ellis County FWSD 1	Water Supply District	No
Ellis County FWSD 2	Water Supply District	Has Drainage Responsibilities
Ellis County FWSD 3	Water Supply District	No
Johnson County FWSD 2	Water Supply District	No
Kaufman County FWSD 1A	Water Supply District	No
Kaufman County FWSD 1B	Water Supply District	Has Drainage Responsibilities
Kaufman County FWSD 1C	Water Supply District	Has Drainage Responsibilities
Kaufman County FWSD 1D	Water Supply District	Has Drainage Responsibilities
Kaufman County FWSD 1E	Water Supply District	Invalid
Kaufman County FWSD 1F	Water Supply District	Invalid
Kaufman County FWSD 2	Water Supply District	Invalid
Kaufman County FWSD 4A	Water Supply District	No
Kaufman County FWSD 4B	Water Supply District	Has Drainage Responsibilities
Kaufman County FWSD 5	Water Supply District	Invalid
Kaufman County FWSD 6	Water Supply District	No
Kaufman County FWSD 7	Water Supply District	No info
Parker County FWSD 1	Water Supply District	Invalid
Polk County FWSD 2	Water Supply District	No
Polo Ridge FWSD	Water Supply District	Unspecified
Tarrant County FWSD 1	Water Supply District	Has Drainage Responsibilities
The Lakes FWSD of Denton County	Water Supply District	No
Denton County Fresh Water Supply District 12	Water Supply District	Unspecified
Wise County WSD	Water Supply District	Unspecified
Improvement Districts		
Chambers County Improvement District 1	Improvement District	No
Chambers County Improvement District 3	Improvement District	Has Drainage Responsibilities
Choctaw Watershed WID	Improvement District	Yes
Cole Ranch ID 1	Improvement District	Has Drainage Responsibilities
Dallas County Improvement District	Improvement District	Invalid
Dallas County LID14	Improvement District	No info
Denton County Development District 4	Improvement District	
Denton County LID 1	Improvement District	No info
Denton County Reclamation & Road District	Improvement District	Yes
Ellis County LID 3	Improvement District	Unspecified
Ellis County LID 4	Improvement District	Unspecified
Falcons Lair Utility & Reclamation District	Improvement District	Invalid
Grand Prairie Metropolitan Utility & Reclamation District	Improvement District	No info
Great Southwest Improvement District	Improvement District	No info
Henderson County LID 1	Improvement District	No info
Henderson County LID 3	Improvement District	Unspecified
Hunter Ranch Improvement District 1	Improvement District	Invalid
Kaufman County LID 1	Improvement District	No info
Kaufman County LID 4	Improvement District	Invalid
Kaufman County Parks Improvement District	Improvement District	Invalid
Lake Granbury Water Improvement District	Improvement District	Invalid
Lakeside Utility & Reclamation District	Improvement District	Invalid
Meadow Road Improvement District	Improvement District	Unspecified
Navarro County LID 10	Improvement District	Invalid
Navarro County LID 11	Improvement District	Invalid
River Ranch ID	Improvement District	Has Drainage Responsibilities
Valwood Improvement Authority	Improvement District	Yes
Management Districts		
Arlington Entertainment Area Management District	Management District	Unspecified
Celina MMD 2	Management District	Has Drainage Responsibilities
Celina MMD 3	Management District	Has Drainage Responsibilities
Frisco Square Management District	Management District	No
Highway 380 MMD 1	Management District	Has Drainage Responsibilities
Karis Municipal Management District	Management District	Has Drainage Responsibilities
Lake View Management and Development District	Management District	Invalid
Mesquite Medical Center Management District	Management District	Invalid
Midlothian MMD 3	Management District	Invalid
New Park MMD	Management District	Invalid
North Celina MMD 3	Management District	Invalid
North Oak Cliff Municipal Management District	Management District	Unspecified
Northlake MMD 1	Management District	No
Northlake MMD 2	Management District	Has Drainage Responsibilities
Oak Farms MMD	Management District	Invalid
Prairie Ridge MMD 1	Management District	Invalid
Prosper Management District 1	Management District	Has Drainage Responsibilities
SoGood Cedars MMD	Management District	No info

Entity	Entity Type	Floodplain Responsibilities
Triple Creek Municipal Management District	Management District	Invalid
University Hills MMD	Management District	Invalid
Viridian Municipal Management District	Management District	Has Drainage Responsibilities
Windsor Hills MMD 1	Management District	No
Municipal Utility Districts		
Bear Creek Ranch MUD 1	MUD	Unspecified
Big Sky MUD	MUD	Unspecified
Burns Branch MUD 1	MUD	Has Road Drainage Responsibilities
Canyon Falls MUD 1	MUD	Has Drainage Responsibilities
Chambers County MUD 2	MUD	Invalid
Chambers County MUD 3	MUD	Invalid
Circle T MUD 1	MUD	Invalid
Circle T MUD 2	MUD	Invalid
Circle T MUD 3	MUD	Invalid
Collin County MUD 1	MUD	Has Drainage Responsibilities
Collin County MUD 2	MUD	Invalid
Cresson Crossroads MUD 2	MUD	Invalid
Dallas County MUD 4	MUD	Invalid
Dallas County Park Cities MUD	MUD	No
Dallas County Park Cities MUD	MUD	No
Denton County MUD 10	MUD	Has Drainage Responsibilities
Denton County MUD 4	MUD	Has Drainage Responsibilities
Denton County MUD 5	MUD	Has Drainage Responsibilities
Denton County MUD 6	MUD	Has Drainage Responsibilities
Denton County MUD 7	MUD	Invalid
Denton County MUD 8	MUD	No info
Denton County MUD 9	MUD	Has Drainage Responsibilities
Double M MUD	MUD	Invalid
Dove Valley Ranch MUD	MUD	Invalid
Ellis County MUD 1	MUD	Invalid
Fairfields MUD	MUD	Has Drainage Responsibilities
Far North Fort Worth MUD 1	MUD	Has Drainage Responsibilities
Far North Fort Worth MUD 1	MUD	Has Drainage Responsibilities
Farmers Creek Watershed Authority	MUD	Invalid
Four Seasons Ranch MUD 1	MUD	Invalid
Grayson County MUD 1	MUD	Invalid
Grayson County MUD 2	MUD	Invalid
Grayson County MUD 3	MUD	Invalid
Grayson County MUD 5	MUD	Invalid
Gunter MUD 1	MUD	Invalid
Gunter MUD 2	MUD	Invalid
Howe MUD 1	MUD	No info
Kaufman County MUD 10	MUD	Has Drainage Responsibilities
Kaufman County MUD 11	MUD	Has Drainage Responsibilities
Kaufman County MUD 12	MUD	Cannot retrieve info
Kaufman County MUD 14	MUD	Has Drainage Responsibilities
Kaufman County MUD 2	MUD	Has Drainage Responsibilities
Kaufman County MUD 3	MUD	Has Drainage Responsibilities
Kaufman County MUD 4	MUD	Has Drainage Responsibilities
Kaufman County MUD 5	MUD	Cannot retrieve info
Kaufman County MUD 6	MUD	Has Drainage Responsibilities
Kaufman County MUD 7	MUD	Has Drainage Responsibilities
Kaufman County MUD 9	MUD	No info
Kimberlin Ranch MUD 1	MUD	No info
Kimberlin Ranch MUD 2	MUD	Unspecified
Kimberlin Ranch MUD 3	MUD	Unspecified
Kings Crossing MUD	MUD	Invalid
La La Ranch MUD	MUD	Invalid
Lake Weatherford MUD 1	MUD	Invalid
Lake Weatherford MUD 2	MUD	Invalid
Lakehaven MUD	MUD	No info
Lancaster MUD 1	MUD	Has Drainage Responsibilities
Las Lomas MUD 1	MUD	No info
Las Lomas MUD 2	MUD	Invalid
Las Lomas MUD 3	MUD	Invalid
Las Lomas MUD 4A of Kaufman County	MUD	No info
Las Lomas MUD 4B of Kaufman County	MUD	No
Las Lomas MUD 4C of Kaufman County	MUD	Invalid
Lazy W District 1	MUD	Invalid
Liberty County MUD 5	MUD	Invalid
Live Oak Creek MUD 1 of Tarrant County	MUD	Has Drainage Responsibilities
McKinney MUD 1 of Collin County	MUD	No
McKinney MUD 2 of Collin County	MUD	Has Drainage Responsibilities
Mobberly MUD	MUD	No info
Morningstar Ranch MUD 1 of Parker County	MUD	No
Morningstar Ranch MUD 2 of Parker County	MUD	No
New Fairview MUD 1	MUD	No
North Zulch MUD	MUD	No

Entity	Entity Type	Floodplain Responsibilities
Platinum Ranch MUD 1A	MUD	Invalid
Platinum Ranch MUD 1B	MUD	Invalid
Preston Summit MUD 1	MUD	No
Ranch at FM 1385 MUD	MUD	Invalid
River Ranch MUD 1	MUD	Has Drainage Responsibilities
River Ranch MUD 10	MUD	
River Ranch MUD 11	MUD	No info
River Ranch MUD 12	MUD	No info
River Ranch MUD 13	MUD	No info
River Ranch MUD 14	MUD	No info
River Ranch MUD 15	MUD	No info
River Ranch MUD 2	MUD	No info
River Ranch MUD 3	MUD	No info
River Ranch MUD 4	MUD	No info
River Ranch MUD 5	MUD	No info
River Ranch MUD 6	MUD	No info
River Ranch MUD 7	MUD	No info
River Ranch MUD 8	MUD	No info
River Ranch MUD 9	MUD	No info
Riverside MUD	MUD	Invalid
Rockwall County Consolidated MUD 1	MUD	No
Rockwall County Consolidated MUD 2	MUD	Invalid
Rockwall County MUD 8	MUD	Has Drainage Responsibilities
Rockwall County MUD 9	MUD	Has Drainage Responsibilities
Sangani Ranch MUD 1	MUD	Invalid
Somerset MUD 1	MUD	Invalid
Somerset MUD 2	MUD	Invalid
Tradition MUD 1 of Denton County	MUD	Invalid
Tradition MUD 2 of Denton County	MUD	Invalid
Trophy Club MUD 1	MUD	No
Twin Lakes MUD 1 of Kaufman County	MUD	Invalid
Van Alstyne MUD 1 of Grayson County	MUD	Unspecified
Van Alstyne MUD 2 of Collin County	MUD	Invalid
Waterwood MUD 1	MUD	No
West Cedar Creek MUD	MUD	No
Westwood Shores MUD	MUD	No
Wilmer MUD 1	MUD	Unspecified
Wise County MUD 4	MUD	No
Navigation Districts		
Chambers-Liberty Counties Navigation District	Navigation District	No
River Authorities		
Angelina & Neches River Authority	River Authority	Yes
Brazos River Authority	River Authority	Yes
Dallas County Utility & Reclamation District	River Authority	Yes
Lower Neches Valley Authority	River Authority	Yes
Red River Authority of Texas	River Authority	Yes
Sabine River Authority	River Authority	Yes
San Jacinto River Authority	River Authority	Yes
Sulphur River Basin Authority	River Authority	Yes
Trinity River Authority of Texas	River Authority	Yes
Upper Neches River Municipal Water Authority	River Authority	Yes
State Entities		
General Land Office	State	Yes
GLO Consultant	State	No
Texas Commission on Environmental Quality	State	Yes
Texas Department of Agriculture	State	Yes
Texas Department of Emergency Management	State	Yes
Texas Department of Emergency Management - Region 1	State	Yes
Texas Department of Emergency Management - Region 2	State	Yes
Texas Department of Emergency Management - Region 6	State	Yes
Texas Department of Transportation Beaumont District	State	Yes
Texas Department of Transportation Bryan District	State	Yes
Texas Department of Transportation Dallas District	State	Yes
Texas Department of Transportation Fort Worth District	State	Yes
Texas Department of Transportation Lufkin District	State	Yes
Texas Department of Transportation Paris District	State	Yes
Texas Department of Transportation Tyler District	State	Yes
Texas Department of Transportation Waco District	State	Yes
Texas Department of Transportation Wichita Falls District	State	Yes
Texas Department of Transportation Yoakum District	State	Yes
Texas Parks and Wildlife Department	State	Yes
Texas State Soil and Water Conservation Board	State	Yes
Texas Water Development Board	State	Yes
SUDs		
Bethany SUD	SUD	Unspecified
Buena Vista-Bethel SUD	SUD	Unspecified
Caddo Basin SUD	SUD	No

Entity	Entity Type	Floodplain Responsibilities
East Fork SUD	SUD	No
Johnson County SUD	SUD	No
Lake Kiowa SUD	SUD	Unspecified
Lavon Special Utility District	SUD	No
Mountain Peak SUD	SUD	No
Phelps SUD	SUD	No
Rockett SUD	SUD	No
Southwest Fannin County SUD	SUD	No
Tarkington SUD	SUD	No
Walnut Creek SUD	SUD	No
Towns		
Addison	Town	Yes
Annetta	Town	Yes
Annetta North	Town	Yes
Argyle	Town	Yes
Blue Ridge	Town	Yes
Edgecliff Village	Town	Yes
Elkhart	Town	Yes
Emhouse	Town	Yes
Fairview	Town	Yes
Flower Mound	Town	Yes
Highland Park	Town	Yes
Lakeside	Town	Yes
New Hope	Town	Yes
Northlake	Town	Yes
Oak Valley	Town	Yes
Ponder	Town	Yes
Prosper	Town	Yes
Providence Village	Town	Yes
Saint Paul	Town	Yes
Shady Shores	Town	Yes
Sunnyvale	Town	Yes
Trophy Club	Town	Yes
Westlake	Town	Yes
Utility Districts		
Cape Royale Utility District	Utility District	Unspecified
Denton County Road Utility District 1	Utility District	Invalid
Lake Cities Municipal Utility Authority	Utility District	Unspecified
Memorial Point Utility District	Utility District	Unspecified
Seis Lagos Utility District	Utility District	Unspecified
Water Authorities		
Baytown Area Water Authority	Water Authority	Invalid
Benbrook Water Authority	Water Authority	No
Clear Creek Watershed Authority	Water Authority	Yes
Coastal Water Authority	Water Authority	Yes
Greater Texoma Utility Authority	Water Authority	No
Gulf Coast Water Authority	Water Authority	No
Water Districts		
North Texas MWD	Water District	No
Upper Trinity Regional Water District	Water District	Has Drainage Responsibilities
Muenster Water District	Water District	No
WCIDs		
Alpha Ranch WCID	WCID	Has Drainage Responsibilities
Canyon Falls WCID 2	WCID	Has Drainage Responsibilities
Collin County WCID 3	WCID	Has Drainage Responsibilities
Double Platinum Ranch WCID 1 of Grayson County	WCID	Invalid
East Keechi Creek WCID 1	WCID	Has Drainage Responsibilities
Ellis County WCID 1	WCID	No info
Frisco West WCID	WCID	Has Drainage Responsibilities
Houston County WCID 1	WCID	No
Jack County WCID 1	WCID	No info
Kaufman County WCID 1	WCID	Unspecified
Liberty County WCID 1	WCID	Has Drainage Responsibilities
Liberty County WCID 5	WCID	Has Drainage Responsibilities
Liberty County WCID 6	WCID	No info
Moore Farm WCID 1	WCID	No info
North Fort Worth WCID 1	WCID	No
Oak Point WCID 1	WCID	Yes
Oak Point WCID 2	WCID	Has Drainage Responsibilities
Oak Point WCID 3	WCID	Unspecified
Oak Point WCID 4	WCID	No
Providence Village WCID of Denton County	WCID	Invalid
Rockwall County WCID 1	WCID	No info
Rockwall County WCID 2	WCID	No info
Rolling V Ranch WCID 1 of Wise County	WCID	No info
Smiley Road WCID 1	WCID	No info
Smiley Road WCID 2	WCID	No info
South Denton County WCID 1	WCID	No

Entity	Entity Type	Floodplain Responsibilities
Talley Ranch WCID 1 of Denton County	WCID	Invalid
Tarrant Regional Water District	WCID	Yes
Valencia on the Lake WCID	WCID	No info
Walden Pond WCID	WCID	Unspecified
◦Invalid indicates that there is sufficient information to conclude or assume that the entity in question		

## Attachment 2

Task 4C.1b and 4C.1f – List of Previous Flood Studies and Models Relevant to Plan Development

DRAFT



Study Name	Model Name	Date Created	Stream Section	Current or Future Conditions	HEC RAS version	Steady or Unsteady state	Model Developer
Corridor Development Certificate Manual, Trinity River Corridor- North Central Texas	UTCDC_Model_v3	7/1/09	West Fork/Elm Fork confluence to Lewisville Dam, West Fork/Elm Fork confluence to Lake Worth Dam, West Fork/Elm Fork confluence to Lake Worth Dam, West Fork/Elm Fork confluence to about 7,300 feet downstream of Dowdy-Ferry Road in southeast Dallas	Existing and Future conditions	CDC HEC-RAS	Steady Flow	USACE
Town Creek and Shannon Creek Master Drainage Plan, City of Burleson	QUILLMILLER	11/21/14	Quill Miller Creek	Existing Conditions	4.1.0	Steady Flow	USACE
Town Creek and Shannon Creek Master Drainage Plan, City of Burleson	SHANNON	11/21/14	Shannon Creek	Existing Conditions	4.1.0	Steady Flow	USACE
Town Creek and Shannon Creek Master Drainage Plan, City of Burleson	Village	11/21/14	Village Creek	Existing Conditions	4.1.0	Steady Flow	USACE
Town Creek and Shannon Creek Master Drainage Plan, City of Burleson	SOUTHSHANNON	1/1/10	South Shannon	Existing Conditions	4.1.0	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_002yr	9/17/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_002yr_NOAA	1/18/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_002yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_005yr	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_005yr_NOAA	9/17/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_005yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_010yr	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_010yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_010yr_NOAA	1/11/19	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_025yr	9/17/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_025yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_050yr	9/17/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_050yr_NOAA	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_050yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watersehd Hydrology Assessment for the Trinity River Basin	AP_Freq_100yr	12/10/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_100yr_NOAA	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_100yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_200yr	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE

Study Name	Model Name	Date Created	Stream Section	Current or Future Conditions	HEC RAS version	Steady or Unsteady state	Model Developer
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_200yr_NOAA_WF	1/18/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_250yr	9/17/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_500yr	12/10/18	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_500yr_NOAA	1/14/19	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Interagency Flood Risk Management (InFRM) Watershed Hydrology Assessment for the Trinity River Basin	AP_Freq_500yr_NOAA_WF	5/7/21	Trinity Bay, Lewisville Lake, Lavon Lake, Grapevine Lake, Ray Roberts Lake, Benbrook Lake, Joe Pool Lake	Future conditions	HEC-HMS 4.3	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	002_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	005_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	010_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	025_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	050_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	100_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	500_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	002_Year_AMC_II	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	AMC_II_002_Freq	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	AMC_II_005_Freq	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	AMC_II_100_Freq	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	AMC_II_500_Freq	4/9/20	Marine and Cement Creeks	Future conditions	HEC-HMS 3.5	Steady Flow	USACE
Marine and Cement Creek Frequency and Propability Maximum Flood Study	Marine_Cement_Creek	3/1/08	Marine and Cement Creeks	Future conditions	HEC-HMS 4.0	Steady Flow	USACE
Shady Lane Feasibility Study	1_ACE	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	2_ACE	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	10_ACE	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	20_ACE	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	50_ACE	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	Existing_Conditions	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Shady Lane Feasibility Study	Shady_Lane	9/25/20	Shady lane	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Drainage Study for Stream 2C5, Keen Creek, From North Barnes Drive To North Yale Drive	KeenCreek	5/25/21	Keen Creek	Existing Conditions	HEC-HMS 4.3	Steady Flow	USACE
Miami Dr Drainage Study	Miami_Drive	12/8/20	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	2_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	5_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	10_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	25_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	50_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	100_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Miami Dr Drainage Study	500_yr_24_hr	8/31/00	Miami Drive	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	2_year_det	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	2_year_existing	12/6/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE

Study Name	Model Name	Date Created	Stream Section	Current or Future Conditions	HEC RAS version	Steady or Unsteady state	Model Developer
Garland Systematic Storm Sewer Study, Project Area 1	5_year	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	5_year_existing	12/6/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	5yr_det	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	10_year_existing	12/6/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	10year_det	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	25_year_existing	12/6/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	25_yr_det	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	50_year_detention	1/30/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	50_year_existing	12/6/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	100_year_detention	11/4/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	100_yr_with_detentio	11/7/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Area_1_Hydrology	9/17/07	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Basin2_100yr	9/17/07	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Basin2_addsubbasins	11/7/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	area1_det_box_us	3/11/03	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Basin3	9/17/07	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Run_1	10/18/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Run_2	10/18/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Run_6	10/18/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Run_7	10/18/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 1	Run_8	10/18/02	Stream 2C5	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 2	Area 2-Existing	2/3/03	Holiday Park North	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 2	Area 2-Prop #1	2/3/03	Holiday Park North	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 2	Area 2-Prop #2	2/3/03	Holiday Park North	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 2	Area 2-Prop #3	2/3/03	Holiday Park North	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 3	2DSS_EC_20201117_DFW 100yr24hr	11/17/20	Stream 2C3	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 3	2DSS_Option1_revGO_DFW 100yr24hr	7/29/21	Stream 2C3	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 3	2DSS_Option2_revGO_DFW 100yr24hr	7/29/21	Stream 2C3	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 3	2DSS_Option3_revGO_DFW 100yr24hr	7/29/21	Stream 2C3	Existing Conditions	HEC-RAS 5.0.7	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 4	4-stormcad - alt 2	3/10/03	Buhler, Cresthaven, Madewell, and Maryland streams	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 4	4-stormcad - alt 3	3/10/03	Buhler, Cresthaven, Madewell, and Maryland streams	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 4	4-stormcad - existing	3/10/03	Buhler, Cresthaven, Madewell, and Maryland streams	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 5	GND02111AREA5	8/11/02	Stream MB-6	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD A,B-stormcad-existing	4/8/03	Storm Drain A,B	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD A,B-stormcad-proposed	4/8/03	Storm Drain A,B	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD A,B-stormcad-existing_905	4/8/03	Storm Drain A,B	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD A,B-stormcad-existing_905r26	4/8/03	Storm Drain A,B	Existing Conditions	StormCAD	Steady Flow	Bentley

[illegible]

Study Name	Model Name	Date Created	Stream Section	Current or Future Conditions	HEC RAS version	Steady or Unsteady state	Model Developer
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD E-stormcad-proposed	4/8/03	Storm Drain E	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD E-stormcad-proposed_1	4/8/03	Storm Drain E	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD E-stormcad-proposed_55	4/8/03	Storm Drain E	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_1	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_86	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_2417	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_2418	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_2575	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-existing_2576	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-proposed	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-proposed_1	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD F to M-stormcad-proposed_86	4/8/03	Storm Drain F-M	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_1	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_86	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_827	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_840	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_901	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-existing_903	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-prop	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area 6-SD O to R-stormcad-prop_86	4/8/03	Storm Drain O-R	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 6	Area_6_Hydrology	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Control_1	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_2	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_5	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_10	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_25	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_50	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Met_100	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	Ultimate___MP_rout	4/8/03	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 6	trib2d1	11/6/02	Storm Drain O-R	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 7	Existing Conditions	7/17/03	Storm Drains A, B, F, H, I, J, K	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 7	Marquis	7/17/03	Storm Drains A, B, F, H, I, J, K	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 7	Existing Conditions	7/17/03	Storm Drains A, B, F, H, I, J, K	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 10	Area10_Strea2C1	8/16/02	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 10	Area 10-stormcad-AMG Alt 1	3/10/03	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley

Study Name	Model Name	Date Created	Stream Section	Current or Future Conditions	HEC RAS version	Steady or Unsteady state	Model Developer
Garland Systematic Storm Sewer Study, Project Area 10	Area 10-stormcad-AMG Alt 2	3/10/03	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 10	Area 10-stormcad-existing	3/10/03	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 10	Area 10-stormcad-Miami Alt 1	3/10/03	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 10	Area 10-stormcad-Miami Alt 2	3/10/03	Eastern Meadows No 2, Southlake Estates No 3, Greenbrook Estates No 2, Green Acres Addition, Rosehill Acreage Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 11	Area 11-stormcad-existing	2/24/03	La Prda Subdivision Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 12	Area 12-stormcad-existing	2/24/03	Gatewood Subdivision Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 14	Area 14 alternative 1	3/11/03	Center Creek Plaza and Southgate Estates No 7 Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 14	Area 14 existing	3/11/03	Center Creek Plaza and Southgate Estates No 7 Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 15	clubcreek	9/27/02	Club Creek	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 16	Alternative 2b--Bore single	5/14/03	Camelot Additionas Nos 3, 5, 7, 8, 11a, 11b	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 16	Alternative 3--Galaxie Bypass2	5/14/03	Camelot Additionas Nos 3, 5, 7, 8, 11a, 11b	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 16	existing	5/14/03	Camelot Additionas Nos 3, 5, 7, 8, 11a, 11b	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 17	city_alternative_split_wout_detention_G	2/5/10	Storm sewer lines A, B, C, E, F, G, H, I, J, K	Existing Conditions	XPStorm 10.52	Steady Flow	XP Software
Garland Systematic Storm Sewer Study, Project Area 17	city_alternative_wout_detention_G	2/5/10	Storm sewer lines A, B, C, E, F, G, H, I, J, K	Existing Conditions	XPStorm 10.52	Steady Flow	XP Software
Garland Systematic Storm Sewer Study, Project Area 18	Area18-stormcad-alt2a	6/12/03	Main Street and Wilson Street Storm Drainage	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 18	Area18-stormcad-existing1	6/12/03	Main Street and Wilson Street Storm Drainage	Existing Conditions	HEC-HMS 2.2	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 20	Existing Conditions	7/17/03	National Drive nd Channels in Garland, Gavron West, Innovation, and Kingsley Industrial Park Storm Drainage	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 20	Marquis	7/17/03	National Drive nd Channels in Garland, Gavron West, Innovation, and Kingsley Industrial Park Storm Drainage	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 20	South watershed alternative 2	7/17/03	National Drive nd Channels in Garland, Gavron West, Innovation, and Kingsley Industrial Park Storm Drainage	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 20	South watershed alternative	7/17/03	National Drive nd Channels in Garland, Gavron West, Innovation, and Kingsley Industrial Park Storm Drainage	Existing Conditions	HEC-RAS 3.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 21	area21exist1	8/5/04	Northlake Estates and Castlewood Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 21	area21NorLakAlt1	8/5/04	Northlake Estates and Castlewood Subdivisions Storm Drainage	Existing Conditions	StormCAD	Steady Flow	Bentley
Garland Systematic Storm Sewer Study, Project Area 25	LA JOLLA-SURVEY 2020-1012	10/12/20	La Jolla Drive Drainage	Existing Conditions	XP Storm 2019.1.3	Steady Flow	XP Software
Garland Systematic Storm Sewer Study, Project Area 25	LA JOLLA-C3D-EXIST SURFACE 2020-1012	10/12/20	La Jolla Drive Drainage	Existing Conditions	XP Storm 2019.1.4	Steady Flow	XP Software
Garland Systematic Storm Sewer Study, Project Area 26	LongBranchBridges	6/24/19	Centerville Marketplace Storm Sewer	Existing Conditions	HEC-HMS 4.0	Steady Flow	USACE
Garland Systematic Storm Sewer Study, Project Area 26	LongBranchCulverts	6/24/19	Centerville Marketplace Storm Sewer	Existing Conditions	HEC-HMS 4.0	Steady Flow	USACE
Acher County BLE - Paper Map Reduction Study	Countywide BLE Models	6/30/17	County-wide	Existing Conditions	HEC-RAS 5.0	Steady Flow	FEMA
Jack County BLE - Paper Map Recution Study	Countywide BLE Models	6/30/17	County-wide	Existing Conditions	HEC-RAS 5.0	Steady Flow	FEMA
Denton HUC-8 BLE	HUC-wide BLEodels	6/30/17	HUC-8-wide	Existing Conditions	HEC-RAS 5.0.5	Steady Flow	FEMA
East Fork HUC-8 BLE	HUC-wide BLEodels	9/30/19	HUC-8-wide	Existing Conditions	HEC-RAS 5.0.5	Steady Flow	FEMA
Cedar HUC-8 BLE	HUC-wide BLEodels	6/30/17	HUC-8-wide	Existing Conditions	HEC-RAS 5.0.5	Steady Flow	FEMA
Chambers HUC-8 BLE	HUC-wide BLEodels	2/28/17	HUC-8-wide	Existing Conditions	HEC-RAS 4.1	Steady Flow	FEMA
Richland HUC-8 BLE	HUC-wide BLEodels	2/28/17	HUC-8-wide	Existing Conditions	HEC-RAS 4.1	Steady Flow	FEMA
Lower Trinity Tehuacana HUC-8 BLE	HUC-wide BLEodels	1/31/21	HUC-8-wide	Existing Conditions	HEC-RAS 4.1	Steady Flow	FEMA
Lower Trnity Kickapoo HUC-8 BLE	HUC-wide BLEodels	5/31/20	HUC-8-wide	Existing Conditions	HEC-RAS 5.0.5	Steady Flow	FEMA



## Attachment 3

Task 4C.1g – Flood Mitigation and Floodplain Management Goals Adopted by the RFPG

DRAFT

## Region 3 Trinity RFPG: Draft Specific Goal Statements

As Reviewed and Approved by Region 3 RFPG on 09/23/21

### Goal 1. Improving Flood Warning & Public Safety

Improve the dissemination of information regarding early flood recognition and danger, emergency response procedures, and post-flood recovery actions.

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the number of communities with flood warning programs that can detect flood threats and provide timely warning of impending flood danger.	Initiated	Maintained
B	Improve safety at low water crossings by adding warning systems/signage or improving low water crossings in high-risk areas	100 crossings	300 crossings

### Goal 2. Improving Flood Analyses

Increase the number and extent of regional flood planning studies (FMEs) and analyses to better prepare communities for implementing flood mitigation projects.

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the availability of flood hazard data that uses the best available land use and precipitation data to reduce gaps in floodplain mapping.	25% gap reduction	95% gap reduction
B	Increase the number of entities that conduct detailed studies of localized/urban flooding impacts within the FPR.	Establish a baseline measurement	30%
C	Increase the number of communities that utilize latest and most appropriate precipitation and land use data as a basis for design criteria and flood prevention regulations.	Establish a baseline measurement	30%

### Goal 3. Reducing Property Damage & Loss

Increase the number and extent of protective regulatory measures and programs to limit future risk and reduce flood damage in the flood planning region.

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the number of entities that have floodplain standards that meet or exceed the NFIP-minimum standards.	5	25
B	Reduce the number of structures within the 1% floodplain (i.e. through structural projects, property buyouts, acquisitions, and/or relocations).	5%	10%
C	Reduce the vulnerability of agriculture, ranching and forestry to flood-related losses.	Establish a baseline measurement	30%

## Goal 4. Floodplain Preservation

Maintain the natural and beneficial functions of floodplains by preservation and conservation programs.

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the acreage of publicly protected natural areas for flood and ecosystem purposes to reduce future impacts of flooding.	Establish a baseline measurement	10%
B	Increase the number of entities that designate the 1% annual chance floodplain on Future Land Use plans that serve as the basis for zoning regulations	20	50
C	Avoid new exposure to flood hazards by adopting comprehensive plans or subdivision regulations that direct development away from the floodplain.	Establish a baseline measurement	10%

## Goal 5. Flood Infrastructure Improvement

Reduce flood risk and mitigate flood hazards to life and property through the maintenance and rehabilitation of existing infrastructure and implementation of new flood infrastructure projects.

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the number of nature-based practices as part of flood risk reduction projects.	Establish a baseline measurement	30%
B	Improve flood infrastructure and maintain streams and drainage channels to protect agricultural lands from flooding	Establish a baseline measurement	10%

## Goal 6. Expanding Flood Education & Outreach

Increase the amount of flood education and outreach opportunities to improve awareness of flood hazards and future participation throughout the flood planning region (FPR).

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Improve the participation of community stakeholder entities in the regional flood planning process.	35%	90%
B	Increase the number of local entities that host annual public outreach and education activities to improve awareness of flood hazards, benefits of flood planning, and procedures associated with emergency response associated with flooding.	Establish a baseline measurement	50
C	Increase the number of communities that work cooperatively as part of an overall floodplain management program.	5	25

### Goal 7. Expand Funding

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Expand eligibility for and use of funding programs (Local, State, Federal, Public/Private Partnerships, etc.)	Establish a baseline measurement	
B	Increase communities with dedicated stormwater funding mechanisms	10%	30%

## MEMORANDUM

**TO:** Interested Parties of the Region 3 Trinity Regional Flood Planning Group (RFPG) **DATE:** September 24, 2021

**FROM:** Stephanie Griffin **AVO:** 43791.001 000800

**EMAIL:** [sgriffin@halff.com](mailto:sgriffin@halff.com)

**SUBJECT:** Region-wide Floodplain Management Standards for Trinity Regional Flood Plan

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On September 23, 2021, the Trinity RFPG held a public meeting in a hybrid setting during which the consultant team presented the results of the data collection effort related to the topics of potentially recommending and potentially adopting region-wide floodplain management standards.

The Trinity RFPG is required to consider the possibility of recommending or adopting consistent minimum floodplain management standards and land use practices for the entire region. While **recommended** practices encourage entities with flood control responsibilities to establish minimum floodplain management standards, the **adoption** of minimum standards requires that entities adopt the minimum standards before their floodplain management evaluations (FMEs), floodplain management strategies (FMSs), and/or floodplain mitigation projects (FMPs) could be considered for potential inclusion in the regional flood plan.

The RFPG approved the following **recommended** region-wide floodplain management standards:

1. Participate in the NFIP or adopt equivalent standards
2. Regulate development in the FEMA floodplain or other local floodplain designated by local jurisdiction
3. Establish higher standards (more stringent than the NFIP) for development or freeboard above the floodplain
4. Drainage corridor preservation
5. Land use standards to reduce future flood risk
6. Compensatory flood storage

The Trinity RFPG did not adopt any region-wide floodplain management standards.

## Attachment 4

Task 4C.1h – Process to Identify Potentially Feasible FMSs and FMPs

DRAFT



# MEMORANDUM



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**TO:** Region 3 Trinity Regional Flood Planning Group

**CC:** Stephanie Griffin – Halff Associates, Inc., David Rivera – Freese and Nichols, Inc.

**FROM:** Scott Hubley, PE, CFM – Vice President, Freese and Nichols, Inc.

**SUBJECT:** Process for Identification and Evaluation of Potential FMEs and Potentially Feasible FMPs and FMSs

**DATE:** 12/07/2021

**PROJECT:** Trinity Regional Flood Plan (FNI Proj. No. HAF21337)

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## Introduction

Halff Associates, Inc. (Halff) along with Freese and Nichols, Inc. (FNI) has been retained as the Technical Consultant (TC) to the Trinity Regional Flood Planning Group (RFPG) to develop the first ever Regional Flood Plan (RFP) for the basin, as part of the state flood planning process administered by the Texas Water Development Board (TWDB). A major component of the process is to identify, evaluate, and recommend Flood Management Evaluations (FMEs), Flood Mitigation Projects (FMPs), and Flood Management Strategies (FMSs) to be included in the RFP and the cumulative State Flood Plan (SFP).

The *Scope of Work (SOW)* developed by TWDB includes a requirement to “receive public comment on a proposed process to be used by the RFPG to identify and select FMEs, FMSs, and FMPs for the 2023 Regional Flood Plan.” This Technical Memorandum (TM) has been furnished to provide background information about the overall flood planning process and the associated technical requirements and to document the TC’s proposed process for this task. It is intended to comply with the *SOW* and the relevant provisions of *Title 31 of the Texas Administrative Code (TAC) Chapters 361 and 362 (Rules)* which serve as the statute and rules that govern regional flood planning, and to be consistent with the *Exhibit C Technical Guidelines for Regional Flood Planning (Technical Guidelines)* prepared by the TWDB.

## Definitions

According to the *Technical Guidelines*, definitions of key terms include:

A **Flood Management Evaluation (FME)** is a proposed flood study of a specific, flood-prone area that is needed in order to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs.

A **Flood Mitigation Project (FMP)** is a proposed project, either structural or non-structural, that has non-zero capital costs or other non-recurring cost and when implemented will reduce flood risk, and mitigate flood hazards to life or property.

A **Flood Management Strategy (FMS)** is a proposed plan to reduce flood risk or mitigate flood hazards to life or property. At a minimum, RFPGs should include as FMSs any proposed action that they would like to identify, evaluate, and recommend that does not qualify as either an FME or FMP.

## Background

Identification and evaluation of FMEs, FMPs, and FMSs occur under *Task 4B* of the *SOW*, with recommendations being developed as part of *SOW Task 5*. Each of these recommendations must tie back to the floodplain management goals adopted by the RFPG and must contribute to the assessment and mitigation of flood risk across the basin.

FMEs, FMSs, and FMPs are broadly categorized as “flood risk reduction projects” (henceforth, “actions”) in the *Technical Guidelines*. The *Technical Guidelines* also list several potential action types for each subcategory, summarized in **Table 1** below:

**Table 1: Flood Risk Reduction Action Types**

Flood Risk Reduction Action Category	Action Types
<b>Flood Management Evaluation (FME)</b>	<ul style="list-style-type: none"> <li>a. Watershed Planning <ul style="list-style-type: none"> <li>i. H&amp;H Modeling</li> <li>ii. Flood Mapping Updates</li> <li>iii. Regional Watershed Studies</li> </ul> </li> <li>b. Engineering Project Planning <ul style="list-style-type: none"> <li>i. Feasibility Assessments</li> </ul> </li> <li>c. Preliminary Engineering (alternative analysis and up to 30% design)</li> <li>d. Studies on Flood Preparedness</li> </ul>
<b>Flood Mitigation Project (FMP)</b>	<p><b>Structural</b></p> <ul style="list-style-type: none"> <li>a. Low Water Crossings or Bridge Improvements</li> <li>b. Infrastructure (channels, ditches, ponds, stormwater pipes, etc.)</li> <li>c. Regional Detention</li> <li>d. Regional Channel Improvements</li> <li>e. Storm Drain Improvements</li> <li>f. Reservoirs</li> <li>g. Dam Improvements, Maintenance, and Repair</li> <li>h. Flood Walls/Levees</li> <li>i. Coastal Protections</li> <li>j. Nature Based Projects – living levees, increasing storage, increasing channel roughness, increasing losses, de-synchronizing peak flows, dune management, river restoration, riparian restoration, run-off pathway management, wetland restoration, low impact development, green infrastructure</li> <li>k. Comprehensive Regional Project – includes a combination of projects intended to work together</li> </ul> <p><b>Non-Structural</b></p> <ul style="list-style-type: none"> <li>a. Property or Easement Acquisition</li> <li>b. Elevation of Individual Structures</li> <li>c. Flood Readiness and Resilience</li> <li>d. Flood Early Warning Systems, including stream gauges and monitoring stations</li> <li>e. Floodproofing</li> <li>f. Regulatory Requirements for Reduction of Flood Risk</li> </ul>
<b>Flood Management Strategy (FMS)</b>	None specified; at a minimum, RFPGs should include as FMSs any proposed action that the group would like to identify, evaluate, and recommend that does not qualify as either a FME or FMP.

Particularly during this first round of flood planning, several areas are likely to be identified for potential FMEs due to a lack of sufficiently complete or current flood study data to accurately evaluate and quantify flood risk. Not every conceivable FME can or will be recommended for inclusion in the plan. The RFPG and the TC must decide which potential FMEs will be recommended in the RFP so that limited state and stakeholder resources can be directed efficiently and accordingly to implement those studies.

Similarly, regional stakeholders will likely propose several projects and strategies for managing flood risk that could be candidates for inclusion in the plan and eligible for state funding. Each FMP and FMS identified by the TC will be screened to determine if the FMP or FMS is potentially feasible. At a minimum, FMPs and FMSs must be developed in an adequate level of detail to furnish the required technical information and adhere to the minimum criteria set forth in the *SOW*, the *Rules*, and the *Technical Guidelines*.

For FMPs, these minimum criteria include having appropriate hydrologic and hydraulic (H&H) models required to evaluate that the project adheres to TWDB Mapping and Modeling Guidelines and a requirement that the FMP causes No Negative Impact on a neighboring area. These requirements must also be met for FMSs, as applicable. These standards are described in more detail in *Section 3.5* and *Section 3.6* of the *Technical Guidelines*.

## Process for Identification of Potential FMEs and Potentially Feasible FMPs and FMSs

### Identification

Identification of potential FMEs and potentially feasible FMPs and FMSs begins with the development of the Flood Mitigation Needs Analysis (*Task 4A*). Generally, this task is meant to guide action, evaluation and recommendation by highlighting:

- The areas with the greatest gaps in flood risk knowledge that should be considered for potential FMEs.
- The areas of greatest known flood risk and flood mitigation needs that should be considered for implementation of potentially feasible FMSs and FMPs.

FNI has developed a process for identifying areas of greatest need based on application of the requirements outlined in the *Rules* and *SOW*. The process is summarized in **Table 2**, below.

**Table 2: Guidance for Assessment and Identification of Flood Mitigation Needs**

Guidance	Factors to Consider
1. Most prone to flooding that threatens life and property	<ul style="list-style-type: none"><li>• Area overlapped by inundation mapping and/or included in any historical flooding record</li><li>• Building footprints / polygons within flood hazard layer</li><li>• Critical facilities with evacuation routes impacted by flooding</li><li>• Fully developed flood models (where available)</li><li>• Low water crossings</li><li>• Agricultural areas at risk of flooding</li></ul>

Guidance	Factors to Consider
2. Locations, extent and performance of current floodplain management and land use policies and infrastructure	<ul style="list-style-type: none"> <li>Communities not participating in NFIP and/or without NFIP equivalent or higher standards</li> <li>Disadvantaged / Underserved communities</li> <li>City / County design manuals</li> <li>Community Rating System (CRS) score</li> <li>Land use policies</li> <li>Floodplain ordinance(s)</li> </ul>
3. Inadequate inundation mapping	<ul style="list-style-type: none"> <li>No mapping</li> <li>Presence of Fathom / BLE / FEMA Zone A flood risk data</li> <li>Detailed FEMA models older than 10 years</li> </ul>
4. Lack of H&H models	<ul style="list-style-type: none"> <li>Communities with zero models</li> <li>Communities with limited models</li> </ul>
5. Emergency need	<ul style="list-style-type: none"> <li>Damaged or failing infrastructure</li> <li>Other emergency conditions</li> </ul>
6. Existing models, analysis and flood risk mitigation plans	<ul style="list-style-type: none"> <li>Exclude flood mitigation plans already in implementation</li> <li>Leverage existing models, analyses, and flood risk mitigation plans</li> <li>Benefit-Cost Ratio &gt; 1</li> </ul>
7. Already identified and evaluated flood mitigation projects	<ul style="list-style-type: none"> <li>Exclude flood mitigation projects already in implementation</li> <li>Leverage existing flood mitigation projects</li> <li>Benefit-Cost Ratio &gt; 1</li> </ul>
8. Historic flooding events	<ul style="list-style-type: none"> <li>Disaster declarations</li> <li>Flood insurance claim information</li> <li>Other significant local events</li> </ul>
9. Already implemented flood mitigation projects	<ul style="list-style-type: none"> <li>Exclude areas where flood mitigation projects have already been implemented unless significant residual risk remains</li> </ul>
10. Additional other factors deemed relevant by RFPG	<ul style="list-style-type: none"> <li>Alignment with RFPG goals</li> <li>Alignment with TWDB guidance principles</li> </ul>

After identification of the areas of greatest flood mitigation need, the TC will review the available data to develop a list of potential flood risk reduction actions for addressing the needs in these areas. The data will include information compiled under previous tasks in the SOW, including:

- Data collection regarding existing flood infrastructure, flood projects currently in progress, and known flood mitigation needs (*Task 1*);
- Quantification of existing and future flood risk exposure and vulnerability (*Tasks 2A and 2B*);
- Goals and strategies adopted and/or recommended by the RFPG for addressing existing flood hazards and mitigating future flood risk (*Tasks 3A and 3B*); and,
- Stakeholder-provided input throughout the flood planning process.

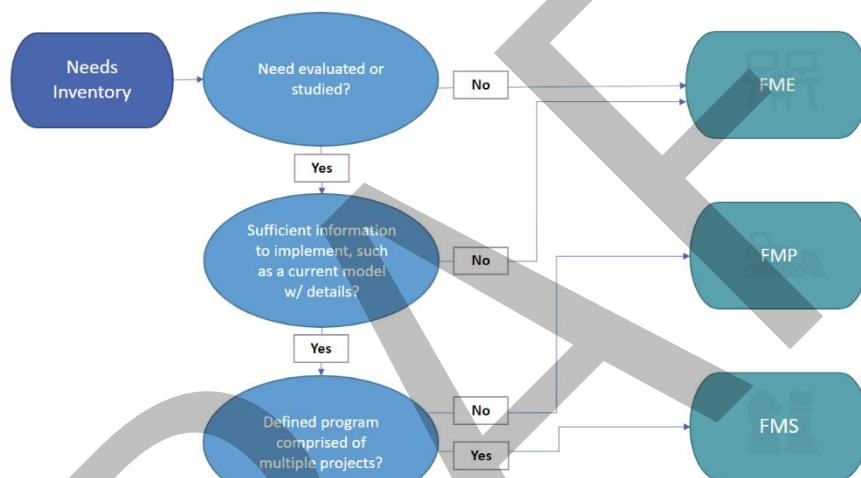
The TC anticipates several potential actions will be identified, primarily FMEs, to address gaps in available flood risk data associated with the first planning cycle. The *Rules* and *SOW* require FMSs and FMPs to be developed in a sufficient level of detail to be included in the RFP and recommended for state funding. The

TC does not anticipate that this first planning cycle will have sufficient data, time, or budget to develop new FMSs and FMPs. Rather, the list of potentially feasible FMSs and FMPs likely will be compiled based on contributions from the RFPG and other regional stakeholders from sources such as previous flood studies, drainage master plans, and capital improvement programs.

### Evaluation

Once potential flood risk reduction actions are identified, the TC will perform a screening process to sort actions into their appropriate categorization. The screening process is shown below in **Figure 1**.

**Figure 1: Potential Flood Risk Reduction Action Screening Process**



In addition to falling into the general buckets of action types outlined in **Table 1**, FMPs and FMSs will be screened to determine if they have been developed in enough detail and include current technical data to meet the TWDB's requirements for these action types as outlined in the *Technical Guidelines*. For instance, one requirement is to prove the project has no negative impacts on neighboring areas. Table 21 in Section 3.6 of the *Technical Guidelines* specifies the impacts analysis should include discharge, velocity, valley storage, and downstream conveyance considerations. This detailed analysis is only achievable if hydrologic and hydraulic models are available. Furthermore, a Benefit-Cost Analysis (BCA) is also required to demonstrate that a recommended FMP has a Benefit-Cost Ratio (BCR) greater than one (see Section 3.8 of the *Technical Guidelines*). As part of the FMP evaluation, it is likely that the BCA will need to be updated to reflect updated cost estimates. Therefore, sufficient data must be available to perform the necessary BCA calculations. Actions that were initially considered for FMSs and FMPs that do not meet these requirements may be recommended for future study as part of an FME.

### Selection

The TC will seek to identify and recommend a comprehensive list of potential flood risk reduction actions for inclusion in the RFP. In practice, this means that as many FMPs and FMSs as possible will be recommended which have information available to meet the detailed requirements specified in the *Technical Guidelines*. FMSs will also be recommended for other strategies the RFPG wishes to pursue that do not fit cleanly into the FME or FMP categorizations. One example of a potential FMS is a program of separate FMPs that is part of an overall strategy to reduce flood risk within a particular area, such as a

community-wide buyout program to be implemented over several years. Generally, FMEs will be recommended for any remaining areas with potential flood risk and exposure of people and property based on results of *Task 4A*.

All recommended actions must meet the technical requirements of the *Technical Guidelines*, including demonstrating No Negative Impacts and identifying at least one local sponsor. However, some potential actions that meet these baseline requirements may not be appropriate for recommendation. While this is not a comprehensive list, some potential reasons a project may not be recommended include:

- Action does not achieve flood risk reduction
- Action does not align with the flood mitigation goal(s) adopted by the region and/or the guidance principles set forth by the state
- Action does not demonstrate benefits at a scale appropriate for inclusion in a regional plan
- Action duplicates the benefits of another action(s) included in the plan
- Action cannot obtain a Memorandum of Understanding (MOU) or other form of concurrence from impacted entities
- Action does not demonstrate a sensible benefit-cost ratio or other metric
- Public input regarding the action demonstrates a need for further evaluation or consensus building with regional stakeholders
- Action does not receive a simple majority vote from a quorum of the RFPG members for inclusion in the RFP.

## Schedule

The process to identify and evaluate FMEs, FMPs, and FMSS must be approved by the RFPG and included in the Technical Memorandum (TM) furnished under *Task 4C* of the SOW. This deliverable deadline has been set for January 7, 2022 by the TWDB. After the delivery of the TM, the TWDB will review and provide Notice to Proceed (NTP) on *Task 5*, after which the TC may begin the process of recommending FMEs and FMPs for inclusion in the RFP. The TWDB has not provided an anticipated date for issuance of NTP. As such, the schedule provided in **Table 3** below is the TC's proposed timeline of activities to meet the TM deadline and anticipated schedule of activities after NTP on *Task 5*.

**Table 3: Timeline of Activities**

Flood Planning Process Activity	Anticipated Date
TC delivers <i>Process for Identification and Evaluation of Potential FMEs and Potentially Feasible FMPs and FMSS</i> TM to RFPG for review	September 16, 2021
RFPG considers approval of Process at November meeting	November 18, 2021
TC delivers TM including identified potential FMEs and potentially feasible FMPS and FMSSs to RFPG for review	November 23, 2021
RFPG considers approval to submit TM	December 16, 2021
TC delivers TM to TWDB	January 7, 2022

Flood Planning Process Activity	Anticipated Date
TWDB review TM; TC continue process to evaluate FMEs, FMPs, and FMSs	January 2022 – TBD
TWDB issues NTP on Task 5; TC to begin process of recommending FMEs, FMPs, and FMS for inclusion in RFP	TBD (after NTP by TWDB)

When reviewing and considering whether to approve drafts of the TM, the RFPG members should do so with the understanding that the TWDB has established the TM as a “draft, mid-point, work-in-progress deliverable...to demonstrate that [the RFPG] are making appropriate progress towards the development of their regional flood plan and in meeting contract requirements.” On August 17, 2021, the TWDB emailed the TC and further clarified that:

“If RFPGs need to make changes to content that was included in deliverables submitted under the technical memorandum after the submission deadline, RFPGs do not need to resubmit any previously submitted deliverables. The content of the draft and final versions of each regional flood plan will supersede all content included in any previous deliverables.”

As such, the TM does not need to include the final list of potential flood risk reduction actions. Actions can be updated, added, or removed as additional flood risk information or other details are evaluated by the TC and through future engagement with stakeholders.

## Attachment 5

Task 4C.1i – List Potential FMEs

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FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000001	Archer County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Archer				Watershed Planning - Flood Mapping Updates	922.9
031000002	Anderson County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Anderson				Watershed Planning - Flood Mapping Updates	1073.7
031000003	Chambers County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Chambers				Watershed Planning - Flood Mapping Updates	629.9
031000004	Clay County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Clay				Watershed Planning - Flood Mapping Updates	1107.9
031000005	Collin County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Collin				Watershed Planning - Flood Mapping Updates	883.4
031000006	Cooke County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Cooke				Watershed Planning - Flood Mapping Updates	893.2
031000007	Denton County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Denton				Watershed Planning - Flood Mapping Updates	948.7
031000008	Ellis County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Ellis				Watershed Planning - Flood Mapping Updates	948.0
031000009	Fannin County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Fannin				Watershed Planning - Flood Mapping Updates	897.0
031000010	Freestone County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Freestone				Watershed Planning - Flood Mapping Updates	888.4
031000011	Grayson County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Grayson				Watershed Planning - Flood Mapping Updates	976.7
031000012	Grimes County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Grimes				Watershed Planning - Flood Mapping Updates	798.9
031000013	Henderson County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Henderson				Watershed Planning - Flood Mapping Updates	945.0
031000014	Hill County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Hill				Watershed Planning - Flood Mapping Updates	982.0
031000015	Hood County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Hood				Watershed Planning - Flood Mapping Updates	438.7
031000016	Houston County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Houston				Watershed Planning - Flood Mapping Updates	1232.1
031000017	Hunt County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Hunt				Watershed Planning - Flood Mapping Updates	879.4
031000018	Jack County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Jack				Watershed Planning - Flood Mapping Updates	917.6
031000019	Johnson County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Johnson				Watershed Planning - Flood Mapping Updates	731.0
031000020	Kaufman County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Kaufman				Watershed Planning - Flood Mapping Updates	804.6
031000021	Leon County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Leon				Watershed Planning - Flood Mapping Updates	1076.1
031000022	Liberty County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Liberty				Watershed Planning - Flood Mapping Updates	1169.8
031000023	Limestone County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Limestone				Watershed Planning - Flood Mapping Updates	929.1
031000024	Madison County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Madison				Watershed Planning - Flood Mapping Updates	470.1
031000025	Montague County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Montague				Watershed Planning - Flood Mapping Updates	933.4
031000026	Navarro County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Navarro				Watershed Planning - Flood Mapping Updates	1081.6
031000027	Parker County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Parker				Watershed Planning - Flood Mapping Updates	903.0
031000028	Polk County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Polk				Watershed Planning - Flood Mapping Updates	1105.9

FME ID	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources and Amount	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)
031000001	Riverine, Urban	Archer County														
031000002	Riverine, Urban	Anderson County														
031000003	Riverine, Urban, Coastal	Chambers County														
031000004	Riverine, Urban	Clay County														
031000005	Riverine, Urban	Collin County														
031000006	Riverine, Urban	Cooke County														
031000007	Riverine, Urban	Denton County														
031000008	Riverine, Urban	Ellis County														
031000009	Riverine, Urban	Fannin County														
031000010	Riverine, Urban	Freestone County														
031000011	Riverine, Urban	Grayson County														
031000012	Riverine, Urban	Grimes County														
031000013	Riverine, Urban	Henderson County														
031000014	Riverine, Urban	Hill County														
031000015	Riverine, Urban	Hood County														
031000016	Riverine, Urban	Houston County														
031000017	Riverine, Urban	Hunt County														
031000018	Riverine, Urban	Jack County														
031000019	Riverine, Urban	Johnson County														
031000020	Riverine, Urban	Kaufman County														
031000021	Riverine, Urban	Leon County														
031000022	Riverine, Urban	Liberty County														
031000023	Riverine, Urban	Limestone County														
031000024	Riverine, Urban	Madison County														
031000025	Riverine, Urban	Montague County														
031000026	Riverine, Urban	Navarro County														
031000027	Riverine, Urban	Parker County														
031000028	Riverine, Urban	Polk County														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000029	Rockwall County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Rockwall				Watershed Planning - Flood Mapping Updates	148.1
031000030	San Jacinto County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	San Jacinto				Watershed Planning - Flood Mapping Updates	625.7
031000031	Trinity County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Trinity				Watershed Planning - Flood Mapping Updates	710.0
031000032	Van Zandt County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Van Zandt				Watershed Planning - Flood Mapping Updates	856.4
031000033	Walker County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Walker				Watershed Planning - Flood Mapping Updates	797.8
031000034	Wise County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Wise				Watershed Planning - Flood Mapping Updates	919.8
031000035	Young County FEMA Mapping	Create FEMA mapping in previously unmapped areas and update existing FEMA mapping as needed.	2A	Young				Watershed Planning - Flood Mapping Updates	927.7
031000036	East Fork Trinity HUC-8 - East Fork Trinity and Tributaries Flood Risk Identification	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Grayson , Fannin , Hunt , Collin , Rockwall , Dallas , Kaufman				Watershed Planning - Flood Mapping Updates	5494.5
031000037	Denton HUC-8 - Hog Branch Flood Risk Identification	Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	2A	Denton				Watershed Planning - Flood Mapping Updates	948.7
031000038	Collin County Dam Inundation Study	Inundation studies of all high and moderate hazard dams	2C, 5B	Collin				Watershed Planning - Flood Mapping Updates - Dam Failure	883.4
031000039	Chambers County Dam/Levee Failure Inundation Map Updates	Update dam and levee failure inundation maps.	2C, 5B	Chambers				Watershed Planning - Flood Mapping Updates - Dam Failure	629.9
031000040	Dallas County Dam Inundation Study	Conduct studies to develop dam inundation maps and models	2C, 5B	Dallas				Watershed Planning - Flood Mapping Updates - Dam Failure	905.2
031000041	Lake Ray Hubbard and Duck Creek Tributary Inundation Study	Conduct studies to develop inundation maps for Lake Ray Hubbard and Duck Creek Tributary and how it affects the Town of Sunnyvale.	2A, 2B	Dallas				Watershed Planning - Flood Mapping Updates - Dam Failure	1299.1
031000042	Denton County Dam Inundation Study	Inundation studies of all high and moderate hazard dams	2C, 5B	Denton				Watershed Planning - Flood Mapping Updates - Dam Failure	948.7
031000043	Ellis County Dam Inundation Study	Inundation studies of all high and moderate hazard dams	2C, 5B	Ellis				Watershed Planning - Flood Mapping Updates - Dam Failure	948.0
031000044	Madison County Dam Inundation Study	Create dam failure inundation maps	2C, 5B	Madison				Watershed Planning - Flood Mapping Updates - Dam Failure	470.1
031000045	Navarro County Dam Inundation Study	Conduct inundation studies of all high and moderate hazard dams.	2C, 5B	Navarro				Watershed Planning - Flood Mapping Updates - Dam Failure	1081.6
031000046	Parker County Dam Inundation Study	Conduct a dam inundation study	2C, 5B	Parker				Watershed Planning - Flood Mapping Updates - Dam Failure	903.0
031000047	Tarrant County Dam Inundation Study	Identify and evaluate high hazard dams.	1, 2C, 5B	Tarrant				Watershed Planning - Flood Mapping Updates - Dam Failure	900.6
031000048	Irving Levee District Flood Risk Assessment	Conduct review of the area in the four levee districts that would be inundated by a levee failure. Analyze all available routes out of the Levee Districts and any new streets that would not be flooded.	2C, 5B	Dallas				Watershed Planning - Flood Mapping Updates - Levee Failure	67.8
031000049	West Fork of the Trinity River Levee Failure Hydrologic Study	Hydrologic study to determine threat, risk, and potential impacts of flooding from levee failure along the West Fork of the Trinity River.	2C, 5B	Tarrant				Watershed Planning - Flood Mapping Updates - Levee Failure	2104.3
031000050	City of Lavon DMP	Evaluate City and identify future projects.	2B, 2C	Collin				Watershed Planning - Drainage Master Plan	3.0

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031000029	Riverine, Urban	Rockwall County														
031000030	Riverine, Urban	San Jacinto County														
031000031	Riverine, Urban	Trinity County														
031000032	Riverine, Urban	Van Zandt County														
031000033	Riverine, Urban	Walker County														
031000034	Riverine, Urban	Wise County														
031000035	Riverine, Urban	Young County														
031000036		NCTCOG														
031000037		NCTCOG														
031000038	Riverine, Urban	Collin County														
031000039	Riverine, Urban, Coastal	Chambers County, Anahuac, Beach City, Mount Belvieu, Cove, Chambers-Liberty Counties Navigation District, and Old-River-Winfree														
031000040	Riverine, Urban	Dallas County														
031000041	Riverine, Urban	Town of Sunnyvale														
031000042	Riverine, Urban	Denton County														
031000043	Riverine, Urban	Ellis County, Alma, Bardwell, Ennis, Ferris, Garrett, Italy, Maypearl, Midlothian, Milford, Oak Leaf, Ovilla, Palmer, Red Oak, Waxahachie														
031000044	Riverine, Urban	Madison County														
031000045	Riverine, Urban	Navarro County, Corsicana, Kerens														
031000046	Riverine, Urban	Parker County, Willow Park														
031000047	Riverine, Urban	Fort Worth, Tarrant County														
031000048		Irving														
031000049	Riverine, Urban	River Oaks														
031000050	Riverine, Urban	Lavon														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000051	University Park DMP	Evaluate City and identify future projects.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	3.7
031000052	City of Rowlett DMP	Evaluate City and identify future projects.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	20.5
031000053	City of Richardson DMP	Evaluate City and identify future projects.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	28.5
031000054	City of Cockrell Hill, City of Sunnyvale, City of Wilmer DMP	Evaluate City and identify future projects.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	25.4
031000055	City of Aubrey DMP	Evaluate City and identify future projects.	2B, 2C	Denton				Watershed Planning - Drainage Master Plan	2.9
031000056	City of Argyle DMP	Evaluate City and identify future projects.	2B, 2C	Denton				Watershed Planning - Drainage Master Plan	11.5
031000057	City of Maypearl DMP	Evaluate City and identify future projects.	2B, 2C	Ellis				Watershed Planning - Drainage Master Plan	0.8
031000058	City of Dayton DMP	Evaluate City and identify future projects.	2B, 2C	Liberty				Watershed Planning - Drainage Master Plan	21.0
031000059	City of Denton DMP	Evaluate City and identify future projects.	2B, 2C	Denton				Watershed Planning - Drainage Master Plan	97.0
031000060	City of Madisonville DMP	Evaluate City and identify future projects.	2B, 2C	Madison				Watershed Planning - Drainage Master Plan	4.9
031000061	City of Rockwall DMP	Evaluate City and identify future projects.	2B, 2C	Rockwall				Watershed Planning - Drainage Master Plan	29.9
031000062	City of Everman DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	1.7
031000063	City of Colleyville DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	13.2
031000064	Haltom City DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	12.4
031000065	City of Southlake DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	22.3
031000066	City of North Richland Hills DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	18.2
031000067	City of Mansfield DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	36.5
031000068	City of Trinidad DMP	Evaluate City and identify future projects.	2B, 2C	Henderson				Watershed Planning - Drainage Master Plan	14.8
031000069	Cedar Hill-DeSoto-Duncanville DMP	Evaluate City and identify future projects.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	68.4
031000070	City of Athens DMP	Evaluate City and identify future projects.	2B, 2C	Henderson				Watershed Planning - Drainage Master Plan	13.5
031000071	Sansom Park DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	1.2
031000072	City of Decatur DMP	Evaluate City and identify future projects.	2B, 2C	Wise				Watershed Planning - Drainage Master Plan	8.8
031000073	City of Waxahachie DMP (Phase 2 Continuation)	Evaluate City and identify future projects. Continue efforts of current DMP Phase 2 efforts.	2B, 2C	Ellis				Watershed Planning - Drainage Master Plan	49.2
031000074	City of Crockett DMP	Evaluate City and identify future projects.	2B, 2C	Houston				Watershed Planning - Drainage Master Plan	9.2
031000075	Town of Dish DMP	Evaluate City and identify future projects.	2B, 2C	Denton				Watershed Planning - Drainage Master Plan	1.5
031000076	City of Corinth DMP	Evaluate City and identify future projects.	2B, 2C	Denton				Watershed Planning - Drainage Master Plan	7.8
031000077	City of Keller DMP	Evaluate City and identify future projects.	2B, 2C	Tarrant				Watershed Planning - Drainage Master Plan	18.4
031000078	Anderson County DMP	Evaluate County and identify future projects.	2B, 2C	Anderson				Watershed Planning - Drainage Master Plan	1073.7

FME ID	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources and Amount	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)
031000051	Riverine, Urban	University Park														
031000052	Riverine, Urban	Rowlett														
031000053	Riverine, Urban	Richardson														
031000054	Riverine, Urban	Cockrell Hill, Sunnyvale, Wilmer														
031000055	Riverine, Urban	Aubrey														
031000056	Riverine, Urban	Argyle														
031000057	Riverine, Urban	Maypearl														
031000058	Riverine, Urban	Dayton														
031000059		City of Denton														
031000060	Riverine, Urban	Madisonville														
031000061	Riverine, Urban	Rockwall														
031000062	Riverine, Urban	Everman														
031000063	Riverine, Urban	Colleyville														
031000064	Riverine, Urban	Haltom City														
031000065	Riverine, Urban	Southlake														
031000066	Riverine, Urban	North Richland Hills														
031000067	Riverine, Urban	Mansfield														
031000068	Riverine, Urban	Trinidad														
031000069	Riverine, Urban	Cedar Hil, DeSoto, Duncanville														
031000070	Urban Flooding/Riverine	City of Athens														
031000071		Sansom Park														
031000072	Riverine	City of Decatur														
031000073	Riverine	City of Waxahachie														
031000074	Urban Flooding/Riverine	City of Crockett														
031000075	Riverine	Town of Dish														
031000076	Riverine	City of Corinth														
031000077	Urban Flooding	City of Keller														
031000078	Riverine, Urban	Anderson County														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000079	Cooke County DMP	Evaluate County to identify future projects.	2B, 2C	Cooke				Watershed Planning - Drainage Master Plan	893.2
031000080	Fannin County DMP	Evaluate County and identify future projects.	2B, 2C	Fannin				Watershed Planning - Drainage Master Plan	897.0
031000081	Freestone County DMP	Evaluate County and identify future projects.	2B, 2C	Freestone				Watershed Planning - Drainage Master Plan	888.4
031000082	Houston County DMP	Evaluate County and Identify future projects.	2B, 2C	Houston				Watershed Planning - Drainage Master Plan	1232.1
031000083	Jack County DMP	Evaluate County and identify future projects.	2B, 2C	Jack				Watershed Planning - Drainage Master Plan	917.6
031000084	Johnson County DMP	Evaluate County and identify future projects.	2B, 2C	Johnson				Watershed Planning - Drainage Master Plan	731.0
031000085	Leon County DMP	Evaluate County and identify future projects.	2B, 2C	Leon				Watershed Planning - Drainage Master Plan	1076.1
031000086	Liberty County DMP	Evaluate County and identify future projects.	2B, 2C	Liberty				Watershed Planning - Drainage Master Plan	1169.8
031000087	Montague County DMP	Evaluate County and identify future projects.	2B, 2C	Montague				Watershed Planning - Drainage Master Plan	933.4
031000088	Parker County DMP	Evaluate County and identify future projects.	2B, 2C	Parker				Watershed Planning - Drainage Master Plan	903.0
031000089	Polk County DMP	Evaluate County and identify future projects.	2B, 2C	Polk				Watershed Planning - Drainage Master Plan	1105.9
031000090	San Jacinto DMP	Evaluate County and Identify future projects.	2B, 2C	San Jacinto				Watershed Planning - Drainage Master Plan	625.7
031000091	Trinity County DMP	Evaluate County and identify future projects.	2B, 2C	Trinity				Watershed Planning - Drainage Master Plan	710.0
031000092	Van Zandt County DMP	Evaluate County and identify future projects.	2B, 2C	Van Zandt				Watershed Planning - Drainage Master Plan	856.4
031000093	Wise County DMP	Evaluate County and identify future projects.	2B, 2C	Wise				Watershed Planning - Drainage Master Plan	919.8
031000094	Dallas County DMP and Vulnerability Assessment	Evaluate County to identify future projects. Risk and vulnerability assessment to determine the number of people, property and infrastructure exposed to flooding.	2B, 2C	Dallas				Watershed Planning - Drainage Master Plan	905.2
031000095	Merritt Road, Sachse Road, and Willow Lake Improvements	Hydrologic and Hydraulic Study of Stream 2E3, 2E4 and Willow Lake to determine causes of flooding along Merrit Rd and identify necessary drainage improvements.	2A, 2B	Collin , Dallas				Watershed Planning - H&H Modeling	42.0
031000096	Richardson West Fork Cottonwood Creek Watershed Study	Richardson West Fork Cottonwood Creek Watershed Study	2A	Dallas , Collin				Watershed Planning - H&H Modeling	32.9
031000097	Copper Canyon Poindexter Branch Flood Mitigation Plan	Copper Canyon Poindexter Branch Flood Mitigation Plan	2A, 2B	Denton				Watershed Planning - H&H Modeling	6.5
031000098	Holiday Park North Drainage Study Update	Area 2	2A	Dallas				Watershed Planning - H&H Modeling	13.8
031000099	Buhler, Cresthaven, Madewell & Maryland Drainage Study Update	Area 4	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000100	Bellaire Heights Drainage Study Update	Area 5	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000101	Country Club Add., Club Hill Est., & Eastern Hills Est. Drainage Study Update	Area 6	2A	Dallas				Watershed Planning - H&H Modeling	6.0
031000102	Shorehaven-Garvon-Rosewood Terrace-Garland Heights-Freeman Heights-Range-Cooper-Barger Drainage Study Update	Area 7	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000103	Brentwood Place-Two Worlds-Apollo_East Park Village Drainage Study Update	Area 8	2A	Dallas				Watershed Planning - H&H Modeling	13.8
031000104	Ridgewood Park-Regal Estates-Meadowcreek Square Drainage Study Update	Area 9	2A	Dallas				Watershed Planning - H&H Modeling	6.5

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031000079	Riverine, Urban	Cooke County														
031000080	Riverine, Urban	Fannin County														
031000081	Riverine, Urban	Freestone County, Fairfield, Streetman, Teague, Wortham														
031000082	Riverine, Urban	Houston County														
031000083	Riverine, Urban	Jack County														
031000084	Riverine, Urban	Johnson County														
031000085	Riverine, Urban	Leon County														
031000086	Riverine, Urban	Liberty County														
031000087	Riverine, Urban	Montague County														
031000088	Riverine, Urban	Parker County, Willow Park														
031000089	Riverine, Urban	Polk County, Livingston, Goodrich, Onalaska, Seven Oaks, Corrigan														
031000090	Riverine, Urban	San Jacinto County, Coldspring, Point Blank, Shepherd														
031000091	Riverine, Urban	Trinity														
031000092	Riverine, Urban	Van Zandt County														
031000093	Riverine, Urban	Wise County														
031000094	Riverine, Urban	Dallas County														
031000095		City of Sachse														
031000096		Richardson														
031000097		Copper Canyon														
031000098		City of Garland														
031000099		City of Garland														
031000100		City of Garland														
031000101		City of Garland														
031000102		City of Garland														
031000103		City of Garland														
031000104		City of Garland														



FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000105	Eastern Meadows-Southlake Estates-Greenbrook-Green Acres-Rosehill Acreage Drainage Study Update	Area 10	2A	Dallas				Watershed Planning - H&H Modeling	12.7
031000106	La Prada 7 & 8 Drainage Study Update	Area 11	2A	Dallas				Watershed Planning - H&H Modeling	6.5
031000107	Gatewood Drainage Study Update	Area 12	2A	Dallas				Watershed Planning - H&H Modeling	6.5
031000108	Curtis Drive Drainage Study Update	Area 13	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000109	Center Creek Plaza 8 Southgate Estates Drainage Study Update	Area 14	2A	Dallas				Watershed Planning - H&H Modeling	6.5
031000110	Bluffview Drainage Study Update	Area 15	2A	Dallas				Watershed Planning - H&H Modeling	6.0
031000111	Camelot Drainage Study Update	Area 16	2A	Dallas				Watershed Planning - H&H Modeling	13.8
031000112	Downtown Drainage Study Update	Area 17	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000113	Main & Wilson Streets Drainage Study Update	Area 18	2A	Dallas				Watershed Planning - H&H Modeling	13.5
031000114	Royal Crest-Meadowview Drainage Study Update	Area 19	2A	Dallas				Watershed Planning - H&H Modeling	6.0
031000115	Garvon West, Innovation & Kingsley Ind. Park Drainage Study Update	Area 20	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000116	Northlake & Castlewood Drainage Study Update	Area 21	2A	Dallas				Watershed Planning - H&H Modeling	4.5
031000117	Legend Drive Drainage Study Update	Area 22	2A	Dallas				Watershed Planning - H&H Modeling	4.7
031000118	Brazos Drive Drainage Study Update	Area 23	2A	Dallas				Watershed Planning - H&H Modeling	6.5
031000119	Sweetbriar-Glenrose Alley Drainage Study Update	Area 26	2A	Dallas				Watershed Planning - H&H Modeling	8.8
031000120	Mc Adams Ditch Widening Project	Widen Mc Adams Ditch that crosses FM 3180 South	5B	Chambers				Engineering Project Planning	2.2
031000121	Rhonda Rosa Lane Bridge	Construct bridge on Rhonda Rosa Lane in Ranches on Turtle Bayou to replace box culverts.	1B, 5B	Chambers				Engineering Project Planning	0.0
031000122	Hackberry Gully and Cotton Bayou Shelving Project	Shelving the entire length of Hackberry Gully and Cotton Bayou from South of I-10 to Cotton Lake; thereby increasing their flow capacity.	5B	Chambers				Engineering Project Planning	24.6
031000123	Collin County Retention Structures Rehabilitation Project	Implement results of hazard/vulnerability assessment and inundation study on NRCS flood retention structures and rehabilitate structures found to be a high hazard.	2C, 3B	Collin				Engineering Project Planning	883.4
031000124	McMillen Rd Bridge Lift Project (Maxwell Creek)	Flood study to determine parameters to raise bridge at McMillen Rd to reduce flooding .	1B	Collin				Engineering Project Planning	10.3
031000125	Cooke County Low-Water Crossing Barriers Project	Installation of automatic flood crossing barriers at low water crossing to prevent automobiles from driving through high water.	1B	Cooke				Engineering Project Planning	893.2
031000126	Wheeler Creek Channelization Project	Channelization of Wheeler Creek to reduce flooding in the west side of town.	5B	Cooke				Engineering Project Planning	39.5
031000127	Pecan Creek Channelization Project	Channelization project for Pecan Creek to reduce flooding.	5B	Cooke				Engineering Project Planning	12.5
031000128	Lindsay Waterways Improvements	Reshape waterways to allow quicker flow in areas that have regular flooding. Construction of Gabion retaining walls, and widening and/or deepening of the waterway.	5B	Cooke				Engineering Project Planning	2.2
031000129	O'Neal St Low-Water Crossing Automatic Barrier Installation	Installation of an automatic barricade for low-water crossing on O'Neal St.	1B	Cooke				Engineering Project Planning	10.3
031000130	Elm Fork Bridge Improvements	Alleviate flooding issues with the Elm Fork bridge on I-35.	1B, 5B	Cooke				Engineering Project Planning	7.2
031000131	Brockbank and Embassy Channel Basin Improvements	Channel improvement on Brockbank Channel Basin north of SH 183; Channel improvement on Embassy Channel Basin north of SH 183	5B	Dallas				Engineering Project Planning	9.2

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031000105		City of Garland														
031000106		City of Garland														
031000107		City of Garland														
031000108		City of Garland														
031000109		City of Garland														
031000110		City of Garland														
031000111		City of Garland														
031000112		City of Garland														
031000113		City of Garland														
031000114		City of Garland														
031000115		City of Garland														
031000116		City of Garland														
031000117		City of Garland														
031000118		City of Garland														
031000119		City of Garland														
031000120		Chambers County														
031000121		Chambers County														
031000122		Chambers County														
031000123	Riverine	Collin County														
031000124		Wylie														
031000125		Cooke County														
031000126		Gainesville														
031000127		Valley View														
031000128		Lindsay														
031000129		Gainesville														
031000130	Riverine, Urban	Gainesville														
031000131		Irving														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000132	University Park Storm Water Infrastructure Improvements	Construction of new storm sewer inlets, mains, and underground detention system to reduce flooding in Northeast portion of the City	5B	Dallas				Engineering Project Planning	3.7
031000133	Exall and Wycliffe Dam Maintenance Protocol for Drainage Systems and Flood Control Structures	Develop and implement a maintenance protocol for Drainage Systems and Flood Control Structures in and around the Exall and Wycliffe Dams. Roadway reconstruction, culvert / bridge construction and associated bank protection and improvements.	5B	Dallas				Engineering Project Planning	2.2
031000134	Farmers Branch Retention Pond Dredging	Dredge the retention ponds along the creeks within the City.	3B, 5B	Dallas				Engineering Project Planning	12.0
031000135	Ten Mile Creek Channel Expansion	Improve and increase the capacity of storm water system by expanding the Ten Mile Creek downstream channel to prevent flooding in flood prone areas to include structural stormwater management projects	5B	Dallas				Engineering Project Planning	77.0
031000136	Hunterwood Stream Stabilization Project	Installation and maintenance of gabion walls to mitigate stream bank erosion during extreme flood events	5B	Dallas				Engineering Project Planning	9.5
031000137	Carrollton Flood Warning Barrier System	Procure and install flood warning barrier system to prevent motorists from driving into flooded areas.	1B	Dallas				Engineering Project Planning	37.3
031000138	Westside Drive Drainage System and Street Reconstruct Project	Reconstruct Drainage System and Street in the 4500-4700 blocks of Westside Drive	5B	Dallas				Engineering Project Planning	2.1
031000139	Garner Rd, Chiesa Rd, and Wayne Way Storm Drain System Improvements	Storm drain system redirection and improvements at Garner Rd, Chiesa Rd, and Wayne Way	5B	Dallas				Engineering Project Planning	10.0
031000140	Cooks Creek Drainage Infrastructure Improvements	Improve the drainage infrastructure along Cooks Creek between Bee St and Spring Valley.	5B	Dallas				Engineering Project Planning	6.3
031000141	Carrollton Drainage Upgrades	Upgrade drainage and targeted regrading of streets and properties. Add additional drains and supporting infrastructure in older neighborhoods to increase offloading of flash flood waters.	5B	Dallas				Engineering Project Planning	37.3
031000142	Little Elm Drainage Improvements	Drainage improvements to mitigate future flash and lake flooding problems.	5B	Denton				Engineering Project Planning	22.3
031000143	Shady Shores Rd Elevation Project	Elevate Shady Shores Rd to reduce future loss due to flooding	1B, 5B	Denton				Engineering Project Planning	16.7
031000144	Sanger Creek Waterways Reconstruction	Reconstruct creek waterways to correct drainage issues	5B	Denton				Engineering Project Planning	11.7
031000145	CR 1400 drainage study	Evaluate widening road and installing box drains where necessary.	1B, 5B	Henderson				Engineering Project Planning	2.5
031000146	Malone Bridge Improvements	Elevate roadways in flood-prone areas through bridge improvements	1B	Hill				Engineering Project Planning	0.4
031000147	FM 2114 Automated Flood Gate Installation	Install an automated flood gate that prevents traffic flow on FM 2114 within the flood-prone area during flooding events.	1B	Hill				Engineering Project Planning	8.8
031000148	Houston County dike for critical facilities	Build earthen dike to elevate emergency vehicle access road to critical facilities to provide protection to 500-year flood level	1B, 3A, 3B	Houston				Engineering Project Planning	1232.1
031000149	Grapeland Critical Facilities Floodproofing Assessment	Flood proof critical facilities to the 500-year flood that are located in flood-prone areas of the city	3A, 3B	Houston				Engineering Project Planning	0.5
031000150	Jack County WWTP and Lift Station Flood-Proofing.	Flood-proof sewage treatment plans in flood hazard / low-lying areas. Raise electrical components of sewage lift stations above the BFE.	3B	Jack				Engineering Project Planning	917.6
031000151	County Rd 125 Automatic Warning Barricade Installation	Install automatic warning barricades at County Rd 125 low-water crossing	1B	Kaufman				Engineering Project Planning	23.1
031000152	City of Liberty WWTP Levee	Construct levee floodwall around waste water treatment plant	3B	Liberty				Engineering Project Planning	42.3
031000153	Liberty County Re-canalization	Dechannelize existing feeder creeks that flow from north to south and improve drainage for storm water runoff	5B	Liberty				Engineering Project Planning	1169.8
031000154	Liberty County Culverts Upgrades	Reduce flooding by increasing size of culverts to 24 inches on County Rd 2361, 2362, 2363, and 2364 and CR 2358	1B, 5B	Liberty				Engineering Project Planning	3.6
031000155	County Rd 2331 Re-Routing	Re-route County Rd 2331 to area not prone to flooding	3B	Liberty				Engineering Project Planning	6.4

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031000132	Riverine, Urban	University Park														
031000133		Highland Park														
031000134	Riverine, Urban	Farmers Branch														
031000135		Lancaster														
031000136		Coppell														
031000137		Carrollton														
031000138		Highland Park														
031000139		Rowlett														
031000140		Farmers Branch														
031000141		Carrollton														
031000142		Little Elm														
031000143		Shady Shores														
031000144		Sanger														
031000145		Malakoff														
031000146		Malone														
031000147		Penelope														
031000148	Riverine, Urban	Houston County														
031000149	Riverine, Urban	Grapeland														
031000150	Riverine, Urban	Jack County														
031000151		Kaufman County														
031000152	Riverine, Urban	City of Liberty														
031000153		Liberty County														
031000154		Liberty County														
031000155		Dayton Lake Estates														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000156	"Aqueduct" Drainage System Replacement	Replace current drainage system known as the "Aqueduct" in the city. Includes creating underground drainage along North Main St	5B	Parker				Engineering Project Planning	3.1
031000157	Polk County Road and Drainage Improvements	Conduct road elevation and drainage improvements.	1B, 5B	Polk				Engineering Project Planning	1105.9
031000158	Seven Oaks Drainage Ditches	Evaluate drainage ditch along city streets Camp Rd, Pickens Loop, Franklin Rd, Austin Street, and Hunt Street	5B	Polk				Engineering Project Planning	7.9
031000159	Old 35 Sover Sampson Creek Bridge Elevation	Elevate bridge on Old 35 Sover Sampson Creek	1B	Polk				Engineering Project Planning	4.9
031000160	Pennington Rd Culverts	Install multiple culverts under Pennington Rd	1B, 5B	Polk				Engineering Project Planning	4.9
031000161	Seven Oaks Culvert Installation	Install multiple new culverts under Camp Rd, Pickens Loop, and Franklin Rd	1B, 5B	Polk				Engineering Project Planning	7.9
031000162	San Jacinto County Drainage and Conveyance Capacity Improvements	Improve drainage and conveyance capacity for Big Creek.	5B	San Jacinto				Engineering Project Planning	625.7
031000163	Rock Creek Road Improvements	Mitigate repetitive damages to Rocky Creek Rd sustained between 2015 - Present	1B, 5B	San Jacinto				Engineering Project Planning	4.0
031000164	Chipmunk Rd Culverts Replacement	Replace Chipmunk Rd culverts with a bridge	1B, 5B	San Jacinto				Engineering Project Planning	3.7
031000165	Comanche Drive Culvert and Retention Wall Construction Project	Build a larger culvert and retention wall for watershed over low crossing on Comanche Drive	1B	Tarrant				Engineering Project Planning	9.9
031000166	Aton Storm Drain System Updates	Improve drainage capabilities on the Aton Storm drain system.	5B	Tarrant				Engineering Project Planning	4.8
031000167	Lower Hardisty Stormdrain Improvements	Conduct Lower Hardisty drain improvements	5B	Tarrant				Engineering Project Planning	14.8
031000168	Big Bear Creek, Little Bear Creek, and Marshall Branch Stream Bank Erosion Study	Study to reduce stream bank erosion impacts along Big Bear Creek, Little Bear Creek, and Marshall Branch to improve drainage within the City of Keller	5B	Tarrant				Engineering Project Planning	734.9
031000169	Calloway Branch Erosion Control Installation	Install erosion control in Calloway Branch to eliminate erosion of stream bank	5B	Tarrant				Engineering Project Planning	27.5
031000170	Mansfield Stream Stabilization	Design and construct projects to protect public infrastructure and private property from damages due to streambank erosion. Projects could include Saddlehorn/Walnut Creek sewer interceptor aerial crossing and Brookfield Hogpen sewer interceptor	5B	Tarrant				Engineering Project Planning	36.5
031000171	Turkey Creek Trail Bridge	Construct Bridge at Low-Water Crossing on Turkey Creek Trail.	1B	Wise				Engineering Project Planning	4.9
031000172	Turkey Creek Trail Rebuild	Rebuild Turkey Creek Trail from 9th Street to State Highway 114.	5B	Wise				Engineering Project Planning	4.9
031000173	West Bridgeport Creek Channelization and Drainage Project	West Bridgeport Creek Channelization and Drainage Project.	5B	Wise				Engineering Project Planning	27.8
031000174	North Weatherford St and Oakwood St Structure Improvements	Structure improvements -North Weatherford St in front of fire station and Oakwood St between Granada and El Camino.	5B	Wise				Engineering Project Planning	5.8
031000175	Hurstview Drive Bridge Improvement - found road but not bridge?	Lorean watershed; \$390,000 cost estimate; from 2013 study	1B, 5B	Tarrant				Engineering Project Planning	4.3
031000176	Regional Detention at Mayfair Park	Valley View watershed; \$1,900,000 cost estimate; from 2017 study	3B, 5B	Tarrant				Engineering Project Planning	3.3
031000177	TRE & SH-10 Culvert Improvements	Valley View watershed; \$750,000 cost estimate; from 2017 study	1B, 2C, 5B	Tarrant				Engineering Project Planning	27.5
031000178	Pipeline Road Bridge Improvement	Walker watershed; \$1,700,000 cost estimate; from 2020 study	5B	Tarrant				Engineering Project Planning	27.5
031000179	Redbud Drive Bridge Improvement	Walker watershed; \$1,200,000 cost estimate; from 2020 study	5B	Tarrant				Engineering Project Planning	4.3
031000180	Northeast Mall Culvert Improvement	Walker watershed; \$11,600,000 cost estimate; from 2020 study	5B	Tarrant				Engineering Project Planning	5.2
031000181	Grand Parkway Culvert Crossing	Upsize cross-culverts to allow for developed flow	1B, 2C, 5B	Chambers				Engineering Project Planning	8.6
031000182	Cherry Point Gully	Construction of a diversion channel; channel improvements upstream of diversion; construction of regional detention basins as alternative to diversion channel construction	5B	Chambers				Engineering Project Planning	5.6

FME ID	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources and Amount	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)
031000156		Hudson Oaks														
031000157		Polk County														
031000158		Seven Oaks														
031000159		Goodrich														
031000160		Goodrich														
031000161		Seven Oaks														
031000162		Shepherd, San Jacinto County														
031000163	Riverine, Urban	San Jacinto County, Shepherd														
031000164		San Jacinto County, Shepherd														
031000165		Lake Worth														
031000166	Urban	Westworth Village														
031000167		Richland Hills														
031000168		Keller														
031000169		Hurst														
031000170		Mansfield														
031000171		Bridgeport														
031000172		Bridgeport														
031000173		Bridgeport														
031000174		Chico														
031000175		City of Hurst														
031000176		City of Hurst														
031000177		City of Hurst														
031000178		City of Hurst														
031000179		City of Hurst														
031000180		City of Hurst														
031000181		City of Mont Belvieu														
031000182		City of Mont Belvieu														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000183	Cotton Bayou	Construction of diversion channel within irrigation canal ROW to drain to Old River; construction of detention basins as needed to serve new development; linear detention through channel improvements; expansion of existing detention basins	5B	Chambers				Engineering Project Planning	24.6
031000184	Belt Line Rd (FM1382) at Cottonwood Creek	Channel Improvements; \$4,502,500	5B	Dallas				Engineering Project Planning	12.5
031000185	North Grand Prairie High School Pond Crossing	Gopher Creek 430 feet north of Small Hill St; channel improvements; \$159,500	5B	Dallas				Engineering Project Planning	3.8
031000186	Belt Line Rd at Plattner Creek	Channel Improvements; \$435,500	5B	Dallas				Engineering Project Planning	2.6
031000187	Small Hill St at Gopher Creek	Channel Improvements; \$307,700	5B	Dallas				Engineering Project Planning	3.8
031000188	Carrier Parkway at Dalworth Creek	190 feet southeast of Capetown; Channel Improvements; \$1,092,000	5B	Dallas				Engineering Project Planning	2.2
031000189	East Tarrant Rd at Gopher Creek	Channel Improvements; \$381,300	5B	Dallas				Engineering Project Planning	3.8
031000190	NE 5th St at Gopher Creek	Channel Improvements; \$390,200	5B	Dallas				Engineering Project Planning	3.8
031000191	Grass-covered Culvert at Dalworth Creek -cant find	520 feet west of Carrier Parkway; Channel Improvements; \$1,048,700	5B	Dallas				Engineering Project Planning	2.2
031000192	High School Drive at Gopher Creek	Channel Improvements; \$402,400	5B	Dallas				Engineering Project Planning	3.8
031000193	Duncan Perry Rd at Johnson Creek	Channel Improvements; \$5,374,200	5B	Dallas				Engineering Project Planning	21.0
031000194	Great Southwest Parkway at Cottonwood Creek Bridge and Roadway Raising Improvements (Stream Station 104+64)	Channel Improvements; \$9,538,300	5B	Dallas				Engineering Project Planning	5.6
031000195	West Park Square Rd at Turner Branch	Channel Improvements; \$445,200	5B	Dallas				Engineering Project Planning	3.8
031000196	Carrier Parkway at Cottonwood Creek and South Fork Cottonwood Creek - Bridges	Channel Improvements; \$18,164,400	5B	Dallas				Engineering Project Planning	5.6
031000197	3rd St at Cottonwood Creek and Cottonwood Creek from SW 3rd to FM 1382	Channel Improvements; \$12,733,000	5B	Dallas				Engineering Project Planning	12.5
031000198	FM 661 at Mountain Creek (Future with Development)	Channel Improvements; \$7,750,000	5B	Dallas				Engineering Project Planning	49.6
031000199	Green Hollow Drive North and South of Thornbush Drive	Storm Drain Improvements; \$247,000	5B	Dallas				Engineering Project Planning	1.6
031000200	Carrier Parkway & Egyptian Way	Storm Drain Improvements; \$3,165,300	5B	Dallas				Engineering Project Planning	21.0
031000201	East Pioneer Parkway & SE 14th St	Storm Drain Improvements; \$3,742,700	5B	Dallas				Engineering Project Planning	5.2
031000202	Great Southwest Parkway & Pinewood Drive	Storm Drain Improvements; \$3,998,200	5B	Dallas				Engineering Project Planning	4.6
031000203	Lake Park Drive and Victoria Drive	Storm Drain Improvements; \$1,094,100	5B	Dallas				Engineering Project Planning	2.6
031000204	Regional Detention at Bowie Elementary School - find coordinates	Storm Drain Improvements; \$3,433,500	5B	Dallas				Engineering Project Planning	2.3
031000205	Shady Grove Rd - Jones St Storm Drainage Improvements	Storm Drain Improvements; \$1,679,200	5B	Dallas				Engineering Project Planning	1.8
031000206	Duncan Perry Rd, Heritage Court and Goodwin Branch - ?	Storm Drain Improvements; \$1,175,300	5B	Dallas				Engineering Project Planning	1.8
031000207	Thousand Oaks Court	Storm Drain Improvements; \$742,700	5B	Dallas				Engineering Project Planning	3.2
031000208	East Marshall Drive, Santa Cruz Circle & Belt Line Rd	Storm Drain Improvements; \$1,753,800	5B	Dallas				Engineering Project Planning	2.6
031000209	East Main St & NE 14th St	Storm Drain Improvements; \$5,879,400	5B	Dallas				Engineering Project Planning	3.8
031000210	Marshall Drive from Emerald to SW 3rd	Storm Drain Improvements; \$3,603,100	5B	Dallas				Engineering Project Planning	2.3
031000211	Varsity Drive and Christy St from Varsity to Mountain Creek Lake	Storm Drain Improvements; \$4,768,500	5B	Dallas				Engineering Project Planning	7.8
031000212	SE 10th Street and Avion Parkway from Perman South to Culvert Crossing	Storm Drain Improvements; \$1,158,400	5B	Dallas				Engineering Project Planning	2.3
031000213	SW 3rd Street from Dorris North to Concrete Channel	Storm Drain Improvements; \$4,024,800	5B	Dallas				Engineering Project Planning	2.6
031000214	Bowles St & Hensley Drive	Storm Drain Improvements; \$1,295,700	5B	Dallas				Engineering Project Planning	2.8
031000215	Manana Channel Improvements	Storm Drain Improvements; \$967,600	5B	Dallas				Engineering Project Planning	3.2
031000216	South of Bardin Rd and North of Newberry St	Storm Drain Improvements; \$2,007,600	5B	Dallas				Engineering Project Planning	4.8
031000217	Cherokee Trace and Choctaw Trace to Clarice	Storm Drain Improvements; \$2,715,600	5B	Dallas				Engineering Project Planning	2.3
031000218	Gilbert Rd Drainage Improvements	Storm Drain Improvements; \$5,825,500	5B	Dallas				Engineering Project Planning	3.2
031000219	27th Street and Graham Street from Rinehart to Channel	Storm Drain Improvements; \$1,419,800	5B	Dallas				Engineering Project Planning	1.6
031000220	East Marshall Drive & Avenue C, East Coral & SE 14th Street and in SE 14th Street & Bogarte Drive	Storm Drain Improvements; \$6,399,100	5B	Dallas				Engineering Project Planning	5.2
031000221	Lakeview Drive & SE 14th Street	Storm Drain Improvements; \$3,570,700	5B	Dallas				Engineering Project Planning	5.2
031000222	WE Roberts St & SW 16th St	Storm Drain Improvements; \$1,625,900	5B	Dallas				Engineering Project Planning	5.6
031000223	Jelmak Rd - Hardrock Rd	Storm Drain Improvements; \$5,095,800	5B	Dallas				Engineering Project Planning	3.1
031000224	Shady Grove Rd, Gilbert Rd, Wright Blvd	Storm Drain Improvements; \$2,860,900	5B	Dallas				Engineering Project Planning	6.3
031000225	Parker Rd - Hardrock Rd	Storm Drain Improvements; \$5,760,800	5B	Dallas				Engineering Project Planning	5.2

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031000183		City of Mont Belvieu														
031000184		City of Grand Prairie														
031000185		City of Grand Prairie														
031000186		City of Grand Prairie														
031000187		City of Grand Prairie														
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031000199		City of Grand Prairie														
031000200		City of Grand Prairie														
031000201		City of Grand Prairie														
031000202		City of Grand Prairie														
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031000210		City of Grand Prairie														
031000211		City of Grand Prairie														
031000212		City of Grand Prairie														
031000213		City of Grand Prairie														
031000214		City of Grand Prairie														
031000215		City of Grand Prairie														
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031000217		City of Grand Prairie														
031000218		City of Grand Prairie														
031000219		City of Grand Prairie														
031000220		City of Grand Prairie														
031000221		City of Grand Prairie														
031000222		City of Grand Prairie														
031000223		City of Grand Prairie														
031000224		City of Grand Prairie														
031000225		City of Grand Prairie														



FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000226	North Carrier Parkway & Main St to Dalworth Creek Channel	Storm Drain Improvements; \$8,803,700	5B	Dallas				Engineering Project Planning	2.2
031000227	Pioneer Parkway from Brady to Plattner Creek (TXDOT)	Storm Drain Improvements; \$9,511,900	5B	Dallas				Engineering Project Planning	2.6
031000228	NW 24th St & NW 23rd St from West Main to Ditch Near Dalworth St and Doreen St	Storm Drain Improvements; \$5,982,600	5B	Dallas				Engineering Project Planning	2.2
031000229	Detention Basin at St. Michael's Church Vacant Property and Relief Storm Drains in Corn Valley Rd and Neighboring Streets from Santa Anna to Kirby Creek Channel	Storm Drain Improvements; \$18,766,400	5B	Dallas				Engineering Project Planning	11.7
031000230	River Ridge Boulevard	Storm Drain Improvements; \$6,148,800	5B	Dallas				Engineering Project Planning	7.9
031000231	East Grand Prairie Rd & 14th Street from Austin to Ditch South of Skyline	Storm Drain Improvements; \$8,549,300	5B	Dallas				Engineering Project Planning	1.8
031000232	Shady Grove Rd	Storm Drain Improvements; \$6,737,200	5B	Dallas				Engineering Project Planning	2.8
031000233	Various Streets and Alleys from Dallas Street West of NW 20th Street to Ditch Just South of WE Roberts Street	Storm Drain Improvements; \$10,656,800	5B	Dallas				Engineering Project Planning	5.6
031000234	South Great Southwest Parkway from Warrior to Kirby Creek Concrete Channel North of Mayfield	Storm Drain Improvements; \$1,411,100	5B	Dallas				Engineering Project Planning	2.8
031000235	South Great Southwest Parkway from North of Forum Drive to Prairie Creek Channel	Storm Drain Improvements; \$2,127,800	5B	Dallas				Engineering Project Planning	5.8
031000236	South Great Southwest Parkway from Sherman to Cottonwood Creek	Storm Drain Improvements; \$6,881,500	5B	Dallas				Engineering Project Planning	5.6
031000237	Arbor Creek Pedestrian Bridge Repair and Channel Bottom Stabilization	270 feet south of Johnson Creek and 290 feet east of SH 161; \$270,900	5B	Dallas				Engineering Project Planning	21.1
031000238	Gopher Creek Stream Bottom Stabilization - creek?	downstream of NE 5th Street; between High School Drive and NE 5th Street; downstream of Belt Line Road; \$65,600 (?) + \$127,300; downstream of High School Drive; \$70,500	5B	Dallas				Engineering Project Planning	3.2
031000239	Turner Branch Stream Bottom Stabilization - creek?	380 feet south of Small Hill Street to 450 feet north of East Tarrant Road; \$187,200 (?)	5B	Dallas				Engineering Project Planning	3.8
031000240	Arbor Creek Channel Bottom Stabilization - creek?	Channelization, Stabilization, and Bank Armoring from SH 161 East to Johnson Creek Confluence; \$2,096,900; from Duncan Perry to SH 161; \$991,600	5B	Dallas				Engineering Project Planning	2.6
031000241	North Fork of Cottonwood Creek Stabilization	from Great Southwest to Carrier; \$214,900	5B	Dallas				Engineering Project Planning	1.3
031000242	Kirby Creek Channel Lining Replacements	from 800 feet east of Great Southwest to West of Waterwood; just north of Kildeer cul-de-sac and from Waterwood East to End of Channel Lining just east of Greenvista; \$1,267,200	5B	Dallas				Engineering Project Planning	2.8
031000243	Dry Branch Stream Bottom Stabilization	300 feet south of Rock Island (2 locations); \$91,300	5B	Dallas				Engineering Project Planning	0.7
031000244	Johnson Creek Avenue J Stabilization	Bridge abutment repair and channel bank stabilization; \$168,500	5B	Dallas				Engineering Project Planning	21.0
031000245	Garden Branch Stabilization - creek?	Channel bottom stabilization from Camp Wisdom to Great Southwest; \$176,100	5B	Dallas				Engineering Project Planning	0.7
031000246	Warrior Creek Stabilization	From Great Southwest to South Fork Cottonwood Creek; \$518,500	5B	Dallas				Engineering Project Planning	10.2
031000247	Dalworth Creek Stabilization	Repair of gabions and protection of wastewater crossing downstream of I-30; \$402,000; from Dalworth Street to Roman; \$278,900	5B	Dallas				Engineering Project Planning	2.2
031000248	South Fork Cottonwood Creek	from Great Southwest to Carrier; \$781,200	5B	Dallas				Engineering Project Planning	4.6
031000249	Willis Branch Stabilization	Dam removal and south channel bank stabilization just west of Devon cul-de-sac; \$48,600; from Great Southwest to Sheffield; \$200,700	5B	Dallas				Engineering Project Planning	7.3
031000250	Johnson Creek Stabilization	Replacement of failed inline channel structure 500 feet east of SH 161 and channel sediment removal; \$1,979,000; south channel bank stabilization north of Babbling Brook from Quest to Shadow Pass; \$831,700; north channel bank stabilization north of North Great Southwest Dead-end near Hidden Brook Drive; \$213,800; north bank stabilization 250 feet east of SH-360 crossing; \$454,800	5B	Dallas				Engineering Project Planning	21.0
031000251	Henry Branch Stream Stabilization	from apartments at 1000 South Belt Line to Grand Prairie Road; \$127,900	5B	Dallas				Engineering Project Planning	2.3

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031000226		City of Grand Prairie														
031000227		City of Grand Prairie														
031000228		City of Grand Prairie														
031000229		City of Grand Prairie														
031000230		City of Grand Prairie														
031000231		City of Grand Prairie														
031000232		City of Grand Prairie														
031000233		City of Grand Prairie														
031000234		City of Grand Prairie														
031000235		City of Grand Prairie														
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031000250		City of Grand Prairie														
031000251		City of Grand Prairie														

FME ID	FME Name	Description	Associated Goal No.	Counties	HUC8s	HUC12s	Watersheds	Study Type	FME Area (sqmi)
031000252	Plattner Creek Stabilization	from FM 1382 to City Limits of Dallas, west of SE 14th; \$252,900	5B	Dallas				Engineering Project Planning	2.6
031000253	Prairie Creek Stabilization	from upstream of Great Southwest Pkwy to upstream of Robinson Road; \$606,900	5B	Dallas				Engineering Project Planning	5.8
031000254	Stuart Branch Stabilization	from 460 feet north of Sanctuary Drive and 350 feet northeast of Nature Court cul-de-sac to Joe Pool Lake (future with development); \$349,700	5B	Dallas				Engineering Project Planning	6.2
031000255	Swadley Branch Stabilization	from 2200 feet south of Koscher Drive to Joe Pool Lake (future with development); \$286,800	5B	Dallas				Engineering Project Planning	3.6
031000256	Mills Branch Stabilization	from 880 feet south of South Periwinkle Court cul-de-sac to Joe Pool Lake (future with development); \$599,300	5B	Dallas				Engineering Project Planning	3.6
031000257	Tarrell Creek Stabilization	from a Stream Point 2420 feet south of South Periwinkle Court cul-de-sac and 800 feet east of South Periwinkle Court cul-de-sac to Joe Pool Lake (future with development); \$747,200	5B	Dallas				Engineering Project Planning	3.6
031000258	Jackson Meadows Pond Erosion Control	Erosion control measures around three pond headwalls to decrease flow velocity.	5B	Collin , Dallas				Engineering Project Planning	6.1
031000259	Long Branch Channel Improvements (Dewitt to Ingram)	Channel improvements to replace a failed headwall and reduce erosive velocities. Sewer line relocation to protect against potential failure due to erosion.	5B	Collin , Dallas				Engineering Project Planning	6.1
031000260	North Colony Blvd. at Powers Street	Streams SC-1A Drainage Study and storm drain upgrades to deal with flooding	2A, 2B, 2C	Denton				Engineering Project Planning	3.0
031000261	Office Creek Drainage Study	updated Drainage Study and Improvements at Five Star Park	2A, 2B, 2C	Denton				Engineering Project Planning	2.5
031000262	Bill Allen Park Erosion Repairs	Blair Oaks Drive to Good Shepherd Lutheran Church	5B	Denton				Engineering Project Planning	5.3
031000263	Johnson County Low Water Crossings - East Side	Hydraulic evaluation to determine how to reduce flooding risk at multiple low water crossings.	1B, 2C	Johnson				Engineering Project Planning	731.0
031000264	Johnson County Low Water Crossings - West Side	Hydraulic evaluation to determine how to reduce flooding risk at multiple low water crossings.	1B, 2C	Johnson				Engineering Project Planning	731.0
031000265	Tributary SB-1: Circle Lane Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	4.5
031000266	Tributary SB-1: Shirley Way Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	4.5
031000267	Tributary SB-1: Briar Drive Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	4.5
031000268	Tributary SB-1: Schumac Lane Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	10.6
031000269	Tributary SB-1: Donna Lane Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	4.5
031000270	Sulphur Branch: Circle Lane Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	4.5
031000271	Sulphur Branch: Bedford Road Culvert Improvements	Evaluate and define necessary culvert improvements.	1B, 2C, 5B	Tarrant				Engineering Project Planning	2.2
031000272	Fairfield South Bateman Drainage Study	Fairfield South Bateman Drainage Study	2A	Freestone				Engineering Project Planning	8.8
031000273	City of Plano - Citywide Drainage Improvements	Citywide drainage improvements for areas with history of flooding.	5B	Collin				Engineering Project Planning	71.9
031000274	Collin County flooding hazard/vulnerability assessment	Develop and implement a hazard/vulnerability assessment for personal properties and structures located in the floodplain.	3B	Collin				Studies on Flood Preparedness	883.4
031000275	Houston County Lake Dam Emergency Action Plan	Develop Emergency Action Plan for Houston County Lake Dam	1	Houston				Studies on Flood Preparedness	1232.1
031000276	Grayson County Dams Compliance Assessment	Determine owners of all high and significant hazard dams and obtain copies of all EAPs. Obtain available dam failure impact data necessary for determining the most appropriate mitigation approach that would achieve compliance with the State's TCEQ regulations for all high and significant hazard dams.	1, 5B, 6C	Grayson				Studies on Flood Preparedness	976.7
031000277	Denton County USDA Dam Studies and Rehabilitation	USDA Dam Studies and Rehabilitation	2C, 5B	Denton				Other - Dam Studies	948.7

FME ID	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor	Entities with Oversight	Emergency Need	Estimated Study Cost	Potential Funding Sources and Amount	Estimated number of structures at flood risk	Habitable structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)	Existing or Anticipated Models (year)	Existing or Anticipated Maps (year)
031000252		City of Grand Prairie														
031000253		City of Grand Prairie														
031000254		City of Grand Prairie														
031000255		City of Grand Prairie														
031000256		City of Grand Prairie														
031000257		City of Grand Prairie														
031000258		City of Sachse														
031000259		City of Sachse														
031000260		City of The Colony														
031000261		City of The Colony														
031000262		City of The Colony														
031000263		Johnson County														
031000264		Johnson County														
031000265		City of Bedford														
031000266		City of Bedford														
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031000268		City of Bedford														
031000269		City of Bedford														
031000270		City of Bedford														
031000271		City of Bedford														
031000272		Fairfield														
031000273	Urban Flooding/Riverine	City of Plano														
031000274	Riverine, Urban	Collin County														
031000275	Riverine, Urban	Houston County														
031000276	Riverine, Urban	Grayson County														
031000277	Riverine, Urban	Denton County														

## Attachment 6

Task 4C.1i – List Potentially Feasible FMPs

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FMP ID	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watershed Name	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor
033000001	Town Creek Railroad Improvements	Due to the backwater caused by the undersized Railroad crossing, this alternative recommends improving the capacity of the crossing. The existing crossing contains two 12' x 10' RCB's. This alternative suggests an additional 12' x 10' RCB. The additional capacity at the Railroad crossing provides the most benefit to inundated structures in the 25-year event. Modeling shows that 14 structures will be removed from 1-foot of inundation in the 25-year storm event after the completion of the Railroad alternative alone.	5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	27.9		Burleson
033000002	Town Creek S. Warren Street Improvements	It is proposed to provide an accessible crossing between SW Johnson Ave. and the Railroad in the event of a frequent flooding event. FNI suggests the most feasible location to provide a safe crossing during lower storm events is at S Warren Street. While currently the four 9' x 6' RCB's are overtopped during the 2-year storm event, it is proposed to raise the road approximately 2.5 feet and replace the existing culverts with (5) 12' x 8' RCB's.	2B, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	27.9		Burleson
033000003	Town Creek Warren Park Extension	This alternative proposes voluntary acquisitions of structures at risk of flooding and extending the existing Warren Park. Based on modeling results, 19 structures that were once inundated over 1-foot can be bought by the City and the property can be converted into a park, effectively extending Warren Park.	3B, 4A	Tarrant			Property or Easement Acquisition	27.9		Burleson
033000004	Shannon Creek - Culvert to South Shannon Creek	This alternative proposes increasing the capacity of the culverts beneath the commercial development by adding two 11' x 8' RCB's that follow the right-of-way along the northern side of the existing development in addition to the existing two 10' x 8' RCB's that are located beneath the existing development. Results indicate that increasing the culvert capacity alone does not entirely mitigate the street flooding; therefore, channel improvements (including 12,000 cubic yards of excavation) downstream of the development is necessary due to the insufficient capacity of South Shannon Creek downstream of the culvert.	2B, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	27.9		Burleson
033000005	Shannon Creek - Culvert to Main Stem Shannon Creek	This alternative recommends facilitating the flow from South Shannon Creek to the main stem Shannon Creek with two 11' x 8' RCB's along SW Wilshire Blvd for 1,900 LF.	2B, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	27.9		Burleson
033000006	Town and Shannon Creek Crossing Safety Improvements	4 crossings; Safety improvements may include, but are not limited to, high-water warning flashers, staff gauges, flood hazard signs, and additional light fixtures. The four crossings analyzed include SE Tarrant Ave, N Warren St, SW Johnson Ave, and SE Newton Dr.	1A, 1B	Tarrant			Flood Early Warning Systems	27.9		Burleson
033000007	Spring Meadows Estates Detention Pond Design	Pond redesign and reconstruction to lower normal pool elevation to be below inlets upstream. Increase storage capacity and design outlet works to increase level of service to 100-yr storm event.	3B, 5	Dallas			Regional Detention	9.9		Sachse

FMP ID	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost (\$)	Potential Funding Sources and Amount	Flood Risk										Reduction in Flood Risk						
					Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at 100-year flood risk	Estimated Population at 100-year flood risk	Critical facilities at 100-year flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at 100-year flood risk (Miles)	Estimated farm & ranch land at 100-year flood risk (acres)	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Residential structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)
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033000002																					
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FMP ID	Reduction in Flood Risk					Pre-Project Level-of- Service	Post-Project Level-of- Service	Cost/ Structure removed	Percent Nature- based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Social Vulnerability Index (SVI)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	BCR
	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)										
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033000004															
033000005															
033000006															
033000007															



FMP ID	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watershed Name	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor
033000008	West Irving Creek Phases 2, 3, and 4	FIF - 13792; The West Irving Creek channel improvements project consists of reconstruction of over 2.5 miles of shallow trapezoidal concrete channel as deeper vertical walled channel to increase capacity and relieve historical flooding issues. The vertical walled channels allow the project to remain within a similar footprint as the existing channel to minimize easement needs and impacts to private properties while meeting the flood carrying capacity goals of the project. The channel improvements will also require the reconstruction of 15 road crossings and several miles of wastewater main. In conjunction with the channel improvements upstream detention improvements will be made as well as the implementation of water quality ponds to reduce pollutant load in the channel and to provide amenity to the adjoining neighborhoods.	2B, 4A, 5A, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	67.6		Irving
033000009	University Park Storm Water Improvements for Area 2	unfunded FIF study #13578	5B	Dallas			Storm Drain Improvements	3.7		University Park
033000010	University Park Storm Water Improvements for Area 1 Phase 2	unfunded FIF study #13576	2B, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	3.7		University Park
033000011	Kennedale Valley Lane Streambank Stabilization	unfunded FIF study #13793	2C, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	6.7		Kennedale
033000012	University Park Storm Water Improvements for Area 1 Phase 3	unfunded FIF study #13577	5B	Dallas			Storm Drain Improvements	3.7		University Park
033000013	Highland Park Wycliffe Avenue Improvements	unfunded FIF study #13778	2B, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	2.2		Highland Park
033000014	Richardson Cottonwood Creek Headwaters Drainage Improvements	unfunded FIF study #13733	2B, 5B	Collin , Denton			Infrastructure (channels, ditches, ponds, pipes, etc.)	28.6		Richardson
033000015	Richardson N. Plano Road Culvert Improvements at Huffhines Creek	unfunded FIF study #13734	1B, 5B	Collin , Denton			Infrastructure (channels, ditches, ponds, pipes, etc.)	28.6		Richardson
033000016	Arlington VC(A)-1 Drainage and Erosion Improvements	unfunded FIF study #13646	2B, 2C, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington
033000017	Western Heights Drainage Improvements	Area 1 Stream 2C5; The proposed system would begin near the intersection of Doss Drive and Matador Drive. It would include adding additional curb inlets north of March Lane to capture excess runoff that would contribute to existing flooding conditions in March Lane. Due to the proposed inlets and greater runoff captured in the proposed system, the existing line from March Lane to the outlet into Keen Creek would also have to be replaced for greater capacity.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1		Garland
033000018	Saturn Springs Estates Drainage Improvements	Area 3 Streams 2C3 and 2C4; Increasing storm drain pipe sizes along with other improvements is sufficient to manage flooding in this drainage basin. Pave and grade the alley between Briarwood and Overhill Drives to improve overland flow to the storm inlet there. In addition to upsizing pipe sizes as in Option 1, new lateral lines will be installed along Briarwood, Glenbrook and Overhill Drives to collect drainage and prevent overland flow. Install new drainage lines along Saturn Springs, Larry Drive and Kynn Drive to relieve systems in the area and prevent overland flow.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1		Garland

FMP ID	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost (\$)	Potential Funding Sources and Amount	Flood Risk										Reduction in Flood Risk						
					Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at 100-year flood risk	Estimated Population at 100-year flood risk	Critical facilities at 100-year flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at 100-year flood risk (Miles)	Estimated farm & ranch land at 100-year flood risk (acres)	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Residential structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)
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FMP ID	Reduction in Flood Risk					Pre-Project Level-of- Service	Post-Project Level-of- Service	Cost/ Structure removed	Percent Nature- based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Social Vulnerability Index (SVI)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	BCR
	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)										
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FMP ID	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watershed Name	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)	Sponsor
033000019	Lakewood Addition Drainage Improvements	Area 24; The proposed improvements to Storm Sewer D would be intended to provide relief to houses in the vicinity of Lakeside Drive by capturing additional runoff and reduce the flows that are contributing to Lakeside Drive. A secondary benefit to the proposed improvements in Storm Sewer D would be to provide relief to the houses in the vicinity of Meadowcrest Drive by reducing the excess runoff contributing to Meadowcrest Drive and reduce the ponding water depths at the low point near 1826 Meadowcrest Drive.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1		Garland
033000020	Montclair No 2 & 3 Drainage Improvements	Area 25; The proposed recommended alternative considers the addition of new inlets along the three feeder roads into La Jolla Drive: Intervale Drive, Tahoe Drive, and Mill River Drive. This would allow for surface runoff to be introduced to an underground drainage system earlier rather than collection along La Jolla Drive and its current undersized system. This proposed mitigation is expected to reduce flooding experienced by the residents along La Jolla Drive.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1		Garland
033000021	Centerville Market Place Drainage Improvements	Area 27; The proposed solutions included in this report will mitigate flooding caused by the ultimate flow scenario. It is recommended that the City of Garland encourage the practices of low impact development (LID) and other strategies to reduce the quantity of runoff reaching the city's storm water infrastructure.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1		Garland
033000022	Shady Lane Drainage Improvements	The study consists of 6 potential alternatives to address flooding issues. The report includes H & H models in support of the floodplain reclamation analysis.	3B, 4A	Dallas			Property Acquisition	56.1	Riverine	Garland
033000023	Drainage Improvements for Stream 2C5, Keen Creek, From North Barnes Drive to North Yale Drive	Evaluate existing drainage conditions for the area and determine the current areas impacted by flooding from the stream. It includes developing recommendations to reduce flooding and erosion impacts throughout the study area.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1	Riverine	Garland
033000024	Miami Drive Drainage Improvements	This study included a hydraulic analysis and recommendations to mitigate for bank erosion on stream 2C-1.	2B, 2C, 5B	Dallas			Infrastructure (channels, ditches, ponds, pipes, etc.)	56.1	Riverine	Garland
033000025	Arlington Bonneville/Greenbrook Drainage Improvements	unfunded FIF project;	2B, 5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington
033000026	Arlington California Lane Drainage Improvements	unfunded FIF project;	5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington
033000027	Arlington Harvest Hills Channel and Drainage Improvements	unfunded FIF project;	5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington
033000028	Arlington Randol Mill (Cooper to Collins)	unfunded FIF project;	5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington
033000029	Arlington Stream CC2 Drainage Improvements	unfunded FIF project;	5B	Tarrant			Infrastructure (channels, ditches, ponds, pipes, etc.)	101.9		Arlington

FMP ID	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost (\$)	Potential Funding Sources and Amount	Flood Risk										Reduction in Flood Risk						
					Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at 100-year flood risk	Estimated Population at 100-year flood risk	Critical facilities at 100-year flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at 100-year flood risk (Miles)	Estimated farm & ranch land at 100-year flood risk (acres)	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Residential structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)
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FMP ID	Reduction in Flood Risk					Pre-Project Level-of-Service	Post-Project Level-of-Service	Cost/Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Social Vulnerability Index (SVI)	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	BCR
	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)										
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## Attachment 7

Task 4C.1i – List Potentially Feasible FMSs

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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000001	Lavon Warning System	Expand the Early Warning Sirens and Local Warning System to notify new populations of impending severe weather or imminent hazards to reduce the loss of life and mitigate the effects of the hazards	1A	Collin			Flood Warning Systems	3.06	Riverine, Urban	Lavon			
032000002	Lindsay Flood Warning and Public Safety Improvements	Citywide “reverse 911” to enable local emergency officials to notify emergency information pertaining to flood advisories, flood warnings, and flood evacuations.	1A	Cooke			Flood Warning Systems	1.59	Riverine, Urban	Lindsay			
032000003	Dallas County Addition of Low Water Crossing Signs and Gates	Identify and add low water crossing signs and gates to low water crossing areas as described in The Road to The Future Report	1A, 1B	Dallas			Flood Warning Systems	67.96	Riverine, Urban	Irving			
032000004	Richardson Flood Warning and Public Safety Improvements	Monitor streams and waterways for potential flooding problems including installation of gauges, sensors, and precipitation measuring sites.	1A	Dallas			Flood Warning Systems	28.67	Riverine, Urban	Richardson			
032000005	Timber Creek Flood Warning System Installation	Purchase and Install Flood Warning Systems in Key Areas Along Timber Creek	1A	Denton			Flood Warning Systems	3.25	Riverine, Urban	Lewisville			
032000006	Houston County Stream and Rain Gauge Installation	Install stream and rain gauges in flood prone areas and waterways as part of new alert notification system	1A	Houston			Flood Warning Systems	818.01	Riverine, Urban	Houston County			
032000007	Hunt County Flood Warning and Public Safety	Adopt and Promote the program of “Turn Around Don’t Drown Campaign.” Implement early warning program.	1A, 1B	Hunt			Flood Warning Systems	29.35	Riverine, Urban	Hunt County			
032000008	City of Kemp Siren Notification System	Install siren notification system for disasters, including dam failure of Kemp Lake Dam	1A	Kaufman			Flood Warning Systems	2.52	Riverine, Urban	Kemp			
032000009	Leon County Local Flood Warning System	This action proposes a local flood warning system to reduce the potential impacts of future flood events	1A	Leon			Flood Warning Systems	811.37	Riverine, Urban	Leon County			
032000010	Rockwall County Warning Signs and Flood Control Gates	Install automatic flood warning gates to prevent access into flooded areas. Install warning signs and flood control	1A, 1B	Rockwall			Flood Warning Systems	148.55	Riverine, Urban	Rockwall County			
032000011	Chambers Creek Stream Flow Monitoring System	Implement a Stream Flow Monitoring system that will allow for historical tracking and constant monitoring of water levels to assist with early warnings to residents	1A	Tarrant			Flood Warning Systems	1.75	Riverine, Urban	Everman			
032000012	Creek Level Monitoring Systems and Weather Stations Installation	Install creek level monitoring systems and weather stations	1A	Tarrant			Flood Warning Systems	902.81	Riverine, Urban	Mansfield			
032000013	Dalworthington Flood Warning System	Purchase and install a technological based high water detection system for low water crossings to mitigate the hazards when the location floods	1A, 1B	Tarrant			Flood Warning Systems	1.82	Riverine, Urban	Dalworthington			
032000014	Colleyville Flood Warning System	Enhance high water warning system by adding automatic gates on the streets that normally flood	1A, 1B	Tarrant			Flood Warning Systems	13.22	Riverine, Urban	Colleyville			
032000015	Haslet Flood Warning System	Install flood warning devices to low water crossing.	1A, 1B	Tarrant			Flood Warning Systems	9.34	Riverine, Urban	Haslet			



FMS ID	Potential Funding Sources and Amount	Flood Risk									
		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000016	Additional Rain/Stream Gauges for 13 locations	West Fork Trinity River at MacArthur Blvd, Bowman Creek at Mirabella Blvd, Cottonwood Creek at Robinson Road, Johnson Creek at Duncan Perry Road, Foster Branch at Seeton Road, Mountain Creek at county road FM 661, Carrier Parkway underneath I-20, Robinson Road underneath I-20, Dalworth Creek at NW 22nd Street, Soap Creek at Prairie Ridge, Johnson Creek at High flow bypass outlet, Kirby Creek at Robinson Road, Lakeridge at Fish Creek	1A	Dallas			Flood Warning Systems	87.56	Riverine, Urban	Grand Prairie			
032000017	Additional Low Water Crossing Flashing Lights and Automated Gates	Duncan Perry Road between Ave K and Sherwood Drive, Riverside Pkwy LWC (lights already in place need gates added), SW 3rd from Phillips Ct to Dickey Road (gates being added in September 2021)	1B	Dallas			Flood Warning Systems	87.56	Riverine, Urban	Grand Prairie			
032000018	Grayson County Flood Warning and Public Safety Improvements	Create improved gauge notification system. Increased Public Awareness prior to occurrences and during flooding.	1A	Grayson			Flood Warning Systems	343.54	Riverine, Urban	Grayson County			
032000019	Dallas County Floodplain Management	Manage the Floodplain beyond the minimum requirements. This action will include developing an incentive program for building above the required freeboard minimum	3A	Dallas			Floodplain Management Policy	908.03	Riverine, Urban	Dallas County			
032000020	Anderson County Structure Permitting Requirement Update	Increase freeboard requirements for permitting structures in the SFHA; Adopt a “no-rise” in BFE in the 100-year floodplain; Update local flood ordinance to prohibit granting of variance in SFHA	3A, 4C	Anderson			Floodplain Management Policy	1078.46	Riverine, Urban	Anderson County			
032000021	Bynum Site Control and Storm Water Runoff Plans Requirement	Require approved site control plans and storm water runoff plans before long-duration construction projects are permitted to begin	n/a	Hill			Floodplain Management Policy	0.13	Urban	Bynum			
032000022	Flood Protection Ordinance Updates	Develop and Implement a City and Town flood protection ordinance	3A	Denton			Floodplain Management Policy	60.11	Riverine, Urban	Corinth, Hickory Creek, Lake Dallas, Little Elm, Shady Shores, The Colony,			
032000023	Hill County Flooding Regulations Update	Catalog, evaluate, and update any floodplain regulations within the City to comply with the latest FEMA regulations.	3A, 4C	Hill			Floodplain Management Policy	986.27	Riverine, Urban	Hill County			
032000024	Freestone County Flood Damage Prevention Ordinance	Develop and Implement a Flood Damage Prevention Ordinance	3A, 4C	Freestone			Floodplain Management Policy	788.65	Riverine, Urban	Freestone County			
032000025	Caney City Floodproofing Ordinances	Implement ordinances to ensure new housing developments meet current floodproofing, as well as ensure that critical facilities owned by jurisdiction are protected from flood.	4C	Henderson			Floodplain Management Policy	1.21	Riverine, Urban	Caney City			
032000026	Leon County Floodplain Construction Restrictions Re-Evaluation	This action proposes a re-evaluation of all existing floodplain construction restrictions to identify strengths and weaknesses in order to reduce future damages during flood events	4C	Leon			Floodplain Management Policy	811.37	Riverine, Urban	Leon County			
032000027	Rockwall County Flood Prevention Ordinance	Update Flood Prevention ordinance, adopting a “no-rise” in Base Flood Elevation in the 100-year floodplain	3A, 4C	Rockwall			Floodplain Management Policy	8.50	Riverine, Urban	Royse City			

FMS ID	Potential Funding Sources and Amount	Flood Risk									
		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000028	San Jacinto County Ordinance to Control Location of Development	Strengthen ordinance(s)/code(s) to control location of development, especially in low lying flood hazard areas	4A, 4C	San Jacinto			Floodplain Management Policy	629.42	Riverine, Urban	San Jacinto County, Shepherd, Coldspring, Point Blank			
032000029	Montague County Floodplain Policy Update	Increase freeboard requirements for permitting structures in the SFHA; Update local flood ordinance to prohibit granting of variance in SFHA	3A, 4A, 4C	Montague			Floodplain Management Policy	405.03	Riverine, Urban	Montague County			
032000030	Town of Westlake's Floodplain Mitigation Ordinances Review	Review and enhance the Town of Westlake's floodplain mitigation ordinances and policies as needed	4C	Tarrant			Floodplain Management Policy	7.05	Riverine, Urban	Westlake			
032000031	Willis Point Structure Permitting Requirement Update	Increase freeboard requirements for permitting structures in the SFHA; Adopt a "no-rise" in BFE in the 100-year floodplain; Update local flood ordinance	3A, 4C	Van Zandt			Floodplain Management Policy	3.68	Riverine, Urban	Wills Point			
032000032	Wise County Storm Water Management Plan	Create a Storm water Management Plan	4C	Wise			Floodplain Management Policy	922.16	Riverine, Urban	Wise County, Alvord			
032000033	Cooke County Floodplain Regulation Updates	Update local ordinances to include regulation of floodplain so that the community may participate in NFIP program.	3A, 4C	Cooke			Floodplain Management Policy	895.55	Riverine, Urban	Valley View			
032000034	City of Sachse Parks Construction Along Low Lying Areas	Establish city parks along low-lying areas	4A, 5A	Dallas			Floodplain Preservation & Zoning Regulations	9.85	Riverine, Urban	Sachse			
032000035	Carrollton Targeted Flood Remediation	Plan for and establish City-owned stand-by contracts for targeted flood remediation of private homes if authorized by City Administration.	3B, 4C	Dallas			Floodplain Preservation & Zoning Regulations	40.29	Riverine, Urban	Carrollton			
032000036	Sunnyvale Floodplain Preservation Program	Restrict future development in high risk areas.	4C	Dallas			Floodplain Preservation & Zoning Regulations	16.75	Riverine, Urban	Sunnyvale			
032000037	Itasca Zoning Regulations	Establish zoning regulations to prohibit residential construction in flood prone areas	4C	Hill			Floodplain Preservation & Zoning Regulations	1.24	Riverine, Urban	Itasca			
032000038	Kaufman County Regulation Standards to Protect Open Space Flood-Prone Areas	Conduct program in conjunction with local communities to incorporate regulatory standards to protect open space flood-prone areas	4A, 4C, 5A	Kaufman			Floodplain Preservation & Zoning Regulations	766.50	Riverine, Urban	Kaufman County			
032000039	Tarrant County Promotion of Open Space and LID	Promote the inclusion of low impact development requirements in local and regional ordinances	5A	Tarrant			Floodplain Preservation & Zoning Regulations	902.81	Riverine, Urban	North Central Texas Council of Govt			
032000040	Itasca Land Use Planning Mechanisms	Implement strategic land-use planning mechanisms to ensure flood-resistant development occurs in flood-prone areas	4A, 4C, 5A	Hill			Floodplain Preservation & Zoning Regulations	1.24	Riverine, Urban	Itasca			
032000041	Dallas County Land Use Program	Continue to develop and maintain special use parks and green belt areas as flooding mitigation strategies & further prohibiting development in the floodplain.	4A, 4C, 5A	Dallas			Floodplain Preservation & Zoning Regulations	28.67	Riverine, Urban	Richardson			
032000042	Houston County Maintenance Program	Conduct annual program to clear debris from bridges, box culverts, and drainage systems throughout unincorporated county. Implement program to clear debris from flood-prone areas, bridges, drains and culverts to prevent overtopping and backup during flash floods.	5B	Houston			Preventive Maintenance Programs	818.01	Riverine, Urban	Houston County			

FMS ID	Potential Funding Sources and Amount	Flood Risk									
		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000043	Kaufman County Agreement to Monitor High Hazard Dams	Develop a mutual aid agreement with the City of Terrell, City of Kemp, City of Kaufman to monitor High hazard dams with automated monitor to minimize potential dam failure of the structure	1A, 4C	Kaufman			Preventive Maintenance Programs	766.50	Riverine, Urban	Kaufman County, Terrell, Kemp, Kaufman			
032000044	Rowlett Creek Tributary Maintenance Program	Routine channel maintenance and erosion control for Rowlett Creek Tributary (Stream 2D13). Keep creek and inlets clear of debris and overgrown vegetation.	5B	Dallas			Preventive Maintenance Programs	57.07	Riverine, Urban	City of Garland			
032000045	Addison-Carrollton Debris Cleaning Program	Adopt and implement a program for clearing debris from bridges, drains and culverts.	5B	Dallas			Preventive Maintenance Programs	41.56	Riverine, Urban	Addison, Carrollton			
032000046	Navarro County Waterways Clearing	Clear waterways of debris and prevent further collection of debris in waterways	5B	Navarro			Preventive Maintenance Programs	24.01	Riverine, Urban	Corsicana			
032000047	Parker County Biannual Dam Inspection Program	Create and implement a biannual inspection program to inspect the city-owned dams to help prevent dam failure	3	Parker			Preventive Maintenance Programs	906.22	Riverine, Urban	Weatherford			
032000048	Tarrant County Semi-Annual Levee Inspections	Perform semi-annual inspection of the levee to look for any maintenance problems or levee failure issues	3	Tarrant			Preventive Maintenance Programs	902.81	Riverine, Urban	Richland Hills			
032000049	Rowlett Creek Tributary Maintenance Program	Routine channel maintenance and erosion control for Rowlett Creek Tributary (Stream 2D13). Keep creek and inlets clear of debris and overgrown vegetation.	5B	Collin , Dallas			Preventive Maintenance Programs	885.97	Riverine, Urban	City of Sachse			
032000050	Hazard Hardening Retrofit for Polk County Facilities	Flood proofing, impact resistant windows, storm shutters, roof straps, structural bracing, low-flow plumbing fixtures, roll-up door reinforcement, grounding systems, surge-protection, data back-up systems, plumbing reinforcement and insulation, heat resilient roofing materials, foundation support and expansion joints, shade providing-drought resistant landscaping	n/a	Polk			Property Acquisition and/or Floodproofing Programs	1118.56	Riverine, Urban	Polk County, Corrigan, Goodrich, Livingston, Onalaska, Seven Oaks			
032000051	Acquire and Protect Red Oak Creek, Bentle Branch Creek, and Balcones Escarpment	Acquire floodplain and protect environmentally sensitive areas and convert them into open space land	4A, 4C, 5A	Dallas			Property Acquisition and/or Floodproofing Programs	32.54	Riverine, Urban	Cedar Hill			
032000052	Ten Mile Creek Comprehensive Loss Reduction Program	Develop a comprehensive loss reduction program, involving buy outs and relocation in areas along Ten Mile Creek to reduce losses and repetitive damages. Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures	3B, 4A	Dallas			Property Acquisition and/or Floodproofing Programs	33.08	Riverine, Urban	Lancaster			
032000053	Midway Property Acquisition and Elevation Program	Acquire existing homes located in the identified special flood hazard area (the 100-year floodplain).	3B	Madison			Property Acquisition and/or Floodproofing Programs	1.61	Riverine, Urban	Midway			
032000054	Montague County Property Acquisition and Land Preservation Program	Acquire and preserve open space adjacent to floodplain areas.	3B, 4A, 5A	Montague			Property Acquisition and/or Floodproofing Programs	405.03	Riverine, Urban	Montague County			
032000055	Montague County Sewage Treatment Plants and Sewage Lift Stations Flood-Proofing Program	Flood-proof sewage treatment plants in flood hazard / low-lying areas. Raise electrical components of sewage lift stations above the Base Flood Elevation (BFE)	n/a	Montague			Property Acquisition and/or Floodproofing Programs	405.03	Riverine, Urban	Montague County			

FMS ID	Potential Funding Sources and Amount	Flood Risk									
		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000056	San Jacinto County Voluntary Property Acquisition & Elevation Program	Pursue voluntary acquisition projects for flood prone properties. Elevate homes in low lying or flood prone areas.	3B	San Jacinto			Property Acquisition and/or Floodproofing Programs	629.42	Riverine, Urban	Shepherd, San Jacinto County			
032000057	Johnson County Acquisition of Flood Prone Structures	Acquire, relocate, and/or elevate flood prone structures	3B	Johnson			Property Acquisition and/or Floodproofing Programs	360.55	Riverine, Urban	Johnson County			
032000058	Acquisition of Repetitive Loss Properties in the Deep River Plantation Subdivision	Acquire repetitive flood loss properties and properties prone to flooding in the Deep River Plantation Subdivision	3B	Walker			Property Acquisition and/or Floodproofing Programs	802.33	Riverine, Urban	Walker County			
032000059	Anderson County Floodplain Acquisition and Preservation Program	Acquire and preserve open spaces adjacent to floodplain areas.	3B, 4A, 5A	Anderson			Property and Land Acquisition Programs	1078.46	Riverine, Urban	Anderson County			
032000060	Collin County Property and Structures Buyout Program	Develop and implement a buyout program for personal properties and structures located in the floodplain	3B	Collin			Property and Land Acquisition Programs	885.97	Riverine, Urban	Collin County			
032000061	Cooke County Acquisition of Repetitive Loss and Damaged Properties	Purchase and removal of damaged homes that are located in the floodplain. Buyout of repetitive flood loss properties in the Wilson Court area.	3B	Cooke			Property and Land Acquisition Programs	895.55	Riverine, Urban	Cooke County			
032000062	Dallas County Acquisition of Flood-Prone and Repetitive Loss Properties	Acquisition / demolition of flood-prone and repetitive loss properties.	3B	Dallas			Property and Land Acquisition Programs	908.03	Riverine, Urban	Dallas County			
032000063	Grayson County Buyout of Repetitive Flood Properties	Buyout of repetitive flood properties, which includes any structures found to be located in flood areas that arearen't incorporated in NFIP areas.	4A, 4B	Grayson			Property and Land Acquisition Programs	343.54	Riverine, Urban	Grayson County			
032000064	Terrell Property Acquisition Program	Acquire high risk and repetitive flood-prone structures	3B	Kaufman			Property and Land Acquisition Programs	27.59	Riverine, Urban	Terrell			
032000065	Leon County Property Acquisition Program	Acquire any repetitive loss structures located below the high hazard dams and homes located in the floodplain.	3B	Leon			Property and Land Acquisition Programs	811.37	Riverine, Urban	Leon County			
032000066	City of Fate Floodplain Acquisition and Preservation Program	Acquire, reuse, and preserve open spaces adjacent to floodplain areas	3B, 4A, 5A	Rockwall			Property and Land Acquisition Programs	12.25	Riverine, Urban	Fate			
032000067	City of Kennedale Property Acquisition Program - Village Creek	Acquire all private property located within the Village Creek 100-year floodplain in the City of Kennedale	3B	Tarrant			Property and Land Acquisition Programs	6.67	Riverine, Urban	Kennedale			
032000068	City of Mansfield Property Acquisition Program	Acquire properties at risk of flooding and permanently remove them from special flood hazard areas.	3B	Tarrant			Property and Land Acquisition Programs	36.60	Riverine, Urban	Mansfield			
032000069	Tarrant County Property Acquisition Program	Create a Buyout Program for Repetitive Loss Properties	3B	Tarrant			Property and Land Acquisition Programs	902.81	Riverine, Urban	Arlington, Azle, Bedford, Blue Mound, Colleyville, Crowley, Dalworthington, Euless, Everman, Forest Hill, Forth Worth, Groveton, Haltom City, Haslet, Hurst, Keller, Kennedale, Lake Worth, Lakeside, North Richland Hills, Pantego, River Oaks, Saginaw, Southlake, Tarrant County, Watauga, Westlake, Westworth Village			
032000070	Walker County Voluntary Buyout Program	The county and partnering jurisdictions will begin a voluntary buyout program for insured severe repetitive loss properties that are in the floodplain	3B	Walker			Property and Land Acquisition Programs	802.33	Riverine, Urban	Walker County, New Waverly, Riverside			
032000071	Wise County Repetitive Flood Loss Buyout Program	Develop a buyout program for repetitive flood loss areas within the county	3B, 4A	Wise			Property and Land Acquisition Programs	922.16	Riverine, Urban	Wise County			



FMS ID	Potential Funding Sources and Amount	Flood Risk									
		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000072	City of Chico Property Acquisition Program	City will acquire property and structures in the flood zone along Dry Creek and its tributaries and remove structures to prevent loss of life and property during flooding events.	3B	Wise			Property and Land Acquisition Programs	1.52	Riverine, Urban	Chico			
032000073	Town Creek Warren Park Extension (Property Acquisition Program)		3B, 4A	Tarrant			Property and Land Acquisition Programs	28.46	Riverine, Urban	Burleson			
032000074	City of Hurst Buyout Program	107 total structures across the Lorean, Valley View, and Walker watersheds	3B	Tarrant			Property and Land Acquisition Programs	9.97	Riverine, Urban	City of Hurst			
032000075	Anderson County Flood Education Program	Coordinate and implement a natural hazards public awareness campaign. Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.	1B, 6B	Anderson			Public Awareness & Educational Programs	1078.40	Riverine, Urban	Anderson County			
032000076	Cooke County Public Information and Education	"Turn Around Don't Drown" campaign.	1B	Cooke			Public Awareness & Educational Programs	895.55	Riverine, Urban	Lindsay			
032000077	Cooke County Flood Insurance Public Awareness Program	Education of the public on the importance of Flood Insurance.	6B, 6C	Cooke			Public Awareness & Educational Programs	895.55	Riverine, Urban	Cooke County			
032000078	Glenn Heights-Seagoville-Wilmer Flood Safety Improvements and Education	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program	1B, 6B	Dallas			Public Awareness & Educational Programs	32.34	Riverine, Urban	Glenn Heights, Seagoville, Wilmer			
032000079	Krum "Turn Around, Don't Drown" Campaign	Implement "Turn Around, Don't Drown" campaign.	1B, 6B	Denton			Public Awareness & Educational Programs	2.64	Riverine, Urban	Krum			
032000080	Fannin County Flood Safety Education	Education programs such as "Turn around Don't Drown." Work with local newspaper to run flood safety information. Public education via water bills, social media, and webpage to promote flood safety.	1B, 6B	Fannin			Public Awareness & Educational Programs	43.95	Riverine, Urban	Fannin County			
032000081	Fannin County Flood Insurance Education	Develop and distribute information about the availability and need for flood insurance. Public awareness of NFIP.	6B, 6C	Fannin			Public Awareness & Educational Programs	43.95	Riverine, Urban	Fannin County			
032000082	Grayson County Flood Insurance Education	Educate local residents on the NFIP program and the importance of purchasing flood insurance.	6B, 6C	Grayson			Public Awareness & Educational Programs	343.54	Riverine, Urban	Grayson County			
032000083	Grayson County Flood Safety Education	Turn Around Don't Drown Campaign. Educate property owners near high hazard dams of the potential of a dam failure. Better inform residents of mitigation activities that they can implement in their homes.	1B, 6B	Grayson			Public Awareness & Educational Programs	343.54	Riverine, Urban	Grayson County			
032000084	Hill County Flooding Education and Outreach Program	Develop a coordinated education, outreach, and training program to inform and educate the public about the dangers of flooding and how to prevent flood damages to property.	6B	Hill			Public Awareness & Educational Programs	986.27	Riverine, Urban	Hill County			
032000085	Houston County Flood Insurance Education	Develop and implement NFIP public education program for residents affected by high flood risk areas.	6B, 6C	Houston			Public Awareness & Educational Programs	818.01	Riverine, Urban	Houston County			
032000086	Houston County Public Education on Dam Education	Educate the Public on mitigation activities that can help protect their properties in the event of structural failures and extreme flooding	6B	Houston			Public Awareness & Educational Programs	818.01	Riverine, Urban	Houston County			

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		Area in 100yr (1% annual chance) Floodplain	Area in 500yr (0.2% annual chance) Floodplain	Estimated number of structures at 100yr flood risk	Residential structures at flood risk	Estimated Population at flood risk	Critical facilities at flood risk (#)	Number of low water crossings at flood risk (#)	Estimated number of road closures (#)	Estimated length of roads at flood risk (Miles)	Estimated active farm & ranch land at flood risk (acres)
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FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watersheds	Strategy Type	Strategy Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Strategy Cost (\$)
032000087	Jack County Flood Education	Implement a flood awareness program by providing FEMA / NFIP materials to mortgage lenders, real estate agents and insurance agents	6B, 6C	Jack			Public Awareness & Educational Programs	659.30	Riverine, Urban	Jack County			
032000088	Kaufman County Flood Education Program	Conduct countywide outreach to educate residents on flood hazards, mitigation techniques and promote availability of NFIP flood insurance.	6B, 6C	Kaufman			Public Awareness & Educational Programs	766.50	Riverine, Urban	Kaufman County			
032000089	Montague County Flood Education	Implement a flood awareness program by providing FEMA / NFIP materials to mortgage lenders, real estate agents and insurance agents and place them in local libraries.	6B, 6C	Montague			Public Awareness & Educational Programs	405.03	Riverine, Urban	Montague County			
032000090	Parker County Flood and Dam Education	Create and implement a community-wide educational campaign to educate residents about the NFIP and dam safety	6B, 6C	Parker			Public Awareness & Educational Programs	906.22	Riverine, Urban	Weatherford, Hudson Oaks, Aledo, Parker County			
032000091	Livingston Flood Damage Mitigation Educational Program	Establish an educational program to teach citizens how to mitigate flood damage to their property	6B	Polk			Public Awareness & Educational Programs	8.75	Riverine, Urban	Livingston			
032000092	Tarrant County Flood Education	Provide flood risk and mitigation risk mapping materials for property owners in floodplains. Include mitigation techniques	6B	Tarrant			Public Awareness & Educational Programs	2.02	Riverine, Urban	River Oaks			
032000093	Tarrant County Flood Education Program	Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance.	6B, 6C	Tarrant			Public Awareness & Educational Programs	902.81	Riverine, Urban	Arlington, Azle, Bedford, Blue Mound, Colleyville, Crowley, Dalworthington, Edgecliff, Euless, Everman, Forest Hill, Forth Worth, Haltom City, Haslet, Hurst, Keller, Kennedale, Lake Worth, Lakeside, Pantego, River Oaks, Saginaw, Southlake, Tarrant County, Watauga, Westlake, Westworth Village			
032000094	Van Zandt County Flood Safety Improvements and Education	Educate community on the dangers of low water crossings	1B, 6B	Van Zandt			Public Awareness & Educational Programs	859.45	Riverine, Urban	Wills Point			
032000095	Walker County Floodplain Regulatory Awareness Public Information Campaign	Rewrite, improve, and implement new local floodplain regulations, to include a public information campaign on regulatory awareness	4C, 6B	Walker			Public Awareness & Educational Programs	802.33	Riverine, Urban	New Waverly, Riverside			
032000096	City of Chico NFIP Education Program	Distribute information to downstream property owners educating homeowners about the National Flood Insurance Program.	6B, 6C	Wise			Public Awareness & Educational Programs	1.52	Riverine, Urban	Chico			
032000097	Dallas County Open Space System Program and Dallas Trails Program	Adopt and implement Dallas County Open Space System Program and Dallas Trails Program.	4A, 5A	Dallas			Nature-Based Solutions	908.03	Riverine, Urban	Dallas County			
032000098	Parker County Nature-Based Practices for Flood Control	Implement the use of green infrastructure	5A	Parker			Nature-Based Solutions	906.22	Riverine, Urban	Parker County, Hudson Oaks			
032000099	Krugerville waterways stabilization program.	Develop and implement waterways stabilization program.	5B	Denton			Erosion Control Programs	1.32	Riverine, Urban	Krugerville			
032000100	City of Euless Stream Bank Protection Program	Develop a plan to reduce stream bank erosion impacts due to flooding along specific creeks	5B	Tarrant			Erosion Control Programs	16.20	Riverine, Urban	Euless			
032000101	Lewisville Storm Water Utility Fee	Levy a storm water fee for developers to fund developments to the storm water drainage systems	5B	Denton			Funding Mechanisms	43.48	Riverine, Urban	Lewisville			

FMS ID	Potential Funding Sources and Amount	Flood Risk									
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## Attachment 8

### Task 4C – Geodatabase

This January 7, 2022 Technical Memorandum submittal for the Trinity Basin includes a geodatabase named **03\_RFP\_GIS\_Data\_01072022.gdb** populated with the layers and tables below:

Item Name	Description	Feature Class Name	Data Format Polygon/Line/ Point/GDB Table
Entities	Entities with flood-related authority and whether they are actively engaged in flood planning, floodplain management, and flood mitigation activities	Entities	Polygon
Watersheds	Entities with flood-related authority and whether they are actively engaged in flood planning, floodplain management, and flood mitigation activities	Watersheds	Polygon
Existing Infrastructure	A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the FPR	ExFldInfraPol	Polygon
Existing Infrastructure	A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the FPR	ExFldInfraLn	Polyline
Existing Infrastructure	A general description of the location, condition, and functionality of existing natural flood mitigation features and constructed major flood infrastructure within the FPR	ExFldInfraPt	Point
Proposed or Ongoing Flood Mitigation Projects	Proposed or ongoing flood mitigation projects currently under construction, being implemented; and with dedicated funding to construct and the expected year of completion.	ExFldProjs	Polygon
Existing Floodplain Management Practices	Perform future condition flood exposure analyses using the information identified in the flood hazard analysis to identify who and what might be harmed within the region for, at a minimum, both 1.0% annual chance and 0.2% annual chance flood events	ExFpMP	Table
Goals	Identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals	Goals	GDB Table
Streams	Shows the streams to be studied by FMEs, and those relevant to FMS and FMPs, when applicable.	Streams	Line

Item Name	Description	Feature Class Name	Data Format Polygon/Line/ Point/GDB Table
Flood Management Evaluations	Shows the streams to be studied by FMEs, and those relevant to FMS and FMPs, when applicable.	FME	Polygon
Flood Mitigation Projects	Flood Mitigation Projects reduce flood risk through a variety of approaches. The service area is the region impacted by the project.	FMP	Polygon
Flood Management Strategies	A table included in the .gdb but built using the Project Details excel template. The table includes more detailed analysis of the project.	FMS	Polygon