

Working Committee Meeting


Neches Regional Flood Planning Group

November 29, 2021

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Agenda

- Task 4C – January 7th Tech Memo
- Task 4C – March 7th Tech Memo
- Exhibit D – Spatial Data
 - Deliverable Components
 - Upcoming GIS dashboard



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Task 4C – Technical Memorandum

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- Draft, mid-point, work-in-progress deliverable to demonstrate progress towards development of the RFP.
- Scope of work items are “interim dataset”
- Content of the draft and final version of the RFP will supersede previous content

Deliverables	Deadline
a. List of political subdivisions and flood-related authorities	January 7 th , 2022
b. List of relevant previous flood studies	January 7 th , 2022
c. Maps and geospatial data representing the 100-year and 500-year flood events	March 7 th , 2022
d. Maps and geospatial data representing flood prone areas	March 7 th , 2022
e. Maps and geospatial data identifying where existing hydrologic and hydraulic models are available to evaluate FMSs and FMPs	March 7 th , 2022
f. List of available flood-related models	January 7 th , 2022
g. Flood mitigation and floodplain management goals adopted by the RFPG	January 7 th , 2022
h. Documented process used by the RFPG to identify potentially feasible FMSs and FMPs	January 7 th , 2022
i. List of FMEs and potentially feasible FMSs and FMPs identified	January 7 th , 2022
j. List of FMSs and FMPs that were identified but determined to be infeasible	January 7 th , 2022

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4C.a. – Flood Related Authorities

5

- Cities, counties, flood control districts, river authorities
 - 111 total political subdivisions
- Two Categories
 - Authority to enact and enforce NFIP floodplain regulations
 - Entities that are own and operate drainage infrastructure

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4C.b. – Previous Flood Studies

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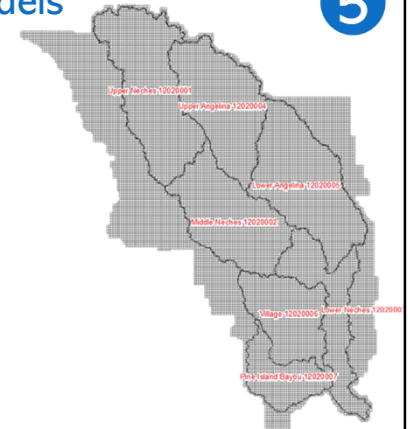
- Executed at various levels
 - Localized drainage study
 - Regional flood study
- Majority of FEMA Flood Insurance Studies completed 2010
- Hazard Mitigation Actions Plans completed following Hurricane Harvey
- FEMA BLE Studies completed 2019
- Ongoing Studies

5

4C.f. – Flood Related Models

5

- Ongoing coordination with GLO Study
 - Alligator Bayou Model (HMS & RAS)
 - City of Beaumont MDP
- FEMA BLE models for entire region



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4C.g. – Floodplain Management Goals

5

- Total 19 Goals
 - Short-Term (10-years) - 10
 - Long-Term (30-Years) – 9
- Goal Categories
 - Improve Flood Infrastructure
 - Expand Funding
 - Improve Data



Specific & Achievable



Reduce Residual Risk



Recommended or Required



Short-term (10 years) &/or Long-Term (30 years)



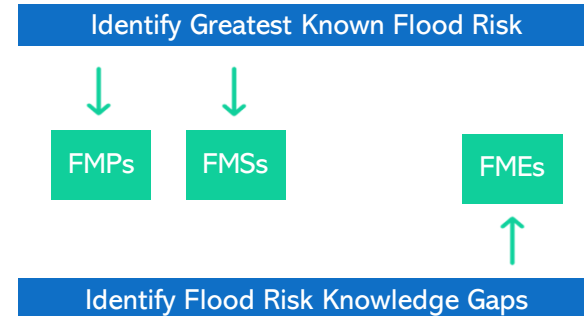
Regionwide Or Subregional

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4C.h. – Process to Identify FMEs, FMSs, FMPs

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Supported by Task 2A & 2B

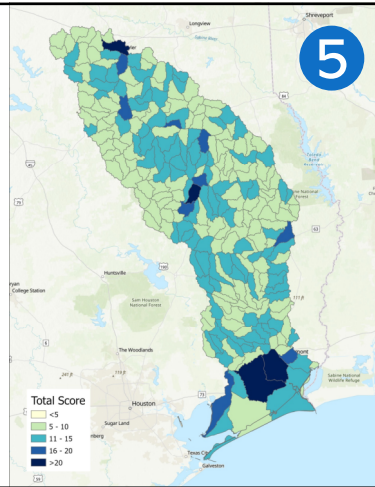


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4C.h. – Process to Identify FMEs, FMSs, FMPs

Flood Mitigation Needs Analysis (Task 4A)

- Areas prone to flooding that threaten life and property
- Current floodplain management policies
- Inadequate mapping/modeling
- Emergency need
- Identified flood mitigation projects
- Historic flood events
- In progress mitigation projects
- Other planning group priorities

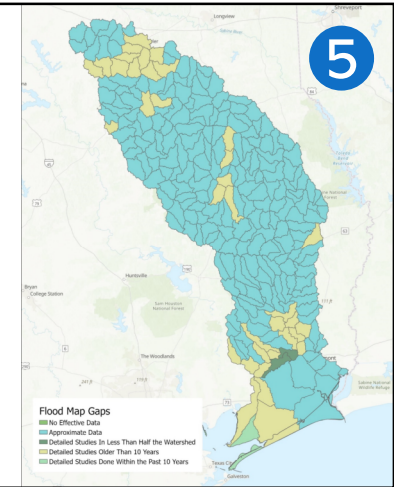


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4C.h. – Process to Identify FMEs, FMSs, FMPs

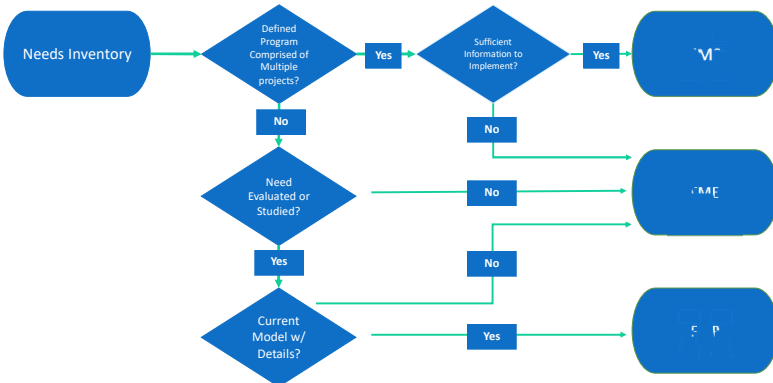
“Gap” defined by lack of data or outdated study

- 82.5% Approximate Information
- 14.8% Detailed > 10 years
- 1.5% Detailed ≤ 10 years
- 1.2% No data



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4C.h. – Process to Identify FMEs, FMSs, FMPs



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4C.i. – Potentially Feasible FMEs, FMSs, and FMPs

Identification

- The attached list of actions is comprised of:
 - Unfunded recent CDBG-MIT, FIF, and FEMA BRIC applications
 - Capital Improvement Plans
 - Hazard Mitigation Plans

Evaluation

1. Initial Screening
2. Screen FMEs
3. Screen FMPs
4. Screen FMSs
5. Detailed Evaluation
6. Final Recommendation



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4C.i. – Potentially Feasible FMEs, FMSs, and FMPs

5

Step 1: Initial Screening of Evaluations, Studies, Projects

- Meet a floodplain management or flood mitigation goal
- Emergency Need
- Drainage Area > 1 square mile
- Reduction to 100-year flood risk

Step 2: Screening of FMEs

- Areas within identified flood risk knowledge gap
 - Require better quality flood risk information
 - Outdated flood risk information
- High flood mitigation and flood risk study need
- FMEs/FMPs without sufficient data/detail

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4C.i. – Potentially Feasible FMEs, FMSs, and FMPs

5

Step 3: Screening of FMPs

- Service area > 1 square mile
 - Except critical infrastructure
- Reduce 100-year flood risk
- Sufficient modeling data to assess benefits and impacts
- Sufficient detail to be ranked

Step 4: Screening of FMSs

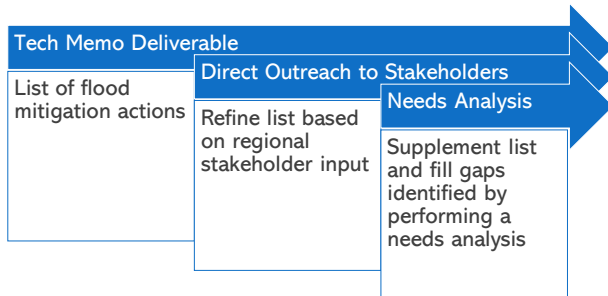
- Reduce potential impacts and meet RFPG goal
- Service area > 1 square mile
 - Except critical infrastructure
- Reduce 100-year flood risk
- Not a FME or FMP

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4C.i. – Potentially Feasible FMEs, FMSs, and FMPs

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- The draft list of FMEs and Potentially Feasible FMSs and FMPs is a *starting point* that will continue to develop as the RFP progresses.



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4C.j. – Infeasible FMSs and FMPs

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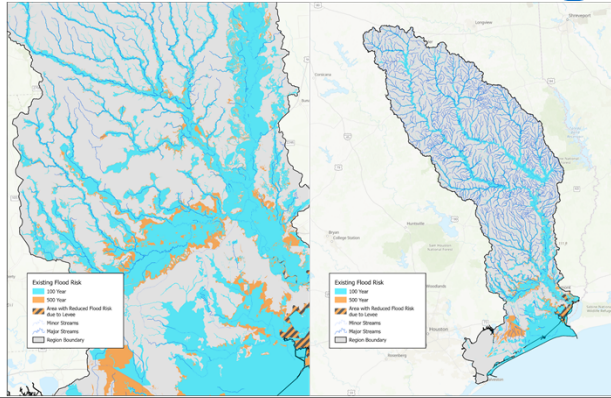
Reasons an action may not be recommended as feasible

- Single localized project with small service area
- Does not achieve flood risk reduction
- Does not align with goals
- Duplicate benefits of another project included in plan
- Cannot obtain concurrence from impacted entities
- Low benefit-cost ratio
- Further evaluation is needed
- Does not achieve simple majority vote for inclusion

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4C.c. – Existing Flood Hazard Boundaries

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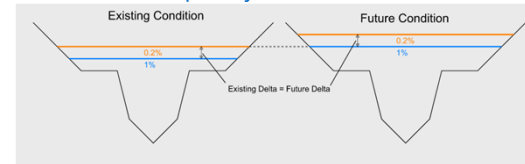
4C.c. – Future Flood Hazard Boundaries

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Use available information, no H&H modeling
 Rely on existing condition Flooplain Quilt

Methods available per TWDB Scope

1. Change in WSEL based on change in population
2. Existing 0.2% → Future 1%
3. Combination of 1 & 2, or a RFPG proposed method
4. Request TWDB for Desktop Analysis

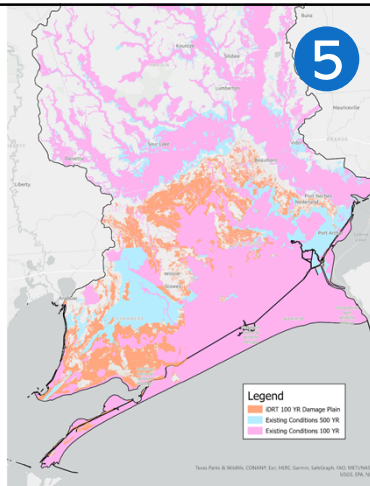


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4C.d. – Additional Flood Prone Areas

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- Areas that have not been previously identified as mapped flood hazard areas
- Identified by local knowledge
- iDRT damage plain to identify flood prone areas in Chambers, Jefferson, Orange County
- Supplement northern counties with Fathom Data

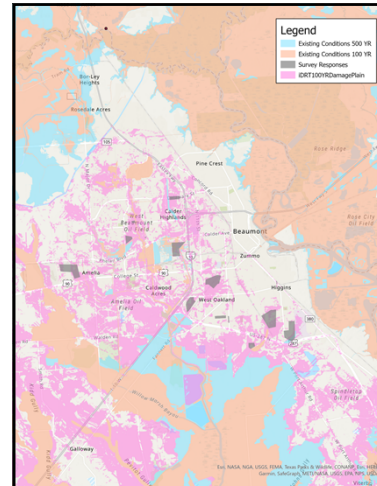


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4C.d. – Additional Flood Prone Areas

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- Transfer to Online Webmap



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**2023 REGIONAL FLOOD PLAN
DRAFT: TECHNICAL
MEMORANDUM
REGION 5
NECHES**

DRAFT

PREPARED FOR THE NECHES REGIONAL FLOOD PLANNING GROUP

**2023 REGIONAL FLOOD PLAN
DRAFT TECHNICAL MEMORANDUM**

PREPARED FOR:

TWDB on behalf of Region 5 Neches Regional Flood Planning Group

PREPARED BY:

Freese and Nichols, Inc.

HDR Engineering, Inc.

MPTX Associates

MTG Engineers & Surveyors, Inc.

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EXECUTIVE SUMMARY

The 2019 Texas State Legislature directed the creation of the first State Flood Plan to be administered by the Texas Water Development Board (TWDB). To better serve the distinct geographies of the state and provide a regional approach to planning, the TWDB created fifteen flood planning regions based on river basin boundaries. Additionally, each region assembled a Regional Flood Planning Group (RFPG) to guide the development of each region's flood plan. The flood planning process is set to be cyclic, with updates to the regional plans produced every five years. The first State Flood Plan has a target publication date of September 1, 2024.

The Neches region flood planning effort is guided by the Neches Regional Flood Planning Group (NRFPG), with the ultimate goal being to develop a regional flood plan for inclusion in the 2024 State Flood Plan. Due to the timeline and complexity of the state-wide effort, the TWDB has established an interim deliverable in the form of a technical memorandum for each of the planning regions.

This technical memorandum serves to document progress towards compiling the necessary technical information and analyses needed to develop the Regional Flood Plan (RFP) and meet contract requirements specified by TWDB. Changes to the data and information presented in this report are anticipated and will be incorporated in forthcoming deliverables. Lastly, the final RFP approved by the NRFPG and TWDB will supersede all previous deliverables.

As part of the ongoing planning effort, the NRFPG has gathered relevant data from various sources, engaged the general public in the planning process, adopted flood mitigation and floodplain management goals, and developed preliminary flood mitigation approaches. A summary of these preliminary findings and efforts is included in this document, and satisfies the interim deliverable established by the TWDB. Included in this technical memorandum are the following:

- a. Political subdivisions with flood related authority
- b. Previous flood-studies relevant to the development of the regional flood plan
- c. Maps of the 1% and 0.2% annual chance flood events
- d. Map of flood-prone areas
- e. Map of existing hydrologic and hydraulic models
- f. List of flood-related models
- g. Flood mitigation and floodplain management goals
- h. Process used to identify FMEs, FMSs and FMPs
- i. List of Potentially Feasible FMEs, FMSs, and FMPs

Several GIS feature classes are also included as deliverables that support the data presented in this technical memorandum. Table 1 summarizes the required GIS geodatabase deliverables as well as their deadlines.

TABLE 1: GIS FEATURE CLASS DESCRIPTIONS

Feature Class Name	Description	Deadline
Entities	Jurisdiction of Entities with flood-related authority	January 7 th , 2022
Watersheds	Watershed boundaries and corresponding HUC8s, HUC10s, and HUC12s	January 7 th , 2022
ExFldInfraPol/ExFldInfraLn/ExFldInfraPt	Existing natural flood mitigation features and constructed flood infrastructure	January 7 th , 2022
ExFldProjs	Proposed and Ongoing Flood Mitigation Projects within Region 5	January 7 th , 2022
<i>ExFldHazard</i>	<i>Existing conditions inundation boundary for the 1% and 0.2% events</i>	<i>March 7th, 2022</i>
<i>Fld_Map_Gaps</i>	<i>Gaps in inundation boundary mapping</i>	<i>March 7th, 2022</i>
<i>ExFldExpPol/ExFldExpLn/ExFldExpPt/ExFldExpAll</i>	<i>Existing conditions flood exposure layer identifying people and places at risk for the 1% and 0.2% events</i>	<i>March 7th, 2022</i>
<i>FutFldHazard</i>	<i>Future conditions inundation boundary for the 1% and 0.2% events</i>	<i>March 7th, 2022</i>
<i>FutFldExpPol/FutFldExpLn/FutFldExpPt/FutFldExpAll</i>	<i>Future conditions flood exposure layer identifying people and places at risk for the 1% and 0.2% events</i>	<i>March 7th, 2022</i>
ExFpMP	Table of entities with existing floodplain management practices	January 7 th , 2022
Goals	Adopted flood mitigation and floodplain management goals	January 7 th , 2022
Streams	Stream relevant to proposed FMEs, FMPs, and FMSs	January 7 th , 2022
FME/FMP/FMS	Proposed FMEs, FMPs, and FMSs with associated areas	January 7 th , 2022

This document does not summarize all effort to date but does include the key items as directed by the TWDB guidelines. Items c, d, and e in the list above will be documented in a subsequent memorandum with an expected date of March 2022, per direction from the TWDB provided on August 15, 2021. These items will incorporate flood exposure datasets that are still in development. Additionally, in the nature of an ongoing effort, updated or additional data might be secured that could result in revised information in the final deliverable.

Definitions and Acronyms

This section provides definitions of key terms, paraphrased from the *Technical Guidelines* published by the TWDB, and defines acronyms used in this document.

Federal Emergency Management Agency (FEMA): FEMA is a federal agency that supports local entities to prepare for, protect against, and respond to emergencies, including flooding. They also administer the National Flood Insurance Program.

National Flood Insurance Program (NFIP): The National Flood Insurance Program is managed by FEMA and provides flood insurance to property owners, renters, and businesses within a participating NFIP community.

Base Level Engineering (BLE): An efficient modeling and mapping approach that aims to provide technically credible flood hazard data at various geographic scales such as community, county, watershed, and/or state level.

Base Flood Elevation (BFE): The elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.

FEMA Zone A: Areas with a 1% annual chance of flooding. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.

Flood Infrastructure Fund (FIF): The FIF is administered by the Texas Water Development Board (TWDB) and provides financial assistance in the forms of loans and grants for flood control, flood mitigation, and drainage projects.

Flood Mitigation Project (FMP): 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 or mitigate flood hazards to life or property.

Flood Management Evaluation (FME): 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.

Flood Management Strategy (FMS): 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 the group would like to identify, evaluate, and recommend that does not qualify as either a FME or FMP.

Flood Exposure: People, property, systems, and functions that might be harmed by flood waters.

Flood Hazard: Potential for inundation comprised of three elements: severity, probability of occurrence, and speed of flood waters.

Flood Risk: Consist of flood hazard, exposure, and vulnerability. Flood risk analyses will comprise a three-step process of flood hazard, flood exposure, and vulnerability analyses.

Introduction

TWDB established 15 flood planning regions based on river basin boundaries. Figure 1 shows the delineation of the fifteen flood planning regions as well as the boundary of and counties within the Neches Flood Planning Region. The Neches Region encompasses the Neches River and its tributaries, covering an area of approximately 11,452 square miles containing approximately 9,673 steam miles.

The Neches region (Flood Planning Region 5) is comprised of three major river basins that include the Neches River, the Angelina River, and the Pine Island Bayou basins. The region extends from the Neches River’s headwaters in Van Zandt County to its confluence with Sabine Lake, which drains to the Gulf of Mexico. Major tributaries within these basins include the Ayish Bayou, Attoyac River, Mud Creek, and Village Creek. Major surface water impoundments, some of which have flood storage, include Lake Palestine, Lake Jacksonville, the Sam Rayburn Reservoir, and B.A. Steinhagen Lake.

Beaumont, Tyler, and Port Arthur are the major population centers in the region with 2019 populations of approximately 118,151, 104,789, and 55,109 respectively. Port Arthur in particular serves as a major hub of the oil and gas industry with several refineries located within the jurisdiction of the city. The region also includes several public agencies with flood control and drainage responsibilities, river authorities, utility districts, and drainage districts.

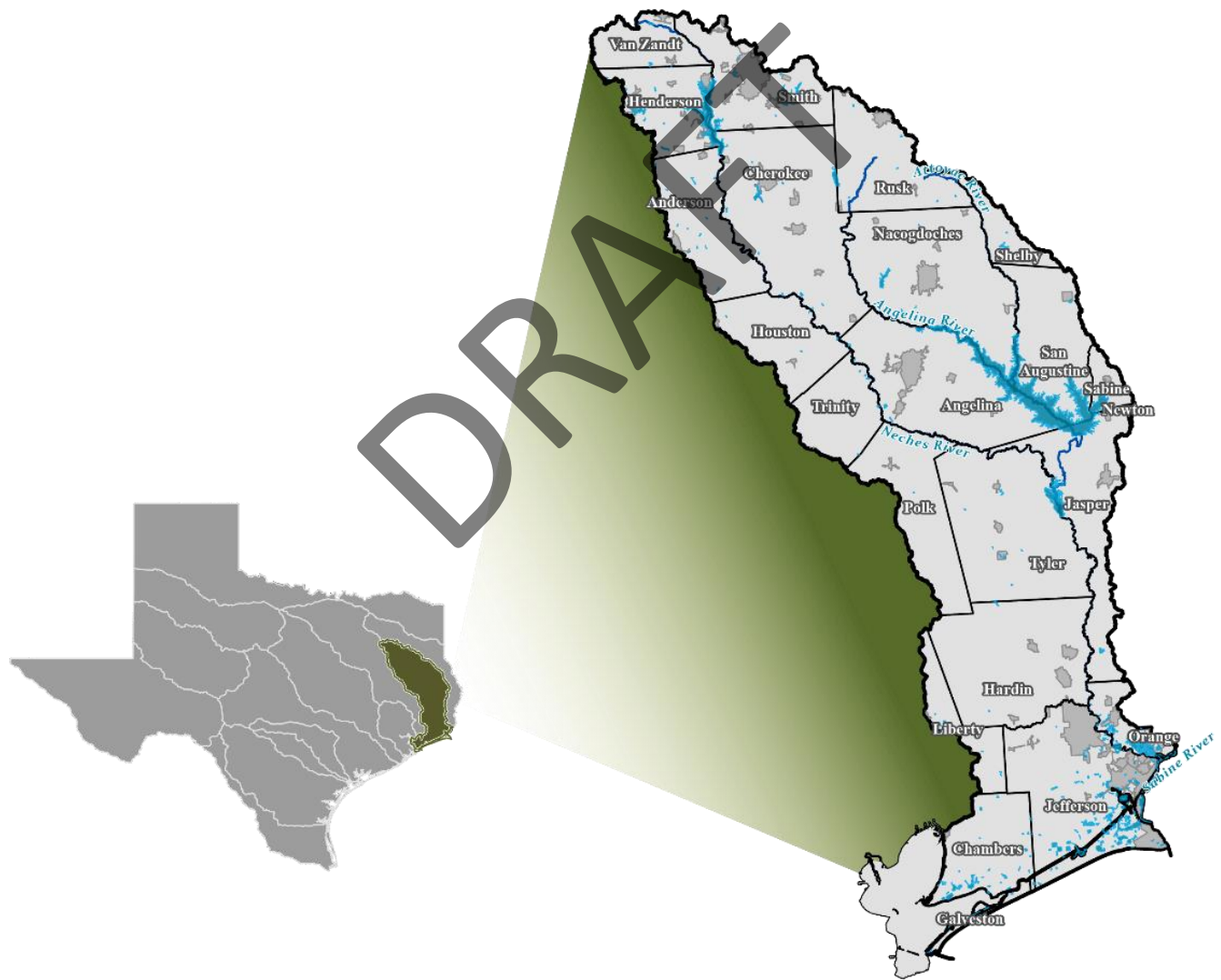


FIGURE 1: NECHES (REGION 5) FLOOD PLANNING REGION

Task 4C – Technical Memorandum

A. Political Subdivisions with Flood Related Authority

Political subdivisions include cities, counties, districts, and authorities. The list of political subdivisions with flood-related authority was created based on jurisdictional boundaries provided by the TWDB. Flood authority can fall under two categories: entities that have the authority to enact and enforce National Flood Insurance Program (NFIP) floodplain regulations and entities that construct, maintain, manage, sponsor, or perform various actions associated with drainage infrastructure.

Identified entities in the region were requested to participate in a stakeholder engagement survey. Responses to the engagement survey were used to determine political subdivisions with flood-related authority and the extent of their floodplain ordinances and regulations. Survey responses were additionally supplemented with research on floodplain ordinances and regulations. A point of contact for each political subdivision was determined from the FEMA Community Contact Report. For communities without an identified contact, the point of contact was determined based on open-source research.

Floodplain ordinances and regulations are aimed at protecting human life and property. They are often established based on flood hazard information provided by FEMA. Many communities' floodplain management programs are fundamentally based on the National Flood Insurance Program (NFIP). Research on floodplain regulation began with documents provided by TWDB and was supplemented with open-source research. Entities that do not have established flood-related regulations or ordinances were determined to not be active in flood planning.

Municipalities identified within Region 5 that have flood-related authority are shown in Table 2. Counties with flood-related authority are listed in Table 3. All counties were determined to have flood-related authority. Table 4 details the eight special districts with flood-related authority, including five drainage districts and three river authorities. In Region 5, 111 total political subdivisions have flood-related authority.

TABLE 2: POLITICAL SUBDIVISION WITH FLOOD RELATED AUTHORITY – MUNICIPALITIES

Municipality	County	Survey Response	Flood Planning Involvement ¹
City of Frankston	Anderson	None	Not Active
City of Palestine	Anderson	None	Active
City of Burke	Angelina	None	Not Active
City of Diboll	Angelina	None	Active
City of Hudson	Angelina	None	Active
City of Huntington	Angelina	None	Active
City of Lufkin	Angelina	None	Active
City of Zavalla	Angelina	None	Active
City of Anahuac	Chambers	Brad Wilbur, Floodplain Administrator	Active
City of Alto	Cherokee	None	Active
City of Cuney	Cherokee	None	Not Active
City of Gallatin	Cherokee	None	Not Active
City of Jacksonville	Cherokee	None	Active
City of New Summerfield	Cherokee	None	Active
City of Rusk	Cherokee	None	Active
City of Wells	Cherokee	None	Active
City of Reklaw	Cherokee, Rusk	None	Active
City of Bullard	Cherokee, Smith	None	Active
City of Troup	Cherokee, Smith	None	Active
City of Kountze	Hardin	Rod Hutto, Floodplain Administrator	Active

Municipality	County	Survey Response	Flood Planning Involvement ¹
City of Lumberton	Hardin	None	Active
City of Rose Hill Acres	Hardin	None	Active
City of Silsbee	Hardin	None	Active
City of Sour Lake	Hardin	None	Active
City of Athens	Henderson	None	Active
City of Berryville	Henderson	None	Active
City of Brownsboro	Henderson	None	Active
City of Chandler	Henderson	None	Active
City of Coffee City	Henderson	None	Active
City of Moore Station	Henderson	None	Not Active
City of Murchison	Henderson	None	Active
City of Poynor	Henderson	None	Active
City of Grapeland	Houston	None	Active
City of Kennard	Houston	None	Active
City of Browndell	Jasper	None	Not Active
City of Jasper	Jasper	None	Active
City of Beaumont	Jefferson	Andrew Lee, TxDOT District Bridge Engineer	Active
City of Bevil Oaks	Jefferson	None	Active
City of China	Jefferson	None	Active
City of Groves	Jefferson	None	Active
City of Nederland	Jefferson	None	Active
City of Port Arthur	Jefferson	None	Active
City of Port Neches	Jefferson	None	Active
City of Rose City	Jefferson	None	Active
City of Taylor Landing	Jefferson	None	Active
City of Nome	Jefferson, Liberty	None	Active
City of Daisetta	Liberty	None	Active
City of Devers	Liberty	None	Active
City of Hardin	Liberty	None	Active
City of Appleby	Nacogdoches	None	Active
City of Chireno	Nacogdoches	None	Not Active
City of Cushing	Nacogdoches	None	Not Active
City of Garrison	Nacogdoches	None	Not Active
City of Nacogdoches	Nacogdoches	None	Active
City of Bridge City	Orange	None	Active
City of Pine Forest	Orange	None	Active
City of Vidor	Orange	Linda Cathey, Code Enforcement	Active
City of Corrigan	Polk	None	Active
City of Henderson	Rusk	None	Active
City of Mount Enterprise	Rusk	None	Active
City of New London	Rusk	None	Active
City of Overton	Rusk, Smith	None	Active
City of Pineland	Sabine	None	Active
City of Broaddus	San Augustine	None	Not Active
City of San Augustine	San Augustine	Leroy Hughes, Mayor	Active

Municipality	County	Survey Response	Flood Planning Involvement ¹
City of Arp	Smith	None	Active
City of Hideaway	Smith	None	Active
City of Lindale	Smith	None	Active
City of New Chapel Hill	Smith	None	Not Active
City of Noonday	Smith	None	Active
City of Tyler	Smith	None	Active
City of Whitehouse	Smith	None	Active
City of Groveton	Trinity	None	Active
City of Chester	Tyler	None	Active
City of Colmesneil	Tyler	None	Active
City of Ivanhoe	Tyler	C.D. Woodrome, Floodplain Administrator	Active
City of Woodville	Tyler	None	Active
City of Edom	Van Zandt	None	Not Active
City of Van	Van Zandt	None	Active

1. Municipalities designated as “Not Active” do not have flood-related regulations or ordinances that meet minimum requirements to participate in the NFIP.

TABLE 3: POLITICAL SUBDIVISION WITH FLOOD RELATED AUTHORITY – COUNTIES

County	Survey Contact	Flood Planning Involvement ¹
Anderson	Christina Crockett, Emergency Management Director	Active
Angelina	None	Active
Chambers	Brad Wilbur, Floodplain Administrator Brian Hawthorne, County Sheriff	Active
Cherokee	None	Active
Galveston	None	Active
Hardin	Alex Parker, Floodplain Administrator Wayne McDaniel, County Judge	Active
Harris	None	Active
Henderson	Joy Kimbrough, Emergency Management Director	Active
Houston	None	Active
Jasper	None	Active
Jefferson	None	Active
Liberty	None	Active
Nacogdoches	None	Active
Newton	None	Active
Orange	None	Active
Polk	None	Active
Rusk	None	Active
Sabine	None	Not Active
San Augustine	None	Active
Shelby	None	Not Active

County	Survey Contact	Flood Planning Involvement ¹
Smith	None	Active
Trinity	None	Not Active
Tyler	None	Active
Van Zandt	None	Active

1. Counties designated as “Not Active” do not have flood-related regulations or ordinances that meet minimum requirements to participate in the NFIP.

TABLE 4: POLITICAL SUBDIVISION WITH FLOOD RELATED AUTHORITY – SPECIAL DISTRICTS

Special District	Stakeholder Type	County	Survey Contact	Flood Planning Involvement
Angelina and Neches River Authority	River Authority	Angelina	Kelley Holcomb, General Manager	Active
Jefferson County Drainage District #3	Flood District	Jefferson	None	Active
Jefferson County Drainage District #6	Flood District	Jefferson	Doug Canant, District Engineer	Active
Jefferson County Drainage District #7	Flood District	Jefferson	None	Active
Liberty County Drainage District ¹	Flood District	Liberty	None	Not Active
Lower Neches Valley Authority	River Authority	Jefferson	None	Active
Orange County Drainage District	Flood District	Orange	None	Active
Upper Neches River Municipal Water Authority	River Authority	Anderson	None	Active

1. Liberty County Drainage District was recently created in 2019. While county commissioners have approved the district as of August 2021, voters have yet to approve the district as of this technical memorandum’s writing

B. Previous Flood Studies

Local and regional flood plans analyze a community’s flood risk and present how that entity will improve its resiliency. Flood studies are critical in defining flood risk, ascertaining the extent of existing risk, and recommending options and measures to manage and mitigate risk. These studies can be executed at various levels ranging from localized drainage studies to regional flood studies. Drainage master plans describe a community’s physical and institutional planning environment and establish interjurisdictional roles and responsibilities when many drainage entities are present. Table 5 lists previous flood studies considered to be relevant to development of the Neches Regional Flood Plan.

TABLE 5: PREVIOUS FLOOD STUDIES

Flood Study	Sponsor	Location	Date
Anderson County FIS	FEMA	Anderson County	2010
Anderson County HMAP	Anderson County	Anderson County	2018
Angelina County FIS	FEMA	Angelina County	2010
Angelina County HMAP	Angelina County	Angelina County	2018
City of Beaumont Master Drainage Plan	City of Beaumont	City of Beaumont	2019
Chambers County FIS	FEMA	Chambers County	2018
Chambers County FIF Study ¹	TWDB	Chambers County	2024
Chambers County HMAP	Chambers County	Chambers County	2017
Chambers County Master Drainage Plan (Volume I)	Chambers County	Chambers County	2014

Flood Study	Sponsor	Location	Date
Chambers County Master Drainage Plan (Volume I)	Chambers County	Chambers County	2014
Cherokee County FIS	FEMA	Cherokee County	2011
Cherokee County HMAP	Cherokee County	Cherokee County	2020
City of Nacogdoches Flood Control Study	City of Nacogdoches	City of Nacogdoches	2010
City of Tyler Master Drainage Study	TWDB	City of Tyler	2008
Hardin County – Lumberton Drainage Study	Lumberton/Hardin County	Lumberton/Hardin County	2016
Hardin County FIS	FEMA	Hardin County	2010
Henderson County FIS	FEMA	Henderson County	2010
Henderson County HMAP	Henderson County	Henderson County	2020
Houston County FIS	FEMA	Houston County	2011
Jasper County FIS	FEMA	Jasper County	2010
Hazard Mitigation Plan Update	Jefferson County Drainage District 6	Jefferson County	2016
JCDD6 Master Drainage Plan ¹	Jefferson County Drainage District 6	Jefferson County	2024
Hazard Mitigation Plan Update	Jefferson County Drainage District 7	Jefferson County	2018
JCDD7 Master Drainage Plan	Jefferson County Drainage District 7	Jefferson County	2019
Jefferson County FIS	FEMA	Jefferson County	2002
Liberty County FIS	FEMA	Liberty County	2018
Liberty County HMAP	Liberty County	Liberty County	2017
Nacogdoches County FIS	FEMA	Nacogdoches County	2010
Orange County FIS	FEMA	Orange County	2014
OCDD HMAP	Orange County Drainage District	Orange County	2017
City of Port Arthur Disaster Recovery Plan	City of Port Arthur	City of Port Arthur	2018
Polk County FIS	FEMA	Polk County	2010
Polk County HMAP	Polk County	Polk County	2018
Polk County Multi-Jurisdiction Hazard Mitigation Plan	Polk County	Polk County	2018
Rusk County FIS	FEMA	Rusk County	2010
Multi-Jurisdiction Hazard Mitigation Action Plan	San Augustine County	San Augustine County	2018
San Augustine HMAP	San Augustine County	San Augustine County	2018
Smith County HMAP	Smith County	Smith County	2018
Trinity County HMAP	Trinity County	Trinity County	2019
Tyler County FIS	FEMA	Tyler County	2011
Van Zandt County FIS	FEMA	Van Zandt County	2010
Van Zandt County HMAP	Van Zandt County	Van Zandt County	2019

Flood Study	Sponsor	Location	Date
Lower Angelina Watershed Hydraulic Analysis (BLE)	FEMA	Angelina County, Jasper County, Nacogdoches County, Newton County, Rusk County, Sabine County, San Augustine County, Shelby County	2019
Lower Neches Watershed Hydraulic Analysis (BLE)	FEMA	Angelina County, Hardin County, Jasper County, Jefferson County, Orange County, Tyler County,	2019
Middle Neches Watershed Hydraulic Analysis (BLE)	FEMA	Angelina County, Cherokee County, Houston County, Jasper County, Polk County, Trinity County, Tyler County	2019
Pine Island Bayou Watershed Hydraulic Analysis (BLE)	FEMA	Hardin County, Jefferson County, Liberty County, Polk County	2019
Upper Angelina Watershed Hydraulic Analysis (BLE)	FEMA	Angelina County, Cherokee County, Nacogdoches County, Rusk County, Smith County	2019
Upper Neches Watershed Hydraulic Analysis (BLE)	FEMA	Anderson County, Cherokee County, Henderson County, Houston County, Smith County, Van Zandt County	2019
Village Watershed Hydraulic Analysis (BLE)	FEMA	Hardin County, Polk County, Tyler County	2019
Combined River Basin Flood Study	Texas General Land Office (GLO)	San Augustine County, Sabine County, Newton County, Polk County, Tyler County, Jasper County, Hardin County, Liberty County, Orange County, Jefferson County, Chambers County, Galveston County	2020
IH-10 Hydraulic Analysis and Resilience Assessment	Texas Department of Transportation (TxDoT)	Jefferson County, Chambers County, Orange County	2020
Southeast Texas Flood Coordination Study	Lamar University		
State Flood Assessment	TWDB	Neches Flood Planning Region	2019
Texas Integrated Flooding Framework Planning Project	TWDB, USACE, USGS	San Augustine County, Sabine County, Newton County, Polk County, Tyler County, Jasper County, Hardin County, Liberty County, Orange County, Jefferson County, Chambers County, Galveston County	2020

1. The Chambers County FIF Study and the Jefferson County Drainage District 6 Master Drainage Plan are studies currently in progress with their estimated completion year listed in the "Date" column.

C. 1% and 0.2% Annual Chance Flood Events

The 1% and 0.2% annual chance flood hazard areas will be provided in a memorandum with an expected date of March 2022, per direction from the TWDB provided on August 15, 2021. Identification of these events will incorporate flood exposure datasets that are still in development.

D. Additional Flood-Prone Areas

Identified flood-prone areas will be provided in the same above-mentioned memorandum with an expected date of March 2022, per direction from the TWDB provided on August 15, 2021. Identification of these areas will incorporate flood exposure datasets that are still in development.

E. Existing Hydrologic and Hydraulic Models

Existing hydrologic and hydraulic models are scheduled to be provided in the above-mentioned memorandum with an expected date of March 2022, per direction from the TWDB provided on August 15, 2021. Identification of these models will incorporate data obtained from stakeholders or through the Texas General Land Office (GLO) East Region.

F. List of Flood-Related Models

The list of all identified flood-related models in Region 5 can be found in Table 6. The list includes all models that the Texas General Land Office has collected as part of the Combined River Basin Study. The list below represents data collected as of November 10, 2021.

TABLE 6: AVAILABLE FLOOD-RELATED MODELS

Model	Description	Location	Source of Data
Alligator Bayou Models	HEC-HMS (v3.5) and HEC-RAS (v4.1.0) Models of Alligator Bayou within Port Arthur, Port Neches, Nederland, and Groves	Port Arthur, Port Neches, Nederland, and Groves	Jefferson County Drainage District 7
HEC Model	Model in the Master Drainage Plan - Project was led by LAN	Beaumont/Jefferson County	Director of Public Works
Lower Angelina Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Angelina County, Jasper County, Nacogdoches County, Newton County, Rusk County, Sabine County, San Augustine County, Shelby County	FEMA
Lower Neches Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Angelina County, Hardin County, Jasper County, Jefferson County, Orange County, Tyler County,	FEMA
Middle Neches Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Angelina County, Cherokee County, Houston County, Jasper County, Polk County, Trinity County, Tyler County	FEMA

Model	Description	Location	Source of Data
Pine Island Bayou Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v 5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Hardin County, Jefferson County, Liberty County, Polk County	FEMA
Upper Angelina Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v 5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Angelina County, Cherokee County, Nacogdoches County, Rusk County, Smith County	FEMA
Upper Neches Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v 5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Anderson County, Cherokee County, Henderson County, Houston County, Smith County, Van Zandt County	FEMA
Village Watershed Hydraulic Analysis (BLE)	Steady flow HEC-RAS (v 5.0.7) models developed for the 10-year, 25-year, 50-year, 100-year, and 500-year flood events	Hardin County, Polk County, Tyler County	FEMA

G. Flood Mitigation and Floodplain Management Goals

Task 3B of the Scope of Work for the development of the Regional Flood Plan (RFP) requires the planning group and its technical consultants to “identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals for the flood planning region.” The goals, outlined on the following pages, were developed considering RFPG input at the regular RFPG meetings, as well as input from regional stakeholders provided through the data collection survey. The discussion and development of goals occurred over the course of the following meetings:

- **September 9, 2021** – Introduction to floodplain management strategies and goals
- **September 22, 2021** – Interactive goal development session and identification of draft goal categories
- **October 14, 2021** – Discussion and action to adopt final floodplain management goals

The comprehensive goal of all regional flood plans is to protect against the loss of life and property. Identifying SMART goals (Specific, Measurable, Attainable, Relevant, and Time-bound) as part of Task 3B will allow the Neches RFPG to track progress towards reducing flood risk to life and property in Region 5 and guide the overall approach and recommendations in the regional flood plan.

The RFPG members participated in a polling exercise during the September 22nd RFPG meeting to identify which goal categories were of highest importance. Results of the polling exercise are summarized in Figure 2. In addition, within each goal group, sub goals were presented and RFPG members were asked to rank them based on each group member’s priorities and importance. Results from the polling exercise were evaluated to determine the RFPG’s priorities and to ascertain the highest ranked sub-goals for the Neches RFPG.

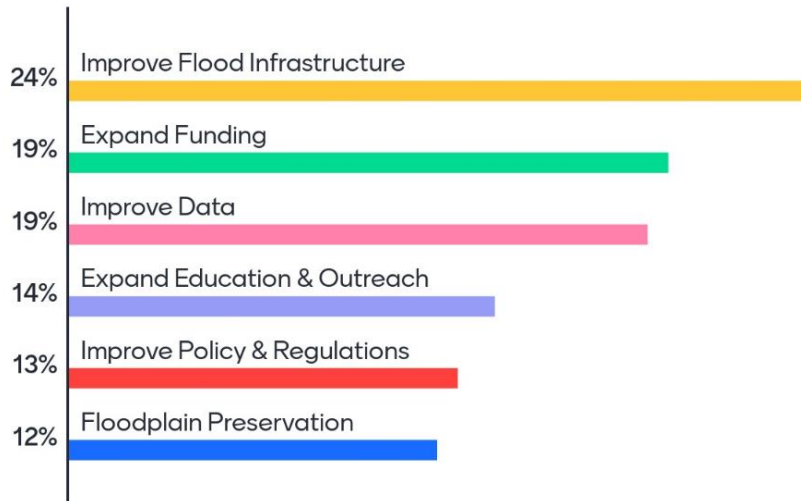


FIGURE 2: RFPG PRIORITIZATION OF FLOOD MITIGATION AND FLOODPLAIN MANAGEMENT GOAL CATEGORIES

The poll also gave the planning group the opportunity to rank specific subgoal topics within each of the broader categories based on importance. The subgoals are more specific and provide direction to achieve the larger goals. For example, under the “Improve Flood Infrastructure” goal category, the presented subgoals include “design future regional infrastructure for larger storm events” and “increase sustainability and resiliency”. A weighting and scoring exercise was performed with input from the RFPG to determine the highest ranking sub-goals to narrow the focus of flood mitigation and floodplain management goals. Draft goals recommendations were provided to the RFPG in advance of the October 2021 RFPG meeting, where they were finalized and adopted. Table 7 details the flood mitigation and floodplain management goals adopted by the RFPG per 31 Texas Administrative Code (TAC) §361.36.

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TABLE 7: REGIONAL FLOOD PLAN FLOOD MITIGATION AND FLOODPLAIN MANAGEMENT GOALS

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	Measurement Method	Overarching Goal	Associated Goal IDs
05000001	5	Neches	Design 10% of the new regional infrastructure projects for larger storm events.	Short Term (10-year)	2033	Entire RFPG	90% of new regional infrastructure projects will not be designed for storm events exceeding the 100-year event.	Number of new projects within region designed for storm events exceeding the 100-year event.	Improve Flood Infrastructure	05000002
05000002	5	Neches	Design 25% of the new regional infrastructure projects for larger storm events	Long Term (30-year)	2053	Entire RFPG	75% of new regional infrastructure projects will not be designed for storm events exceeding the 100-year event.	Number of new projects within region designed for storm events exceeding the 100-year event.	Improve Flood Infrastructure	05000001
05000003	5	Neches	RFPGs will consider and incorporate nature-based practices and floodplain preservation in 10% of their new flood risk reduction projects.	Short Term (10-year)	2033	Entire RFPG	Areas outside of the project's service area will not achieve a reduction in water surface elevation.	Number of new flood risk reduction projects incorporating nature-based practices (LID, FEMA Nature-Based Solutions guide)	Improve Flood Infrastructure	05000004
05000004	5	Neches	RFPGs will consider and incorporate nature-based practices and floodplain preservation in 25% of their new flood risk reduction projects.	Long Term (30-year)	2053	Entire RFPG	Areas outside of the project's service area will not achieve a reduction in water surface elevation.	Number of new flood risk reduction projects incorporating nature-based practices (LID, FEMA Nature-Based Solutions guide)	Improve Flood Infrastructure	05000003
05000005	5	Neches	Reduce the number of critical facilities in the 100-year flood risk inundation extents by 15%.	Short Term (10-year)	2033	Entire RFPG	85% of critical facilities within the region have no change in flood risk from the 100-year storm event.	Number of critical facilities removed from the 100-year flood risk inundation extent.	Improve Flood Infrastructure	05000006
05000006	5	Neches	Reduce the number of critical facilities in the 100-year flood risk inundation extents by 25%.	Long Term (30-year)	2053	Entire RFPG	75% of critical facilities within the region have no change in flood risk from the 100-year storm event.	Number of critical facilities removed from the 100-year flood risk inundation extent.	Improve Flood Infrastructure	05000005
05000007	5	Neches	Reduce exposure of existing and future structures in the 100-year flood risk inundation extents by elevating, acquiring, relocating, or otherwise providing flood protection to 10% of structures.	Short Term (10-year)	2033	Entire RFPG	90% of existing within the 100-year flood risk inundation extent will have no change to flood risk.	Number of existing structures removed from the 100-year flood risk inundation extent.	Improve Flood Infrastructure	05000008
05000008	5	Neches	Reduce exposure of existing and future structures in the 100-year flood risk inundation extents by elevating, acquiring, relocating, or otherwise providing flood protection to 30% of structures.	Long Term (30-year)	2053	Entire RFPG	70% of existing structures within the 100-year flood risk inundation extent will have no change to flood risk	Number of existing structures removed from the 100-year flood risk inundation extent.	Improve Flood Infrastructure	05000007
05000009	5	Neches	Increase the amount of State/Federal funding for flood mitigation projects and strategies awarded within the Neches Region by 25%.	Short Term (10-year)	2033	Entire RFPG	Flood risk mitigation actions not executed as a result of lack of funding.	Increase in awarded funding based on total received in 2017 to be directed to the execution of flood mitigation actions.	Expand Funding	05000010
05000010	5	Neches	Increase the amount of State/Federal funding for flood mitigation projects and strategies awarded within the Neches Region by 75%.	Long Term (30-year)	2053	Entire RFPG	Flood risk mitigation actions not executed as a result of lack of funding.	Increase in awarded funding based on total received in 2017 to be directed to the execution of flood mitigation actions.	Expand Funding	05000009
05000011	5	Neches	Increase percentage of areas with dedicated funding sources for operations & maintenance for storm drainage system to 50% of communities.	Short Term (10-year)	2033	Entire RFPG	Entities without dedicated funding have no change in flood risk; entities with new funding sources have reduced risk as stormwater O&M and capital projects are implemented.	Number of entities within region with dedicated funding sources for stormwater operations and maintenance.	Expand Funding	05000012

Goal ID	RFPG No.	RFPG Name	Goal	Term of Goal	Target Year	Applicable To	Residual Risk	Measurement Method	Overarching Goal	Associated Goal IDs
05000012	5	Neches	Increase percentage of areas with dedicated funding sources for operations and maintenance for storm drainage system to 75% of communities.	Long Term (30-year)	2053	Entire RFPG	Entities without dedicated funding have no change in flood risk; entities with new funding sources have reduced risk as stormwater operations and maintenance projects are implemented.	Number of entities within region with dedicated funding sources for stormwater operations and maintenance.	Expand Funding	05000011
05000013	5	Neches	50% of the region's population is part of an entity that has a dedicated drainage charge, fee, or other continuous funding mechanism for the maintenance and/or restoration of flood infrastructure.	Short Term (10-year)	2033	Entire RFPG	Entities without continuous funding mechanisms may see an increase in flood risk as infrastructure may not function as designed. The population of the region within entities that have continuous funding mechanisms are able to maintain existing flood risk.	Number of people within region located in the jurisdictions of entities that have continuous funding mechanisms.	Expand Funding	05000014
05000014	5	Neches	75% of the region's population is part of an entity that has a dedicated drainage charge, fee, or other continuous funding mechanism for the maintenance and/or restoration of flood infrastructure.	Long Term (30-year)	2053	Entire RFPG	Entities without continuous funding mechanisms may see an increase in flood risk as infrastructure may not function as designed. The population of the region within entities that have continuous funding mechanisms are able to maintain existing flood risk.	Number of people within region located in the jurisdictions of entities that have continuous funding mechanisms.	Expand Funding	05000013
05000015	5	Neches	Increase the coverage of flood hazard data across the region by completing detailed studies that utilize consistent methodology in 75% of areas identified as having current gaps in flood mapping.	Short Term (10-year)	2033	Entire RFPG	No direct change to flood risk inundation extents; 75% of current areas with gaps will have improved flood hazard mapping that can provide a better understanding of structures at risk of flooding.	Number of HUC10s within region, previously marked as having gaps in mapping, with detailed flood hazard studies that utilize consistent methodology.	Improve Data	05000016
05000016	5	Neches	Increase the coverage of flood hazard data across the region by completing detailed studies that utilize consistent methodology in 100% of areas identified as having current gaps in flood mapping.	Long Term (30-year)	2053	Entire RFPG	No direct change to flood risk inundation extents; all current areas with gaps will have improved flood hazard mapping that can provide a better understanding of structures at risk of flooding.	Number of HUC10s within region, previously marked as having gaps in mapping, with detailed flood hazard studies that utilize consistent methodology.	Improve Data	05000015
05000017	5	Neches	Increase the number of gages across the Neches basin to cover 50% of the region's HUC10s.	Short Term (10-year)	2033	Entire RFPG	No direct change to flood risk inundation extents; the increased number of gages will aid in better prediction of flood events.	Number of HUC10s within region that have gages installed within them.	Improve Data	05000018
05000018	5	Neches	Increase the number of gages across the Neches basin to cover 100% of the region's HUC10s.	Long Term (30-year)	2053	Entire RFPG	No direct change to flood risk inundation extents; the increased number of gages will aid in better prediction of flood events.	Number of HUC10s within region that have gages installed within them.	Improve Data	05000017
05000019	5	Neches	Develop and maintain critical infrastructure database	Short Term (10-year)	2033	Entire RFPG	No direct change to flood risk inundation extents; the critical infrastructure database will aid in providing information of critical infrastructure at risk of ≥100-yr storm events.	Implementation and maintenance of database to be used by the RFPG.	Improve Data	

H. Process Used to Identify Potentially Feasible FMSs and FMPs

Identification

Task 4B of the Regional Flood Plan includes the identification and evaluation of potential Flood Management Evaluations (FMEs), Flood Mitigation Projects (FMPs), and Flood Management Strategies (FMSs). They are defined as the following:

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 or 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 the group would like to identify, evaluate, and recommend that does not qualify as either a FME or FMP.

Identification of potential FMEs and potentially feasible FMPs and FMSs began with the development of the Flood Mitigation Needs Analysis from Task 4A. This task is intended to guide actions, evaluations, and recommendations by highlighting:

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

Table 8 summarizes factors evaluated in identifying areas of greatest need based on application of the requirements outlined in the *Scope of Work*.

TABLE 8: 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"> • Area overlapped by inundation mapping and/or included in any historical flooding record • Building footprints / polygons within flood hazard layer • Fully developed flood models (where available) • Low water crossings • Agricultural areas at risk of flooding
2. Locations, extent and performance of current floodplain management and land use policies and infrastructure	<ul style="list-style-type: none"> • Communities not participating in NFIP and/or without NFIP equivalent or higher standards • City / County design manuals • Floodplain ordinance(s)
3. Inadequate inundation mapping	<ul style="list-style-type: none"> • No mapping • Presence of Fathom / BLE / FEMA Zone A flood risk data • Detailed FEMA models older than 10 years
4. No H&H models	<ul style="list-style-type: none"> • Communities with no models • Communities with limited models • Communities with outdated models
5. Emergency need	<ul style="list-style-type: none"> • Damaged or failing infrastructure • Other emergency conditions
6. Existing models, analyses, and flood risk mitigation plans	<ul style="list-style-type: none"> • Exclude flood mitigation plans already in implementation • Leverage existing models, analyses, and flood risk mitigation plans otherwise
7. Already identified and evaluated flood mitigation projects	<ul style="list-style-type: none"> • Exclude flood mitigation projects already in implementation • Leverage existing flood mitigation projects otherwise

Guidance	Factors to Consider
8. Historic flooding events	<ul style="list-style-type: none"> • Disaster declarations • Flood insurance claim information • Other significant local events
9. Already implemented flood mitigation projects	<ul style="list-style-type: none"> • Exclude areas where flood mitigation projects have already been implemented unless significant residual risk remains
10. Additional other factors deemed relevant by RFPG	<ul style="list-style-type: none"> • Alignment with RFPG goals • Alignment with TWDB guidance principles

After identification of the areas of greatest flood mitigation need, the RFPG will review the available data to develop a list of potential flood risk reduction actions for addressing the needs in these areas. The data to be reviewed includes information completed under previous tasks, 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*);
- Stakeholder-provided input throughout the flood planning process.

Potential flood risk reduction actions will be identified through data analysis and input from stakeholders. 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*. Actions initially considered for FMSs and FMPs that do not meet these requirements may be recommended for future study as part of an FME. Therefore, there will likely be several potential actions identified, primarily FMEs, to address gaps in flood risk data associated with the first planning cycle.

It should be noted that new FMSs and FMPs will likely not be developed as part of the first planning cycle. Rather, the list of potentially feasible FMSs and FMPs will be compiled based on contributions from the RFPG and other regional stakeholders. FMSs and FMPs will also be developed from sources including but not limited to previous flood studies, drainage master plans, Capital Improvement Plans (CIPs), Hazard Mitigation Plans (HMPs), Flood Infrastructure Fund (FIF) Applications, and Community Development Block Grant Mitigation Program (CDBG-MIT) Applications.

Evaluation

Once potential flood risk reduction actions are identified, the following process will be performed to sort actions into their appropriate category. The screening process is shown in Figure 3. The process for identifying potential FMEs and potentially feasible FMSs and FMPs was approved by the NRFPG at the October 14th 2021 meeting.

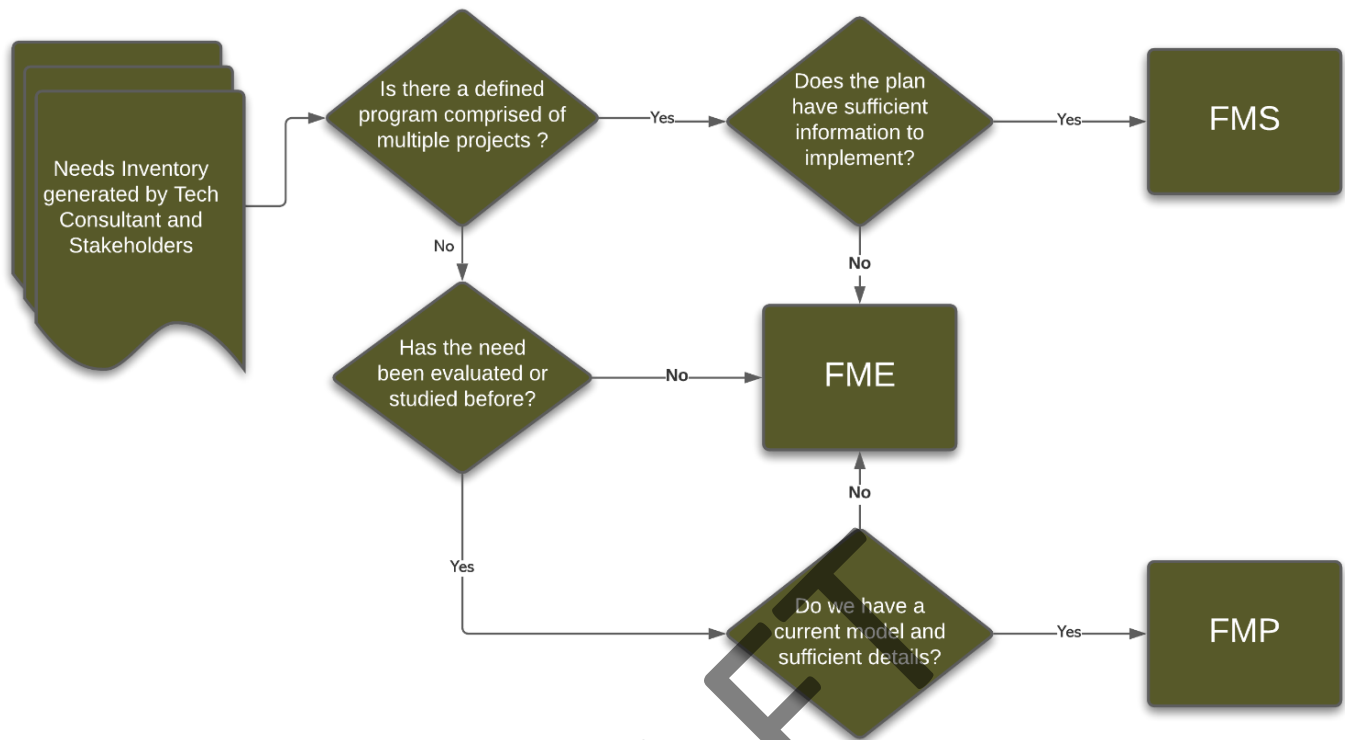


FIGURE 3: FLOOD RISK REDUCTION ACTION SCREENING PROCESS

The first step in the screening process is to perform an initial screening of the compiled evaluations (studies), projects, and strategies. The initial screening includes determining whether the flood risk reduction action meets a floodplain management or flood mitigation goal, meets an emergency need, has a service area greater or equal to 1 square mile, or reduces 100-year flood risk. The RFPG also has the flexibility to include actions that benefit critical facilities or infrastructure but may not benefit a larger service area or achieve a reduction to the 100-year flood risk.

The following factors will be evaluated in screening FMEs and follow TWDB minimum guidance requirements:

- Areas within an identified flood risk knowledge gap
 - Areas require better quality flood risk information
 - Areas with outdated flood risk information
- Areas identified as having a high flood mitigation and flood risk study need (Task 4A)
- Projects that do not have sufficient data/detail to qualify as a FMS/FMP

The following factors will be evaluated in screening FMPs and follow TWDB minimum guidance requirements:

- Service area greater or equal to 1 square mile
 - Except in instances of flooding critical infrastructure
- Reduce the 100-year flood risk
- Sufficient modeling data to assess benefits and potential impacts
 - Projects cannot have a negative impact
- Sufficient project detail to be ranked in Texas’s first ever State Flood Plan
 - Includes, but is not limited to, flood severity metrics, risk/damage reductions, capital and operation and maintenance costs, benefit cost ratios, environmental benefits and impacts, implementation constraints, etc.

The following factors will be evaluated in screening FMSs and follow TWDB minimum guidance requirements:

- Reduce the potential impacts of floods and meet RFPG goals
- Service area greater or equal to 1 square mile
 - Except in instances of flooding critical infrastructure
- Reduce the 100-year flood risk
- Must not qualify as a FME or FMP

I. List of Potentially Feasible FMEs, FMPs and FMSs

Potential flood mitigation actions, including FMEs, FMPs, and FMSs, are outlined in the following collection of tables. The list of potential flood mitigation actions was compiled based on review and evaluation of several data sources, including available flood risk information, open source datasets, and input from the RFPG and regional stakeholders. As can be expected during the first planning cycle, FMEs comprise a majority of the identified potential flood mitigation actions, since flood risk and planning information have not to this point been assessed at a regional or statewide scale.

Table 9 lists the potential flood mitigation evaluations (FMEs) that have been identified at this point in time. It was determined that almost the entirety of Region 5 had either approximate flood hazard mapping or detailed studies that were outdated by more than 10 years. To address these gaps in flood hazard mapping, 21 FMEs (FME IDs 051000025 – 051000045) have been developed for the purposes of updating flood hazard mapping for the counties in the region. Several FMEs have been identified that can potentially become FMPs, but due to a lack of information on project scope and existence of supporting models, they have been classified as FMEs. Many of the FME action items have been directly sourced from Hazard Mitigation Action Plans from counties within the flood planning region.

Potentially feasible FMPs listed in Table 10 were identified based on responses to the survey, review of previous studies, and coordination with stakeholders. As they are further evaluated, these FMPs may be reclassified as FMEs if they lack information necessary for complete evaluation and recommendation. Additional FMPs may be identified through future outreach efforts and through the execution of FMEs.

Region 5 featured a considerable number of Flood Mitigation Strategies (FMSs), presented in Table 11. The FMSs identified within the flood planning region involved a great number of action items involving public outreach and education, property acquisition and structural elevation, and programs intended to foster future infrastructure projects within the region.

The FME, FMP, and FMS action items sometimes fall within the jurisdiction of an entity that only has a portion of its total area represented within Region 5. In this case, only the area of the entity within Region 5's boundary was taken into consideration when reporting the areal extent of a particular action item.

TABLE 9 : POTENTIALLY FEASIBLE FLOOD MITIGATION EVALUATIONS

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000001	Anderson County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Anderson	12020001	120200010307, 120200010402, 120200010403, 120200010404, 120200010405, 120200010406, 120200010407, 120200010408, 120200010409, 120200010501, 120200010502, 120200010503, 120200010504, 120200010505, 120200010508, 120200010509, 120200010510, 120200010511, 120200010701, 120200010702, 120200010705	Upper Neches	Watershed Planning	495.35	Other	Anderson County	Anderson County
051000002	Angelina County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Angelina	12020002, 12020003, 12020004, 12020005	120200020106, 120200020201, 120200020204, 120200020207, 120200020301, 120200020302, 120200020306, 120200020307, 120200020308, 120200020501, 120200020502, 120200020504, 120200020505, 120200020506, 120200020508, 120200030102, 120200030103, 120200030104, 120200030105, 120200040604, 120200040705, 120200050103, 120200050104, 120200050105, 120200050107, 120200050205, 120200050602, 120200050603, 120200050604, 120200050902, 120200050903, 120200050904, 120200051001	Middle Neches, Lower Neches, Upper Angelina, Lower Angelina	Watershed Planning	860.98	Other	Angelina County	Angelina County
051000003	Chambers County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Chambers	12040201, 12040202, 12040203, 12040204	120402010100, 120402020100, 120402020200, 120402020300, 120402020400, 120402020500, 120402030200, 120402040200	Sabine Lake, East Galveston Bay, North Galveston Bay, West Galveston Bay	Watershed Planning	434.46	Other	Chambers County	Chambers County
051000004	Cherokee County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Cherokee	12020001, 12020002, 12020004	120200010305, 120200010306, 120200010307, 120200010402, 120200010407, 120200010409, 120200010503, 120200010505, 120200010507, 120200010511, 120200010601, 120200010602, 120200010603, 120200010704, 120200010705, 120200020101, 120200020104, 120200020105, 120200020106, 120200020201, 120200040105, 120200040106, 120200040201, 120200040202, 120200040203, 120200040204, 120200040205, 120200040206, 120200040207, 120200040301, 120200040302, 120200040304, 120200040305, 120200040505, 120200040506, 120200040601, 120200040602, 120200040603, 120200040604	Upper Neches, Middle Neches, Upper Angelina	Watershed Planning	1057.77	Other	Cherokee County	Cherokee County
051000005	Galveston County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Galveston	12040202, 12040204	120402020100, 120402020300, 120402020400, 120402020500, 120402040200, 120402040500	East Galveston Bay, West Galveston Bay	Watershed Planning	57.07	Other	Galveston County	Galveston County
051000006	Hardin County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Hardin	12020003, 12020006, 12020007	120200030306, 120200030307, 120200030308, 120200030401, 120200030402, 120200030405, 120200060104, 120200060106, 120200060107, 120200060203, 120200060207, 120200060303, 120200060305, 120200060306, 120200060401, 120200060402, 120200060403, 120200060404, 120200060405, 120200060406, 120200060407, 120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070109, 120200070201, 120200070202, 120200070203, 120200070204, 120200070205, 120200070301, 120200070302, 120200070303, 120200070304	Lower Neches, Village, Pine Island Bayou	Watershed Planning	887.60	Other	Hardin County	Hardin County

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
05100007	Henderson County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Henderson	12020001	120200010103, 120200010202, 120200010203, 120200010204, 120200010205, 120200010206, 120200010301, 120200010302, 120200010303, 120200010304, 120200010305, 120200010307, 120200010403, 120200010404, 120200010405	Upper Neches	Watershed Planning	373.91	Other	Henderson County	Henderson County
05100008	Houston County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Houston	12020001, 12020002	120200010509, 120200010701, 120200010702, 120200010703, 120200010705, 120200020101, 120200020102, 120200020103, 120200020104, 120200020106, 120200020202, 120200020203, 120200020204, 120200020206, 120200020401, 120200020402	Upper Neches, Middle Neches	Watershed Planning	418.21	Other	Houston County	Houston County
05100009	Jasper County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Jasper	12020002, 12020003, 12020005	120200020506, 120200020508, 120200030102, 120200030103, 120200030104, 120200030105, 120200030203, 120200030204, 120200030205, 120200030206, 120200030301, 120200030302, 120200030303, 120200030304, 120200030305, 120200030306, 120200030307, 120200030308, 120200030401, 120200030402, 120200030403, 120200030404, 120200050807, 120200050808, 120200050809, 120200050904, 120200051001, 120200051002, 120200051003	Middle Neches, Lower Neches, Lower Angelina	Watershed Planning	615.49	Other	Jasper County	Jasper County
05100010	Jefferson County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Jefferson	12020003, 12020007, 12040201, 12040202	120200030405, 120200030406, 120200030407, 120200070105, 120200070110, 120200070201, 120200070205, 120200070303, 120200070304, 120402010100, 120402010200, 120402010300, 120402010500, 120402020200, 120402020300, 120402020500	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Watershed Planning	954.23	Other	Jefferson County	Jefferson County
05100011	Liberty County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Liberty	12020007, 12030203, 12040201, 12040202	120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070108, 120200070109, 120200070110, 120200070201, 120302030202, 120402010100, 120402020100, 120402020100, 120402020200	Pine Island Bayou, Lower Trinity, Sabine Lake, East Galveston Bay	Watershed Planning	235.49	Other	Liberty County	Liberty County
05100012	Nacogdoches County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Nacogdoches	12020004, 12020005	120200040207, 120200040503, 120200040504, 120200040505, 120200040601, 120200040602, 120200040603, 120200040604, 120200040701, 120200040702, 120200040703, 120200040704, 120200040705, 120200050101, 120200050102, 120200050103, 120200050105, 120200050106, 120200050106, 120200050107, 120200050201, 120200050202, 120200050203, 120200050204, 120200050205, 120200050302, 120200050303, 120200050304, 120200050305, 120200050306, 120200050307, 120200050401, 120200050402, 120200050403, 120200050405, 120200050406, 120200050501, 120200050502, 120200050503, 120200050601, 120200050602, 120200050603, 120200050604	Upper Angelina, Lower Angelina	Watershed Planning	977.213	Other	Nacogdoches County	Nacogdoches County
05100013	Orange County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Orange	12010005, 12020003, 12040201	120100051004, 120100051005, 120200030402, 120200030403, 120200030404, 120200030405, 120200030406, 120200030407, 120402010500	Lower Sabine, Lower Neches, Sabine Lake	Watershed Planning	155.72	Other	Orange County	Orange County

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000014	Polk County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Polk	12020002, 12020006, 12020007	120200020305, 120200020306, 120200020307, 120200020308, 120200020404, 120200020405, 120200020406, 120200020407, 120200020408, 120200020409, 120200020503, 120200020504, 120200020507, 120200060101, 120200060102, 120200060103, 120200060104, 120200060105, 120200060106, 120200060201, 120200060202, 120200060402, 120200070202	Middle Neches, Village, Pine Island Bayou	Watershed Planning	535.17	Other	Polk County	Polk County
051000015	Rusk County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Rusk	12020004, 12020005	120200040207, 120200040301, 120200040302, 120200040303, 120200040304, 120200040305, 120200040401, 120200040402, 120200040403, 120200040404, 120200040405, 120200040405, 120200040501, 120200040502, 120200040503, 120200040505, 120200050301, 120200050302, 120200050303, 120200050304, 120200050305	Upper Angelina, Lower Angelina	Watershed Planning	524.87	Other	Rusk County	Rusk County
051000016	Sabine County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Sabine	12020005	120200050705, 120200050803, 120200050804, 120200050805, 120200050806, 120200050807, 120200050808, 120200050809	Lower Angelina	Watershed Planning	95.27	Other	Sabine County	Sabine County
051000017	San Augustine County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	San Augustine	12020005	120200050402, 120200050403, 120200050404, 120200050405, 120200050406, 120200050501, 120200050502, 120200050503, 120200050604, 120200050701, 120200050702, 120200050703, 120200050704, 120200050705, 120200050801, 120200050802, 120200050803, 120200050804, 120200050804, 120200050808, 120200050809, 120200050901, 120200050902, 120200050903, 120200050904	Lower Angelina	Watershed Planning	533.497	Other	San Augustine County	San Augustine County
051000018	Shelby County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Shelby	12020005	120200050301, 120200050303, 120200050307, 120200050401, 120200050402, 120200050403, 120200050404, 120200050405, 120200050701	Lower Angelina	Watershed Planning	159.87	Other	Shelby County	Shelby County
051000019	Smith County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Smith	12020001, 12020004	120200010101, 120200010102, 120200010103, 120200010104, 120200010105, 120200010301, 120200010302, 120200010305, 120200010306, 120200010307, 120200010401, 120200040101, 120200040102, 120200040103, 120200040104, 120200040105, 120200040106, 120200040202, 120200040301, 120200040302	Upper Neches, Upper Angelina	Watershed Planning	509.57	Other	Smith County	Smith County
051000020	Trinity County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Trinity	12020002	120200020202, 120200020203, 120200020204, 120200020205, 120200020206, 120200020207, 120200020303, 120200020304, 120200020305, 120200020306, 120200020401, 120200020402, 120200020403, 120200020404, 120200020405, 120200020407	Middle Neches	Watershed Planning	341.75	Other	Trinity County	Trinity County

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000021	Tyler County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Tyler	12020002, 12020003, 12020006	120200020409, 120200020503, 120200020504, 120200020507, 120200020508, 120200030101, 120200030103, 120200030105, 120200030201, 120200030202, 120200030203, 120200030204, 120200030206, 120200030301, 120200030303, 120200030304, 120200030305, 120200030306, 120200060104, 120200060105, 120200060106, 120200060107, 120200060201, 120200060202, 120200060203, 120200060204, 120200060205, 120200060206, 120200060207, 120200060301, 120200060302, 120200060303, 120200060304, 120200060305	Middle Neches, Lower Neches, Village	Watershed Planning	931.72	Other	Tyler County	Tyler County
051000022	Van Zandt County Update Flood Hazard Mapping	Complete a detailed study within the county extent to delineate an updated flood hazard area.	05000015, 05000016	Van Zandt	12020001	120200010101, 120200010102, 120200010103, 120200010105, 120200010201, 120200010202, 120200010203, 120200010203, 120200010204, 120200010205, 120200010206, 120200010301	Upper Neches	Watershed Planning	244.01	Other	Van Zandt County	Van Zandt County
051000023	Chambers County Flood Protection Planning for Watersheds	FIF Application; scope of project unavailable	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Chambers	12040201, 12040202	120402010100, 120402020100, 120402020200, 120402020300, 120402020400, 120402020500, 120402030200, 120402040200	East Galveston Bay, Sabine Lake	Preparedness	434.46	Urban	Chambers County	Chambers County
051000024	City of Silsbee Flood Protection Planning	FIF Application; scope of project unavailable	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Hardin	12020003, 12020006	120200030401, 120200060406, 120200060407	Lower Neches, Village	Preparedness	7.73	Urban	City of Silsbee	City of Silsbee
051000025	City of Port Arthur Master Drainage Plan and Policy Guide Development	FIF Application; scope of project unavailable	05000005, 05000006, 05000007, 05000008, 05000015, 05000016	Jefferson	12020003, 12040201, 12040202	120200030407, 120402010100, 120402010200, 120402010300, 120402010500, 120402020500	Lower Neches, East Galveston Bay, Sabine Lake	Watershed Planning	143.8	Urban	City of Port Arthur	City of Port Arthur
051000026	Liberty County Drainage Plan	Establish a county wide drainage plan	05000005, 05000006, 05000007, 05000008, 05000015, 05000016	Liberty	12020007, 12030203, 12040201, 12040202	120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070108, 120200070109, 120200070110, 120200070201, 120302030202, 120402010100, 120402020100, 120402020200,	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Watershed Planning	235.49	Urban	Liberty County	Liberty County Engineering Department
051000027	City of Arp Drainage Study	Perform study of existing culverts and drainage capabilities in town. Then upgrade drainage capacity where needed.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Smith	12020004	120200040101, 120200040102, 120200040106	Upper Angelina	Other	2.63	Urban	City of Arp	City of Arp
051000028	City of Tyler Hydrology Studies and Survey	Study areas that are reporting flood damage and general flooding.	05000015, 05000016	Smith	12020001	120200010104, 120200010105, 120200010301, 120200010302, 120200040103, 120200040104	Upper Neches, Upper Angelina	Other	56.2	Urban	City of Tyler	City of Tyler
051000029	City of Nacogdoches Update Flood Control Study	Conduct Flood Control Study and implement actions such as channelization, detention, retention, etc to stop repetitive flood losses.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Nacogdoches	12020004, 12020005	120200040704, 120200050101, 120200050102, 120200050106, 120200050201	Upper Angelina, Lower Angelina	Project Planning	27.54	Urban	City of Nacogdoches	City of Nacogdoches

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000030	Willie Nerron Road and Gillan Creek Bridge Replacement	Replace bridges over Willie Nerron Road and Gillan Creek	05000001, 05000002,	Angelina	12020002, 12020003, 12020004, 12020005	120200020106, 120200020201, 120200020204, 120200020207, 120200020301, 120200020302, 120200020306, 120200020307, 120200020308, 120200020501, 120200020502, 120200020504, 120200020505, 120200020506, 120200020508, 120200030102, 120200030103, 120200030104, 120200030105, 120200040604, 120200040705, 120200050103, 120200050104, 120200050104, 120200050105, 120200050107, 120200050205, 120200050602, 120200050603, 120200050604, 120200050902, 120200050903, 120200050904, 120200051001	Middle Neches, Lower Neches, Upper Angelina, Lower Angelina	Project Planning	860.98	Urban	Angelina County	Angelina County
051000031	Hall Street Bridge over White Oak Creek	Elevate bridge over White Oak Creek on Hall St going into the park	05000007, 05000008	Angelina	12020002	120200020306	Middle Neches	Project Planning	Unknown	Urban	City of Diboll	City of Diboll
051000032	Gibsonville Street and Porterville Road Bridges Improvements	Raise bridges on Gibsonville St. and Porterville Road to increase flow of creek under.	05000007, 05000008	Angelina	12020002	120200020501	Middle Neches	Project Planning	Unknown	Urban	City of Huntington	City of Huntington
051000033	Shawnee Creek Concrete Canal	Construct concrete canal for Shawnee Creek from Louisiana Street to 6th Street.	05000001, 05000002	Angelina	12020002	120200020505	Middle Neches	Project Planning	Unknown	Urban	City of Huntington	City of Huntington
051000034	City of Lufkin Detention Pond Construction and Improvements	Construct retention pond behind Inez Timms property. Increase holding capacity of existing retention ponds throughout the city.	05000007, 05000008	Angelina	12020002, 12020005	120200020301, 120200020302, 120200020308, 120200020502, 120200050104	Middle Neches, Lower Angelina	Project Planning	Unknown	Urban	City of Lufkin	City of Lufkin
051000035	North Anahuac Drainage	Expand/repair road ditches and culverts; channelize the drainage outfall for area north of Lonestar Canal	05000001, 05000002	Chambers	12040202	120402020100	East Galveston Bay	Project Planning	Unknown	Riverine	City of Anahuac	City of Anahuac
051000036	Southeast Drainage Ditch	Channelization and crossing upgrades from Benton Lane to FM 563	05000001, 05000002	Chambers	12040202	120402020100	East Galveston Bay	Project Planning	Unknown	Urban	City of Anahuac	City of Anahuac
051000037	Southwest Anahuac Ditch	Channelization and crossing upgrades from Main Street to Bay	05000001, 05000002	Chambers	12040202	120402020100	East Galveston Bay	Project Planning	Unknown	Urban	City of Anahuac	City of Anahuac
051000038	Spindletop Bayou Ditch Improvement	Increase IH10 crossings, enlarge ditches and create retention along the Spindletop Bayou in east Chambers County	05000001, 05000002	Chambers	12040202	120402020300	East Galveston Bay	Project Planning	Unknown	Riverine	Chambers County	Chambers County Judge, County Engineers, and Department of Emergency Management)

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000039	Dredging West Fork- Double Bayou	Dredge West Fork- Double Bayou from mouth to FM 562 bridge	05000001, 05000002	Chambers	12040202	120402020100	East Galveston Bay	Project Planning	Unknown	Riverine	Chambers County, USACE	USACE, Chambers County (County Judge, County Engineers Offices, Department of Emergency Management)
051000040	Anahuac, North of Canal Drainage	In the city limits of Anahuac, the area north of the Chambers Liberty Counties Navigation District canal generally along N. Main Street, Texas Avenue, and Work Street.	05000001, 05000002	Chambers	12040202	120402020100	East Galveston Bay	Project Planning	Unknown	Urban	Chambers County	Chambers County
051000041	City of Rose Hill Acres Flood Mitigation Improvements	FIF Application; scope of project unavailable	05000001, 05000002	Hardin	12020007	120200070303	Pine Island Bayou	Project Planning	0.4	Urban	City of Rose Hill Acres	City of Rose Hill Acres
051000042	Hardin County Municipal Storm Drain Project	FIF Application; scope of project unavailable	05000001, 05000002	Hardin	12020003, 12020006, 12020007	120200030306, 120200030307, 120200030308, 120200030401, 120200030402, 120200030405, 120200060104, 120200060106, 120200060107, 120200060203, 120200060207, 120200060303, 120200060305, 120200060306, 120200060401, 120200060402, 120200060403, 120200060404, 120200060405, 120200060406, 120200060407, 120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070109, 120200070201, 120200070202, 120200070203, 120200070204, 120200070205, 120200070301, 120200070302, 120200070303, 120200070304	Lower Neches, Pine Island Bayou, Village	Project Planning	887.60	Urban	Hardin County	Hardin County
051000043	City of Coffee City Flood-prone Roadway and Infrastructure Evaluation	Locate roadways and properties prone to flooding due to heavy rainfall		Henderson	12020001	120200010305, 120200010307	Upper Neches	Other	6.63	Urban	City of Coffee City	City of Coffee City
051000044	City of Moore Station Flood-prone Roadway and Infrastructure Evaluation	Locate roadways and properties prone to flooding due to heavy rainfall		Henderson	12020001	120200010305	Upper Neches	Other	1.3	Urban	City of Moore Station	City of Moore Station
051000045	Houston County Earthen Dike Construction	Build earthen dike to elevate emergency vehicle access road to critical facilities to provide protection to 500- year flood level.	05000001, 05000002	Houston	12020001, 12020002	120200010509, 120200010701, 120200010702, 120200010703, 120200010705, 120200020101, 120200020102, 120200020103, 120200020104, 120200020106, 120200020202, 120200020203, 120200020204, 120200020206, 120200020401, 120200020402	Upper Neches, Middle Neches	Project Planning	418.21	Other	Houston County	Houston County
051000046	Lateral B4A and B4A Ext. Improvements	Consists of widening those channels to increase the runoff capacity – upgrading/enlarging road crossing to reduce out of bank flooding.	05000001, 05000002	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7
051000047	Beauxart Gardens Central Ditch Improvements	Consists of widening those channels to increase the runoff capacity – upgrading/enlarging road crossing to reduce out of bank flooding.	05000001, 05000002	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7

FME ID	FME Name	Description	Associated Goals	Counties	HUC8s	HUC12s	Watershed Name	Study Type	FME Area (sqmi)	Flood Risk Type	Sponsor	Entities with Oversight
051000048	Upgrade to Lateral B4B	Consists of widening those channels to increase the runoff capacity – upgrading/enlarging road crossing to reduce out of bank flooding	05000001, 05000002	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7
051000049	Ditch 100 A (East Caldwell) Improvements	2,200 feet of unmaintainable channel is planned to be retrofitted with an underground culvert to allow for shaping and resizing the ditch to allow for continued maintenance.	05000001, 05000002	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 6	Jefferson County Drainage District 6
051000050	Ditch 119 Crossings at Yount and Edson	Joint project w/ City of Beaumont, will protect about 50 homes and mitigate flood risk on a historically flood prone road.	05000007, 05000008	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 6	Jefferson County Drainage District 6
051000051	Rodair Pump Station	FIF Application; scope of project unavailable	05000001, 05000002	Jefferson	Unknown	Unknown	Unknown	Project Planning	Unknown	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7
051000052	Liberty County Culvert Replacement Project	Increase culvert size in identified flood hazard problem areas within Liberty County.	05000001, 05000002	Liberty	12020007, 12030203, 12040201, 12040202	120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070108, 120200070109, 120200070110, 120200070201, 120302030202, 120402010100, 120402020100, 120402020200,	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Project Planning	235.49	Urban	Liberty County	Liberty County (Drainage Department)
051000053	Liberty County Recanalization Feasibility Study	Dechannelize existing feeder creeks that flow from north to south and improve drainage for storm water runoff.	05000001, 05000002	Liberty	12020007, 12030203, 12040201, 12040202	120200070101, 120200070102, 120200070103, 120200070104, 120200070105, 120200070106, 120200070107, 120200070108, 120200070109, 120200070110, 120200070201, 120302030202, 120402010100, 120402020100, 120402020200,	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Project Planning	235.49	Riverine	Liberty County	Liberty County Engineering Department
051000054	City of Daisetta Drainage Projects	Drainage projects throughout the city to include widening culverts and ditches	05000001, 05000002	Liberty	12020007	120200070108	Pine Island Bayou	Project Planning	1.5	Urban	City of Daisetta	City of Daisetta (City Mayor)
051000055	Orange County DD SW Detention/Retention Facilities	Construct stormwater detention/retention facilities, if determined to be beneficial and cost effective.	05000001, 05000002	Orange	12010005, 12020003, 12040201	120100051004, 120100051005, 120200030402, 120200030403, 120200030404, 120200030405, 120200030406, 120200030407, 120402010500	Lower Sabine, Lower Neches, Sabine Lake	Project Planning	155.72	Urban	Orange County Drainage District	Orange County Drainage District
051000056	Orange County DD Harvey Repairs	Repair damage to drainage ditches, crossings, culverts, levees, and right-of-ways caused by Hurricane Harvey to restore pre-flood capacity.	05000001, 05000002	Orange	12010005, 12020003, 12040201	120100051004, 120100051005, 120200030402, 120200030403, 120200030404, 120200030405, 120200030406, 120200030407, 120402010500	Lower Sabine, Lower Neches, Sabine Lake	Project Planning	155.72	Urban	Orange County Drainage District	Orange County Drainage District
051000057	Orange County DD FM 1135 Detention Pond	Engineer and construct a detention pond off of FM 1135.	05000001, 05000002	Orange	12010005, 12020003, 12040201	120100051004, 120100051005, 120200030402, 120200030403, 120200030404, 120200030405, 120200030406, 120200030407, 120402010500	Lower Sabine, Lower Neches, Sabine Lake	Project Planning	155.72	Urban	Orange County Drainage District	Orange County Drainage District
051000058	City of Bullard Culvert Upgrades	The city will evaluate existing culverts for current condition. The placement, removal, replacement, or repair of old culverts that are clogged with debris, unstable, or unusable due to damage, or changing conditions have severely limited the capacity level and structural integrity of the current culverts. The priority locations for upsizing is near downtown and 8 to 12 culverts are priority.	05000001, 05000002	Smith	12020001	120200010306, 120200010401, 120200040105	Upper Neches, Upper Angelina	Other	3.34	Urban	City of Bullard	City of Bullard

TABLE 10: POTENTIALLY FEASIBLE FLOOD MITIGATION PROJECTS

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	Entities with Oversight	Estimated Project Cost (\$)
053000001	Rodair Gully System Detention Pond	Construct a detention pond on Rodair Gully in the vicinity of West Port Arthur Road.	05000007, 05000008	Jefferson	120402010300	Sabine Lake	Detention Pond		Riverine	Jefferson County Drainage District 7	Jefferson County Drainage District 7	Unknown
053000002	Delaware Street Detention Project	Detention project planned to protect structures on Delaware Street and surrounding area.	05000007, 05000008	Jefferson	120402010200	Sabine Lake	Detention Pond		Urban	Jefferson County Drainage District 6	Jefferson County Drainage District 6	Unknown
053000003	Mayhaw Lateral Improvements	Rectify negative impacts to properties downstream of IH-10 caused by additional drainage crossings	05000001, 05000002	Jefferson, Chambers	120402010100	Sabine Lake	Storm Drain		Urban	Jefferson County Drainage District 6	Jefferson County Drainage District 6	\$ 2,200,000
053000004	City of Nacogdoches Flood Mitigation Project	Mitigate the wide-spread flooding that occurs along LaNana and Banita Creeks in the City of Nacogdoches	05000001, 05000002	Nacogdoches	120200050101, 120200050102	Lower Angelina	Channel	27.54	Urban	City of Nacogdoches	City of Nacogdoches	\$ 30,484,000

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TABLE 11: POTENTIALLY FEASIBLE FLOOD MITIGATION STRATEGIES

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000001	CODE RED Notification System	Plan and implement a new publicity campaign to expand enrollment in CODE RED notification system; use CODE RED to warn of impending hazard events.		Anderson	1202000103, 1202000104, 1202000105, 1202000107	Upper Neches	Flood Measurement and Warning	495.35	Other	Anderson County	Anderson County (Office of Emergency Management)	Unknown
052000002	Education Program Development	Develop, enhance and implement education programs to increase awareness of natural hazards and to inform residents of mitigation actions to reduce risk to citizens, public infrastructure, private property owners, businesses and schools.		Anderson	1202000103, 1202000104, 1202000105, 1202000107	Upper Neches	Education and Outreach	495.35	Other	Anderson County	Anderson County (Office of Emergency Management)	Unknown
052000003	Culvert Improvements	Widen culverts to mitigate against future drainage issues that lead to flooding.	05000007, 05000008	Anderson	1202000103, 1202000104, 1202000105, 1202000107	Upper Neches	Infrastructure Projects	495.35	Urban	Anderson County	Anderson County (Road and Bridge Department)	\$800 per culvert replaced
052000004	Dam Inspection and Maintenance	Work with dam owners to keep dams in excellent condition by visiting dam locations and doing inspections with owners to ensure that dams are properly maintained and failure possibilities are greatly reduced.	05000001, 05000002	Anderson	1202000103, 1202000104, 1202000105, 1202000107	Upper Neches	Regulatory and Guidance	495.35	Other	Anderson County	Anderson County (Office of Emergency Management)	Unknown
052000005	Public Education	Educate homeowners to increase awareness about the hazard of flooding and to inform residents of mitigation actions to reduce risk.		Anderson	1202000103, 1202000104, 1202000105, 1202000107	Upper Neches	Education and Outreach	495.35	Other	Anderson County	Anderson County (Office of Emergency Management)	Unknown
052000006	Public Education	The City will provide public education on the dangers of flash flooding, and to inform residents of mitigation actions to reduce risk to citizens, public infrastructure, private property owners, businesses and schools including participation in the "Turn Around, Don't Drown" campaign.		Anderson	1202000103, 1202000104	Upper Neches	Education and Outreach	2.47	Other	City of Frankston	City of Frankston (Public Works Department)	Unknown
052000007	City of Frankston Culvert Improvements	Enlarge culverts within the city's jurisdiction	05000001, 05000002	Anderson	1202000103, 1202000104	Upper Neches	Infrastructure Projects	2.47	Urban	City of Frankston	City of Frankston (Public Works Department)	Unknown
052000008	Drainage System Expansion and Maintenance	Increase drainage capacity where needed	05000001, 05000002	Anderson	1202000105	Upper Neches	Infrastructure Projects	6.77	Other	City of Palestine	City of Palestine (Public Works Department, City Administration)	\$800 per culvert replaced
052000009	Angelina County Property Elevation	Elevate properties in the floodplain	05000007, 05000008	Angelina	1202000201, 1202000202, 1202000203, 1202000205, 1202000301, 1202000406, 1202000407, 1202000501, 1202000502, 1202000506, 1202000509	Middle Neches, Lower Neches, Upper Angelina, Lower Angelina	Property Acquisition and Structural Elevation	860.98	Urban	Angelina County	Angelina County	\$ 600,000
052000010	City of Diboll Ordinance and Regulation Update	Update building code and subdivision ordinance to include restrictions on the distance a structure can be built from active streams and creeks.	05000007, 05000008	Angelina	1202000203	Middle Neches	Regulatory and Guidance	5.01	Riverine	City of Diboll	City of Diboll (City Administrator)	\$ 5,000
052000011	Angelina County Property Acquisition	Acquire repetitive loss properties.	05000007, 05000008	Angelina	1202000201, 1202000202, 1202000203, 1202000205, 1202000301, 1202000406, 1202000407, 1202000501, 1202000502, 1202000506, 1202000509, 1202000510	Lower Neches, Middle Neches, Lower Angelina, Upper Angelina	Property Acquisition and Structural Elevation	860.98	Urban	Angelina County	Angelina County, City of Hudson, City of Lufkin, City of Zavalla	\$ 2,000,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000012	Angelina County Culvert Improvements	Enlarge culverts where water overtops the road or washes culverts out. Specific locations include but are not limited to: Diboll – X2 under Mockingbird Lane; Hudson – Lance Wood Circle Creek; Huntington – Gibsonville St.; Zavalla – Carpenter Road. New installation.	05000001, 05000002	Angelina	1202000201, 1202000202, 1202000203, 1202000205, 1202000301, 1202000406, 1202000407, 1202000501, 1202000502, 1202000506, 1202000509, 1202000510	Lower Neches, Middle Neches, Lower Angelina, Upper Angelina	Infrastructure Projects	860.98	Urban	Angelina County	Angelina County, City of Burke, City of Diboll, City of Hudson, City of Huntington, City of Lufkin, City of Zavalla	\$ 60,000
052000013	Angelina County Public Education on Mitigation Techniques	Publish educational materials to inform the public in methods of mitigating private property against natural hazard damage.		Angelina	1202000201, 1202000202, 1202000203, 1202000205, 1202000301, 1202000406, 1202000407, 1202000501, 1202000502, 1202000506, 1202000509, 1202000510	Lower Neches, Middle Neches, Lower Angelina, Upper Angelina	Education and Outreach	860.98	Other	Angelina County	Angelina County, City of Burke, City of Diboll, City of Hudson, City of Huntington, City of Lufkin, City of Zavalla	\$ 5,000
052000014	Angelina County Siren Warning System Installation	Install warning siren system.		Angelina	1202000201, 1202000202, 1202000203, 1202000205, 1202000301, 1202000406, 1202000407, 1202000501, 1202000502, 1202000506, 1202000509, 1202000510	Lower Neches, Middle Neches, Lower Angelina, Upper Angelina	Flood Measurement and Warning	860.98	Other	Angelina County	Angelina County, City of Burke, City of Diboll, City of Hudson, City of Huntington, City of Lufkin, City of Zavalla	\$ 200,000
052000015	City of Burke Drainage Ditch Capacity Upgrades	Increase the capacity of drainage ditches along all city streets and roads	05000001, 05000002	Angelina	1202000203	Middle Neches	Infrastructure Projects	2.84	Urban	City of Burke	City of Burke	\$ 600,000
052000016	Chambers County Property Protection	Project will clear obstacles, widen and reshape ditches, and upgrade culverts to restore adequate drainage to mitigate flooding throughout all participating jurisdictions	05000005, 05000006, 05000007, 05000008	Chambers	1204020101, 1204020201, 1204020202, 1204020203, 1204020204	East Galveston Bay, Sabine Lake	Infrastructure Projects	434.46	Urban	Chambers County	Chambers County	\$ 500,000
052000017	Chambers County Mapping/Data Update	All participating jurisdictions will work to update dam and levee failure inundation maps, and update floodway maps throughout the county. The updated floodway maps will also be made available to the public.	05000015, 05000016	Chambers	1204020101, 1204020201, 1204020202, 1204020203, 1204020204	East Galveston Bay, Sabine Lake	Other	434.46	Urban	Chambers County	Chambers County	\$ 150,000
052000018	Chambers County Public Education on Mitigation Techniques	Implement an outreach and education campaign to educate the public on mitigation techniques for all hazards to reduce loss of life and property.		Chambers	1204020101, 1204020201, 1204020202, 1204020203, 1204020204	East Galveston Bay, Sabine Lake	Education and Outreach	434.46	Urban	Chambers County	Chambers County	\$ 7,000
052000019	Cherokee County Culvert Upgrades	Upgrade major culvert areas which are prone to flooding.	05000001, 05000002	Cherokee	1202000103, 1202000104, 1202000105, 1202000106, 1202000107, 1202000201, 1202000202, 1202000401, 1202000402, 1202000403, 1202000405, 1202000406	Middle Neches, Upper Neches, Upper Angelina	Infrastructure Projects	1057.77	Urban	Cherokee County	Cherokee County (County Commissioner)	\$ 80,000
052000020	City of Alto Culvert Improvements	Enlarge drainage culverts in flood prone areas.	05000001, 05000002	Cherokee	1202000201	Middle Neches	Infrastructure Projects	1.7	Urban	City of Alto	City of Alto	\$ 5,000
052000021	City of Cuney Seek NFIP Participation	Pass appropriate Resolutions and Ordinances for participation in the National Flood Insurance Program.		Cherokee	1202000104	Upper Neches	Regulatory and Guidance	1.64	Other	City of Cuney	City of Cuney (City Administration)	N/A
052000022	City of Cuney Bridge and Culvert Inspection Program	Plan and implement a program to regularly inspect low-lying bridges and highway culverts, clear debris, and create safe pathways for excess water runoff, to avoid flooding.	05000001, 05000002	Cherokee	1202000104	Upper Neches	Regulatory and Guidance	1.64	Urban	City of Cuney	City of Cuney (City Administration)	N/A
052000023	City of Gallatin "Turn Around Don't Drown" Campaign	Promote the "Turn Around Don't Drown" campaign in partnership with DPS.		Cherokee	1202000402	Upper Angelina	Education and Outreach	4.58	Other	City of Gallatin	City of Gallatin (City Administration)	N/A

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000024	City of Gallatin Multi-Jurisdiction Coordination	Work with County or TXDOT to increase drainage capacity in sites that are prone to flooding.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Cherokee	1202000402	Upper Angelina	Regulatory and Guidance	4.58	Other	City of Gallatin	City of Gallatin (City Administration)	N/A
052000025	City of Jacksonville Multi-Jurisdiction Coordination	Work with County or TXDOT to increase drainage capacity in sites that are prone to flooding.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Cherokee	1202000105, 1202000402	Upper Neches, Upper Angelina	Education and Outreach	14.14	Other	City of Jacksonville	City of Jacksonville (City Administration)	N/A
052000026	City of Jacksonville Public Education on Mitigation Actions	Develop and implement public education program to educate the public on mitigation actions to reduce their risk, along with posting updated pertinent weather information on City social media during weather events.		Cherokee	1202000105, 1202000402	Upper Neches, Upper Angelina	Education and Outreach	14.14	Other	City of Jacksonville	City of Jacksonville (City Administration)	N/A
052000027	City of Reklaw Improved Enforcement of Ordinances	Improve the long-range management and use of flood-prone areas by the adoption and enforcement of local ordinances to regulate new development within the floodplain. Review and revise ordinances, when needed.	05000007, 05000008	Cherokee	1202000402, 1202000404	Upper Angelina	Regulatory and Guidance	2.93	Urban	City of Reklaw	City of Reklaw	N/A
052000028	City of Reklaw Drainage System Upgrades	Increase drainage capacity in sites that are prone to flooding.	05000007, 05000008	Cherokee	1202000402, 1202000404	Upper Angelina	Infrastructure Projects	2.93	Urban	City of Reklaw	City of Reklaw	\$3000 per site
052000029	City of Rusk "Turn Around Don't Drown" Campaign	Promote the "Turn Around Don't Drown" campaign in partnership with DPS.		Cherokee	1202000106, 1202000402	Upper Neches, Upper Angelina	Education and Outreach	7.23	Other	City of Rusk	City of Rusk	N/A
052000030	City of Rusk Flood Maps Maintenance and Update	Work with state and federal agencies to maintain current flood maps.	05000015, 05000016	Cherokee	1202000106, 1202000402	Upper Neches, Upper Angelina	Education and Outreach	7.23	Other	City of Rusk	City of Rusk (Public Works/Development)	N/A
052000031	City of Rusk Culvert Improvements	Enlarge drainage culverts in flood prone areas.	05000001, 05000002	Cherokee	1202000106, 1202000402	Upper Neches, Upper Angelina	Infrastructure Projects	7.23	Urban	City of Rusk	City of Rusk	\$ 5,000
052000032	City of Wells Culvert Improvements	Enlarge drainage culverts in flood prone areas	05000001, 05000002	Cherokee	1202000201	Middle Neches	Infrastructure Projects	1.90	Urban	City of Wells	City of Wells	\$ 5,000
052000033	Henderson County Emergency Training Program	Increase training opportunities for citizens, to encourage their involvement in mitigation efforts. Partner with ETCOG, TDEM, TFS, TEEEX, FEMA, and others, to bring free and low cost mitigation training to the people of our local jurisdictions, county, and region.		Henderson	1202000101, 1202000102, 1202000103, 1202000104	Upper Neches	Education and Outreach	373.91	Other	Henderson County	Henderson County (Office of Emergency Management)	\$ 50,000
052000034	City of Berryville Public Education on Mitigation Techniques	Provide materials and data sources to educate citizens of all potential hazards in the planning area and methods to mitigate hazards and increase awareness.		Henderson	1202000103	Upper Neches	Education and Outreach	1.3	Other	City of Berryville	City of Berryville (City Council, City Mayor)	\$ 3,000
052000035	City of Brownsboro Code Red System Implementation	Obtain access and/or incorporate the use of the automated emergency calling system, Code Red, into local emergency management plan		Henderson	1202000102	Upper Neches	Flood Measurement and Warning	1.3	Other	City of Brownsboro	City of Brownsboro (Police Chief)	\$ 100,000
052000036	City of Brownsboro Flood Mitigation Education for City Officials and Citizens	Seek FEMA and State training in flood mitigation to assist with NFIP and encourage awareness of flood hazard and National Flood Insurance Program assistance to citizens		Henderson	1202000102	Upper Neches	Education and Outreach	1.3	Other	City of Brownsboro	City of Brownsboro (City Administration)	\$ 5,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000037	City of Brownsboro Public Education on Mitigation Techniques	Provide materials and data sources to educate citizens of all potential hazards in the planning area and methods to mitigate hazards and increase awareness.		Henderson	1202000102	Upper Neches	Education and Outreach	1.3	Other	City of Brownsboro	City of Brownsboro (City Administration)	\$ 5,000
052000038	City of Chandler Warning Siren Maintenance	Check the location and condition of warning sirens; determine if repairs are needed		Henderson	1202000102, 1202000103	Upper Neches	Flood Measurement and Warning	6.18	Other	City of Chandler	City of Chandler (City Administration)	\$ 100,000
052000039	City of Chandler Public Education on Code Red System	Provide public training and education materials about the Code Red system and how to register for the warning system notifications		Henderson	1202000102, 1202000103	Upper Neches	Education and Outreach	6.18	Other	City of Chandler	City of Chandler (City Staff)	\$ 10,000
052000040	City of Chandler Citizen/Business/City Mitigation Strategy Planning	Encourage the development of public and private partnership with businesses, service organizations and other community groups to work together on mitigation		Henderson	1202000102, 1202000103	Upper Neches	Education and Outreach	6.18	Other	City of Chandler	City of Chandler (Emergency Management)	N/A
052000041	City of Murchison Warning Siren System Installation	Obtain early warning siren system installment inside jurisdiction to assist in public notification of hazard prior to hazard occurrence		Henderson	1202000102, 1202000103	Upper Neches	Flood Measurement and Warning	1.57	Other	City of Murchison	City of Murchison	\$ 100,000
052000042	Houston County Alert/Notification System Installation	Purchase and install I-info alert/notification system including one user license per jurisdiction or participating entity.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Flood Measurement and Warning	418.21	Urban	Houston County	Houston County (Office of Emergency Management)	\$ 500,000
052000043	Houston County Public Education on Alert/Notification System	As part of the county-wide I-Info Alert/Notification System, develop a public education program for residents, businesses, and schools on responding to alerts, including evacuations and safe shelter locations.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Education and Outreach	418.21	Urban	Houston County	Houston County (Office of Emergency Management)	\$500 per participating entity
052000044	Houston County Gage Installation and Monitoring	Install stream and rain gauges in flood prone areas and waterways as part of overall rainfall tracking, recording program, and new alert notification system.	05000017, 05000018	Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Flood Measurement and Warning	418.21	Other	Houston County	Houston County (Office of Emergency Management)	\$ 100,000
052000045	Houston County Public Education Program on Emergency Evacuation	Conduct public education program and advertise Houston County Emergency Evacuation Plan, such as escape routes in coordination with TxDOT.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Education and Outreach	418.21	Other	Houston County	Houston County, City of Grapeland, City of Kennard, Houston County WCID #1	\$ 20,000
052000046	Houston County Hazard Radio Acquisition	Purchase NOAA "All-Hazards" radios for early warning and post-event information for all county government building locations and hospitals.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Flood Measurement and Warning	418.21	Other	Houston County	Houston County	\$ 5,000
052000047	Houston County Flood Infrastructure Maintenance	Clear debris from bridges, box culverts, and drainage systems throughout unincorporated county.	05000007, 05000008	Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Infrastructure Projects	418.21	Other	Houston County	Houston County	\$ 100,000
052000048	Houston County Mobile Home Inspection	Conduct routine inspection of manufactured home/mobile homes in flood-prone area to ensure proper tie-downs per Flood Damage Ordinance.	05000007, 05000008	Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Regulatory and Guidance	418.21	Other	Houston County	Houston County	\$ 50,000
052000049	Houston County Property Elevation and Public Education on NFIP	Conduct program to educate residents on NFIP/availability of flood insurance and elevating new construction in and outside of mapped floodplain areas.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Education and Outreach	418.21	Other	Houston County	Houston County	\$ 1,000
052000050	Houston County Rainfall Observer Program	Implement rainfall observer program utilizing volunteers.		Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Flood Measurement and Warning	418.21	Other	Houston County	Houston County	\$ 500
052000051	Houston County Drainage Culvert Upgrades	Expand and upgrade drainage culverts to prevent flooded roadways, add signage in low-water crossings.	05000001, 05000002	Houston	1202000105, 1202000107, 1202000201, 1202000202, 1202000204	Upper Neches, Middle Neches	Infrastructure Projects	418.21	Urban	Houston County	Houston County	\$ 20,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000052	City of Grapeland Critical Facilities Flood-Proofing	Flood proof critical facilities to the 500-year flood that are located in flood-prone areas of the city.	05000005, 05000006	Houston	1202000107	Upper Neches	Infrastructure Projects	2.58	Urban	Houston County	City of Grapeland (Public Works, City Mayor)	\$ 3,000,000
052000053	City of Kennard Public Awareness Program	Conduct public awareness program and distribute NFIP education information to citizens including availability of flood insurance.		Houston	1202000202	Middle Neches	Education and Outreach	1.29	Other	Houston County	City of Kennard	\$ 1,000
052000054	City of Kennard Ditch Maintenance Program	Implement program to routinely remove debris from drainage ways and roadside ditches to prevent back up of flood velocity and improve conveyance of stream during flood events.	05000001, 05000002, 05000007, 05000008	Houston	1202000202	Middle Neches	Infrastructure Projects	1.29	Other	Houston County	City of Kennard	\$ 1,000
052000055	JCDD7 Update Data Operation System-Control Center	Will allow officials to see what pump stations are operating in real time, monitor pumps/generator conditions and status	05000001, 05000002	Jefferson	1204020103	Lower Neches, Sabine Lake	Flood Measurement and Warning	112.8	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7	\$ 100,000
052000056	JCDD7 Storm Water Management Plan	Help to establish and allow District to enforce development regulations within existing flood zones.	05000005, 05000006, 05000007, 05000008	Jefferson	1204020102, 1204020103, 1202000304,	Lower Neches, Sabine Lake	Regulatory and Guidance	112.8	Other	Jefferson County Drainage District 7	Jefferson County Drainage District 7	\$ 50,000
052000057	JCDD6 Severe Weather Action Plan	Create severe weather action plan, conduct drills, identify and promulgate evacuation and sheltering options.		Jefferson	1204020101, 1204020102, 1204020103, 1204020202, 1204020203, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Regulatory and Guidance	496.94	Other	Jefferson County Drainage District 6	Jefferson County Drainage District 6	Unknown
052000058	JCDD6 Multi-Jurisdiction Corrdination	Increase coordination with the City and County regarding flood predictions and post event recovery.		Jefferson	1204020101, 1204020102, 1204020103, 1204020202, 1204020203, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Regulatory and Guidance	496.94	Other	Jefferson County Drainage District 6	Jefferson County Drainage District 6, City of Beaumont, Jefferson County	Unknown
052000059	JCDD6 Increase Flood Predictive Capability for Streams and Creeks	At least 20 ALERT stations have been added throughout our Jefferson County Drainage District No. 6's district to monitor rainfall and water levels. Jefferson County Drainage District No. 6 has also worked with the National Weather Service to help citizens of the Bevil Oaks community better understand the flood warnings and predictions.		Jefferson	1204020101, 1204020102, 1204020103, 1204020202, 1204020203, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Flood Measurement and Warning	496.94	Urban	Jefferson County Drainage District 6	Jefferson County Drainage District 6	Unknown
052000060	JCDD6 Public Education Material Distribution	Develop distribution centers in local libraries, DD6 facilities, DD6 website and other public buildings where information and safety guidance on natural and manmade hazards as well as ways to mitigate hazards can be provided to citizens		Jefferson	1204020101, 1204020102, 1204020103, 1204020202, 1204020203, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Education and Outreach	496.94	Other	Jefferson County Drainage District 6	Jefferson County Drainage District 6	Unknown
052000061	JCDD6 Hazard Radio Acquisition	Acquiring NOAA All Hazard Radios will allow the District to prepare for and respond to hazards as efficiently as possible.		Jefferson	1204020101, 1204020102, 1204020103, 1204020202, 1204020203, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Pine Island Bayou, Sabine Lake, East Galveston Bay	Flood Measurement and Warning	496.94	Other	Jefferson County Drainage District 6	Jefferson County Drainage District 6	Unknown
052000062	Jefferson County Property Elevation	FIF Application; aimed to elevate houses within county subject to inundation from flooding.	05000005, 05000006, 05000007, 05000008	Jefferson	1204020101, 1204020102, 1204020103, 1204020105, 1204020202, 1204020203, 1204020205, 1202000304, 1202000701, 1202000702, 1202000703	Lower Neches, Sabine Lake, Pine Island Bayou, East Galveston Bay	Property Acquisition and Structural Elevation	1113	Urban	Jefferson County	Jefferson County	\$ 1,000,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000063	JCDD7 Hurricane Flood Protection Levee Study	Continue working with USACE on studies and possible upgrade to help reduce the risk of flooding and to help the District review and update levees in jurisdictional area.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008, 05000015, 05000016	Jefferson	1204020103	Lower Neches, Sabine Lake	Preparedness	112.8	Urban	Jefferson County Drainage District 7	Jefferson County Drainage District 7	Unknown
052000064	City of Daisetta Culvert Maintenance and Upgrades	Removal of debris, silt and vegetation obstacles in drainage ways. Project will clear obstacles, mow and reshape ditches, and upgrade culverts to restore adequate drainage to mitigate flooding	05000001, 05000002	Liberty	1202000701	Pine Island Bayou	Infrastructure Projects	1.5	Urban	City of Daisetta	City of Daisetta (City Engineer)	\$ 250,000
052000065	City of Daisetta Property Elevation Ordinance	The city shall adopt a land use ordinance which requires any structure within the 100-year floodplain to be elevated 2 feet above base flood elevation.	05000007, 05000008	Liberty	1202000701	Pine Island Bayou	Regulatory and Guidance	1.5	Urban	City of Daisetta	City of Daisetta (City Council, Mayor)	\$ 5,000
052000066	City of Daisetta Property Construction Ordinance	The city shall adopt a land-use ordinance which prohibits building residential or commercial structures in the 100-year floodplain	05000007, 05000008	Liberty	1202000701	Pine Island Bayou	Regulatory and Guidance	1.5	Urban	City of Daisetta	City of Daisetta (City Manager, City Council, Office of Code Enforcement)	\$ 5,000
052000067	Liberty County Drainage Projects	The county will work with partnering jurisdictions and engineers in order to implement drainage projects throughout the county- including adding ditches, detention ponds and detention basins in identified locations throughout the county in order to improve drainage	05000001, 05000002	Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Infrastructure Projects	235.49	Urban	Liberty County	Liberty County, City of Daisetta, City of Devers, City of Hardin	\$ 500,000
052000068	Liberty County Topographical Mapping Update	Purchase updated topographical maps/complete LiDAR aerial survey for drainage plan.	05000015, 05000016	Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Other	235.49	Other	Liberty County	Liberty County (Permit Department, County Surveyor)	\$ 100,000
052000069	Liberty County FIRM Updates	Update Flood Insurance Rate maps to reflect most recent data.	05000015, 05000016	Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Other	235.49	Other	Liberty County	Liberty County (Permit Department, County Surveyor)	\$ 100,000
052000070	City of Hardin Subdivision Ordinance Implementation	Implement subdivision ordinance regulations concerning building in flood-prone areas.	05000007, 05000008	Liberty	1202000701	Pine Island Bayou	Regulatory and Guidance	2.3	Urban	City of Hardin	City of Hardin (City Council)	N/A
052000071	Liberty County Property Acquisition	Acquire property located in the floodplain including properties located in subdivisions along the Trinity River.	05000007, 05000008	Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Property Acquisition and Structural Elevation	235.49	Other	Liberty County	Liberty County (Permit Department, County Engineer)	\$ 2,000,000
052000072	LCDD Multi-County Coordination	Work with adjoining counties regarding flood and drainage issues.	05000001, 05000002, 05000005, 05000006, 05000007, 05000008	Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Other	235.49	Urban	Liberty County Drainage District	Liberty County Drainage District	\$ 500,000
052000073	City of Daisetta Education of City Council on Mitigation Benefits	Educate City Council on benefits of mitigation and encourage council members to become more involved.		Liberty	1202000701, 1202000702, 1204020101, 1204020201, 1204020202, 1203020302	Pine Island Bayou, Lower Trinity, East Galveston Bay, Sabine Lake	Education and Outreach	1.5	Other	City of Daisetta	City of Daisetta	\$ 1,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000074	City of Nacogdoches Study and Ranking of Repetitive Loss Structures	Analyze flood-prone properties in the City of Nacogdoches and identify appropriate mitigation options for each repetitive loss structure. Establish a priority system that ranks each repetitive loss structure in order of priority. Acquire properties and remove them from the floodplain.	05000001, 05000002	Nacogdoches	1202000407, 1202000501, 1202000502	Upper Angelina, Lower Angelina	Project Planning	27.54	Urban	City of Nacogdoches	City of Nacogdoches	\$ 327,000
052000075	City of Nacogdoches Codes and Ordinances Update	Review and update, if necessary, all City codes and ordinances pertaining to floodplain management to ensure their compliance with state and federal laws and to achieve cohesion with the mitigation strategies contained herein.		Nacogdoches	1202000407, 1202000501, 1202000502	Upper Angelina, Lower Angelina	Regulatory and Guidance	27.54	Other	City of Nacogdoches	City of Nacogdoches (Engineering Department)	\$30,000 per year
052000076	City of Nacogdoches Public Education Program	Develop and promote a public education program regarding flood hazards, NFIP, and flood plain regulations.		Nacogdoches	1202000407, 1202000501, 1202000502	Upper Angelina, Lower Angelina	Regulatory and Guidance	27.54	Other	City of Nacogdoches	City of Nacogdoches (Engineering and Planning)	\$30,000 per year
052000077	City of Nacogdoches Stormwater Drainage Fee Implementation	Implement stormwater drainage fee to assist funding of flood mitigation infrastructure projects	05000013, 05000014	Nacogdoches	1202000407, 1202000501, 1202000502	Upper Angelina, Lower Angelina	Regulatory and Guidance	27.54	Other	City of Nacogdoches	City of Nacogdoches (Engineering and Finance)	N/A, Revenue Neutral
052000078	OCDD Installing Additional Stream Gages	Add stream gauges to the major watersheds to increase flood predictive capability for streams and creeks that affect OCDD (stream gages)	05000017, 05000018	Orange	1202000304, 1201000510, 1204020105	Lower Sabine, Lower Neches, Sabine Lake	Flood Measurement and Warning	155.72	Riverine	Orange County Drainage District	Orange County Drainage District	Unknown
052000079	OCDD Support/Create Stricter Floodplain Ordinances	Work with Communities to support ordinances or create ordinances that help to protect new structures from being built in the floodplain or floodway	05000007, 05000008	Orange	1202000304, 1201000510, 1204020105	Lower Sabine, Lower Neches, Sabine Lake	Regulatory and Guidance	155.72	Other	Orange County Drainage District	Orange County Drainage District	Unknown
052000080	OCDD Flood Infrastructure Improvements	Support regional efforts to plan, design, and construct large scale flood control / storm surge protection improvements	05000001, 05000002	Orange	1202000304, 1201000510, 1204020105	Lower Sabine, Lower Neches, Sabine Lake	Infrastructure Projects	155.72	Urban	Orange County Drainage District	Orange County Drainage District	Unknown
052000081	OCDD Hazard Notification System Development	Develop employee emergency notification system to warn staff of imminent hazards/risks.		Orange	1202000304, 1201000510, 1204020105	Lower Sabine, Lower Neches, Sabine Lake	Flood Measurement and Warning	155.72	Other	Orange County Drainage District	Orange County Drainage District	Unknown
052000082	Polk County Public Education Campaign	Initiate public education campaign to improve the community's understanding and access to information to guide and facilitate activities they can undertake which improve level of protection for their homes, their property and improve their safety and resiliency to natural hazards.		Polk	1202000203, 1202000204, 1202000205, 1202000601, 1202000602, 1202000604, 1202000702	Middle Neches, Village, Pine Island Bayou	Education and Outreach	535.17	Other	Polk County	Polk County (Office of Emergency Management, City Administrations)	\$ 300,000
052000083	Polk County Hazard Hardening Retrofit for County/City Facilities	Activities may include but are not limited to: 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.		Polk	1202000203, 1202000204, 1202000205, 1202000601, 1202000602, 1202000604, 1202000702	Middle Neches, Village, Pine Island Bayou	Infrastructure Projects	535.17	Other	Polk County	Polk County (Office of Emergency Management, City Facilities Directors)	\$ 30,000,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000084	Polk County Improved Hazard Communication	Upgrade and expand implementation of natural hazard warning systems and methods. This may include but is not limited to: upgraded and modernized text-enabled warning systems, warning sirens and speakers, televised warnings, reverse 911, remote sensing devices with automated alerts.		Polk	1202000203, 1202000204, 1202000205, 1202000601, 1202000602, 1202000604, 1202000702	Middle Neches, Village, Pine Island Bayou	Flood Measurement and Warning	535.17	Other	Polk County	Polk County (Office of Emergency Management, City Administrations)	\$ 3,000,000
052000085	Polk County Flood Mapping Update	Work with FEMA to develop detailed FIRMs to more accurately map flooding risk from all sources.	05000015, 05000016	Polk	1202000203, 1202000204, 1202000205, 1202000601, 1202000602, 1202000604, 1202000702	Middle Neches, Village, Pine Island Bayou	Other	535.17	Other	Polk County	Polk County, Floodplain Administration, National Weather Service	\$ 2,000,000
052000086	Polk County Flood Infrastructure Improvements	Elevate and reinforce roadways and bridges prone to inundation from flooding. Projects may include general road elevation; upgrading culverts and installing headwalls; upgrades and reinforcement of bridges and bridge footings	05000007, 05000008	Polk	1202000203, 1202000204, 1202000205, 1202000601, 1202000602, 1202000604, 1202000702	Middle Neches, Village, Pine Island Bayou	Infrastructure Projects	535.17	Urban	Polk County	Polk County, TDEM, FEMA, TxDOT	\$ 5,000,000
052000087	San Augustine County Hazard Hardening Retrofit for Existing and Newly Constructed Critical Facilities.	Actions can include but are not limited to: installing window screens, storm shutters, window film reinforcements, roof straps, flood proofing, roll-up door reinforcement (i.e. fire stations), fire resistant roofing materials, fire resistant exterior walls, data back-up systems, and extending defensible space. Specific projects include but are not limited to flood proofing and drainage improvements for San Augustine Fire Department	05000007, 05000008	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Infrastructure Projects	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 500,000
052000088	San Augustine County Bridge Improvements	Projects may include general road elevation; upgrading culverts and installing headwalls; upgrades and reinforcement of bridges and bridge footings; etc.	05000007, 05000008	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Infrastructure Projects	533.50	Urban	San Augustine County	San Augustine County (Office of Emergency Management)	\$ 5,000,000
052000089	San Augustine County Culvert Upgrades	Actions can include but are not limited to: installing/upgrading culverts and headwalls; and enlarging storm water ditches and canals.	05000001, 05000002	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Infrastructure Projects	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 1,000,000
052000090	San Augustine County Public Education on Mitigation Techniques	Includes programs in schools and senior citizen centers, pamphlets, and community meetings.		San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Education and Outreach	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 10,000
052000091	San Augustine County Structure Elevation	Elevate existing flood prone structures above the base flood elevation to reduce flood losses. Flood proof historical structures at risk from flooding.	05000015, 05000016	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Property Acquisition and Structural Elevation	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 300,000
052000092	San Augustine County Detention and Retention Pond Construction	Construct storm water detention/retention ponds at strategic locations for improved stormwater storage to hold storm water run-off and as a mitigation measure for drought and wildfire.	05000001, 05000002	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Property Acquisition and Structural Elevation	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 100,000
052000093	San Augustine County Acquisition and Conversion of Flood Prone Properties	Acquire flood prone/repetitive loss properties and convert to open space, parks, boating access, trails, agricultural projects, and/or as a general community asset.	05000015, 05000016	San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Property Acquisition and Structural Elevation	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$ 500,000
052000094	San Augustine County Continue NFIP Participation	Continue participation in the National Flood Insurance Program (NFIP) and expand administration and monitoring capabilities		San Augustine	1202000504, 1202000505, 1202000506, 1202000507, 1202000508, 1202000509	Lower Angelina	Property Acquisition and Structural Elevation	533.50	Urban	San Augustine County	San Augustine County, City of San Augustine, City of Broadus	\$50,000 per year

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000095	San Augustine County and City of Broaddus Infrastructure Flood Protection	Construct flood protection, winter storm-hardening, and expansive soils mitigation projects for water distribution networks and wastewater facilities for Cities of Broaddus and San Augustine.	05000005, 05000006, 05000007, 05000008	San Augustine	1202000505, 1202000507, 1202000509	Lower Angelina	Infrastructure Projects	5.15	Urban	City of San Augustine, City of Broaddus	City of San Augustine, City of Broaddus	\$ 1,000,000
052000096	Shelby County Roadway/Bridge Elevation	Elevate and reinforce roadways and bridges prone to inundation from flooding	05000007, 05000008	Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Property Acquisition and Structural Elevation	159.87	Urban	Shelby County	Shelby County (Office of Emergency Management)	Unknown
052000097	Shelby County Warning Siren Installation	Install warning sirens at strategic locations for use during disaster events		Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Flood Measurement and Warning	159.87	Other	Shelby County	Shelby County (Office of Emergency Management)	Unknown
052000098	Shelby County Hazard Hardening Retrofit of Existing and Newly Constructed Critical Facilities	Storm-harden and/or retrofit existing and newly constructed critical facilities	05000005, 05000006	Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Infrastructure Projects	159.87	Urban	Shelby County	Shelby County (Office of Emergency Management)	Unknown
052000099	Shelby County Drainage Upgrades	Upgrade stormwater conveyance capacity via drainage improvement projects	05000001, 05000002	Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Infrastructure Projects	159.87	Other	Shelby County	Shelby County, Texas Department of Transportation	Unknown
052000100	Shelby County Public Education on Hazards	Educate the residents of Shelby County and participating jurisdictions on safety and planning for the hazards identified in this plan		Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Education and Outreach	159.87	Other	Shelby County	Shelby County (Office of Emergency Management)	Unknown
052000101	Shelby County Property Acquisition	Acquire flood prone/repetitive loss properties and convert to open space, parks, boating access, trails, agricultural projects, and/or as a general community asset	05000007, 05000008	Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Property Acquisition and Structural Elevation	159.87	Other	Shelby County	Shelby County (Office of Emergency Management, Floodplain Administration)	Unknown
052000102	Shelby County Seek NFIP Participation	Pursue participation in the NFIP for Shelby County since it is currently not participating and develop thorough floodplain administration procedures		Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Regulatory and Guidance	159.87	Other	Shelby County	Shelby County (Floodplain Administration)	Unknown
052000103	Shelby County Detention and Retention Pond Construction	Construct storm water detention/retention ponds at strategic locations for improved stormwater storage to hold storm water run-off and as a mitigation measure for drought and wildfire	05000001, 05000002, 05000007, 05000008	Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Infrastructure Projects	159.87	Urban	Shelby County	Shelby County, Texas Department of Transportation, Texas Water Development Board	Unknown
052000104	Shelby County Electronic Hazard Warning Message Board Acquisition	Acquire electronic message board for use during disaster response and recovery operations		Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Flood Measurement and Warning	159.87	Other	Shelby County	Shelby County (Office of Emergency Management), Texas Division of Energy Management	Unknown
052000105	Shelby County Hazard Radio Acquisition	Acquire and distribute radios and transmitters for first responders and volunteers. Acquire and distribute NOAA weather radios for vulnerable populations		Shelby	1202000503, 1202000504, 1202000507	Lower Angelina	Regulatory and Guidance	159.87	Other	Shelby County	Shelby County (Office of Emergency Management), Texas Division of Energy Management	Unknown
052000106	Smith County Drainage Capacity Upgrades	Evaluate existing culverts for current condition. The placement, removal, replacement, or repair of old culverts that are clogged with debris, unstable, or unusable due to damage or changing conditions have severely limited the capacity level and structural integrity of the current culverts within Smith County. The priority locations are along County Road 47 and County Road 1139.	05000001, 05000002	Smith	1202000101, 1202000103, 1202000104, 1202000401, 1202000402, 1202000403,	Upper Neches, Upper Angelina	Infrastructure Projects	509.57	Urban	Smith County	Smith County (Roads and Bridge Department)	\$ 900,000

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000107	City of Linsdale No Adverse Impact Implementation	Incorporate "no adverse impact" design requirements in community development. Provide awareness to stakeholders and design engineers; building code adoption and plan approval process.		Smith	1202000101	Upper Neches	Regulatory and Guidance	6.20	Other	City of Lindale	City of Lindale (Community Development)	\$ 10,000
052000108	City of Linsdale Natural Runoff Policies Implementation	Incorporate "natural run-off" policies. Calculate cumulative effect of development, increase capacity of storm water drainage systems, institute regular drain system maintenance.		Smith	1202000101	Upper Neches	Regulatory and Guidance	6.20	Other	City of Lindale	City of Lindale (Community Development)	\$ 10,000
052000109	City of Tyler Open Channel Improvements	Enclose open channels that are contributing to flooding. Priority locations are: 1) Ashmore subdivision between Ashmore and Salisbury and 2) Fleishel Ave. between 6th and 8th Streets.	05000007, 05000008	Smith	1202000101, 1202000103, 1202000401	Upper Neches, Upper Angelina	Infrastructure Projects	56.2	Urban	City of Tyler	City of Tyler (Engineering Department)	\$ 500,000
052000110	City of Troup Floodplain Ordinance Update	Adopt and enforce a stricter floodplain ordinance that no new structures are allowed in the 100-year floodway. Adopted by City Council action.	05000007, 05000008	Smith	1202000401, 1202000402	Upper Angelina	Regulatory and Guidance	2.46	Urban	City of Troup	City of Troup (City Administration)	\$ 10,000
052000111	City of Whitehouse Drainage Capacity Upgrades	Increase stormwater drainage capacity by completing a hydraulic study, evaluating historical water drainage, then construct. Consider the placement, removal, replacement or repair of old culverts that are clogged with debris, unstable, or unusable due to damage, or changing new development have severely limited the capacity level and structural integrity of the current culverts within Whitehouse.	05000007, 05000008	Smith	1202000401	Upper Angelina	Infrastructure Projects	5.53	Urban	City of Whitehouse	City of Whitehouse (Public Works)	\$ 900,000
052000112	Trinity County Public Education on Mitigation Actions	Create a program to educate the public about specific mitigation actions for multiple hazards		Trinity	1202000202, 1202000203, 1202000204	Middle Neches	Education and Outreach	341.75	Other	Trinity County	Trinity County	< \$10,000 per hazard addressed
052000113	Trinity County Flood Infrastructure Upgrades	Installing/improving culverts and headwalls; and expanding stormwater ditches and canals	05000001, 05000002	Trinity	1202000202, 1202000203, 1202000204	Middle Neches	Infrastructure Projects	341.75	Urban	Trinity County	Trinity County	\$ 500,000
052000114	Trinity County Buyout Program Implementation	Develop and implement a program to buyout repetitive loss properties and convert to open space, parks, boating access, trails, and/or as a general community asset.	05000007, 05000008	Trinity	1202000202, 1202000203, 1202000204	Middle Neches	Property Acquisition and Structural Elevation	341.75	Other	Trinity County	Trinity County	< \$10,000 to establish program; costs will vary per structure
052000115	Trinity County Flood-prone Infrastructure Upgrades	May include general roadway elevation upgrading culverts and installing headwalls; upgrades and reinforcement of bridges and bridge footings; etc.	05000007, 05000008	Trinity	1202000202, 1202000203, 1202000204	Middle Neches	Infrastructure Projects	341.75	Urban	Trinity County	Trinity County, Texas Department of Transportation	\$ 5,000,000
052000116	Trinity County Dam/Levee Failure Data Collection	Develop and implement standard operating procedures for collecting and sharing data to provide extent of dam/levee failure	05000001, 05000002	Trinity	1202000202, 1202000203, 1202000204	Middle Neches	Education and Outreach	341.75	Other	Trinity County	Trinity County	\$ 30,000
052000117	City of Groveton Public Education on Mitigation Actions	Create a program to educate the public about specific mitigation actions for multiple hazards		Trinity	1202000204	Middle Neches	Education and Outreach	42.25	Other	City of Groveton	City of Groveton	\$ 5,000
052000118	City of Groveton Warning System Upgrades	Implement, upgrade, expand, and integrate digital methods for storm notification to include all methods of communication including: cell phones, text messages, land-lines, internet networking sites, television, and radio. The City will also install warning sirens at strategic locations as needed and coordinate periodically with National Weather Service to maintain information channels.		Trinity	1202000204	Middle Neches	Flood Measurement and Warning	42.25	Other	City of Groveton	City of Groveton	\$10,000 per device

FMS ID	FMS Name	Description	Associated Goals (ID)	Counties	HUC10s	Watershed Name	Strategy Type	Strategy Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa Other)	Sponsor	Entities with Oversight	Estimated Project Cost (\$)
052000119	City of Groveton Flood Infrastructure Upgrades	Installing/improving culverts and headwalls; and expanding stormwater ditches and canals		Trinity	1202000204	Middle Neches	Infrastructure Projects	42.25	Urban	City of Groveton	City of Groveton	\$ 500,000
052000120	City of Groveton Buyout Program Implementation	Develop and implement a program to buyout repetitive loss properties and convert to open space, parks, boating access, trails, and/or as a general community asset.	05000007, 05000008	Trinity	1202000204	Middle Neches	Property Acquisition and Structural Elevation	42.25	Other	City of Groveton	City of Groveton	< \$10,000 to establish program; costs will vary per structure
052000121	Van Zandt County Warning System Acquisition	Acquire and Install Warning Systems throughout the County, including Incorporated Jurisdictions. Reduce risk to citizens through improved communications and early warning.		Van Zandt	1202000101, 1202000102, 1202000103	Upper Neches	Flood Measurement and Warning	244	Other	Van Zandt County	Van Zandt County	\$ 80,000
052000122	Van Zandt County Flood Infrastructure Maintenance	Adopt and Implement a Program for Clearing Debris from Bridges, Drains and Culverts. Reduce damages caused by flooding by maintaining or restoring drainage capacity.	05000007, 05000008	Van Zandt	1202000101, 1202000102, 1202000103	Upper Neches	Infrastructure Projects	244	Urban	Van Zandt County	Van Zandt County (Road and Bridge, Precinct 2)	\$ 25,000
052000123	Van Zandt County Road Elevation	Upgrade and Elevate Major Roads to Allow Adequate Runoff and Drainage into Existing Roadside Ditches and Culverts and Reduce Flooding that Occurs in Some Areas of Town. Reduce risk of damages to roadways; Reduce flood damages to infrastructure; Ensure continuity of emergency services.	05000007, 05000008	Van Zandt	1202000101, 1202000102, 1202000103	Upper Neches	Property Acquisition and Structural Elevation	244	Urban	Van Zandt County	Van Zandt County (Road and Bridge, Precinct 2)	\$ 525,000
052000124	Van Zandt County Drainage Capacity Upgrades	Increase Drainage Capacity; Install French Drains or Elevate Building and Upgrade Undersized Pipe under State Hwy for Water to Run into Creek. Reduce risk of flood damages through improved drainage capacity; Reduce continual cost to remove water from the building; Ensure offices remain open for business.	05000001, 05000002, 05000007, 05000008	Van Zandt	1202000101, 1202000102, 1202000103	Upper Neches	Infrastructure Projects	244	Urban	Van Zandt County	Van Zandt County (Office of Emergency Management)	\$ 3,000,000
052000125	Van Zandt County Higher Standards Incorporation	Incorporate Higher Standards for Hazard Resistance in Local Application of the Building Code.	05000007, 05000008	Van Zandt	1202000101, 1202000102, 1202000103	Upper Neches	Regulatory and Guidance	244	Other	Van Zandt County	Van Zandt County	\$ 10,000

J. List of Infeasible FMSs and FMPs

Table 12 details the infeasible FMSs and FMPs found for the planning region. Some potential reasons a project may not be recommended as feasible include but are not limited to the following:

- Action is a single localized project with a small service area
- 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 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.

As FMEs are conducted, more action items could be considered infeasible based on the corresponding scope of work or the cost associated with executing the project or strategy.

TABLE 12: INFEASIBLE ACTIONS

FMS/FMP	Action Name	Description	Entity	Estimated Project Cost (\$)	Reason Action Infeasible
FMS	Angelina County Generator Installation	Install generators for all City/County critical facilities	Angelina County	\$ 500,000	Action does not directly address flood mitigation.
FMS	City of Brownsboro Mitigation Planning Organization	Train local EMC and officials on chosen Mitigation action items including record keeping or reports and data. Provide information during Hazard Mitigation Planning Committee Meeting update	City of Brownsboro	\$ 10,000	Action does not directly address flood mitigation.
FMS	City of Burke Drainage Ditch Upgrades	Increase the capacity of drainage ditches along all city streets and roads.	City of Burke	\$ 600,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMS	City of Chandler Emergency Response Grant Funding	Assist local fire department in applying for grant funding to purchase needed equipment and PPE; assist in qualification and grant writing	City of Chandler	\$ 100,000	Action does not directly address flood mitigation.
FMP	Drainage Canal Improvements	Increase capacity of drainage canal behind high school baseball field to prevent flooding school property.	Corrigan-Camden ISD	\$ 600,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMP	City of Corrigan Culvert Installation	Install culvert on MLK south of Hulett street to prevent repeat of road washout.	City of Corrigan Public Works	\$ 400,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.

FMS/FMP	Action Name	Description	Entity	Estimated Project Cost (\$)	Reason Action Infeasible
FMP	City of Corrigan Culvert Improvements	Enlarge culvert on MLK at Buckshot Ave.	City of Corrigan Public Works	\$ 60,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMP	City of Daisetta Drainage Projects	Drainage projects. Including widening culverts and ditches	City of Daisetta	\$ 750,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMP	City of Diboll Stream Bed Restoration Project	Stream bed restoration project along Sewer Street	City of Diboll	\$ 500,000	Action does not directly address flood mitigation.
FMS	City of Grapeland Ditch Maintenance	Remove dead trees and limbs from roadside ditches, natural drainage areas and waterways.	City of Grapeland	\$ 15,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan
FMS	Purchase Back Up Power Generators	Installing generators at critical facilities will help ensure physical safety for facility occupants and maintain electronic systems functionality during power outages.	City of Groveton	\$ 100,000	Action does not directly address flood mitigation.
FMS	Houston County Generator Acquisition	Install backup generators at critical facilities and shelters throughout county.	Houston County	\$ 100,000	Action does not directly address flood mitigation.
FMS	Houston County Emergency Operations Center Update	Retrofit Emergency Operations Center to improve technological capabilities for monitoring, recording, and responding to disasters.	Houston County	\$ 500,000	Action does not directly address flood mitigation.
FMS	Houston County Spillway Fencing	Fence emergency spillway to prevent 4-wheeler, trucks, and ATV traffic from destroying natural vegetation, causing erosion during severe rainfall event.	Houston County WCID #1	\$ 5,000	Action does not directly address flood mitigation.
FMS	Houston County Erosion Prevention Improvements	Plant erosion prevention vegetation on lands and levees adjacent to and along river banks to mitigate excessive runoff during flood events.	Houston County	\$ 50,000	Action does not directly address flood mitigation.
FMP	Jack Creek and Hwy 94 Streambed Restoration Project	Streambed restoration project for Jack Creek along HWY 94 where it has eroded away causing sewer line to be moved.	City of Hudson	\$ 500,000	Action does not directly address flood mitigation.
FMS	City of Hudson Public Education on Streambed Erosion	Educate the public on techniques to mitigate streambed erosion on privately owned property.	City of Hudson	\$ 5,000	Action does not directly address flood mitigation.

FMS/FMP	Action Name	Description	Entity	Estimated Project Cost (\$)	Reason Action Infeasible
FMP	Shawnee Creek Bank Stabilization	Stabilize Shawnee creek bank to prevent under cutting Louisiana Street	City of Huntington	\$ 60,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMS	City of Kennard Generator Acquisition	Install backup generators to support critical facilities in the event of outage.	City of Kennard	\$ 20,000	Action does not directly address flood mitigation.
FMP	Winter Valley Subdivision Infrastructure Improvements	Harden bridge, dam and spillway in Winter Valley Subdivision under TCEQ permit NO. 366	Liberty County Engineering Department	\$ 350,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMS	City of Murchison Roadway and Infrastructure Maintenance	Perform maintenance of culverts and ditches throughout the city and sewer plant location	City of Murchison	\$ 100,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan
FMS	City of Murchison VFD Grant Application Aid	Assist local VFD with grant opportunities for needed resources	City of Murchison	\$ 100,000	Action does not directly address flood mitigation.
FMP	FM 1135 Detention Pond Construction	Engineer and construct a detention pond off of FM 1135.	Orange County Drainage District	Unknown	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMS	OCDD Public Education on Flood Hazard	Educate the public about securing debris, propane tanks, yard items, or stored objects that may otherwise be swept away during a flood event.	Orange County Drainage District	Unknown	Action does not directly address flood mitigation.
FMP	Route 66 Culvert Improvements	Enlarge culvert under Route 66 past Taylor Lake Estates.	Polk County Precinct 1	\$ 60,000	Action does not demonstrate benefits at a scale appropriate for inclusion in the regional flood plan.
FMS	City of Poynor Roadway and Infrastructure Improvements	2 Step process of surveying and repaving city roadways through contracting company	City of Poynor	\$ 350,000	Action does not directly address flood mitigation.
FMS	Trinity County Generator Acquisition	Installing generators at critical facilities will help ensure physical safety for facility occupants and maintain electronic systems functionality during power outages.	Trinity County	\$ 100,000	Action does not directly address flood mitigation.