

# Update from Consultant Team


## Neches Regional Flood Planning Group

December 15, 2022

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## Agenda

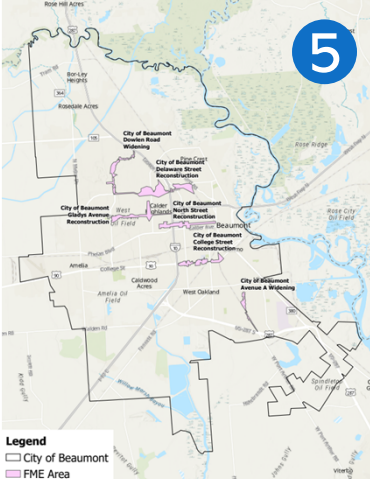
- Task 4 – City of Beaumont Combined FMEs
- Task 5 – Recommendation of Newly Identified FMEs
- Task12 – Progress Update
- Overview of Final Regional Flood Plan
- Consider adoption and approval of Final Regional Flood Plan



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## Task 4 – City of Beaumont FMEs

- 6 new FMEs provided from City of Beaumont:
  - Avenue A Widening
  - College Street Reconstruction
  - Delaware Street Reconstruction
  - Dowlen Road Widening
  - Gladys Avenue Reconstruction
  - North Street Reconstruction
- Combined into one FME action item (**City of Beaumont Drainage Studies**)



**Legend**  
 City of Beaumont  
 FME Area

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## Task 5 - Recommendation of FMEs

- Encourage the RFPG to favor inclusion of FMXs
  - No obligation to take action and no financial commitment associated with FMX sponsorship

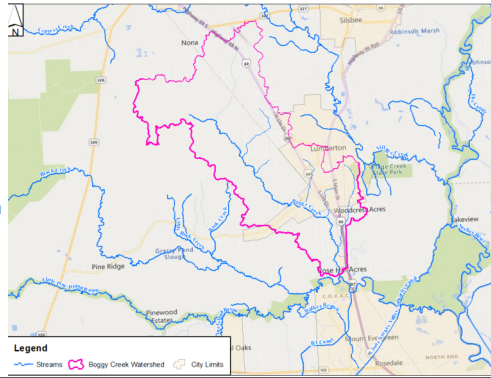
FME Name	FME Type	FME Cost	Sponsor	Structures in 100-YR Floodplain	Estimated Population at 100-YR Flood Risk
City of Beaumont Drainage Studies	Project Planning	\$118,750	City of Beaumont	29	592

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### Task 12 – Update (Hardin County SE Area Drainage System)

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- Additional coordination ongoing
- Jefferson County DD6 FIF Study evaluating improvement alternatives
  - Diversion to Neches River
  - Conveyance improvements along Boggy Creek and Main tributaries

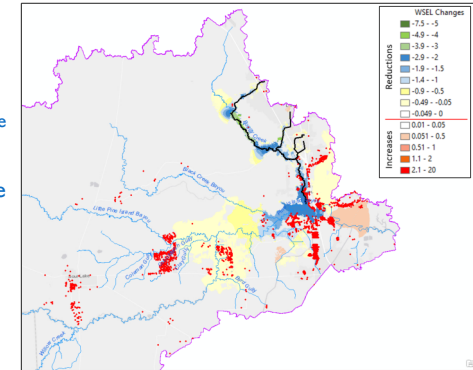


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### Task 12 – Update (Hardin County SE Area Drainage System)

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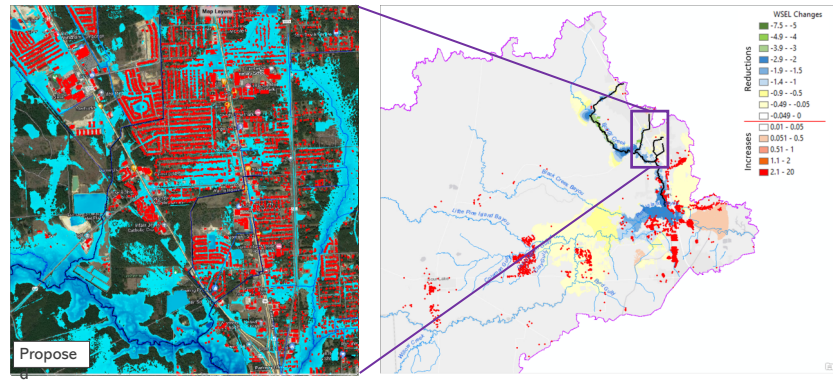
- Conveyance Improvements Preliminary Analysis Results
  - Reduced WSEL up to 4 ft along Boggy Creek.
    - Reduced WSEL up to 3 ft along Pine Island Bayou
    - The timing of Boggy Creek's peak has a great effect in Pine Island Bayou
    - Reductions in WSELs in Lumberton, Rose Hill Acres, Bevil Oaks



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### Task 12 – Update (Hardin County SE Area Drainage System)

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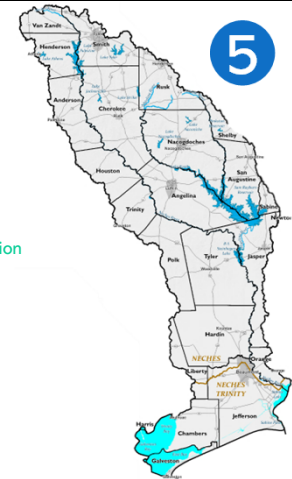


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### Chapter 1 – Planning Area Description

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- Region 5 by the numbers:
  - **11,542** square miles
  - **1,019,184** people in the region (2020 Census)
    - **3.5% of Texas population**
  - **24** counties and **79** municipalities
    - Harris and Newton County have minimal areas within region
  - **92%** rural by land area
  - **2** urbanized areas account for over **60%** of the region's population
  - **9,673** stream miles



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## Notable Edits to Chapter 1

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- Various editorial adjustments in sections to improve clarity
  - New sections added to detail farming, ranching, and natural resources most impacted by flooding (Section 1.A.6.)
  - Stormwater Pumps added to the list of constructed features at the start of Chapter 1.B. with an additional section detailing them
- List of Existing Flood Projects edited upon local feedback
  - Hardin County Property and Open Space Acquisition projects
    - Total of 25 identified Existing Flood Projects
      - 1 removed
      - 2 edited

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## Chapter 2 – Flood Risk Analyses

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- Flood risks evaluated for the existing and future 1% and 0.2% annual chance exceedance events (ACEs)
- Risks associated with riverine, coastal, and pluvial flooding
- Additional Flood Prone areas incorporated from Fathom data
- Future flood hazard is anticipated to increase in extent under a “no-action” scenario

Future Flood Hazard Area	Source
1% ACE (100-year)	Existing 0.2% ACE
0.2% ACE (500-year)	Horizontal/Vertical Buffer method
Additional Flood Prone Areas	0.2% ACE Fathom data

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## Chapter 2 – Existing and Future Exposure Comparison

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Features	Existing Conditions	Future Conditions	Increase	% Increase
Population	247,393	364,265	116,872	47%
Total Structures	104,260	141,290	37,030	36%
Residential Structures	81,884	110,769	28,885	35%
Critical Facilities	2,373	3,541	1,168	49%
Roadway Crossing	4,980	5,749	769	15%
Roadway Segments (miles)	3,069	3,988	919	30%
Agricultural Area (sq. mi)	209	231	22	11%

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## Notable Edits to Chapter 2

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- Populations at Flood Risk re-calculated per TWDB guidance
  - Previously were taking the higher daytime or nighttime population for each building at flood risk
  - Revised to aggregate the daytime and nighttime population exposed to flood risk by county before selecting the higher of the two
- New tables added to detail area by county exposed to each type of flood risk per TWDB guidance
  - Flood Risk Types include Riverine, Coastal, Local, and Other

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## Chapter 3 – Floodplain Management Practices and Flood Protection Goals

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RFPG voted to *recommend, not adopt*, minimum standards

Short Term (10 year)	Long Term (30 year)
An average of 10% of the new regional infrastructure projects between 2023 – 2033 will utilize larger storm events (>100-year) as the basis of their design.	An average of 25% of the new regional infrastructure projects between 2033 – 2053 will utilize larger storm events (>100-year) as the basis of their design.
RFPG must consider in all projects and should incorporate nature-based practices and floodplain preservation in an average of 10% of their new flood risk reduction projects between 2023 - 2033.	RFPG must consider in all projects and should incorporate nature-based practices and floodplain preservation in an average of 25% of their new flood risk reduction projects between 2033 - 2053.
Reduce the number of critical facilities in the 100-year flood risk inundation extents by 15%.	Reduce the number of critical facilities in the 100-year flood risk inundation extents by 25%.
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.	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.
Increase the amount of State/Federal funding for flood mitigation projects and strategies awarded within the Neches Region by 25%.	Increase the amount of State/Federal funding for flood mitigation projects and strategies awarded within the Neches Region by 75%.
Increase percentage of areas with dedicated funding sources for operations & maintenance for storm drainage system to 50% of communities.	Increase percentage of areas with dedicated funding sources for operations and maintenance for storm drainage system to 75% of communities.

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## Chapter 3 – Floodplain Management Practices and Flood Protection Goals

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Short Term (10 year)	Long Term (30 year)
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.	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.
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.	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.
Increase the number of gauges across the Neches basin to cover 50% of the region's HUC10s.	Increase the number of gauges across the Neches basin to cover 100% of the region's HUC10s.
Develop and maintain critical infrastructure database	N/A
Give notice to 100% of affected units of local government and improve 50% of Low Water Crossings, identified in the latest Regional Flood Plan, by installing warning devices.	Give notice to 100% of affected units of local government and improve 100% of Low Water Crossings, identified in the latest Regional Flood Plan, by installing warning devices.
Give notice to 100% of affected units of local government and solicit funding applications for improvement or removal of 25% of Low Water Crossings identified in the latest Regional Flood Plan.	Give notice to 100% of affected units of local government and solicit funding applications for improvement or removal of 80% of Low Water Crossings identified in the latest Regional Flood Plan.
100% of counties to perform public education and awareness campaigns to better inform the public of flood-related risks on an annual basis.	Maintain 100% participation of counties performing public education and awareness campaigns to better inform the public of flood-related risks on an annual basis.

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## Notable Edits to Chapter 3

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- The list of entities possessing flood-related authority has been refined
  - Municipalities verified to confirm which were active participants in NFIP
- Additional language added to clarify that recommended standards listed in Chapter 3.A. apply to all entities in the region that regulate floodplain development

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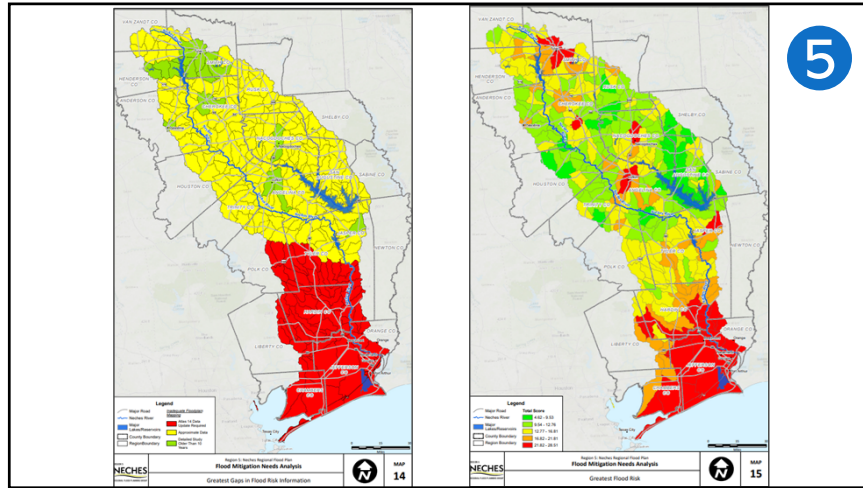
## Chapter 4A – Flood Mitigation Needs Analysis

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- Examined several factors and weighed based on RFPG assessment:
  - Flood risk exposure
    - Buildings
    - Low Water Crossings
    - Agricultural Areas
    - Critical Facilities
  - NFIP participation
  - Social Vulnerability Index score
  - Gaps in flood mapping information
  - FEMA Claims
  - Flood-Related Disaster Declarations



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### Chapter 4B/5 – Identified and Recommended FMEs

FME Type	Description	Count	Cost
<b>Flood Mapping Updates</b>	Updates to floodplain mapping to include new hydrologic and hydraulic modeling for defining flood hazard areas.	22	\$34,679,047
<b>Master Drainage Plan</b>	An assessment of a watershed or community to estimate flood risk and recommend flood management and flood mitigation projects.	37	\$29,421,728
<b>Project Planning</b>	Evaluate identified potential flood mitigation projects to define costs, quantify flood reduction benefits, demonstrate no adverse impacts, and evaluate design alternatives. Evaluation may require the creation or updating of hydrologic and hydraulic models.	91	\$24,318,879
<b>Feasibility</b>	Develop flood mitigation project alternatives for a discrete high flood risk area, estimate construction costs for alternatives, and determine flood reduction benefit for alternatives. Evaluation may require creation of H&H modeling.	7	\$1,026,171
<b>TOTAL</b>		<b>157</b>	<b>\$89,445,825</b>

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### Chapter 4B/5 – Identified and Recommended FMSs

FMS Type	Description	Count	Cost
<b>Education and Outreach</b>	Implementation of program to educate the public on the hazards and risks of flooding.	25	\$581,100
<b>Flood Measurement and Warning</b>	Installation and operation of stream gauges, monitoring stations, alert systems to provide flood hazard information.	17	\$8,719,000
<b>Property Acquisition and Structural Elevation</b>	Administration of program to acquire and demolish structures and convert the land to open space to mitigate flooding.	18	\$53,955,000
<b>Regulatory and Guidance</b>	Development of ordinances, development criteria, building codes, design standard to prevent new flood risk.	31	\$1,974,600
<b>Infrastructure Projects</b>	Establish program, plan, or standards to facilitate future infrastructure improvements.	54	\$109,650,000
<b>Other</b>	Maintenance and inspection of flood infrastructure to ensure its design level of service is maintained.	2	\$157,000
<b>TOTAL</b>		<b>147</b>	<b>\$175,036,700</b>

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### Chapter 4B/5 – Identified and Recommended FMPs

FMP Type	Description	Count	Cost
<b>Channel</b>	Channel extensions and upgrades to increase capacity of water conveyance.	2	\$43,820,866
<b>Comprehensive</b>	Improve existing levees, build new pump stations, construct/reconstruct floodwalls to higher elevations.	2	\$982,900,000
<b>Detention</b>	New detention pond construction	1	\$85,000,000
<b>TOTAL</b>		<b>5</b>	<b>\$1,111,720,866</b>

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## Notable Edits to Chapter 4/5

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- Costs for county-wide FMEs recalculated per comment received from TWDB
  - Previously costs had considered the full area of the county, including the area outside Region 5
  - Revised to only consider area within region – many FME costs directly changed as a result
    - Remaining costs included in adjacent Flood Planning Regions
- Additional information supporting no adverse impact of the identified FMPs was found and added to Appendix 5-E.
  - Technical Memorandum for Bayou Din Detention Basin
  - USACE Memorandum for the Orange County Coastal Storm Risk Management Project
- Added FME
  - City of Beaumont Drainage Studies

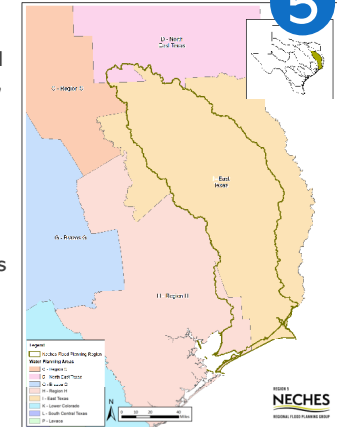
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## Chapter 6 – Impacts and Contribution of the Regional Flood Plan

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- Impacts to environment, agriculture, recreational resources, water quality, erosion, sedimentation, and navigation all considered during recommendation
- FMEs and FMSs can reduce future increases in floodplain extents by promoting responsible development
- No FMPs or FMSs deemed to have impact on water supply, water availability, or other projects in the State Water Plan

Flood Exposure Region-wide	Existing Conditions	After Implementation	Reduction In Exposure
	1% ACE	1% ACE	1% ACE
<b>Total Structures</b>	34,728	31,113	3,595
<b>Residential Structures</b>	25,145	22,644	2,501
<b>Critical Facilities</b>	479	404	75
<b>Population</b>	65,717	56,696	9,021
<b>Low Water Crossings</b>	165	165	0
<b>Road Length (Miles)</b>	1,505	1,471	34



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## Notable Edits to Chapter 6

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- Various editorial adjustments in sections to improve clarity
  - Population data in tables changes to reflect new methodology used in Chapter 2
  - Language added to clarify there are no anticipated measurable impacts to water supply and water availability

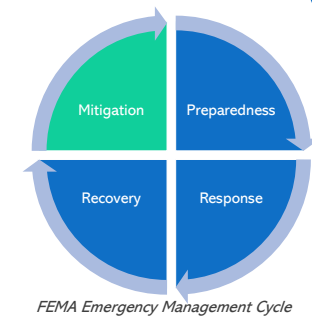


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## Chapter 7 – Flood Response Information and Activities

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- Focus on the preparedness, response, and recovery phases of flood emergencies
- Developed through survey responses, oral testimony, and knowledge of local technical consultants
- Cities and counties carry most of the responsibility for flood response (road closure, evacuations, etc.)

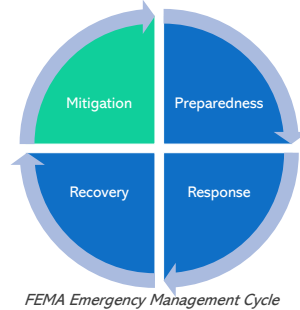


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## Notable Edits to Chapter 7

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- Changed “Hazard Mitigation Action Plan” to “Hazard Mitigation Plan” per guidance from TWDB
- Added a new section detailing the InFRM Flood Decision Support Toolbox per comment from USACE



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## Chapter 8 – Administrative, Regulatory, and Legislative Recommendations

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- Draft recommendations discussed during May RFPG meeting
- **23** recommendations developed
- Legislative Recommendations
  - Increase funding for watershed models and floodplain maps
  - Incentivize buy-out programs to convert into natural beneficial use areas
  - Establish O&M grant programs
- Regulatory and Administrative Recommendations
  - Provide technical assistance to smaller jurisdictions
  - Establish a process to take BLE data to regulatory information
  - Review and update TxDOT criteria
- Flood Planning Recommendations
  - Promote nature-based projects
  - Utilize alternative SVI database
  - Incorporate FEMA in the Regional Flood Planning Process

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## Notable Edits to Chapter 8

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- Edited language on select recommendations
  - Recommendation of developing model floodplain management standards edited to also include implementation guidance for ensuring consistency of interpretation
- Added additional recommendations
  - Recommendation to expand scope of flood mitigation needs analysis
    - Examine individual property values in addition to considering cost of lost industrial production and repair
  - Recommendation to establish flood responses and flood warning activities that consider the needs of the disabled community

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## Chapter 9 – Flood Infrastructure Financing Analysis

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- Total of **309** flood planning actions recommended
- Stormwater CIP, O&M, and floodplain management activities are historically underfunded
- A survey was sent out to potential sponsors to better understand funding needs
  - ~\$1.03 billion of funding needed beyond the current capacity of local sponsors to implement the recommended actions

Flood Mitigation Action	Number of Recommended Actions	Total Flood Mitigation Action Cost
FME	157	\$89,445,824
FMS	147	\$175,036,700
FMP	5	\$1,111,720,866
<b>Total</b>	<b>309</b>	<b>\$1,376,203,390</b>

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## Notable Edits to Chapter 9

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- Funding Survey information edited to account for the new City of Beaumont Drainage Studies FME identified in Chapter 4
- Expanded on the Floodplain Management Services Program (FPMS) per comment from USACE

Flood Mitigation Action	Number of Recommended Actions	Total Flood Mitigation Action Cost
FME	157	\$89,445,824
FMS	147	\$175,036,700
FMP	5	\$1,111,720,866
<b>Total</b>	<b>309</b>	<b>\$1,376,203,390</b>

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## Chapter 10 – Public Participation and Plan Adoption

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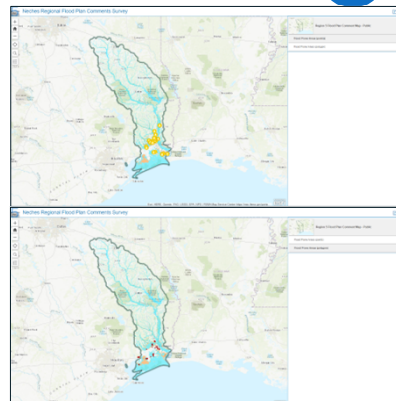
- Many ways to engage the public
  - Interactive map to identify areas of flood risk/upload data
  - Interactive data dashboard to display developed GIS information
- Public Comment Meetings
  - Existing Flood Risk
    - Nacogdoches, Beaumont, Port Arthur
  - Draft Regional Flood Plan
    - Beaumont (Sept 9)
- 23 formal planning meetings (including today's meeting) held between October 2020 and December 2022
  - All meetings held in accordance with the Texas Open Meetings Act
- Plan developed following guidance principles from the TWDB

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## Notable Edits to Chapter 10

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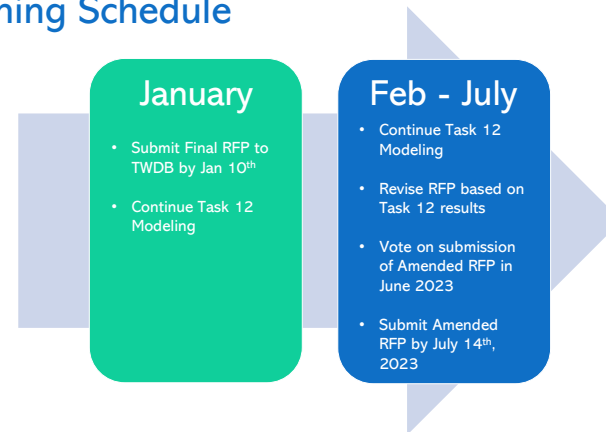
- Added summary on the Draft Plan Public Meeting held on September 9<sup>th</sup>, 2022 in addition to detailing the dissemination of the Draft Plan
- Edited sections to discuss the comments received on the Draft Plan from the public and TWDB



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## Planning Schedule

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