

Update from Consultant Team

Neches Regional Flood Planning Group

July 22, 2022

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Agenda

- Overview of Draft Regional Flood Plan
- Consider approval of Draft Regional Flood Plan
- September 9, 2022 Public Meeting

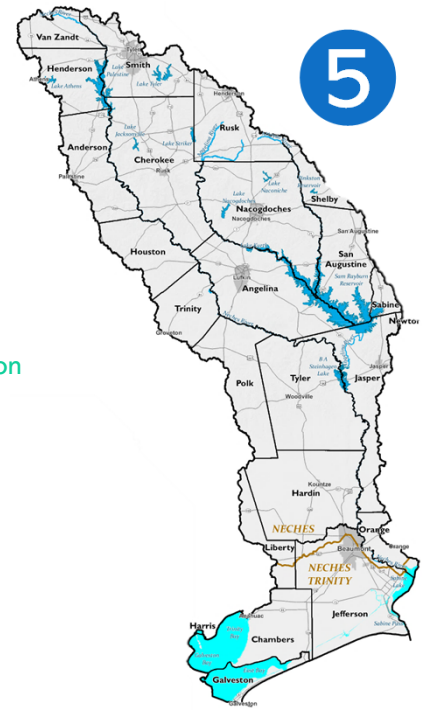


The map displays the Neches River basin, which flows through several counties in East Texas. The counties shown include Van Zandt, Henderson, Smith, Cherokee, Rusk, Anderson, Houston, Cherokee, Rusk, Shelby, Angelina, San Augustine, Sabin, Trinity, Polk, Tyler, Jasper, Hardin, Orange, Liberty, NECHES, NECHES TRINITY, Harris, Chambers, Jefferson, and Galveston. A blue circle with the number '5' is positioned in the upper right corner of the map area.

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Chapter 1 – Planning Area Description

- 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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Chapter 2 – Flood Risk Analyses

- 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	500-year 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	357,544	493,999	136,455	38%
Total Structures	104,260	141,290	37,030	36%
Residential Structures	81,884	110,769	28,885	35%
Critical Facilities	22,376	30,521	8,145	36%
Roadway Crossing	2,373	3,543	1,170	49%
Roadway Segments (miles)	4,980	5,749	769	15%
Agricultural Area (sq. mi)	3,069	3,988	919	30%

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Chapter 3 – Floodplain Management Practices and Flood Protection Goals

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RFPFG 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.
RFPFG 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.	RFPFG 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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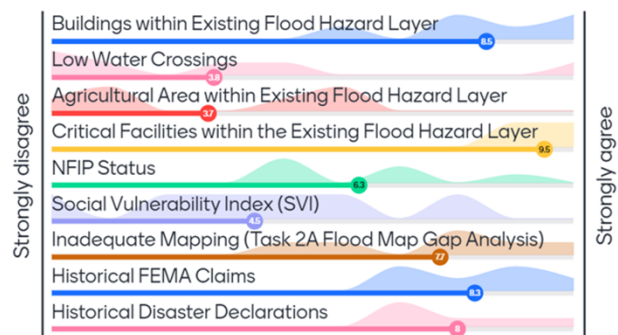
Short Term (10 year)	Long Term (30 year)
50% of the region's population is part of an entity that has a dedicated drainage charge, fee, or other continuous funding mechanism for the maintenance and/or restoration of flood infrastructure.	75% of the region's population is part of an entity that has a 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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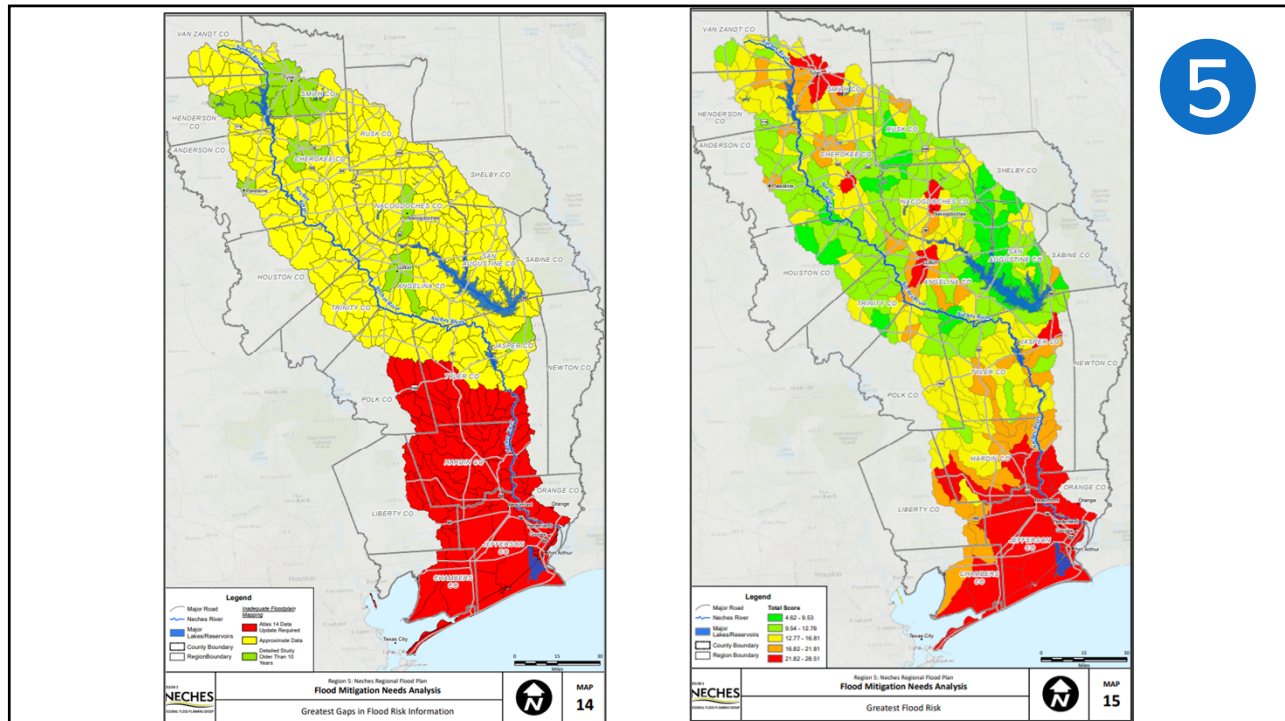
Chapter 4A – Flood Mitigation Needs Analysis

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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
 - Gaps in flood mapping information
 - Social Vulnerability Index score
 - FEMA Claims
 - Flood-Related Disaster Declarations



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Chapter 4B/5 – Identified and Recommended FMEs

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FME Type	Description	Count	Cost
Flood Mapping Updates	Updates to floodplain mapping to include new hydrologic and hydraulic modeling for defining flood hazard areas.	22	\$57,760,000
Master Drainage Plan	An assessment of a watershed or community to estimate flood risk and recommend flood management and flood mitigation projects.	37	\$35,680,000
Project Planning	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.	90	\$24,632,500
Feasibility	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	\$1,130,000
TOTAL		156	\$119,202,500

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Chapter 4B/5 – Identified and Recommended FMSs

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

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Chapter 4B/5 – Identified and Recommended FMPs

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

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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 1% ACE	After Implementation 1% ACE	Reduction in Exposure 1% ACE
Total Structures	34,728	31,113	3,595
Residential Structures	25,145	22,644	2,501
Critical Facilities	479	404	75
Population	94,287	85,266	9,021
Low Water Crossings	165	165	0
Road Length (Miles)	1,505	1,471	34

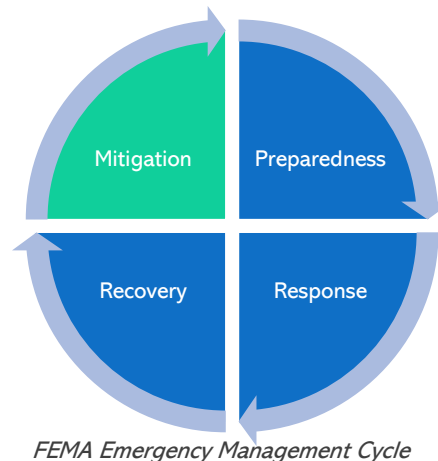


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Chapter 7 – Flood Response Information and Activities

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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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Chapter 8 – Administrative, Regulatory, and Legislative Recommendations

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- Draft recommendations discussed during May RFPG meeting
- 21 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 projects to take BLE data to regulatory information
 - Review and updated TxDOT criteria
- Flood Planning Recommendations
 - Promote nature-based projects
 - Alternative SVI database
 - Incorporate FEMA in the Regional Flood Planning Process

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Chapter 9 – Flood Infrastructure Financing Analysis

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- Total of 308 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
 - ~\$1.06 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	156	\$119,202,500
FMS	147	\$175,036,700
FMP	5	\$1,111,720,866
Total	308	\$1,405,960,066

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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)
- 19 formal planning meetings (including today's meeting) held between October 2020 and July 2022
 - All meetings held in accordance with the Texas Open Meetings Act
- Plan developed following guidance principles from the TWDB

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Draft Plan

- Draft Flood Plan delivered via email to RFPG members on **July 15, 2022**
- Draft chapters per schedule below:

Draft Chapters	Initial Delivery Date
1	May 18, 2022
3	June 6, 2022
7, 8	June 30, 2022
2, 4	July 9, 2022
5, 6, 9, 10, ES	July 15, 2022

Texas Water
Development Board

VOLUME 1

DRAFT
REGION 5 NECHES
2023 REGIONAL FLOOD PLAN
AUGUST 2022

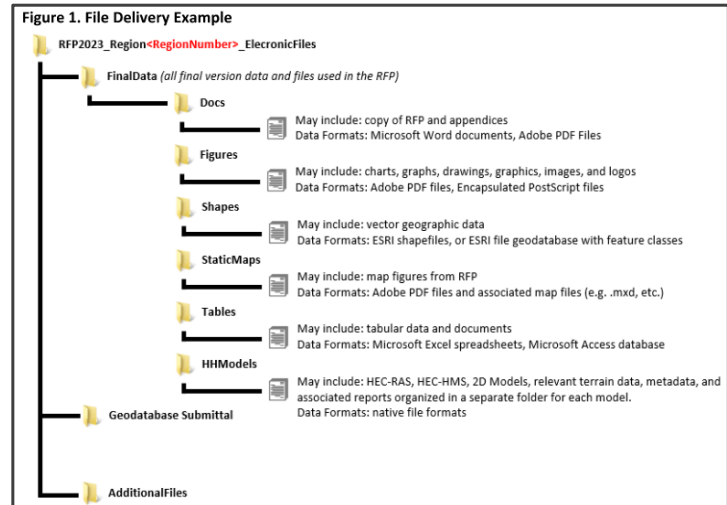
PREPARED FOR THE
REGION 5 NECHES FLOOD PLANNING GROUP

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Submittal of Draft Plan

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- In addition to volumes 1 & 2 of the Draft RFP, submittal will also include:
 - GIS Data; metadata
 - Supporting figures
 - Supporting map documents
 - Supporting excel tables
 - Packaged HH Models
 - 2 printed copies



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RFPG Draft Plan Approval

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- RFPG to vote to approve the Draft Regional Flood Plan and authorize the Technical Consultant to submit the plan and required materials to the TWDB contingent upon incorporation of any necessary, non-substantive comments or changes including, but not limited to:
 - Updates necessary to adhere to recently issued TWDB guidance (7/1/22)
 - Non-substantive updates necessary to address recently received comments from the TWDB on the Technical Memorandum (5/20/22)
 - Updates necessary to address additional or outstanding RFPG comments including clarification or correction of content
 - No changes to content or technical approaches, but updates to how the content is presented/captured in the draft RFP.

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Planning Schedule

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