

REGION



Lower Brazos
Regional Flood Planning Group

Thursday, August 21, 2025

10:00 AM

Brazos River Authority, Lt. Gen. Phillip J. Ford Central Office

4600 Cobbs Dr., Waco, TX 76710



1. Call Meeting to Order and Attendance



2. Public Input - comments on agenda items or flood planning issues (limited to 3 minutes each)

3. Consent Agenda

3.1. Approval of Minutes for the July 17, 2025, meeting

3.2. Approval and Certification of the Finance Report Expenditures

Meeting Minutes

REGION 8 - LOWER BRAZOS REGIONAL FLOOD PLANNING GROUP

Brazos River Authority, Lt. Gen. Phillip J. Ford Central Office,
4600 Cobbs Dr. Waco, TX 76710

10:00 a.m. – Thursday, July 17, 2025

Meeting agenda, materials, and audio recordings are available online at www.lowerbrazosflood.org

1. Call Meeting to Order and Attendance

Alysha Girard presided over the meeting in Waco, TX. Ms. Girard called the meeting to order at 10:00 am.

Anthony Beach	P	Alysha Girard	P
Bruce Bodson	P	Matt Phillips	P
Sujeeth Draksharam	P	Kristina Ramirez	P
Tim Finley	A	Jonathan Steiber	P
Russell Ford	A	Mark Vogler	P
Charlotte Gilpin	P	Brandon Wade	P

Quorum Present: Yes. A quorum is 7 of 12 voting members.

2. Report, discussion, and possible action regarding the expiration of RFPG voting members whose terms expire on July 10, 2025

Matt Phillips made a motion to renew the terms of voting members that have terms ending on July 10, 2025: Alysha Girard, Anthony Beach, Sujeeth Draksharam, and Brandon Wade. Mark Vogler seconded the motion. These are 5 year terms.

3. Public Input - Public comments on agenda items or flood planning issues (limited to 3 minutes each)

Anthony Beach opened the floor for public comments. No public comments.

4. Consent Agenda

4.1. Approval of Minutes from the June 19, 2025 meeting

4.2. Report, Approval and Certification of the Finance Report Expenditures

Alysha Girard opened the floor for approval of the Consent Agenda Items. The June 19, 2025, meeting minutes were approved as presented. Anthony Beach made the motion to approve the consent agenda items and Alysha Girard seconded the motion. The motion passed unanimously. No finance report this month.

5. Discussion and possible action on the report from the technical consultant.

The Technical Consultant Team presented a technical memorandum summarizing Task 3A recommendations for the group's consideration. The RFPG discussed the value of dividing the Lower Brazos zones based on jurisdictional boundaries instead of drainage boundaries. The Technical Consultant Team agreed to revisit the zones and determine if this change is feasible.

The Technical Consultant Team presented on flash flooding within the region over the July 4th weekend. The Chair encouraged the RFPG to use this time of public awareness to encourage their involvement in the flood planning process. The RFPG discussed the evaluation of flood warning and flood gauges for the region completed as part of the previous flood planning cycle.

Action Item: Motion was made by Charlotte Gilpin for the LBRFPG approved the flowchart for the identification and evaluation of flood mitigation needs, as presented. Sujeeth Draksharam seconded the motion. Motion passed unanimously.

6. Report from:

6.1. Texas Water Development Board (TWDB) staff

Tressa Olson provided the TWDB Report to the RFPG.

6.2. Regional Planning Sponsor

Pam Hannemann provided the Sponsor report.

6.3. Lower Brazos RFPG Liaisons and Chair

Alysha gave a brief Chair's report.

7. Confirm next meeting date and discuss new business to be considered at next meeting

The next regular meeting will be on Thursday August 21, 2025, at 10:00AM. The LBRFG will also hold a public Open House at 1:00pm – 3:00pm in Waco at the BRA Central Office.

8. Adjourn

Alysha Girard adjourned the meeting at 10:30 AM.

Approved by the Region 8 Lower Brazos RFPG at the meeting held on August 21, 2025.

Matt Phillips, Secretary

Alysha Girard, Chair

Brazos River Authority
2028 Region 8 Lower Brazos Regional Flood Planning Group
 From 06/01/25 Through 07/31/25

	Current Period	Life to Date	Total Budget	Budget Variance	% Budget Remaining
Revenues					
State Grants	194,445	603,759	2,520,600	1,916,841	76.05%
Total Revenues	194,445	603,759	2,520,600	1,916,841	76.05%
Reimbursable Expenditures					
Salaries	450	1,415	14,750	13,335	90.41%
Benefits	194	608			
Indirect Costs	45	141			
Other Expenditures			10,250	10,250	100.00%
Printing/Publishing					
Public Information/Notices/Ads ¹	27	36			
Misc postage/overnight/Misc/etc. ²	51	449			
Total Other Expenditures	767	2,650	25,000	22,350	89.40%
Voting Planning Member Travel	279	279	4,500	4,221	93.81%
Subcontractors ³	193,399	600,831	2,491,100	1,890,269	75.88%
Total Reimbursable Expenditures	194,445	603,759	2,520,600	1,916,841	76.05%
Work in Kind					
Salaries/benefits	482	3,546			
Other	-	-			
Total Work in Kind	482	3,546			
Net Revenue over expenditures	(482)	(3,546)	-	-	

²Agenda, handouts, sign in sheets & chair notes

³Thru 06/30/25



4. Discussion and possible action on the report from the technical consultant

Technical Consultant Update

August 21, 2025



Agenda



General Updates



Task 1 – Planning Area Description Draft Chapter



Task 2A – Existing Flood Risk



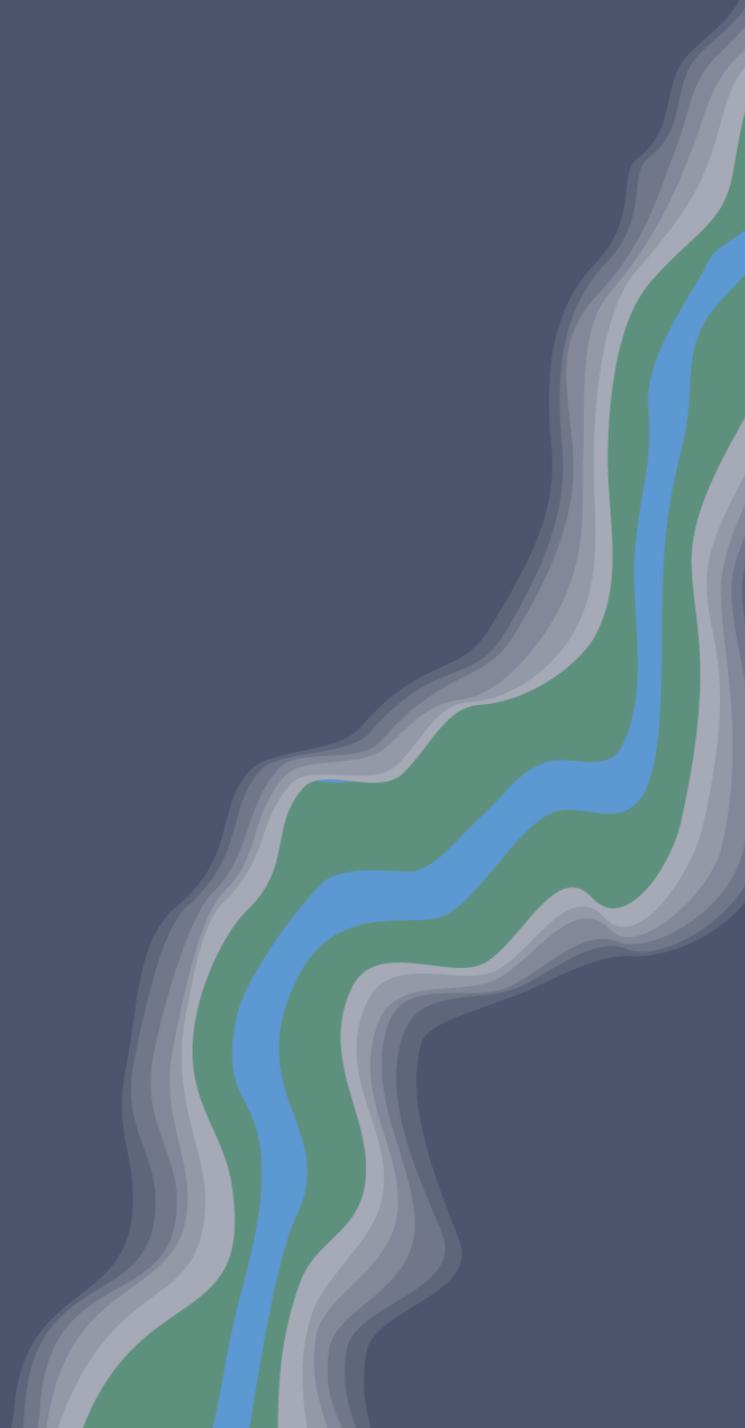
Task 3A – Floodplain Management Practices



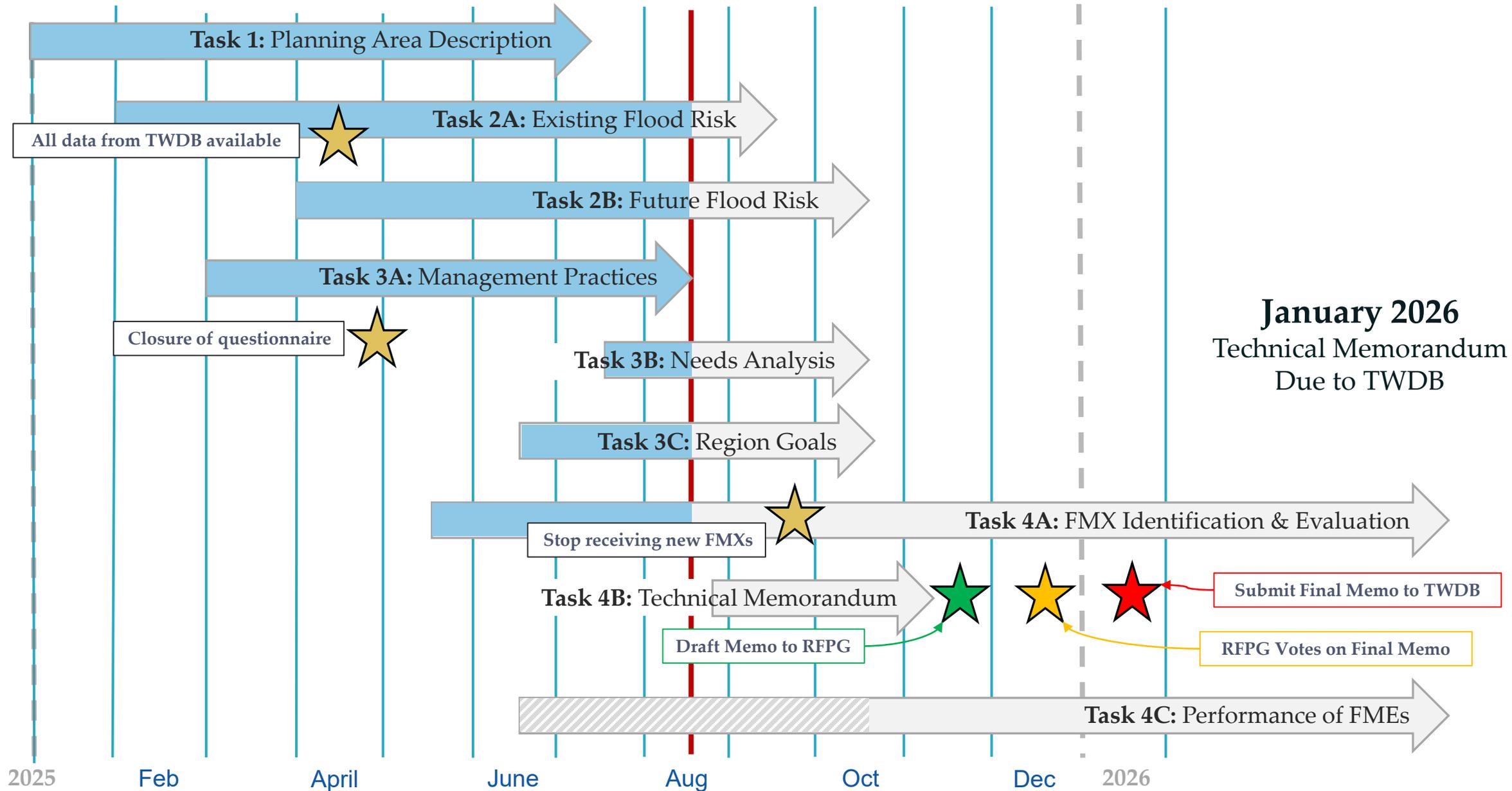
Flood Warning Systems

General Updates

Ryan Londeen, PE, CFM



Schedule Updates



General Updates

Website

- Making changes to website for better navigation
 - Drop down menus
 - Navigation pane
 - Minor bug fixes

Task 3C - Goals

- Researching baseline metrics to build goals on
- Dependent on Task 2A and 3B analysis for current progress and risk

Amendment

- Received comments from TWDB 7/28
 - 34 comments
 - Minor numerical inconsistencies
- Revised amendment submitted 8/13 (deadline)

Task 4A – Identify FMXs

- Performing outreach for FMXs
- Collecting through end of September
- Using FMX form for easier submittals and clarify on required items

Public Roadshow

Waco
Aug. 21, 2025
1:00 – 3:00 PM
4600 Cobbs Dr.
Waco, TX 76710
[Meeting Notice](#)

College Station
Aug. 26, 2025
5:00 – 7:00 PM
1207 Texas Ave.
College Station, TX 77840
[Meeting Notice](#)

Rosenberg
Aug. 28, 2025
5:00 – 7:00 PM
3825 Highway 36 South,
Rosenberg, TX 77471
[Meeting Notice](#)

Granbury
Sept. 9, 2025
5:00 – 7:00 PM
1410 W. Pearl St.
Granbury, TX 76048
[Meeting Notice](#)

Georgetown
Sept. 11, 2025
5:00 – 7:00 PM
445 E. Morrow St.
Georgetown, TX 78626
[Meeting Notice](#)

Open House - Stations

Informational
Video

TWDB Flood
Planning
Process

About Region
8

Existing Flood
Risk (digital)

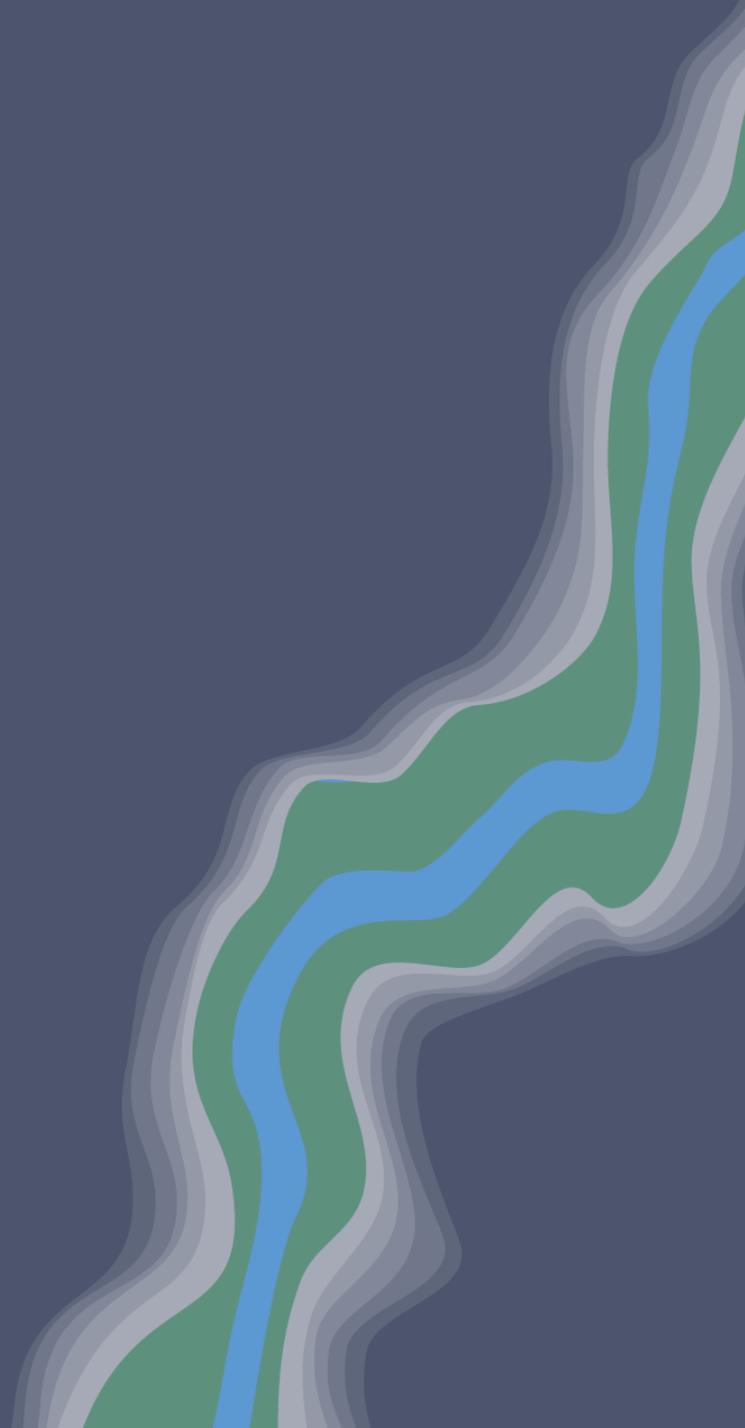
FMX List
(digital)

Get Involved

**Attend a meeting
near you!**

Task 1 – Planning Area Description

Ryan Londeen, PE, CFM



Task 1: Planning Area Description

Draft Chapter 1 Provided for Review

Chapter 1: Lower Brazos Planning Area Description

1.1 Introduction: The Regional Flood Plan in Context

1.1.1 Origins of the State Flood Planning Process

In Texas, the billion-dollar flood disaster is becoming a regular occurrence. Between 2015 and 2017, flooding alone caused nearly \$5 billion in damages to Texas communities. In conjunction with the impact of Hurricane Harvey, the total cost in 2017 approached \$200 billion in financial losses (National Oceanic and Atmospheric Administration, 2021) and nearly 100 deaths. As Texas grappled with how to manage flood risk better and reduce loss of life and property from future disasters, the Texas Water Development Board (TWDB) prepared the first-ever statewide flood assessment, which described Texas' flood risks, provided an overview of roles and responsibilities, and included an estimate of potential flood mitigation costs and a summary of interest groups views on the future of flood planning.

This plan was prepared because:

- flood risks, impacts, and mitigation costs had never been assessed at a statewide level
- flood risks pose a serious threat to lives and livelihoods
- much of Texas is unmapped or uses out-of-date maps (Peter M. Lake (Chairman of TWDB), 2019)

Task 2A: Existing Flood Risk

Ryan Londeen, PE, CFM

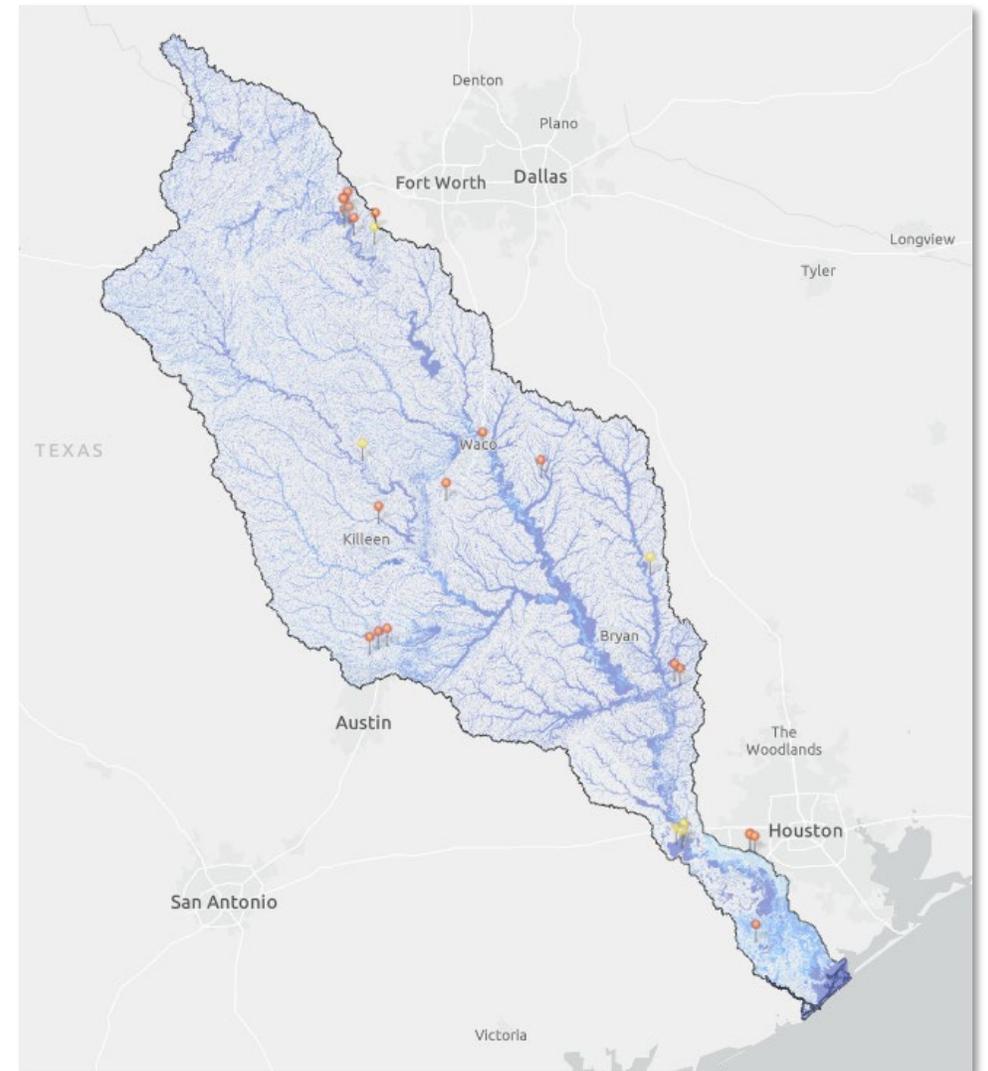


Task 2A: Existing Flood Risk

Draft Flood Quilt Provided for Review

- Available on website
- Bringing to public roadshows for public review

Lowerbrazosflood.org/Resources



Task 2A – Flood Quilt Data Prioritization

Revised prioritization based on detailed review and comparison of datasets.

Initial Prioritization Approach

1. Community Models / Maps
2. FEMA Detailed (AE & VE) – Large Rivers
3. BLE 2D
4. FEMA Detailed (AE & VE) – Small Rivers, recent data
5. BLE 1D
6. Fathom (pluvial)*

*Data gap filler, where applicable

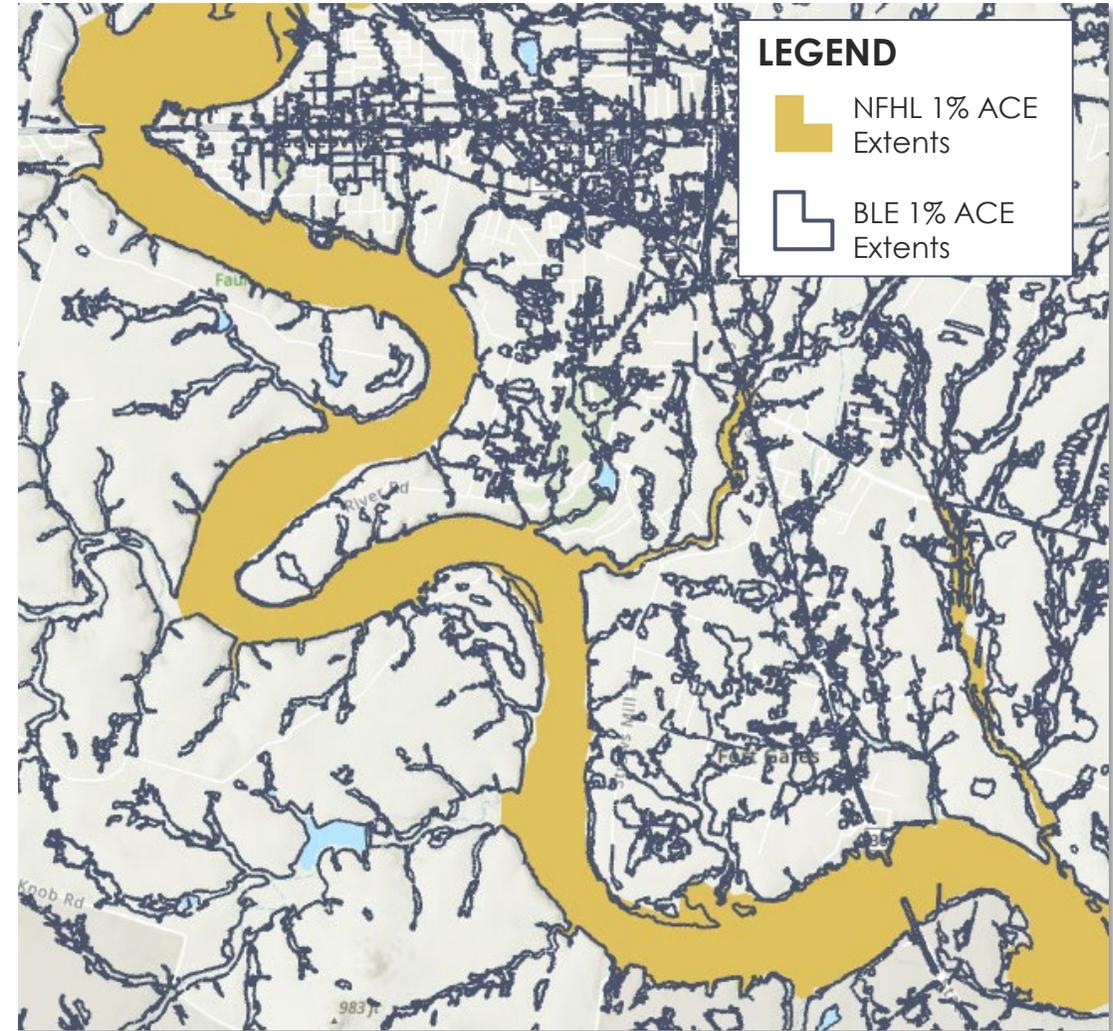
Revised Prioritization Approach

1. Community Models / Maps
2. ~~FEMA Detailed (AE & VE) – Large Rivers~~
3. BLE 2D
4. FEMA Detailed (AE & VE) – Small Rivers, recent data
5. Maximum of BLE 1D & Fathom

Task 2A: Prioritization Revisions

NFHL vs BLE

- Case-by-case comparison indicated very minor differences in River NFHL and BLE
- Riverine BLE results calibrated to NFHL
- Used BLE instead of NFHL to be more consistent throughout dataset and reduce tie-in discrepancies



Task 3A: Floodplain Management Practices

Evan Adrian, PE, CFM, ENV SP (Torres)



Task 3A – Floodplain Management Practices

Task 3A Summary

- Memorandum shared with RFPG with Documentation of Recommended Standards
- During May 15th meeting, RFPG discussed keeping Standards as *Recommended* for Region
- Standards include Region-wide Recommendations and Zone Specific Recommendations

Task 3A Revision Summary from 2023 RFP

- *Use of Best Available Rainfall Data* Standard updated to Regionwide Standard
- Zone Boundaries revised to County Political Boundaries
- Slight Modification to Standard Language included in Memorandum
- Added Definition for “New Infrastructure” for Drainage Corridor Preservation Standard

 **MEMORANDUM**

DATE: August 13th, 2025 Data Code: _____

TO: Lower Brazos Regional Flood Planning Group

FROM: Evan Adrian, PE, CFM, ENV SP; Jacob Torres, PhD, PE, CFM, BC, WRE
(Torres & Associates, LLC)

PROJECT: 2028 Lower Brazos Regional Flood Plan

SUBJECT: Preliminary Recommendations on Floodplain Management Practices (Task 3A)

This memorandum provides a cursory listing of *Standards for Recommendation* for the Lower Brazos Region, in partial fulfillment of *Task 3A - Evaluation and Recommendations on Floodplain Management Practices*. The purpose of Task 3A is to evaluate existing floodplain management practices within the Lower Brazos Planning Region and recommend floodplain management standards that minimize existing flood risks and prevent creating new flood risks. It is essential to note the RFPG does not have the authority to enact or enforce floodplain management, land use, or other infrastructure design standards. Any standards considered, recommended, and accepted by the Lower Brazos RFPG are intended to encourage implementation by local entities in the Lower Brazos Planning Region with flood-related authority. Any standards considered, recommended, and adopted by the Lower Brazos RFPG in this task would be aimed at encouraging implementation by local entities in the region with flood-related authority.

Floodplain management standards fall into two main categories, *adoption* and *recommendation*. Recommended standards are general guidelines for consideration by the floodplain regulating entities in the region. Adopted standards are specific minimum standards that should be adopted by the entities within the region. Standards determined to be for adoption must be implemented by entities prior to the RFPG including any flood management evaluations, flood management strategies, or flood mitigation projects for the entity in the Regional Flood Plan. **Based on feedback from the RFPG during the meeting on May 15th, 2025, standards proposed for the Lower Brazos Flood Planning Region are recommended standards to be used as general guidelines for consideration by the entities within the region.**

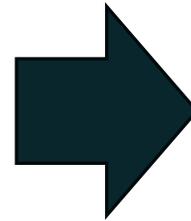
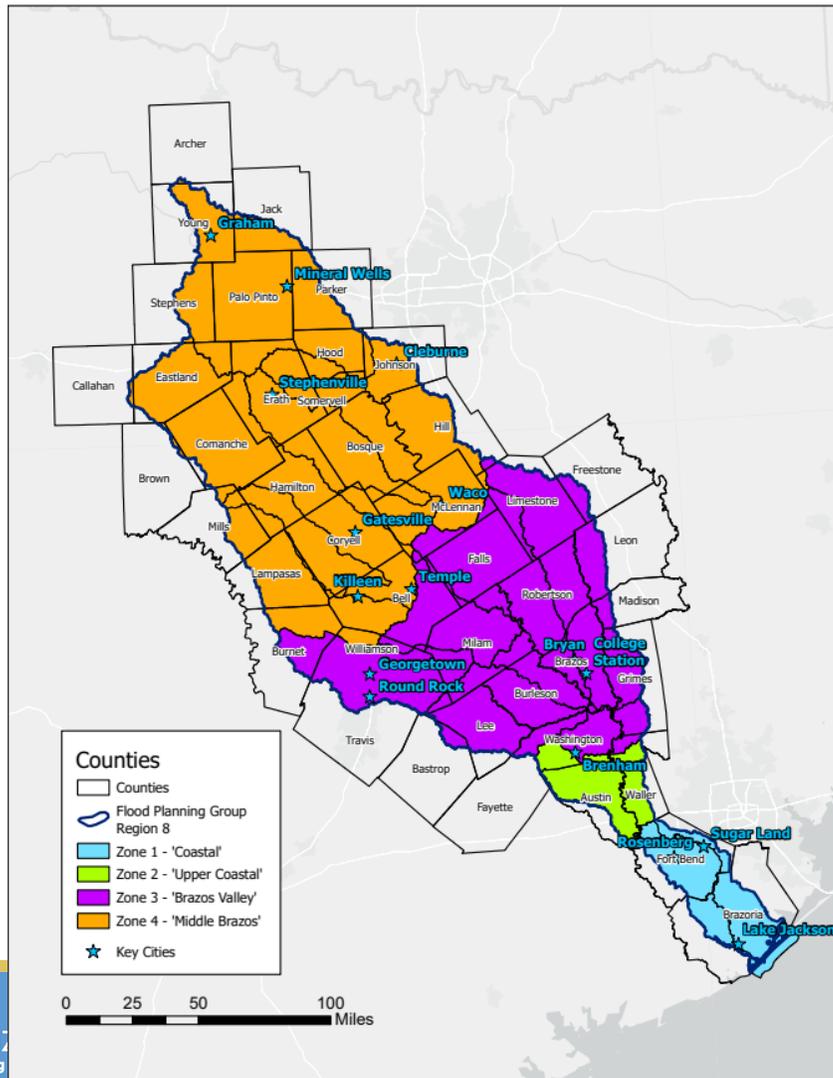
The recommended standards for consideration are divided into two distinct categories: standards for region-wide recommendation and standards recommended for smaller “zones” within the Lower Brazos Planning Region delineated along county boundaries. These categories allow for a broad application of standards and a tailored formulation for capturing flood risk variability, natural hydrography, topography, climatological effects, and demographics throughout the region. The different categories of standards are described further in subsequent sections, along with the definitions of each standard. Table 1 provides a summary of the *recommended* standards for the Lower Brazos Region.

1 LOWER BRAZOS REGIONAL FLOOD PLAN

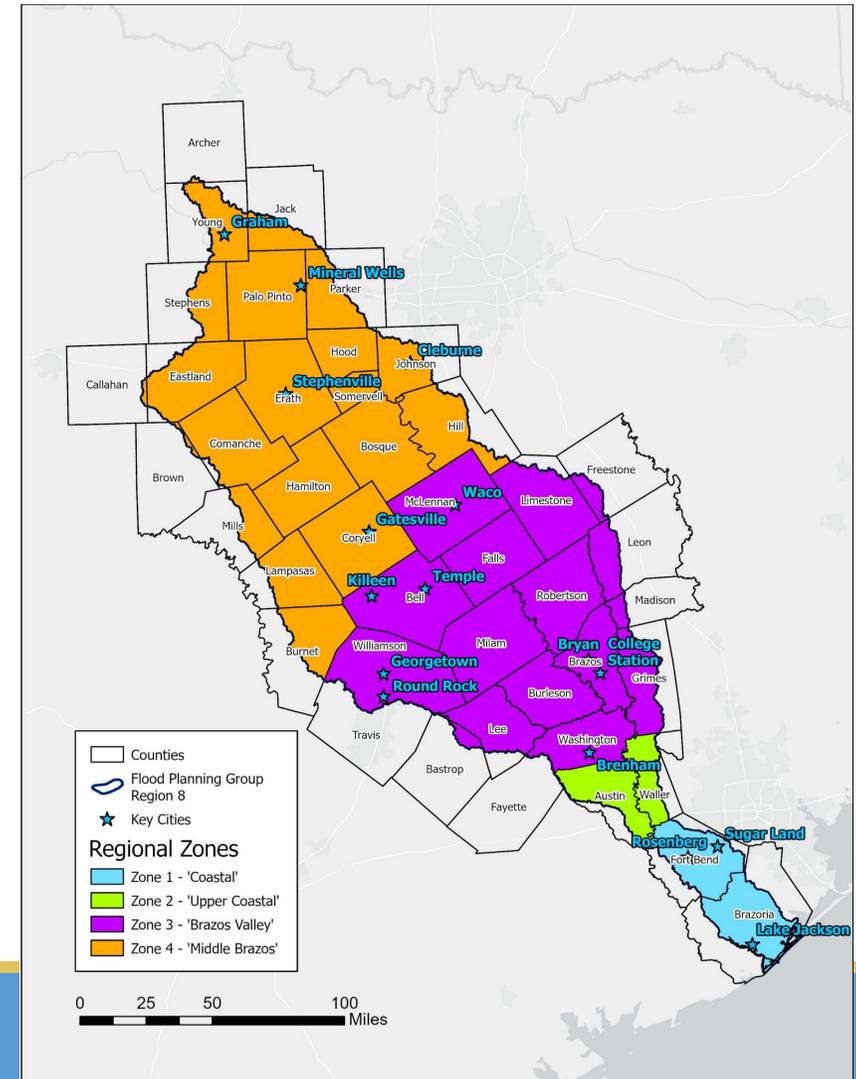
3 LOWER BRAZOS REGIONAL FLOOD PLAN

Zone Refinement

HUC-8 Zone Delineations



County Boundary Zone Delineations



Drainage Corridor Preservation Definition Update

Drainage Corridor Preservation Standard (Zone 2, 3)

Infrastructure construction should avoid high-risk and sensitive areas such as floodways, floodplains, coastal dunes, and areas downstream of dams, levees, and floodwalls. New buildings **or other new infrastructure** should be prohibited within the regulatory floodplain **and in other high risk or sensitive areas identified by the entity.**

New Infrastructure refers to newly constructed infrastructure that would obstruct natural and engineered drainage corridors and other water courses. This recommendation does not apply to common infrastructure systems, such as water, wastewater, stormwater, and other infrastructure utilities that are deemed critical (e.g. communications, gas lines, emergency alert systems, etc.).

Added Definition for “New Infrastructure”

*Red text indicates adjustments made to 2023 RFP Recommended Standards

Recommended Standards

Recommended Standard	Region Wide	Zone 1 "Coastal"	Zone 2 "Upper Coastal"	Zone 3 "Brazos Valley"	Zone 4 "Middle Brazos"
National Flood Insurance Program (NFIP) Participation	X				
Compensatory Storage Requirement in 1% Floodplain	X				
No Adverse Impacts for the 1% Storm Event	X				
Improved Flood Response	X				
Improved Flood Risk Awareness/Education	X				
Use of Best Available Rainfall Data	X				

Recommended Standards

Recommended Standard	Region Wide	Zone 1 "Coastal"	Zone 2 "Upper Coastal"	Zone 3 "Brazos Valley"	Zone 4 "Middle Brazos"
No Adverse Impacts for the 1% and 10% Storm Event		X	X	X	
Formation of a Voluntary Buyout Program		X			
Long-term Operation and Maintenance Planning of Drainage Infrastructure		X			
Drainage Corridor Preservation			X	X	
Compensatory Storage Requirement in 0.2% Floodplain				X	X
Requirements for Culvert and Bridge Crossings				X	X
Roadway Requirements within the Floodplain				X	X
Culvert and Bridge Hydrologic and Hydraulic Analysis Requirement				X	X

Task 3A – Floodplain Management Practices

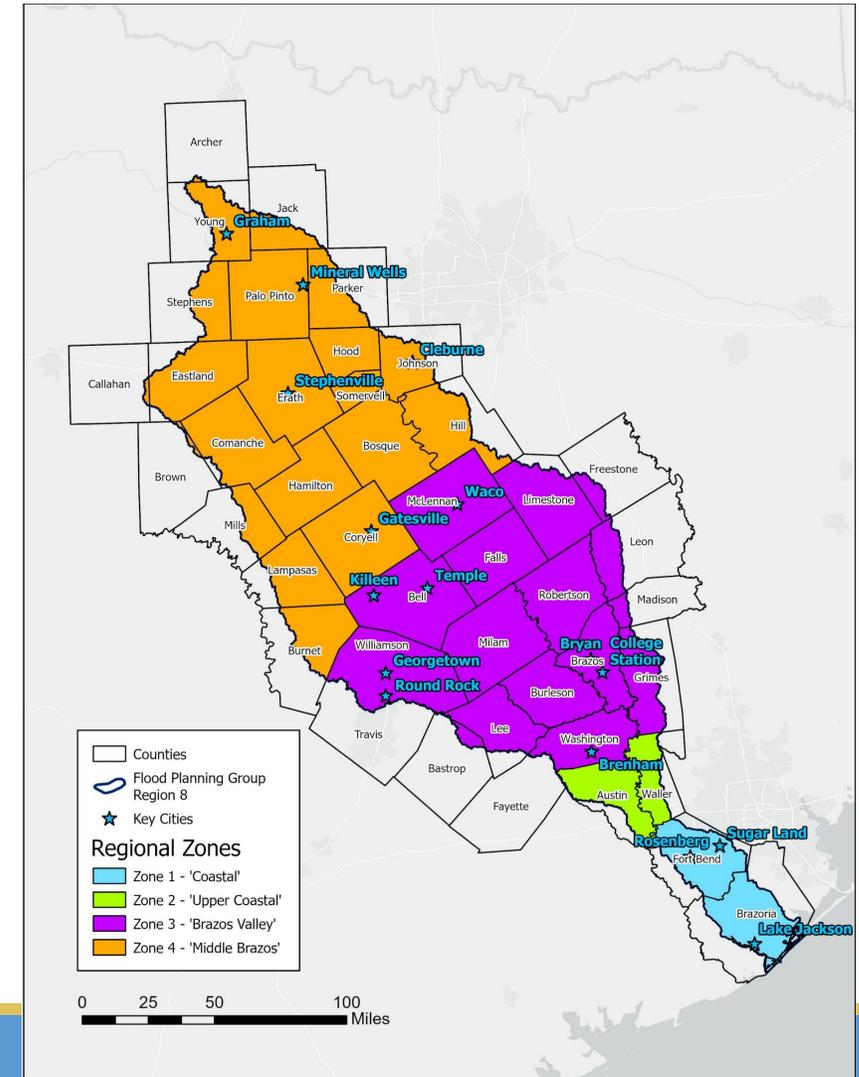
VOTE

Task 3A Vote

- Vote for acceptance of Standards as Recommended for Region as presented within the Task 3A Memorandum dated August 20, 2025
- Standards include Region-wide Recommendations and Zone-Specific Recommendations

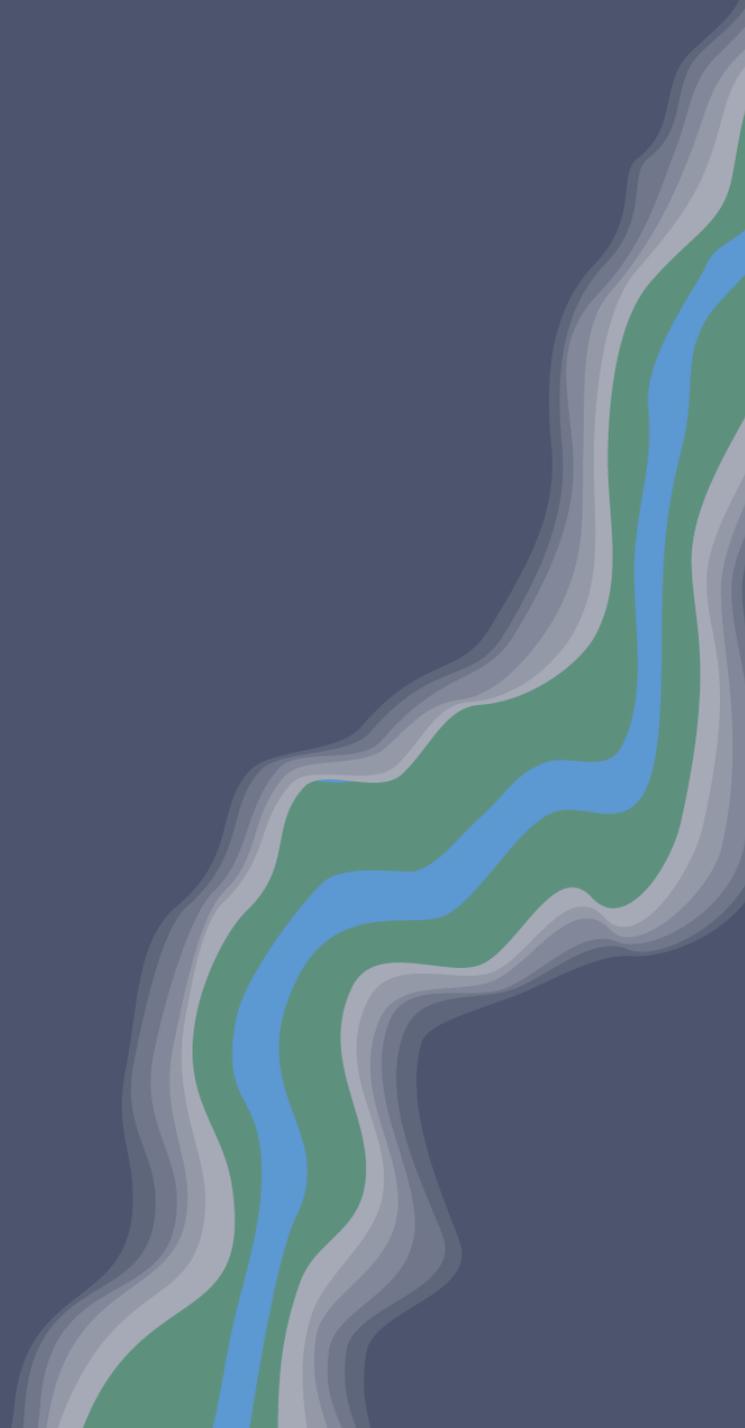
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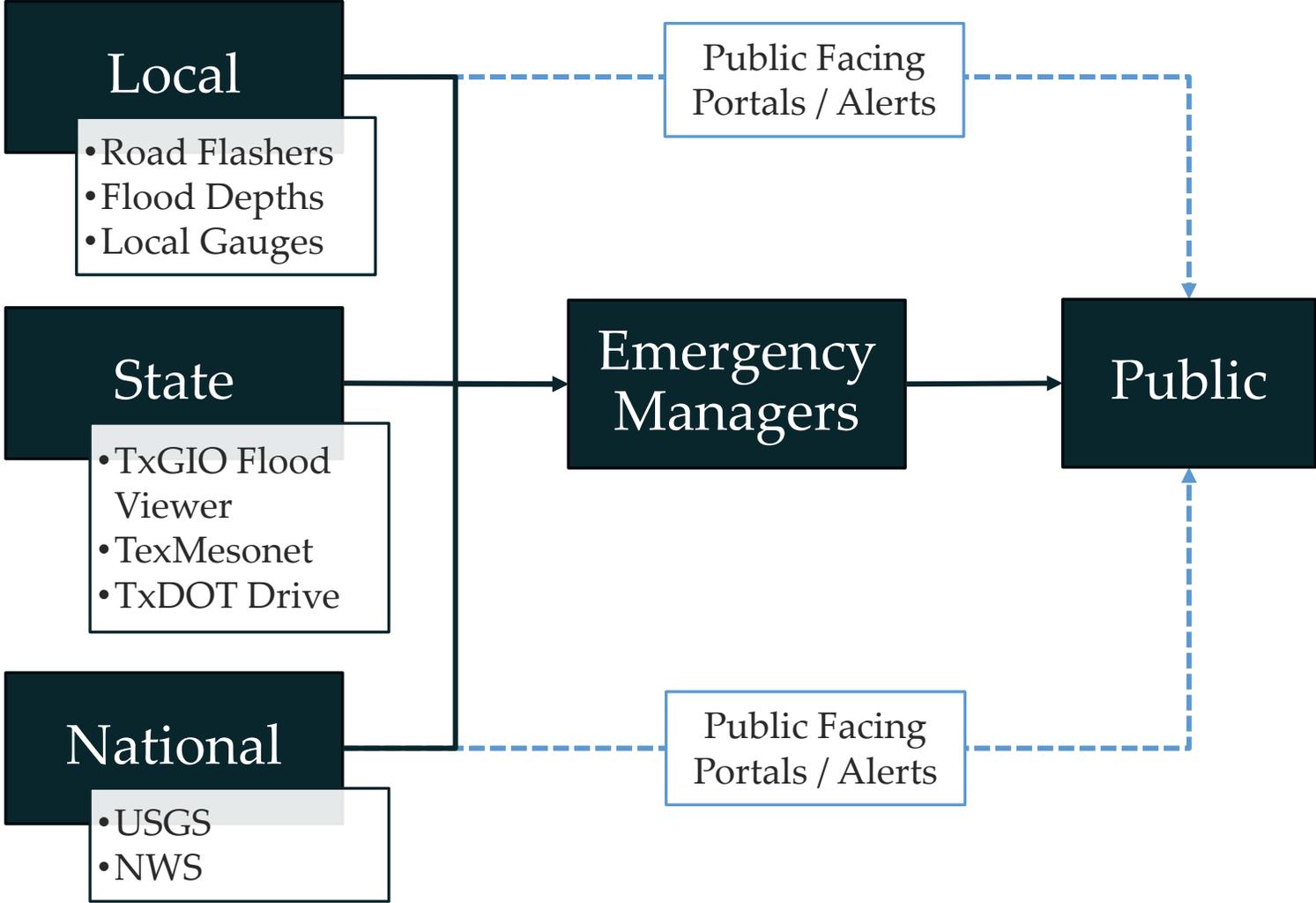


Flood Warning Systems (FWS)

Ryan Londeen, PE, CFM



Flood Warning Systems



Survey Results

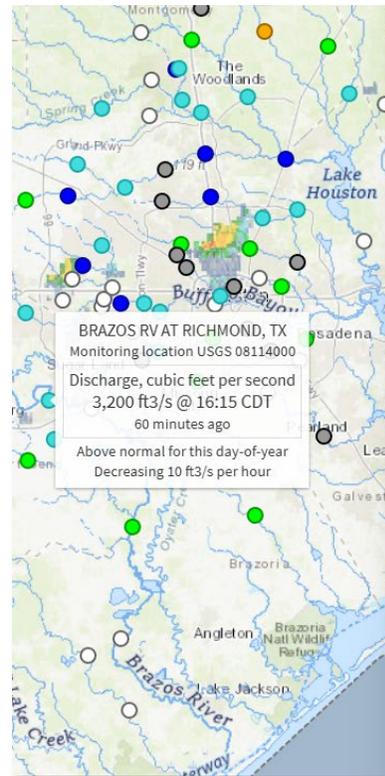
- 10 Use flood forecasting tools for emergency response
- 14 Use rain and stream gauges for emergency response
- 24 Did not indicate use of gauges or forecasted warning systems

National FWS Example

USGS National Water Dashboard

- Public-facing web-based portal
- USGS gauge data (observed / historic)
- Stage
- Flow
- Flood stage indicators

dashboard.waterdata.usgs.gov/app/nwd/en

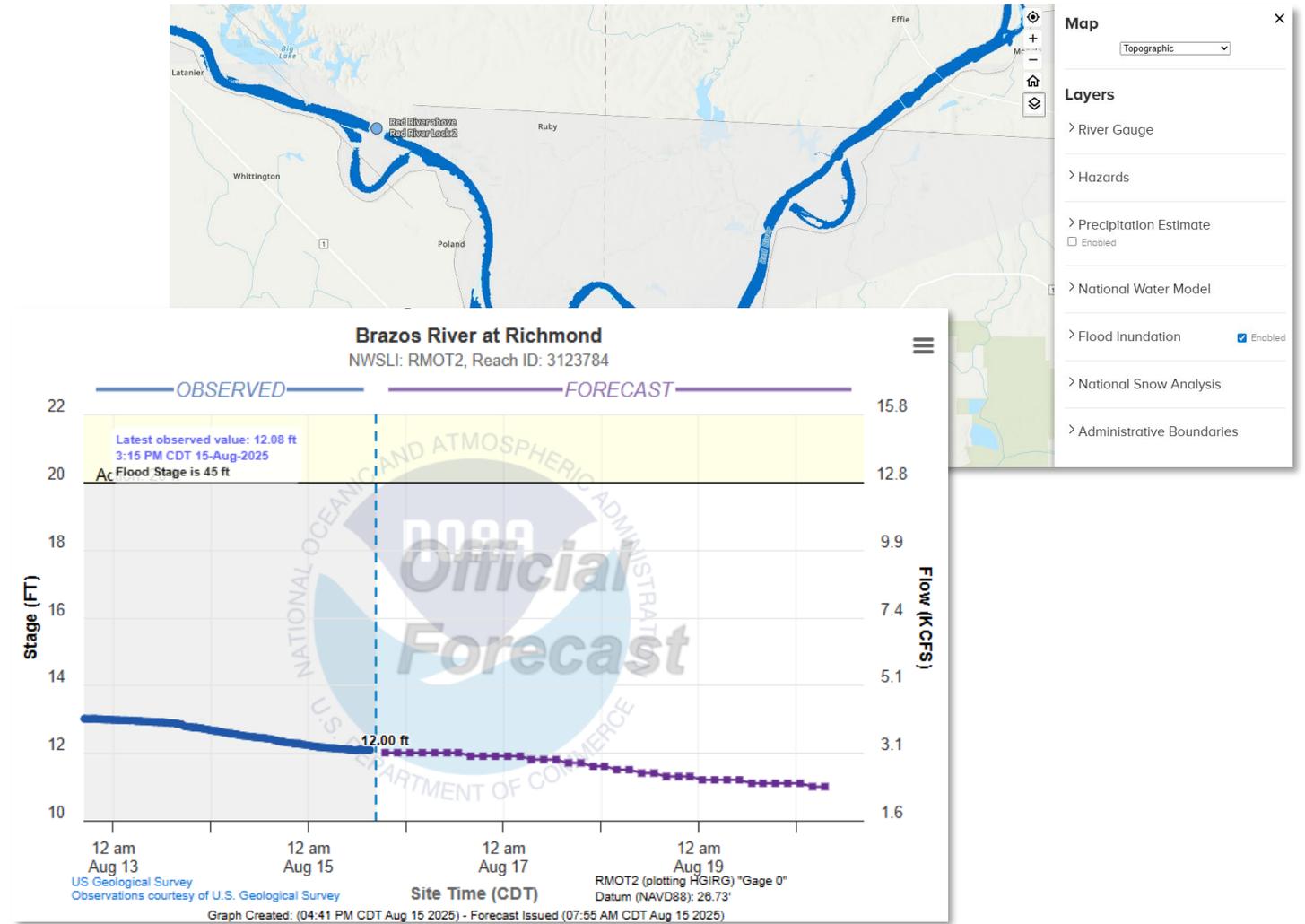


National FWS Example

NOAA Flood Inundation Mapping Services

- Public-facing web-based portal
- Gauge data (observed / forecast)
- Predicted inundation from National Water model
- Inundation mapping is work in progress: experiment / limited coverage
- Gauges increase accuracy

water.noaa.gov/fim

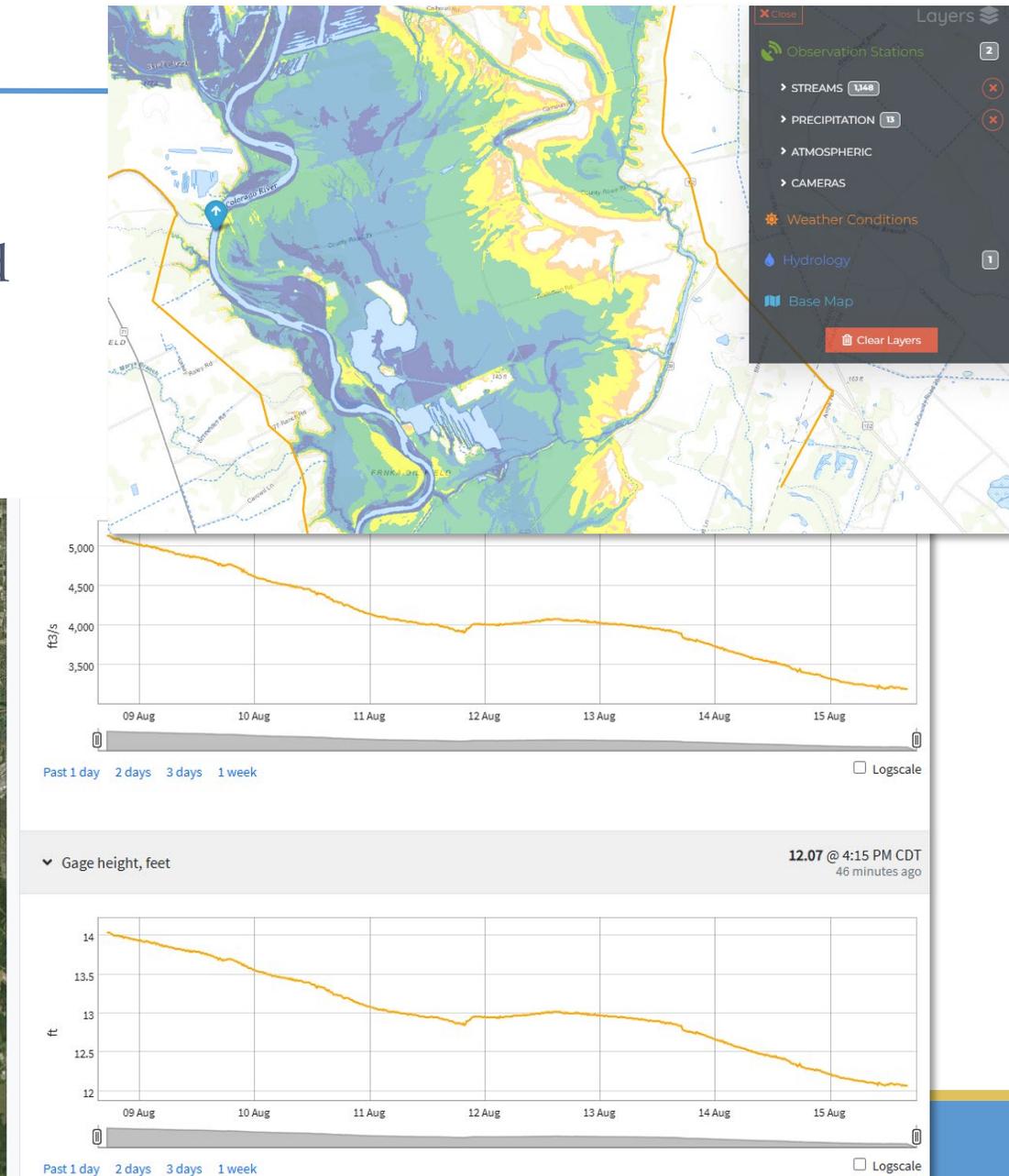
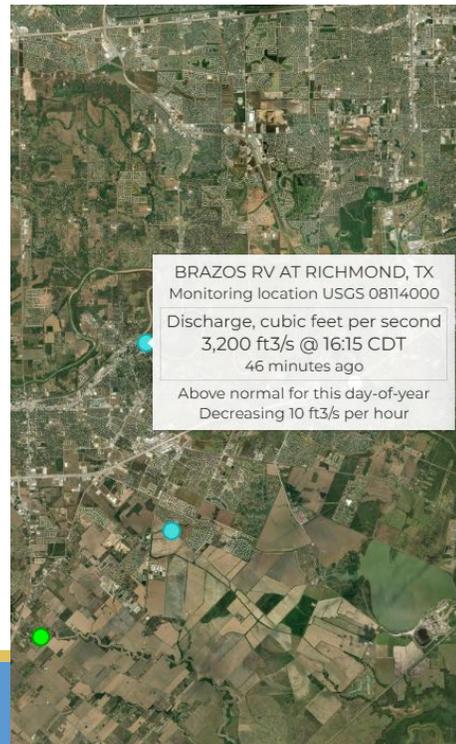


National FWS Example

InFRM – Flood Decision Support Toolbox

- Similar info as USGS national weather dashboard
- Public-facing web-based portal
- Current precipitation, flows, flood depths
- Inundation Maps:
 - Max forecasting
 - Historic
 - Inundation: limited coverage

webapps.usgs.gov/infrm/fdst

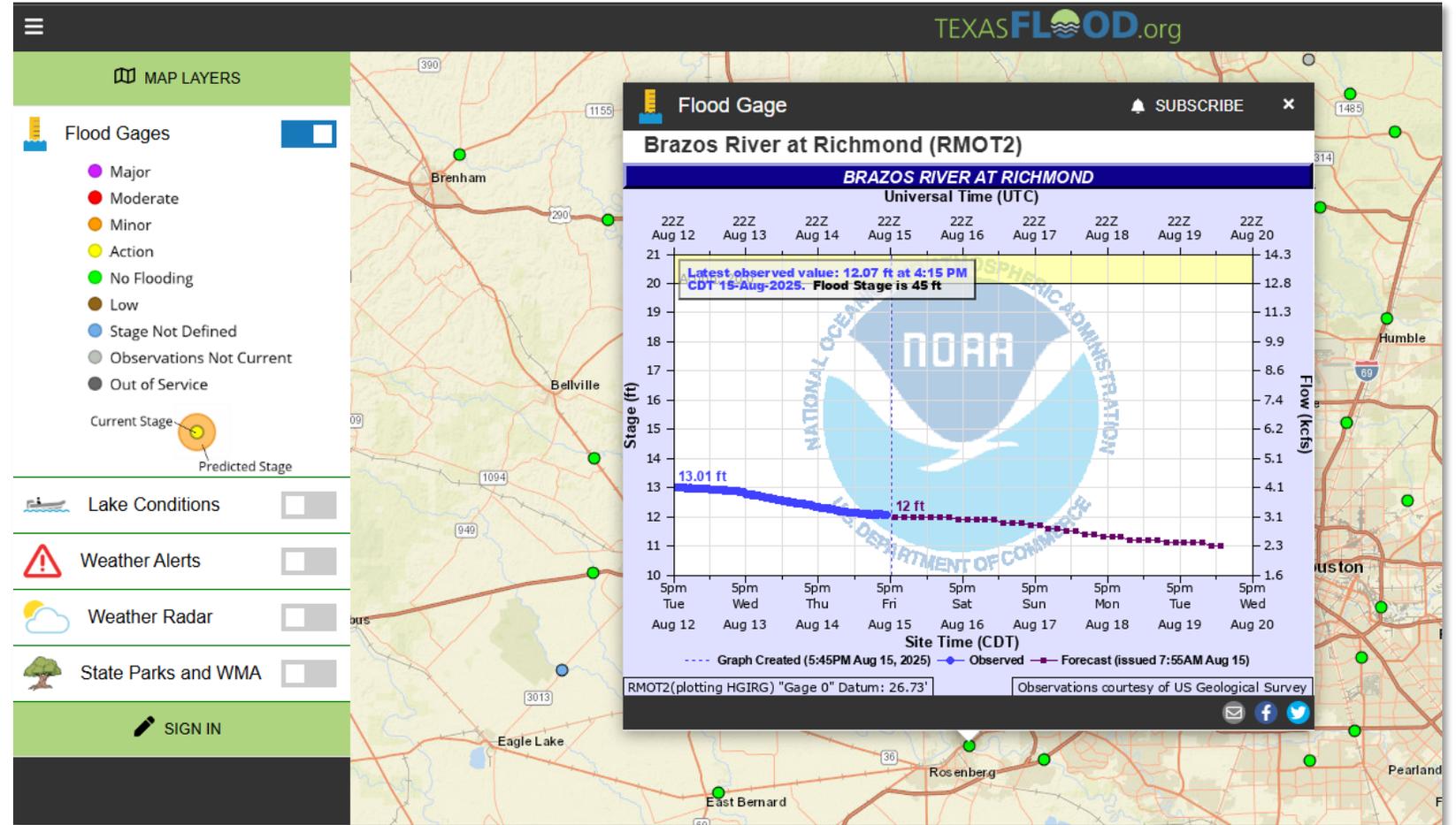


State FWS Example

TxGIO Flood Viewer

- Public-facing web-based portal
- Flood Gauge Data
 - Current
 - Predicted
 - Flood stage indicators

map.texasflood.org

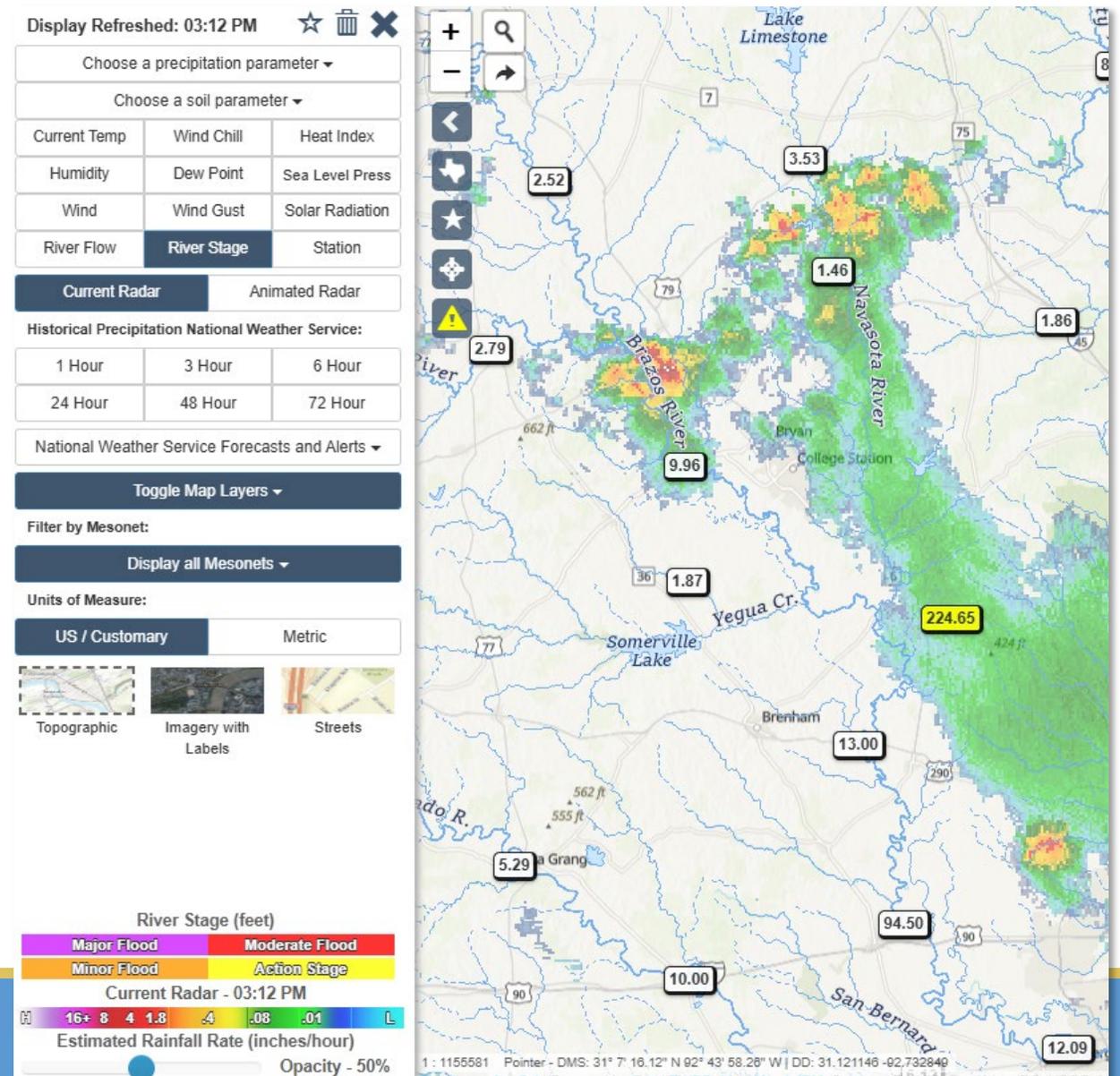


State FWS Example

TexMesonet

- Public-facing web-based portal
- Gauge Data
 - Historic and Current
 - Precipitation
 - River Flow
 - River Stage
- Current Radar

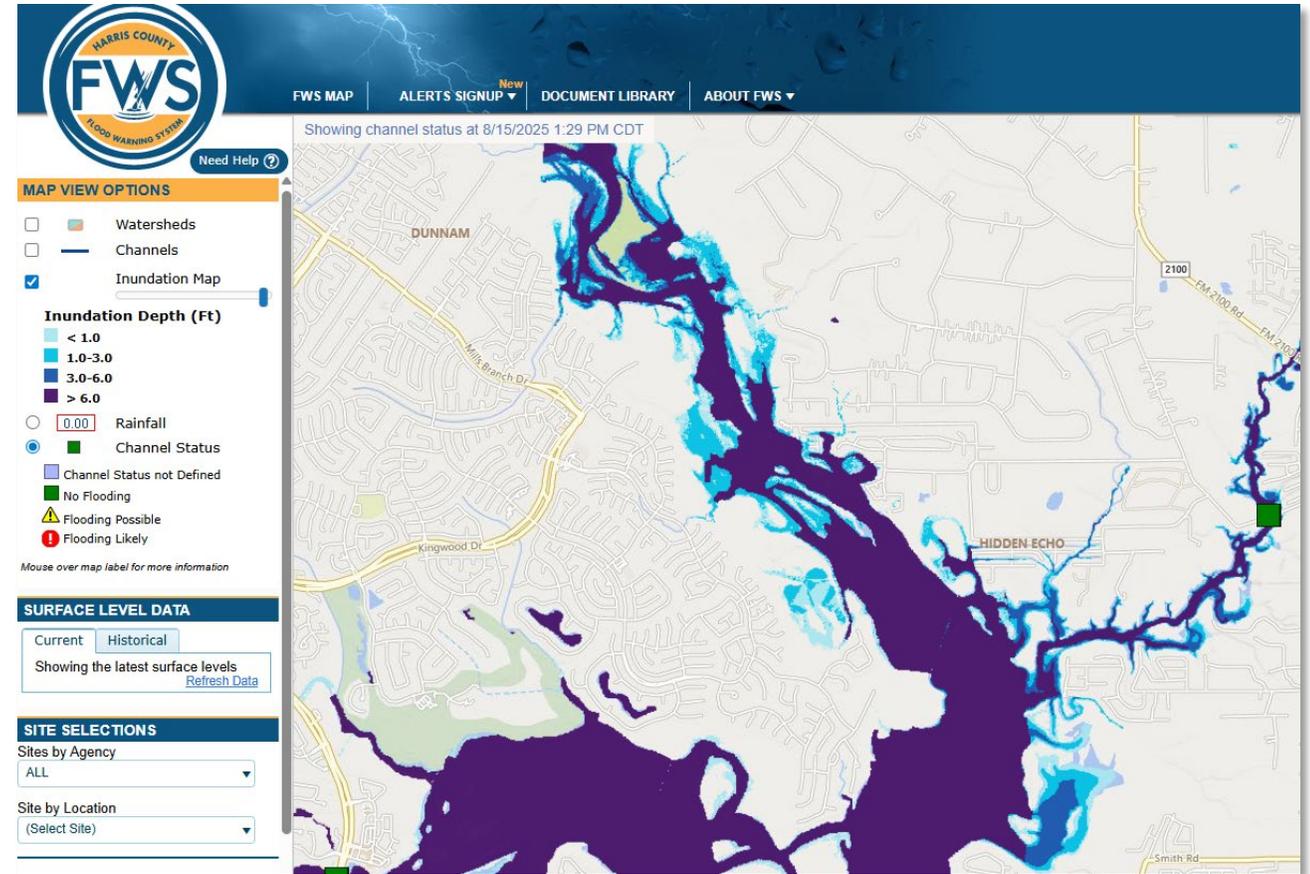
texmesonet.org



Local FWS Examples

Harris County

- Public-facing web-based portal
- Displays total rainfall depths
- Displays current flood depths and inundation maps from pre-simulated modeling that best matches live rainfall gage information
- Rainfall and water level alerts by text or email



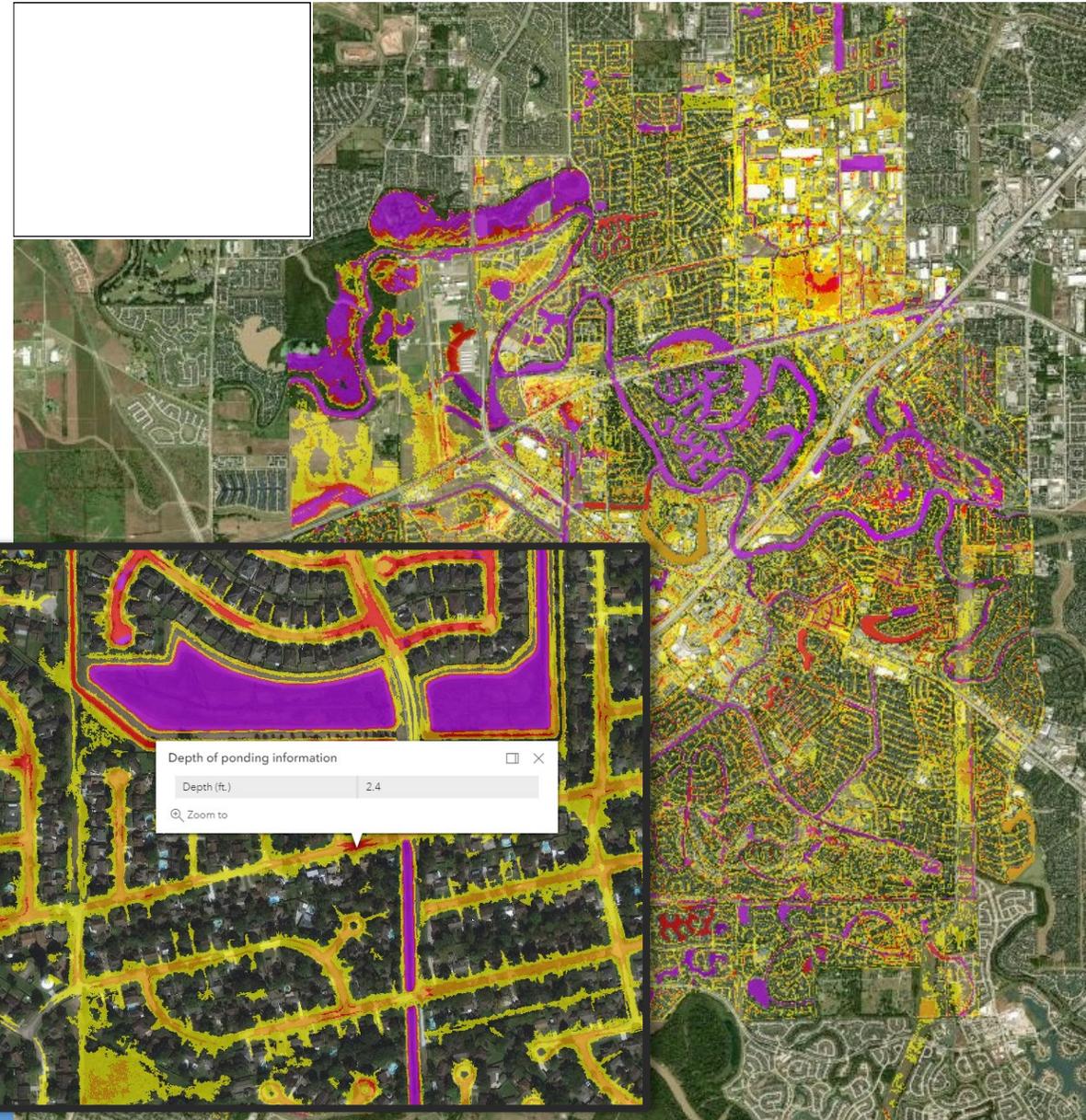
harriscountyfws.org

Local FWS Examples

City of Sugar Land ISWMM

- Public-facing web-based ponding map
- Display flood depths from pre-simulated modeling that best matches live rainfall gage information
- Emergency Response Plan
 - Determine ponding depths at any location
 - Provide live information to staff and residents
 - Plan evacuation routes
- Assists in identification and prioritization of CIP projects

iswmm.sugarlandtx.gov/Map/Public

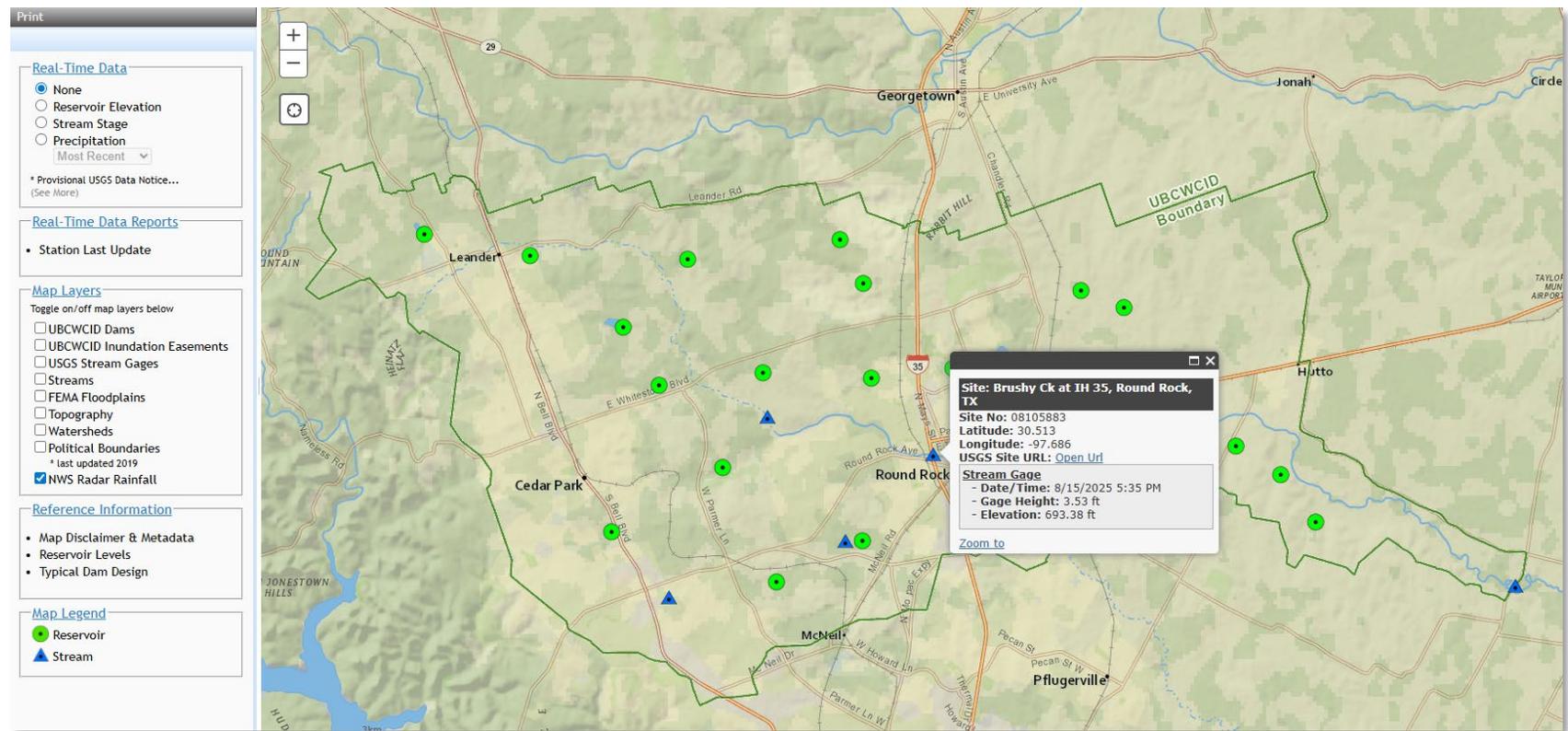


Local FWS Examples

Upper Brushy Creek WCID

upperbrushycreekwcid-auth0.halff.com/portal10

- Public-facing web-based portal
- Gauges (real-time)
 - Local
 - Precipitation
 - Stream
 - Reservoir
- Radar data



Local FWS Examples

City of Bryan

- Alerts emergency response crews and city staff to coordinate preemptive roadway closures
- “Turn Around, Don’t Drown” with automated flashing beacons
- Long-term plans include sending out closure notifications by text/email subscriptions.
- Collects rainfall data
- 20 Locations
- \$450,000 (\$150,000 grant from TWDB FIF)
- Upcoming: public facing website

More info at the City
of Bryan website:

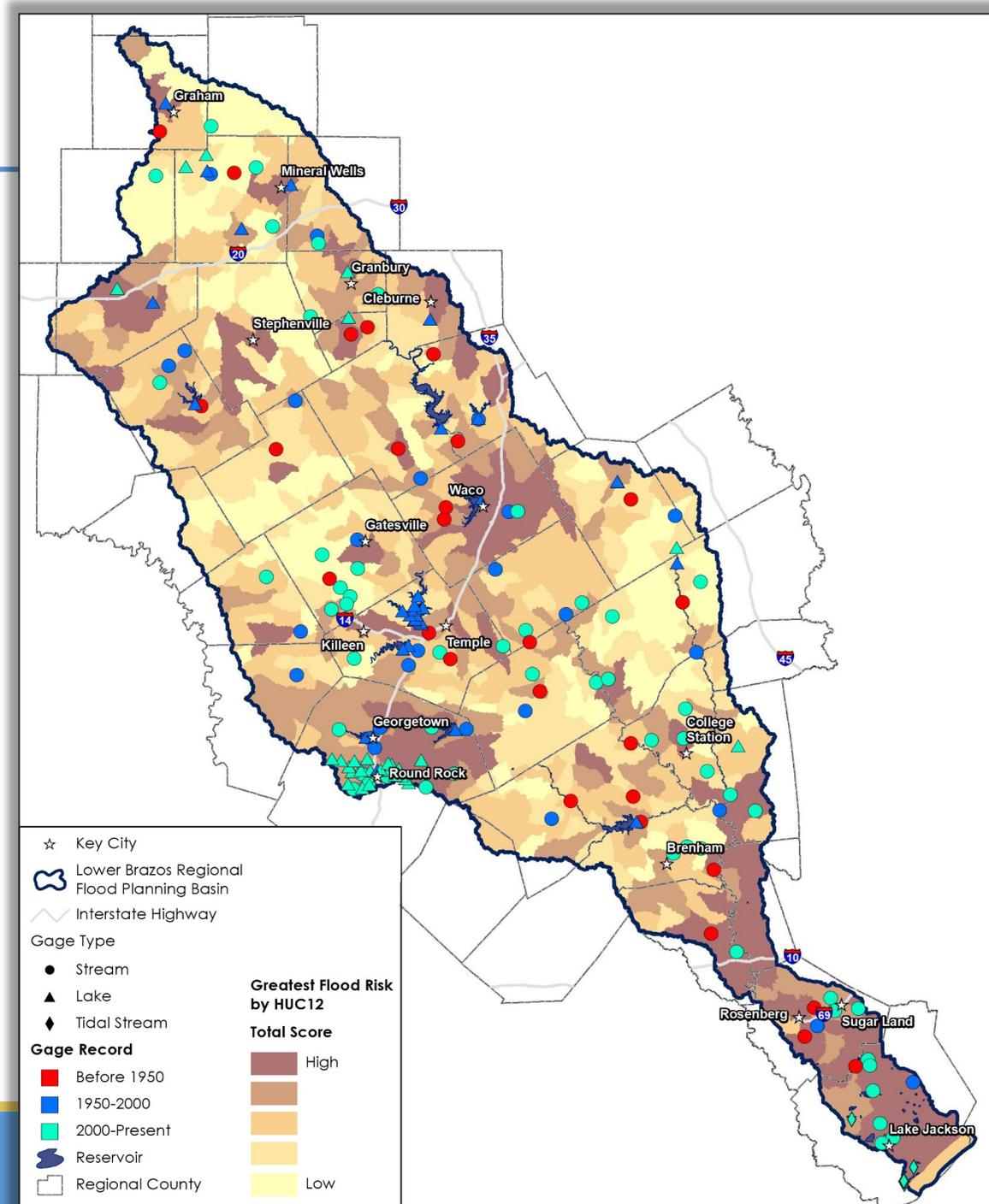


<https://www.bryantx.gov/flood-early-warning-system-in-bryan-will-save-lives-and-property/>

LBRFP FWS Analysis

2023 Cycle FEWS Analysis

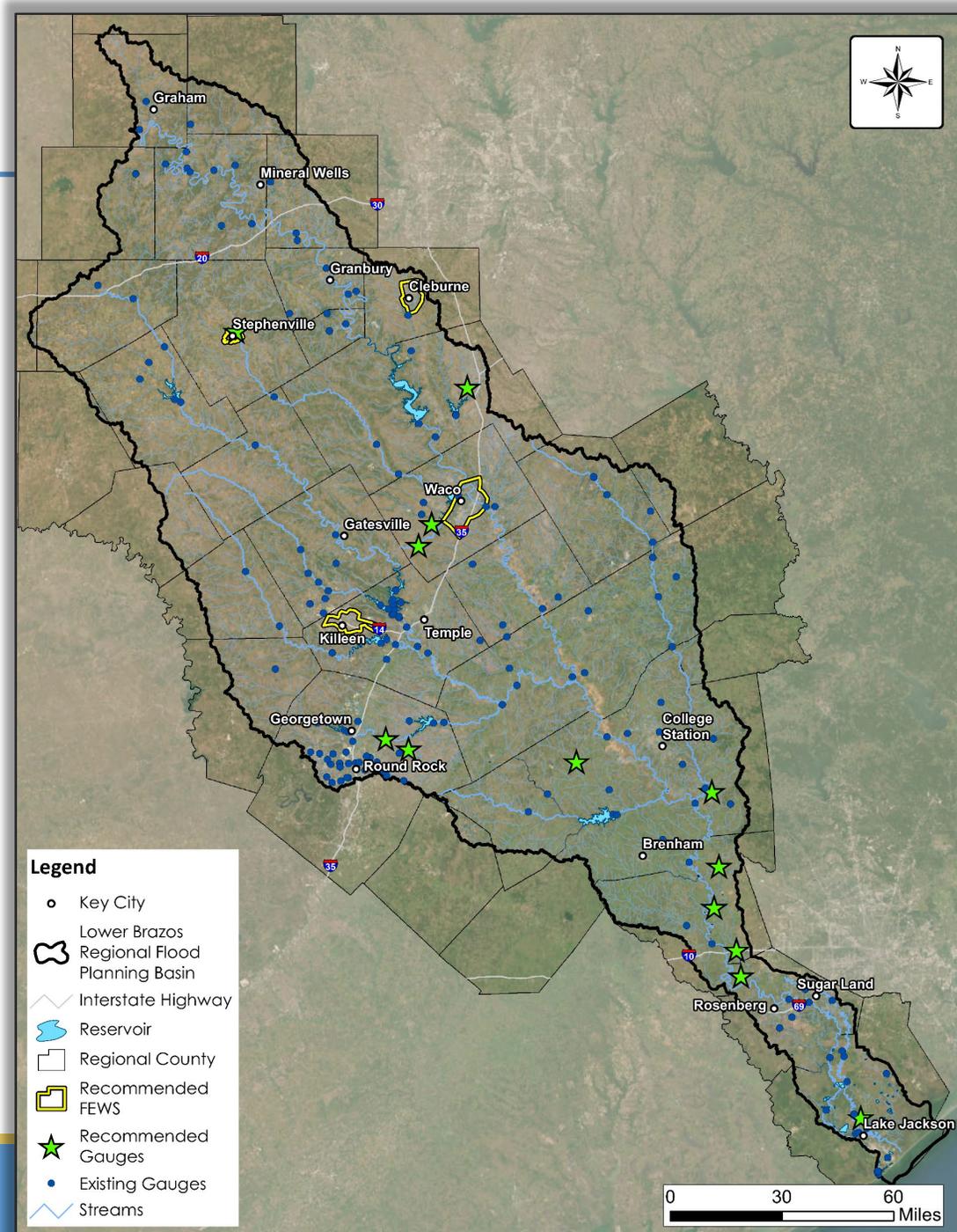
- Investigated current flood warning systems in the region
 - Local systems
 - National Systems
 - Statewide systems
 - Gauge coverage
- Identified areas in need of additional infrastructure (gauges, FEWS, etc.)
- Developed recommendations and memorandum summarizing efforts (included as a supplemental)



LBRFP FWS Analysis

FEWS Recommendations

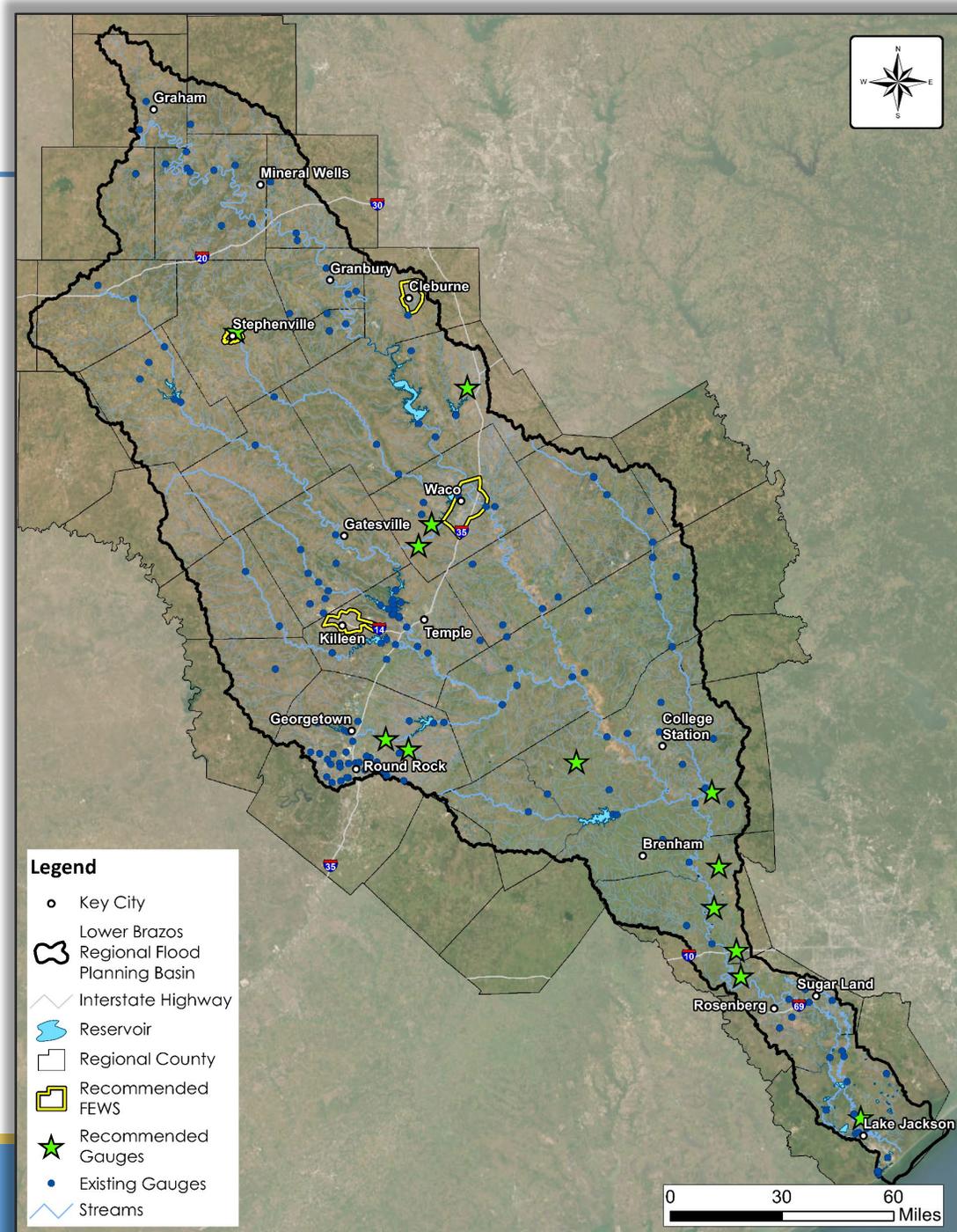
- Locations that could benefit from additional gauges
 - Dominant flood risk is riverine
 - Small communities who may not be able to upkeep an intricate FEWS
- Locations that could benefit from FEWS
 - Flood risk is a mix of urban and riverine (multiple flood sources)
 - Larger communities who could support implementation and maintenance of intricate FEWS



LBRFP FWS Analysis

FEWS Recommendations

- Recommend 4 FEWS (based on population and flood risk)
 - City of Waco
 - City of Killeen
 - City of Stephenville
 - City of Cleburne
- Recommend 12 Gauges
 - Crossings of major streams and throughfares
 - Located near severe structural flooding and identified low water crossings
 - Covers 9 counties throughout the region



LBRFP FWS FMXs

FMX Type	FMX Name	Brief Description	Sponsor	FMX Cost*	Recommended
FMS	Lower Brazos Additional Gauges	Final assessment of placement and constructability of recommended gauges from preliminary analysis. Coordination between entities to integrate gauges into USGS system.	Lower Brazos RFPG	\$150,000	No
FMS	Lower Brazos Flood Warning Portal	Development of interface to incorporate regional and local data system information for public use in the Lower Brazos Region.	Lower Brazos RFPG	\$500,000	No
FME	City of Killeen FEWS	Assessment of most beneficial gauge placements and development of data interface.	Killeen	\$100,000	Yes
FME	City of Cleburne FEWS	Assessment of most beneficial gauge placements and development of data interface.	Cleburne	\$100,000	No
FME	City of Stephenville FEWS	Assessment of most beneficial gauge placements and development of data interface.	Stephenville	\$100,000	No
FME	City of Waco FEWS	Assessment of most beneficial gauge placements and development of data interface.	Waco	\$100,000	No
FME	City of Georgetown FEWS	Assessment of most beneficial gauge placements and development of data interface.	Georgetown	\$100,000	No

*FMX costs are estimated and may vary pending the detail needed for any analysis and implementation.

Special Session Senate Bills

Senate Bill 2

- Creates a working group to
 - Establish a **single data hub** for the state's various mesonet systems
 - Identify the areas that lack adequate coverage of flood gauges, weather radar, and other meteorological equipment and **identify projects to address those inadequacies**
 - Develop an **implementation plan for a statewide system** of flood gauges and other meteorological equipment that can provide information in real-time

Senate Bill 3

- Requires TWDB to adopt rules and procedures for outdoor warning systems and direct some communities to install outdoor warning systems
- Allows for the use of any money made available from the state to **assist municipalities, counties, and other governmental entities in covering the costs of installing outdoor warning sirens**

Senate Bill 5

- \$50 million for the **purchase of sirens, rain gauges, and other equipment in the Central Texas flood region**
- \$24 million to develop enhanced atmospheric measurement and modeling techniques

**list only shows items in each bill that are relevant to flood warning systems*

Potential Future Actions

Tasks 4A / 5A

- Create FMEs and FMSs to develop flood warning systems for vulnerable communities
- Recommend FWS FMXs including LBRFP FEWS Portal

Task 4C

- Further FWS analysis
- Perform FMEs that develop FMP/FMS to assist interested communities in pursuing implementation funding

Task 8

- Recommend improvements to legislature for flood warning and emergency response requirements and/or funding

Task 10

- Provide informational email to point communities to different FEWS systems
- Embed National/State FWS portals to the website

LOOKING AHEAD

SEPTEMBER 2025

- Task 2A: Existing Conditions Draft Flood Risk Exposure Results
- Task 2B: Future Conditions Draft Flood Quilt
- **Task 3B: Needs Analysis Process**

OCTOBER 2025

- Task 3B: Needs Analysis Results
- **Task 3C: Goals Results**
- Task 4C: Performance of FMEs Discussion

Gold = RFPG Decision or Vote



5. Report from:

5.1. Texas Water Development Board (TWDB) staff

5.2. Regional Planning Sponsor

5.3. Lower Brazos RFPG Chair



6. Confirm the next meeting date and discuss new business to be considered at the next meeting

3rd Thursday of the month for regular RFBPG meeting – September 18, 2025, at 10:00 AM

Kick-off of Public Open Houses to be held around the Basin, August 21 in Waco (BRA) 1:00 -3:00pm

REGION



Lower Brazos
Regional Flood Planning Group

7. Adjourn