REGION 3 TRINITY
REGIONAL FLOOD PLANNING GROUP

September 23, 2021

1. Call to order

2. Roll call

3. Approval of minutes

Region 3 Trinity Flood Planning Group Meeting
August 19, 2021
2:00 PM to 12:00 PM
North Central Texas Council of Governments
Transportation Council Room
616 Six Flags Drive
Arlington, TX 76011

The Region 3 Trinity Flood Planning Group held a meeting, in person, on August 19, 2021 at 2:00 PM. Acting Chairman Glenn Clingenpeel called the meeting to order at 2:00 PM.

Voting Members Present:

Lissa Shepard
Sano Blocker
Jordan Macha
Rachel Ickert
Matt Robinson
Sarah Standifer
Glenn Clingenpeel
Melissa Bookhout

Nine voting members were present, constituting a quorum.

Ex Officio Members Present:

Adam Whisenant
Rob Barthen
Steve Bednarz
Jonah Chen
Richard Bagans
Jerry Cotter
Lisa McCracken
Edith Marvin
Lonnie Hunt

Approval of the Minutes of the Last Meeting

Motion: Matt Robinson moved to approve the minutes from the June 24, 2021 meeting as presented; Second: Melissa Bookhout; Action: Minutes were unanimously approved.

Acknowledgement of written public comments received

Mr. Clingenpeel stated that two written comments had been received and that copies of the comments had been included in the meeting materials. This was an information item and no action was necessary or taken.

TWDB Update

Richard Bagans with TWDB gave an update on the 2021 Legislative Session. He mentioned that additional funding from the legislature had been allocated to the flood planning process and that a survey had been sent out to all the flood planning regions seeking information about how the funds should be distributed. Responses to the survey were due July 16, 2021. Mr. Bagans stated that the TWDB was compiling responses on how best to allocate the additional money to be spent during the current flood planning cycle. The allocations will be formula-based and may become available by the end of September, when TWDB staff will take their recommendations on allocation to the TWDB Board of Directors for final approval. Following adoption of the proposed allocation methodology, the TWDB will initiate contract amendments with the regional planning group sponsors in order to officially disperse the funds.

Mr. Bagans stated that the Governor's Emergency Declaration for COVID-19 would be expiring on September 1st, 2021. As a result, all Open Meeting Act requirements would be back in place. He stated that while there would be no more exceptions to the Act, there are allowances within the Open Meeting Act that allow for a hybrid meeting structure.

Rachael Ickert asked about the increasing cases of COVID, and whether or not the committee would allow for virtual participation. Mr. Clingenpeel stated that if the group wanted to entertain hybrid meetings, that it was open for discussion. Ms. Ickert stated that it might be easier to obtain a quorum due to their geographical disbursement.

Pre-Planning Meeting #2 (TWDB presentation and general public comment)

Mr. Clingenpeel introduced the pre-planning meeting by providing an explanation of its purpose, stating that it is a requirement of the workplan with TWDB, and that it is designed to be an opportunity for the public to engage at the beginning of the flood planning process before the plan is developed.

Richard Bagans then provided a more detailed explanation of the meeting

intent, including background information on the genesis of the flood planning process, and the importance of public participation.

Following Mr. Bagan's comments, Mr. Clingenpeel opened the meeting to public comments. No members of the public indicated they wished to make any remarks, and the public comment period was closed.

Update from Region 3 Technical Consultant

Stephanie Griffin with Halff Associates gave a brief overview of the updates. She mentioned that there had been an extension to the deadline for certain components of the technical memo, which had been moved to March 7, 2022 from January 7, 2022. The extension was granted in order to give the planning groups additional time to consider data being provided by the TWDB.

a. Chapter 1 Planning Area Description – Ms. Kimberly Miller, with Halff Associates provided an overview of progress on, and highlights from, Chapter 1. She began the presentation with a discussion on population estimates, both current and projected. This information allows an estimation of areas with projected growth that may increase flood risk. Ms. Miller continued with an overview of known, flood-prone areas and what is understood about current flood risk. She stated that overall, 22% of the basin is at flood risk, with over 20% of the region's land area in either the 100 or 500-year flood plain, including 70 communities in 25 counties.

b. Chapter 2 Flood Risk Analyses – Sam Amoako-Atta, Halff Associates began the presentation on Chapter 2 with a brief recap of the items covered in the last meeting including data collection. He stated that on June 24 they officially launched the first phase of the data portal. Emails, postcards and follow-up calls were made to help assure that information on data requests had been received by targeted entities. Mr. Amoako-Atta also showed maps of data collection survey participation, survey responses, and data received.

c. Chapter 3 Goals Discussion/Determination – Kimberly Miller, Halff Associates gave a re-cap of chapter 3 information discussed during the June 24 meeting. Ms. Miller discussed potential approaches to narrowing-down the chapter 3 goals including the potential creation of a subcommittee. She mentioned that there were quite a few goals listed as top priorities from the June meeting. Based on discussion and feedback, those were reduced to six overarching

goals. The six goals were then discussed at length. The goals discussed were:

Goal 1 – Implementing Flood Warning and Public Safety

Goal 2 – Improving Flood Analyses

Goal 3 – Reducing Property Damage and Loss

Goal 4 – Floodplain Preservation

Goal 5 – Flood Infrastructure Improvement

Goal 6 – Expanding Flood Education and Outreach

There was a general discussion about creating measurable goals using metrics that are not yet well-understood. Specifically, Rachel Ickert stated that until you understand where there are potential deficiencies in flood-related infrastructure, and until you have sufficient data, you cannot create a specific metric. Mr. Clingenpeel agreed and expressed his concern regarding specific, quantified goals at this juncture, and suggested that the goals be more qualitative. Mr. Bagans addressed the issue from the TWDB's perspective. He stated that there are two main objectives in the creation of chapter 3 goals; 1) to guide the group in carrying out the flood mitigation needs analyses, and 2) to structure and present them in a format that is easily-understandable for the public.

Mr. Clingenpeel asked the group if there was support to create a subcommittee. He explained that the creation of a subcommittee would allow for more discussion and opportunity to refine the goals before they were adopted. There was a consensus regarding the need for a subcommittee. Mr. Clingenpeel then asked for volunteers to serve on the subcommittee. Sarah Standifer, Matt Robinson, Jordan Macha and Rachel Ickert volunteered, and were appointed, with Sarah serving as the subcommittee chair.

d. There was a suggestion regarding whether specific types of data (e.g. NOAA Atlas 14) should be mentioned by name in regards to recommended use. The group decided it would be best to use a term of art that reflects the best available data in order to allow flexibility and capitalize on the most appropriate data sets available at a given point in time.

e. Overview and approach to Chapter 4 Flood Mitigation Needs and Potentially Feasible Solutions

Mr. David Rivera with Freese & Nichols gave an overview on the process of identifying flood mitigation needs and potential solutions. Mr. Rivera discussed how Chapter 4 contributes to the outcome of the plan. The two processes they are going to develop are: 1) how to identify and prioritize areas of need, and 2) how to identify and select potential solutions. The result will be a table of potential, feasibility studies, evaluations, and projects. During the discussion it was mentioned that areas that had been subjected to tropical storms would receive a default higher rating, giving greater weight to coastal flooding. Mr. Clingenpeel suggested that significant local events should not be automatically deprioritized as compared to tropic storms.

f. Overview and approach to Chapter 7. Emergency Response Summary. The consultant team reviewed results of survey data regarding entities emergency responses. Results indicate that very few entities have their own emergency response plans, and that cities and counties were looked to for coordination during events. The results also touched on actions respondents would like to see more of, and preferred means of public communication. Coordination between city and county entities was noted as being critical in all stages of a flood event.

g. Discussion on Chapter 8 Administrative, Regulatory and Legislative Recommendations – Stephanie Griffin with Halff Associates opened the floor for discussion on potential recommendations for future legislation and regulatory changes. There was a suggestion regarding the need for research on collecting and implementing drainage fees, as some municipalities do not currently have authority to collect them.

h. Public outreach updates – Ms. Griffin noted that the planning group had created a Twitter account, and that a universal Region 3 Power Point presentation was available for group members should they be asked to speak on behalf of the group.

Consider establishing Technical Subcommittees – This item was covered in a previous section.

U.S. Army Corps of Engineers Presentation - Jerry Cotter and Lisa Mairs-McCracken with the U.S. Army Corps of Engineers gave a presentation on USACE planning processes and authority.
Mr. Cotter provided an introduction. Ms. Mairs-McCracken explained the USACE Planning Process and what it entails. She then provided a detailed overview of several programs that are administered by the USACE. These included the Silver Jackets, Floodplain Management Services, Planning Assistance to States, and the Continuing Authorities Program. Ms. Mairs-McCracken spoke on their

authorization process, how they get funding, their partnerships, and how they use them.

Update from Liaisons Region 5 and 6

There were no updates from either of the adjoining coastal planning groups.

Update from Planning Group Sponsor

No update was presented.

Receive general public comments

No members registered for public comment or indicated that they wished to provide any.

Announcements

Glenn Clingenpeel made several announcements including the TWDB's decision to delay the due date of several portions of the Technical Memo. He also noted that Mike Rickman will be retiring and has given his resignation letter. According to the letter, Mr. Rickman's resignation will be effective upon his replacement. Mr. Clingenpeel said he would contact Secretary Scott Harris to get the nominating committee started on a formal recommendation for Mr. Rickman's replacement.

Stephanie Griffin announced that the Texas Floodplain Association would be holding its conference next week. She also mentioned that they were going to try to get more participation in the flood planning effort.

Meeting date for September 2021 meeting

The meeting was tentatively set for Thursday, September 23, 2021. Mr. Clingenpeel stated he would visit with the consulting team and explore options for getting the audio and video infrastructure needed for a possible hybrid meeting.

Agenda items for next meeting

Mr. Clingenpeel briefly reviewed items for the next meeting.

Other Business

There was no other business brought before the group.

Adjourn:

The meeting was adjourned at 1:20 p.m.

THE ABOVE AND FOREGOING ARE CERTIFIED TO BE TRUE AND CORRECT MINUTES OF THE REGULAR MEETING OF THE REGION 3 TRINITY FLOOD PLANNING GROUP HELD AUGUST 19, 2021.

_____ _____

SCOTT HARRIS, Secretary
REGION 3 TRINITY FLOOD
PLANNING GROUP

Date

_____ _____

GLENN CLINGENPEEL, Chair
REGION 3 TRINITY FLOOD
PLANNING GROUP

Date

4. Acknowledgement of written comments received

5. Public comments on agenda items

6. Consider resignation for Water District Category representative effective upon the election of a replacement

7. Appoint Nominating Committee

8. TWDB update

9. Consultant update

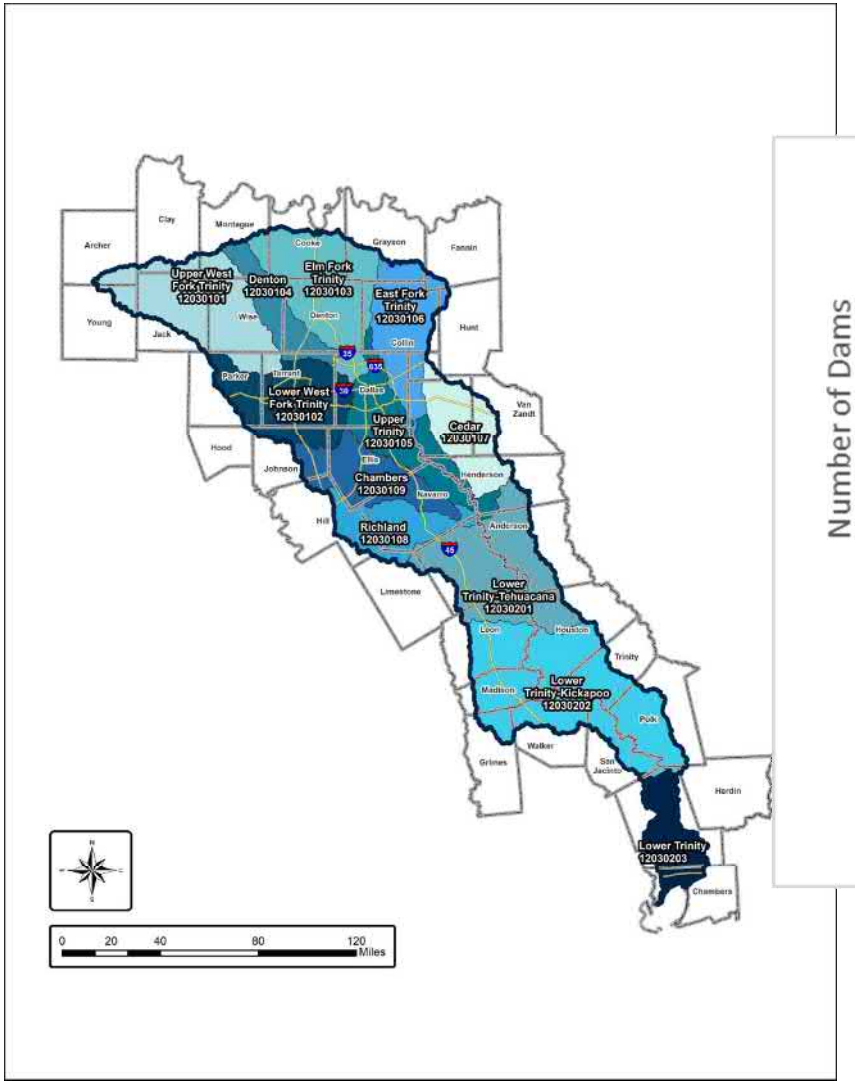
CONSULTANT UPDATE

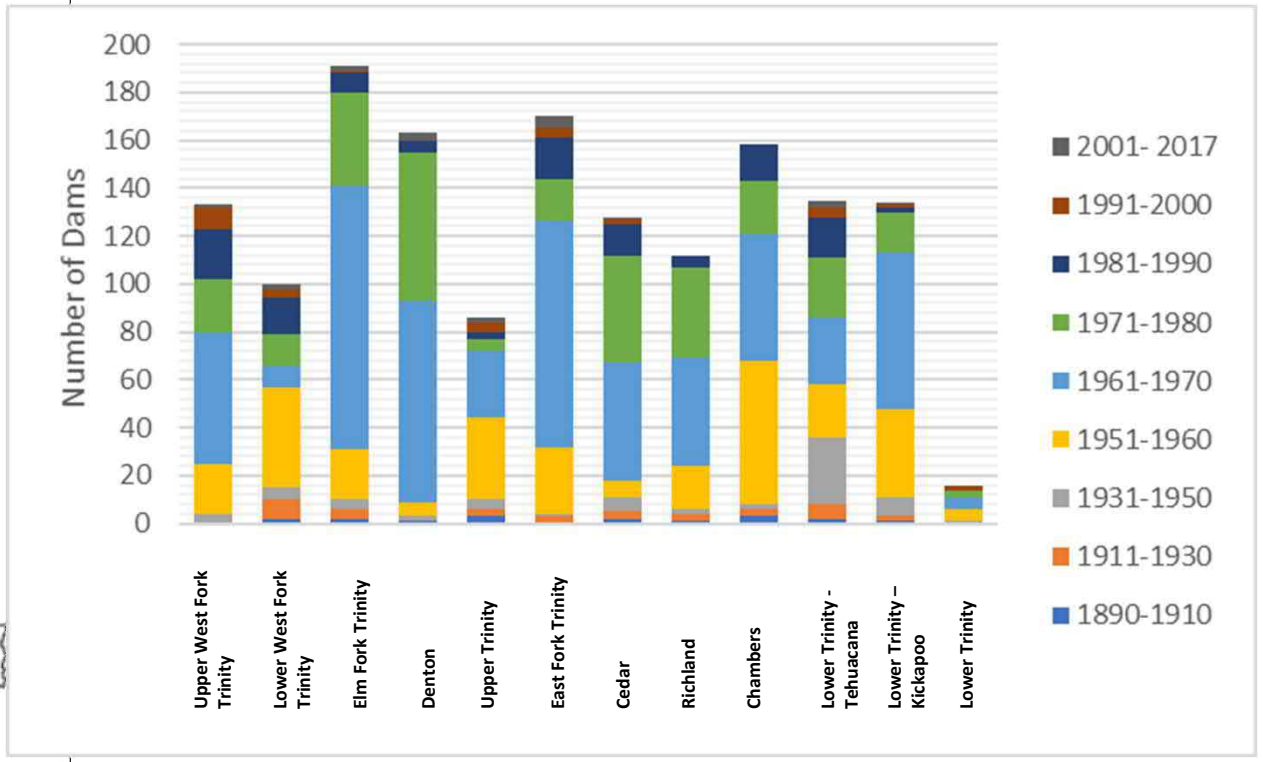
- **Update on Chapter 1**
- **Update on Chapter 2 Flood Risk Analysis**
  - Draft data gap map
  - Draft exposure and vulnerability overview
  - Approach to future conditions
  - Draft maps of current 100-yr and 500-yr floodplain maps
- **Chapter 3 Floodplain Management Practices and Goals**
  - Consider approval of goals
  - Discussion of potential floodplain management practices
  - Consider approval of recommending or adopting floodplain management practices
- **Chapter 4 Flood Mitigation Needs & Potentially Feasible Solutions**
  - Consider approval of process to identify potential FMEs, FMSs, and FMPs
- **Discussion on potential Ch. 8 Admin, Regulatory and Legislative Recommendations**

Ch. 1 Planning Area Description

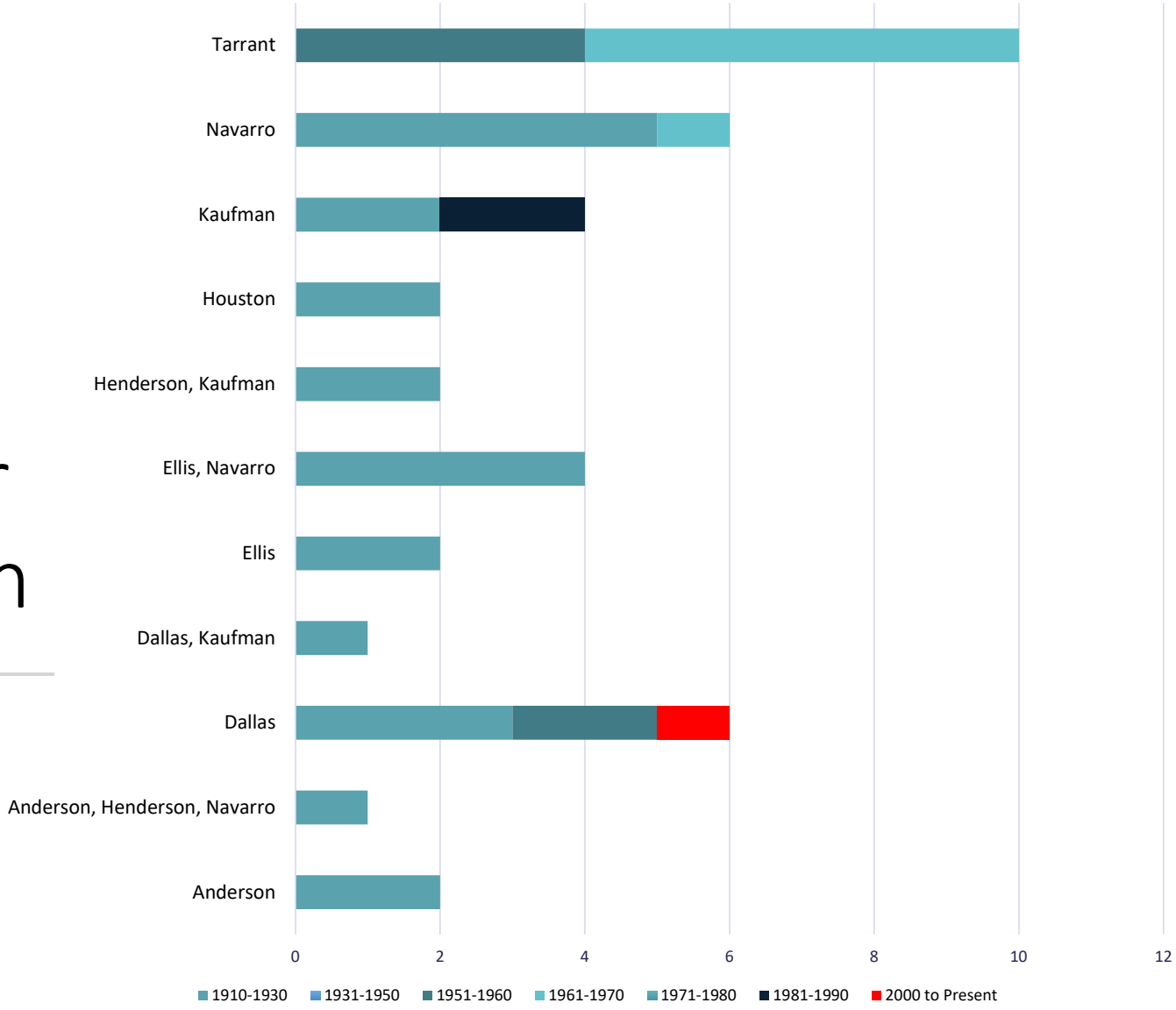
Consider Approval of Chapter 1

Dams by Year Built

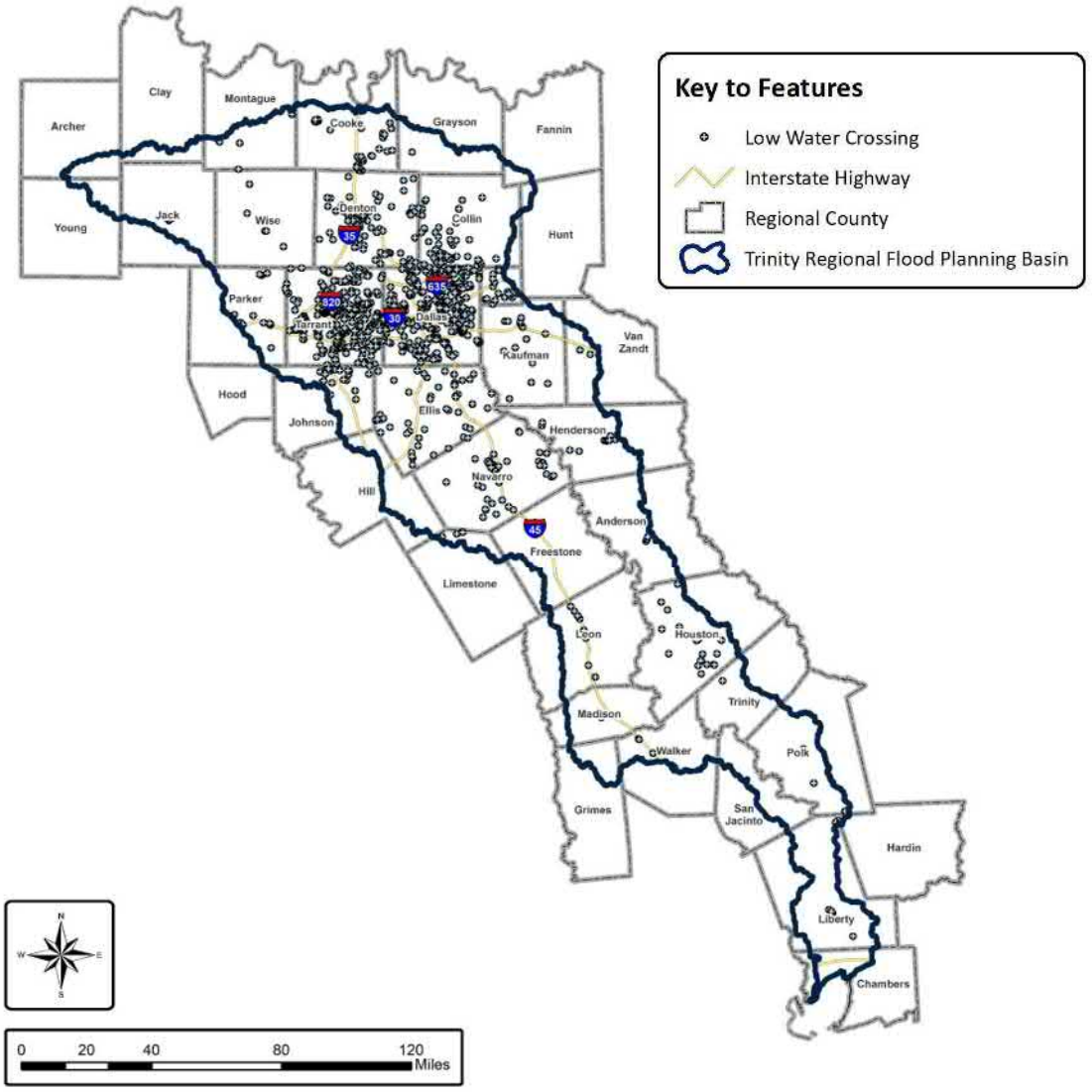




Levees by County by Year of Construction

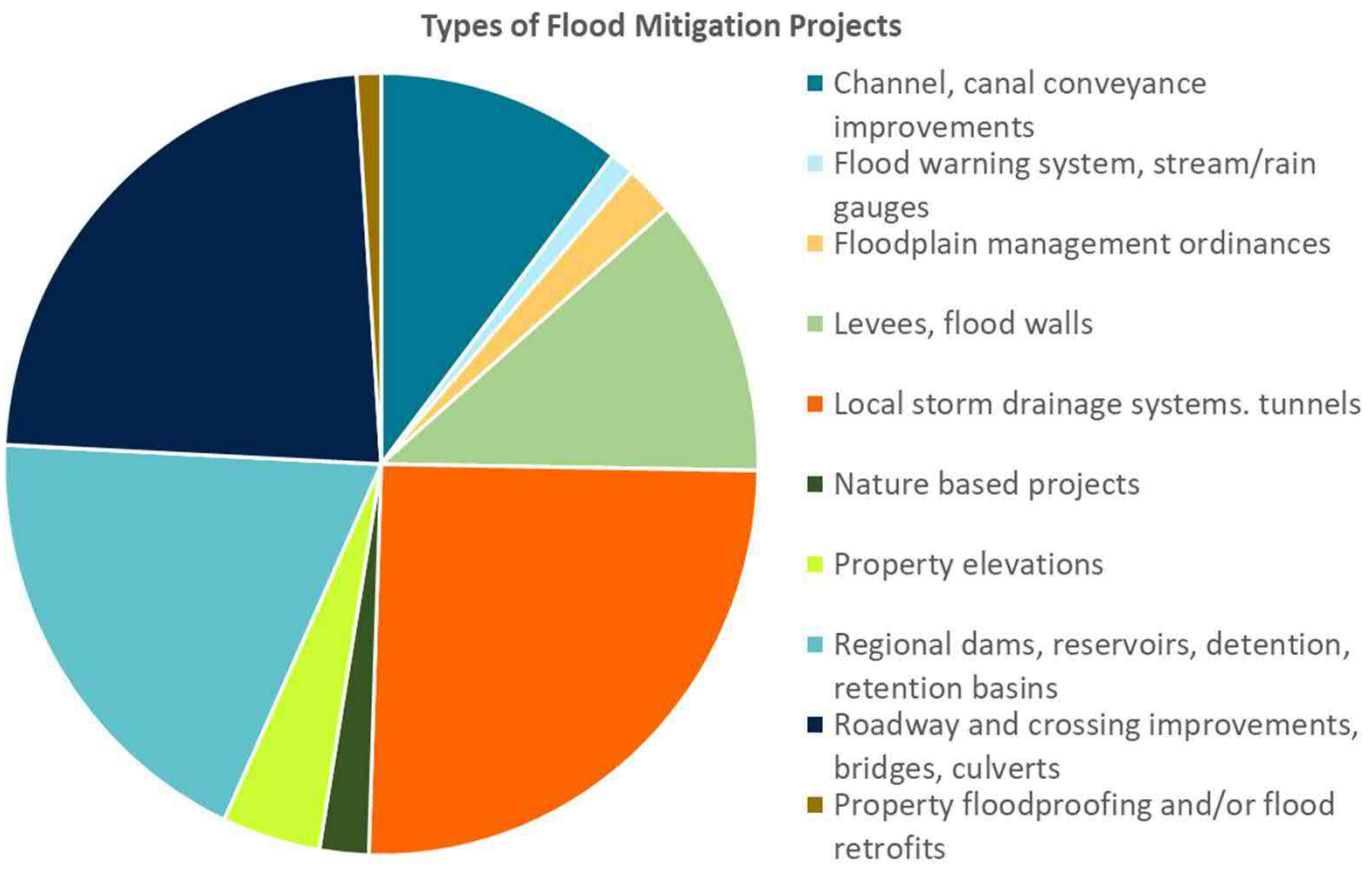


Low Water Crossings



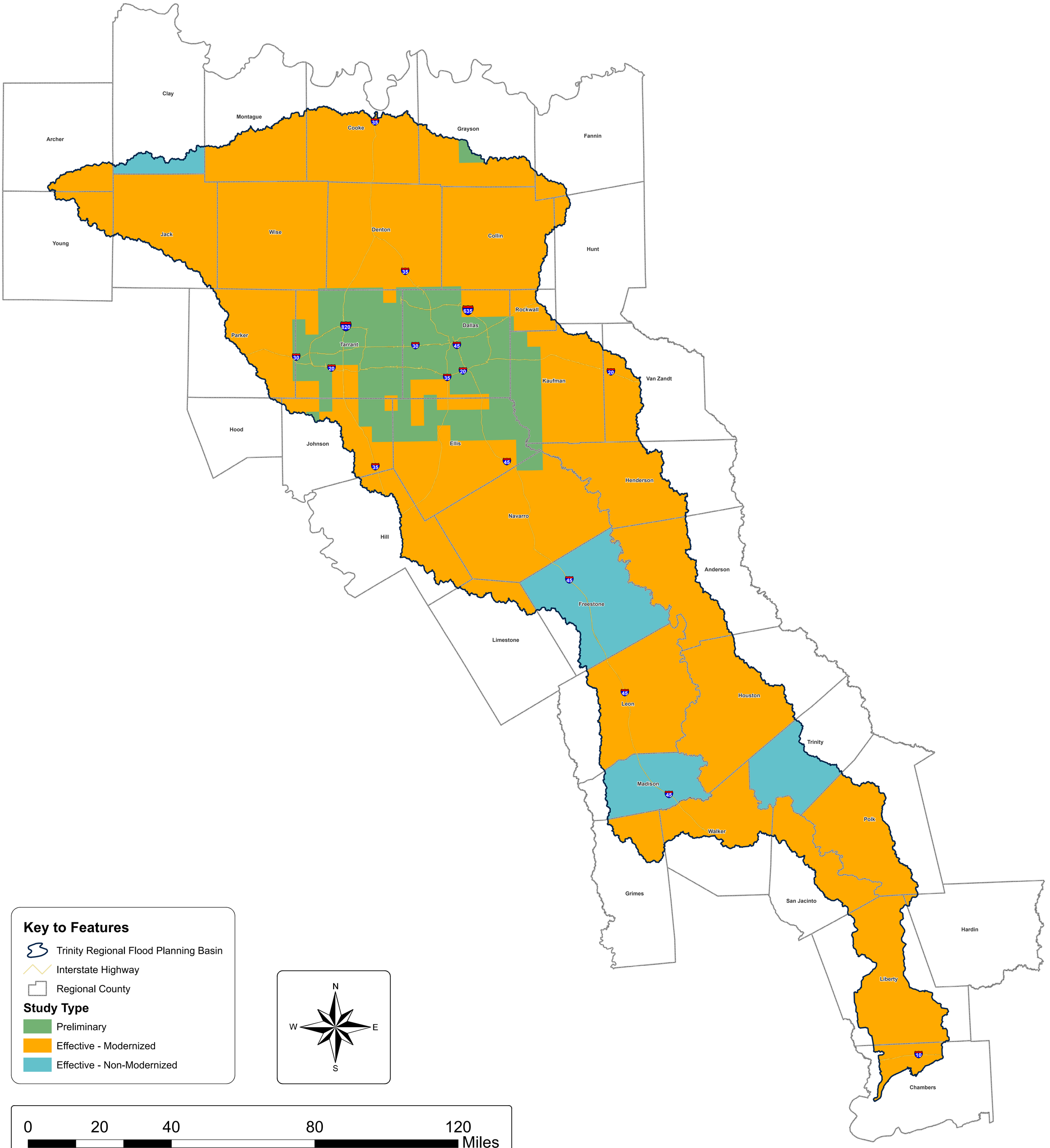
Flood Mitigation Projects

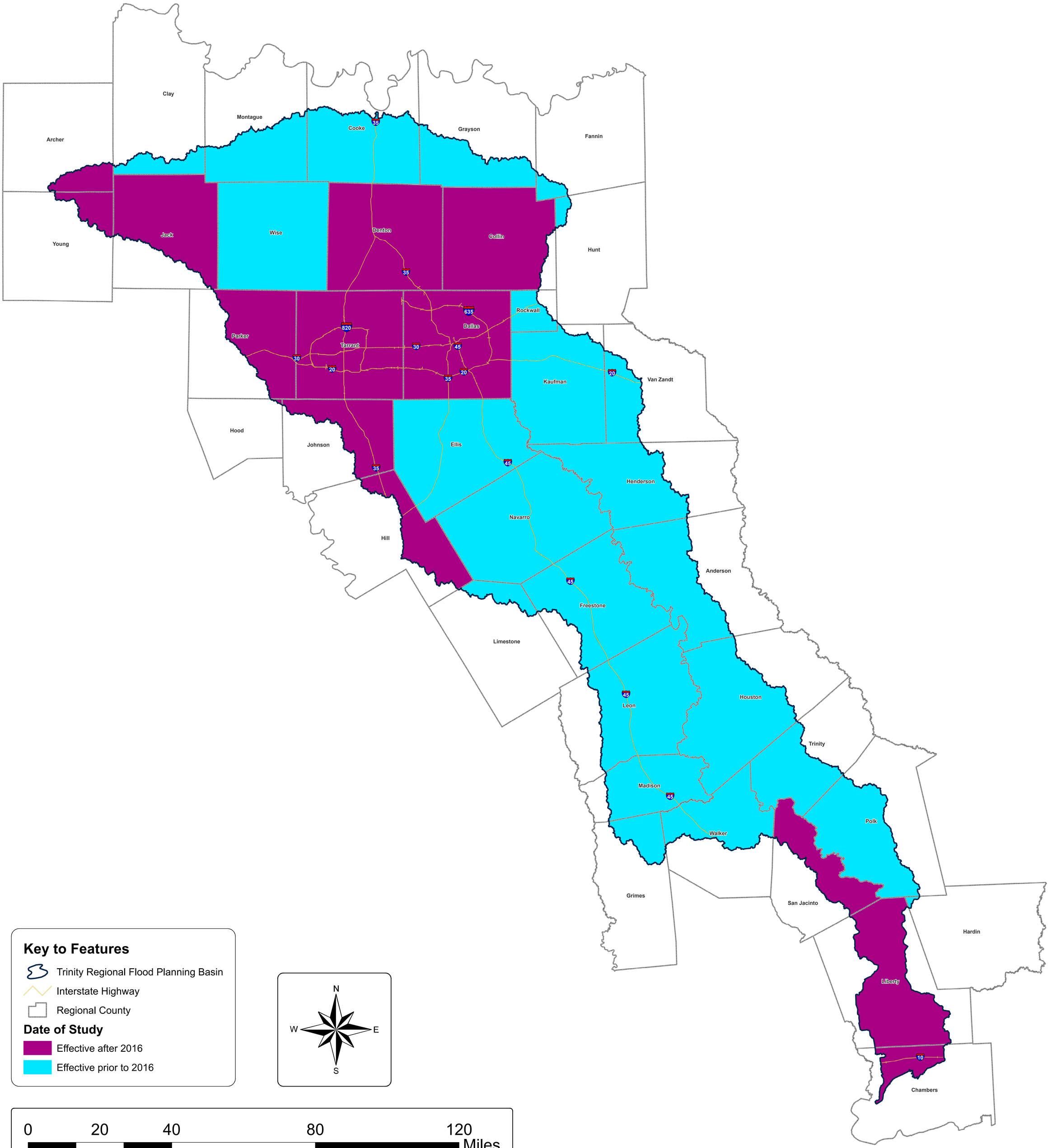
- Responses to Survey



Ch. 2 Flood Risk Assessment

- Existing Floodplain Mapping
- Data Gaps
- Exposure and Vulnerability Assessment
- Approach to Future Conditions


Clay
Montague
Cooke
Grayson
Fannin
Archer
Young
Jack
Wise
Denton
Collin
Hunt
Rockwall
Parker
Dallas
Tarrant
Kaufman
Van Zandt
Hood
Johnson
Ellis
Henderson
Navarro
Hill
Anderson
Freestone
Limestone
Leon
Houston
Trinity
Madison
Walker
Polk
Grimes
San Jacinto
Hardin
Liberty
Chambers
35
820
635
30
45
20
10
Key to Features
Trinity Regional Flood Planning Basin
Interstate Highway
Regional County
Study Type
Preliminary
Effective - Modernized
Effective - Non-Modernized
N
W
E
S
0
20
40
80
120
Miles



Key to Features

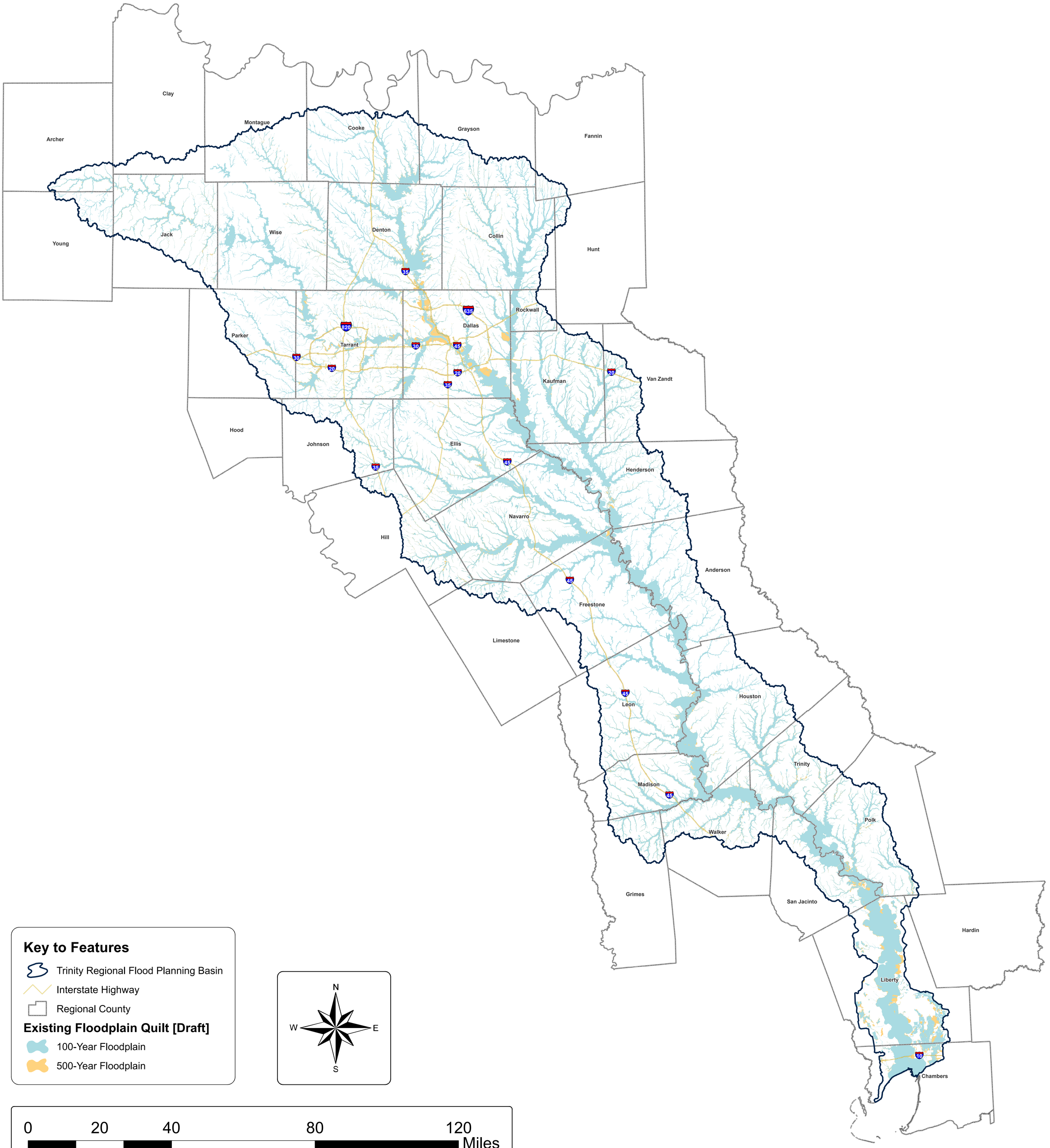
- Trinity Regional Flood Planning Basin
- Interstate Highway
- Regional County

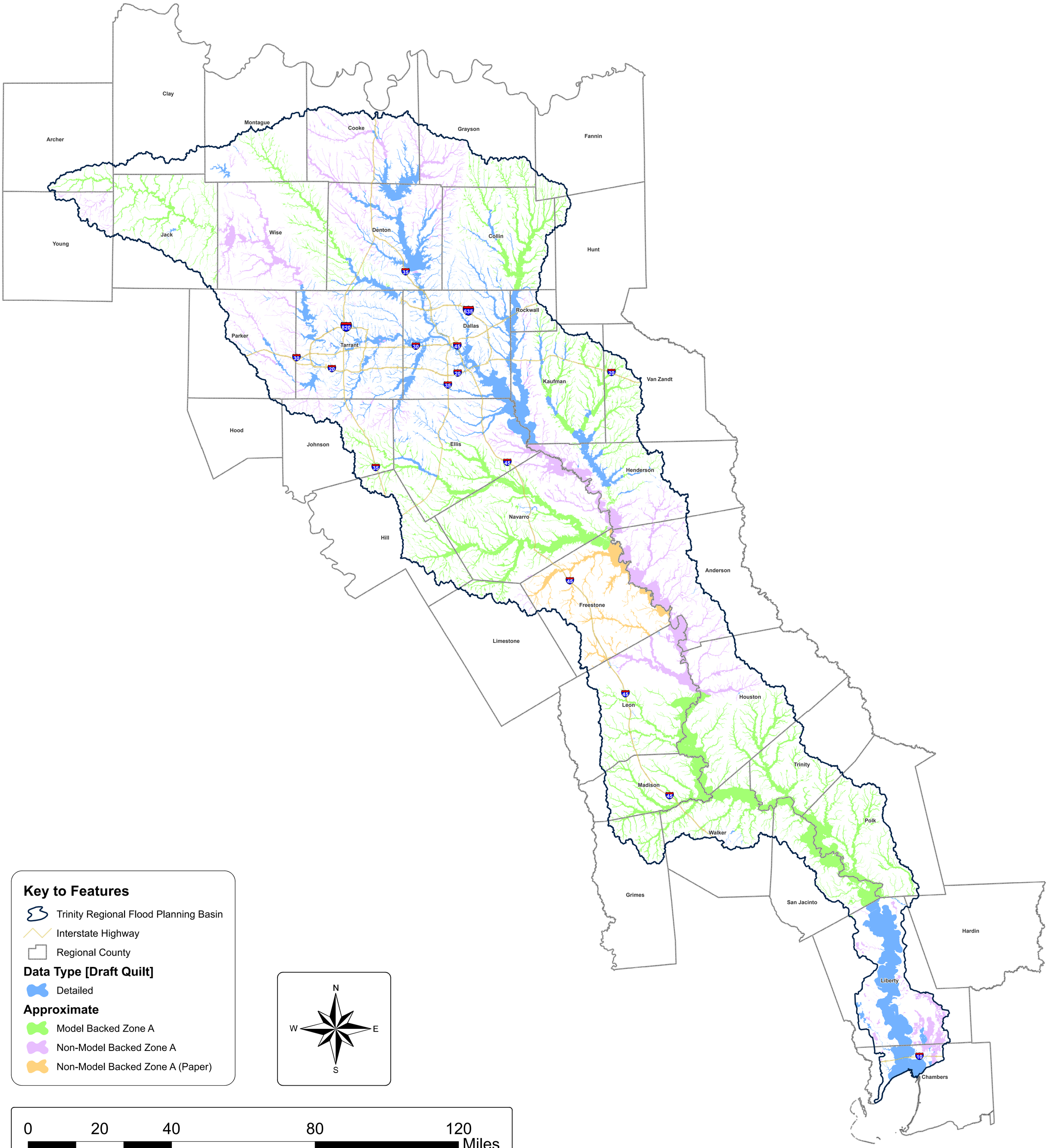
Date of Study

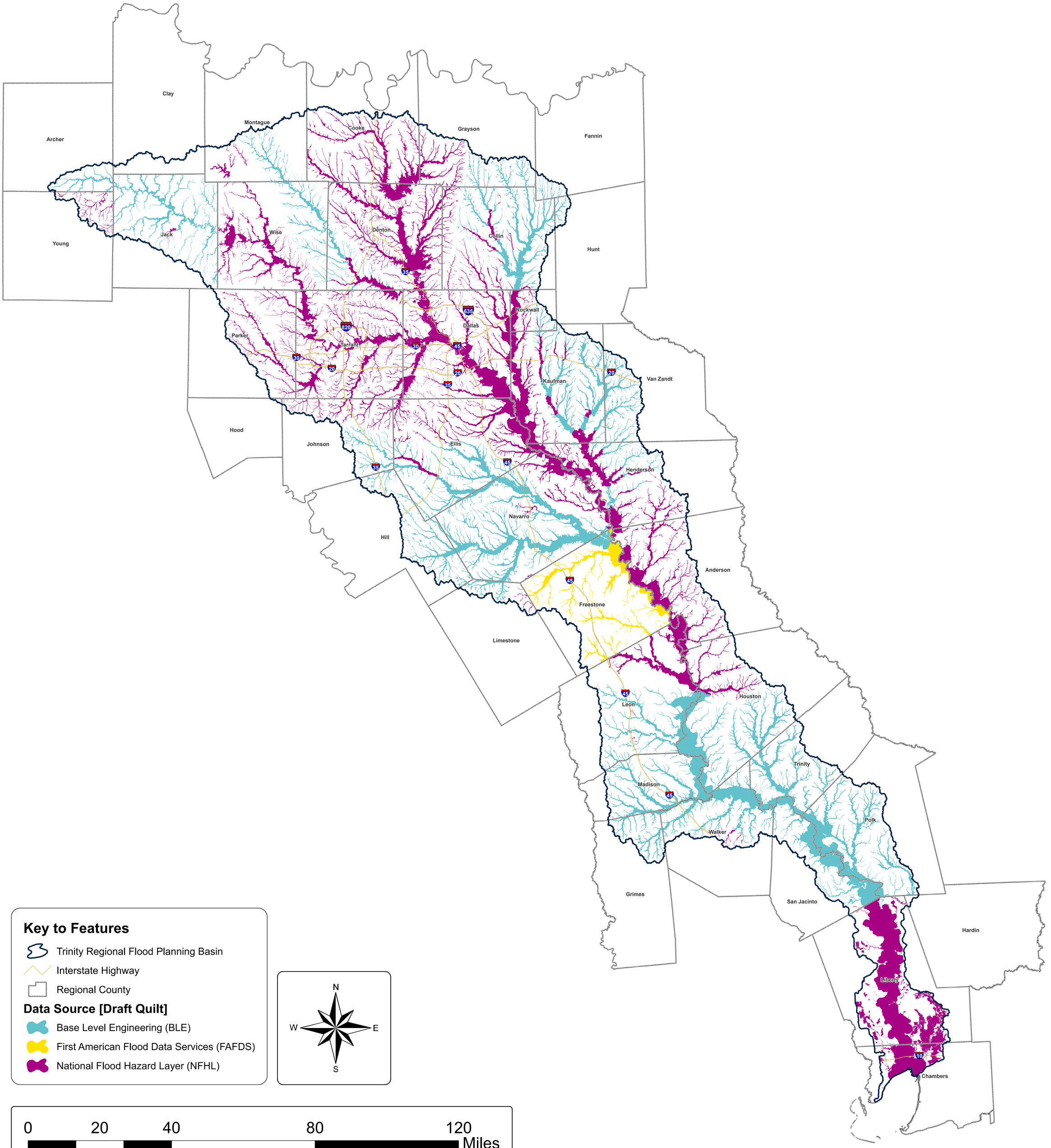
- Effective after 2016
- Effective prior to 2016

N
W E
S

0 20 40 80 120 Miles

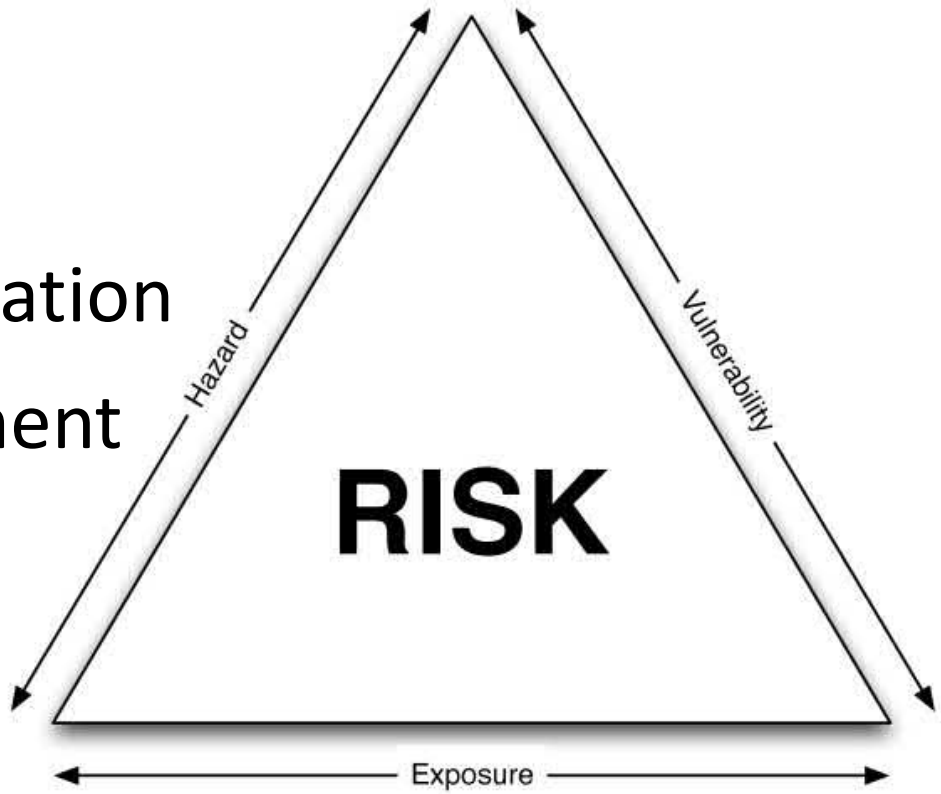

Clay
Archer
Montague
Cooke
Grayson
Fannin
Young
Jack
Wise
Denton
Collin
Hunt
Rockwall
Dallas
Parker
Tarrant
Kaufman
Van Zandt
Hood
Johnson
Ellis
Henderson
Navarro
Hill
Anderson
Freestone
Limestone
Leon
Houston
Trinity
Madison
Walker
Polk
Grimes
San Jacinto
Hardin
Liberty
Chambers
35
820
635
30
45
20
10
Key to Features
Trinity Regional Flood Planning Basin
Interstate Highway
Regional County
Existing Floodplain Quilt [Draft]
100-Year Floodplain
500-Year Floodplain
N
W
E
S
0
20
40
80
120
Miles


Clay
Archer
Montague
Cooke
Grayson
Fannin
Young
Jack
Wise
Denton
Collin
Hunt
Rockwall
Parker
Tarrant
Dallas
Kaufman
Van Zandt
Hood
Johnson
Ellis
Henderson
Navarro
Hill
Anderson
Freestone
Limestone
Leon
Houston
Madison
Trinity
Walker
Polk
Grimes
San Jacinto
Liberty
Hardin
Chambers
Key to Features
Trinity Regional Flood Planning Basin
Interstate Highway
Regional County
Data Type [Draft Quilt]
Detailed
Approximate
Model Backed Zone A
Non-Model Backed Zone A
Non-Model Backed Zone A (Paper)
N
W
E
S
0
20
40
80
120
Miles


Clay
Montague
Cooke
Grayson
Fannin
Archer
Young
Jack
Wise
Denton
Collin
Hunt
Rockwall
Parker
Tarrant
Dallas
Kaufman
Van Zandt
Hood
Johnson
Ellis
Henderson
Navarro
Hill
Anderson
Freestone
Limestone
Leon
Houston
Madison
Trinity
Walker
Polk
Grimes
San Jacinto
Hardin
Liberty
Chambers
Key to Features
Trinity Regional Flood Planning Basin
Interstate Highway
Regional County
Data Source [Draft Quilt]
Base Level Engineering (BLE)
First American Flood Data Services (FAFDS)
National Flood Hazard Layer (NFHL)
N
W
E
S
0
20
40
80
120
Miles

Task 2 - Purpose

- Flood Risk Mapping
- Flood Exposure Estimation
- Vulnerability Assessment

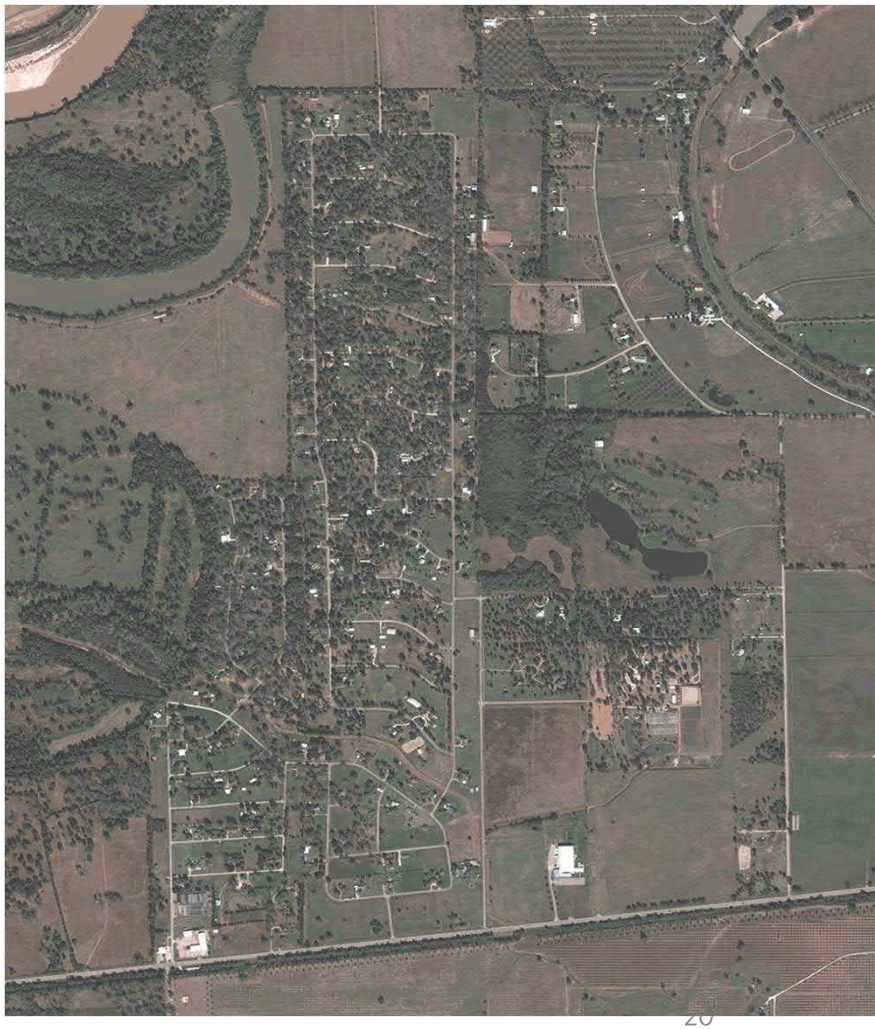


Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

Flood Mapping Data Sources

- Engineering Modeling
- Historic Flooding Sources



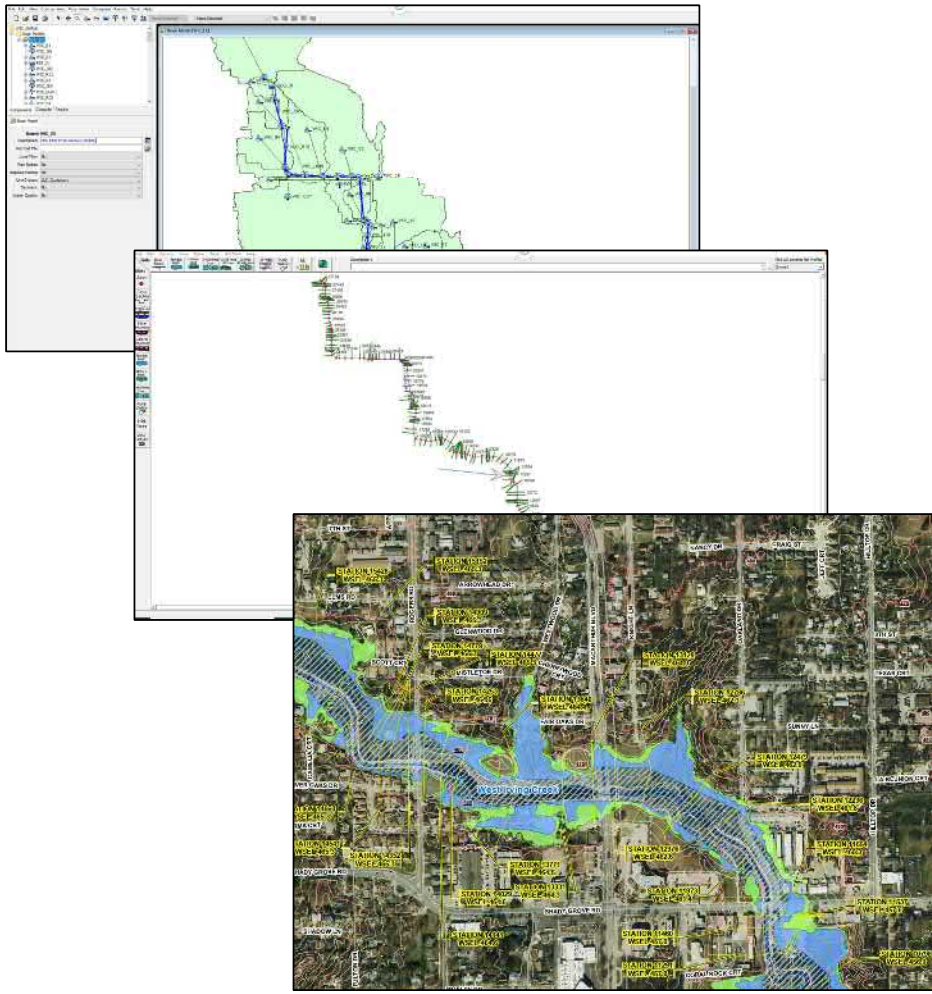
Source - TWDB

EXISTING FLOOD HAZARD

Task 2A – Existing Conditions Flood Risk Assessment

How Riverine Mapping is Generated

- Hydrologic Modeling
  - Collected runoff calculated from rainfall and basin properties
- Hydraulic Modeling
  - Flood elevations generated from calculated runoff from hydrologic model and river/creek features (geometry and infrastructure)
- Floodplain Mapping
  - Floodplain mapping developed from flood elevations plotted onto topography/surface terrain

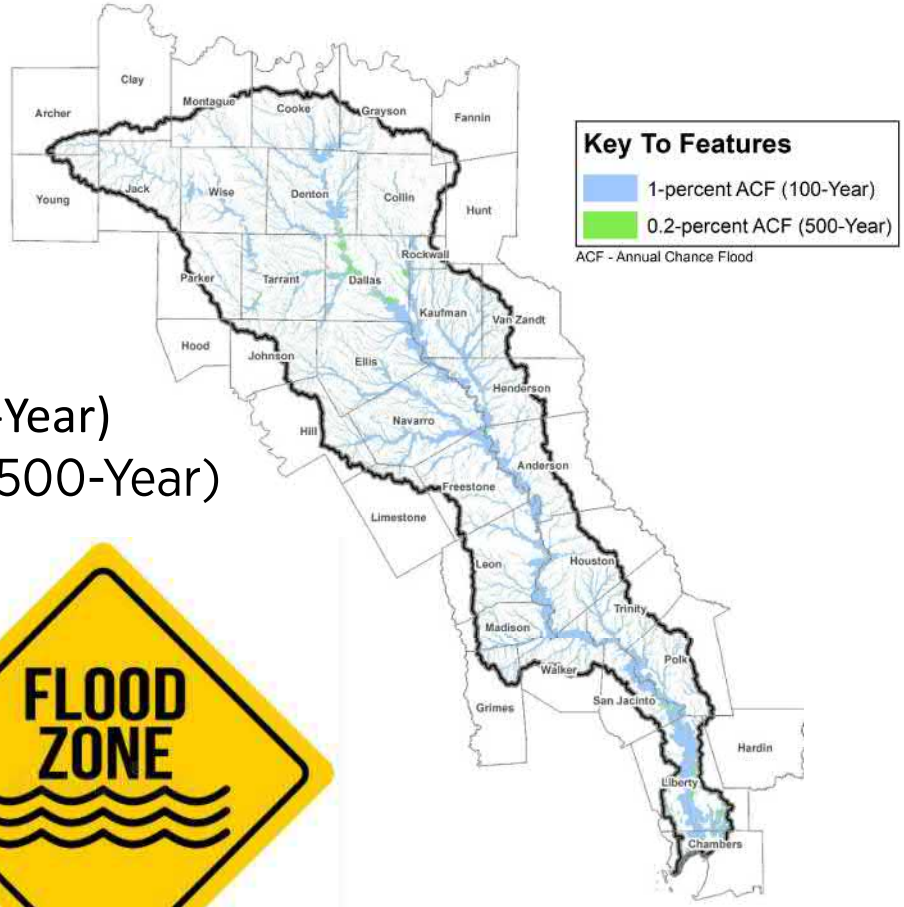


Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

FLOOD EVENT TYPES

- 1-percent-annual chance flood (100-Year)
- 0.2-percent-annual chance flood (500-Year)



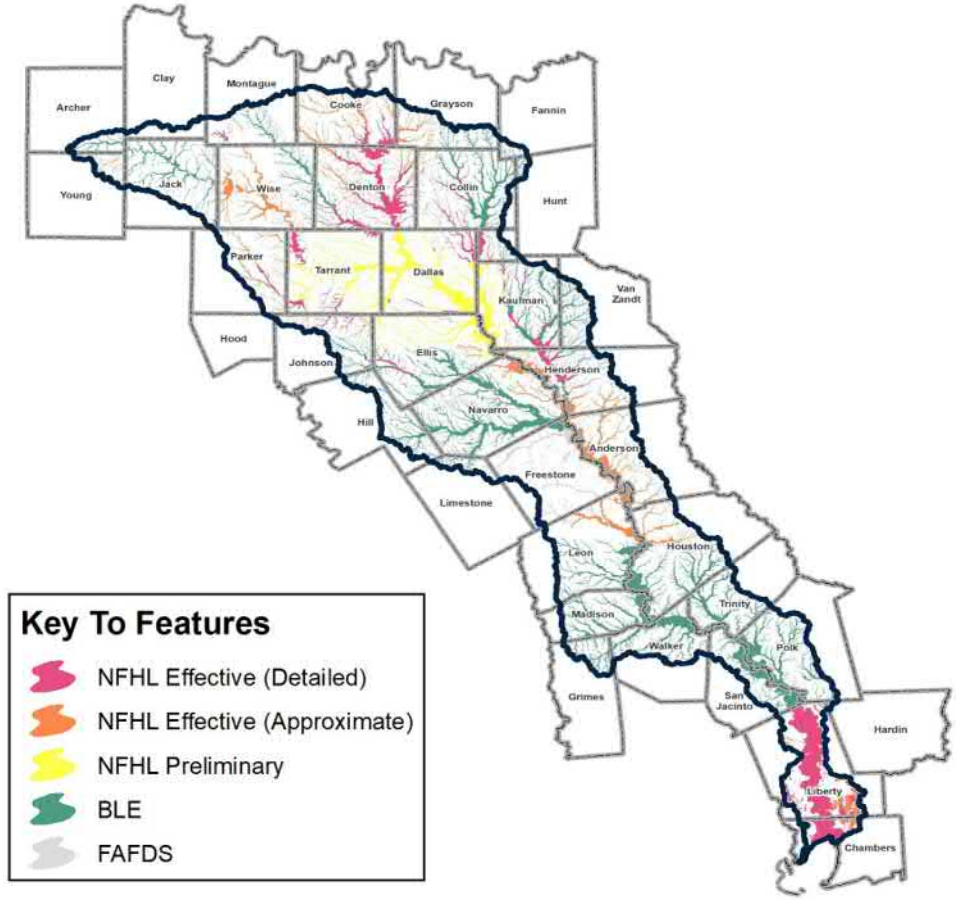
Source - TWDB

Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

DATA SOURCES

- TWDB Flood Quilt
  - FEMA
  - TWDB
  - FAFDS
- USACE or other Federal Data
- Regional Stakeholder Data
- Community Data
- FATHOM



Source - TWDB

Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

DATA SOURCES HIERARCHY

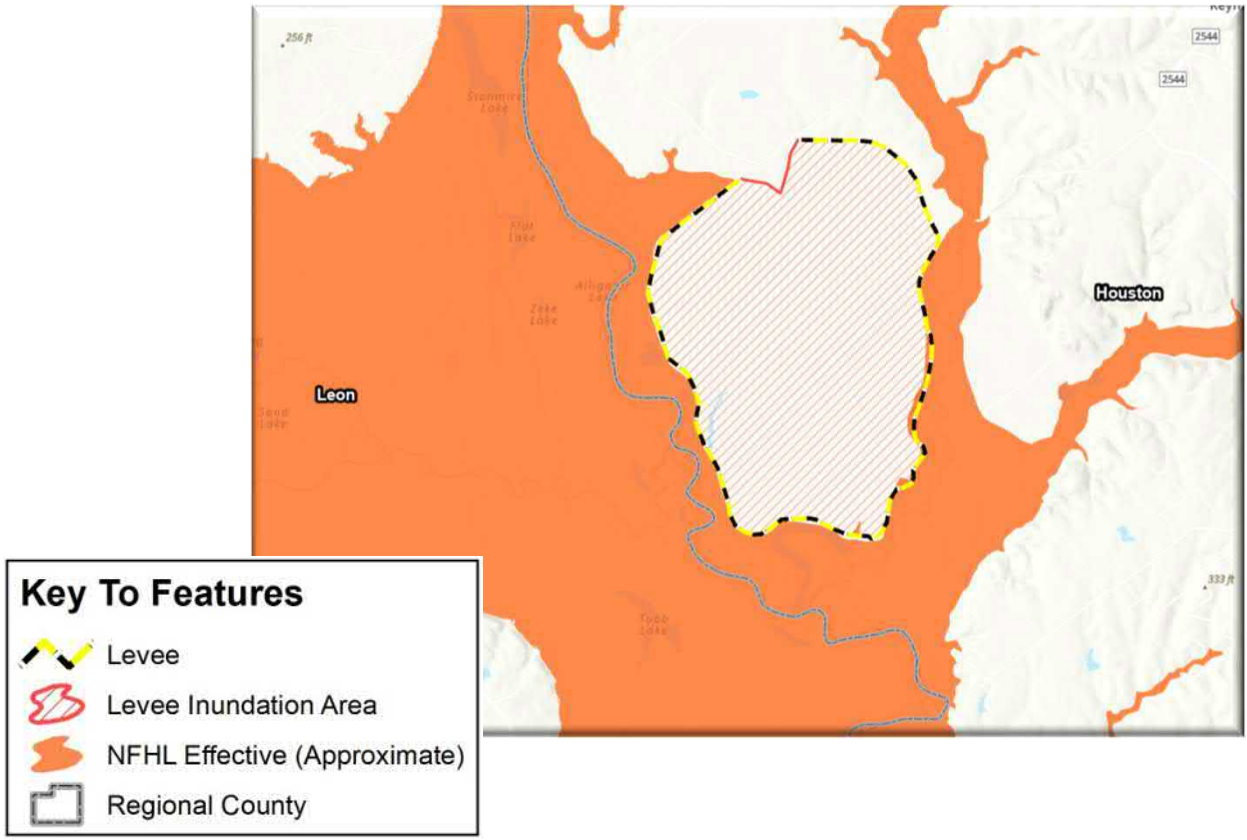
RANKING	DATA CATEGORY	SOURCE
1	NFHL Pending	FEMA
2	NFHL Preliminary	FEMA
3	NHFL Effective (Detailed Study areas only)	FEMA
4	BLE	FEMA
		TWDB
5	NFHL Effective - (Approximate Study areas only)	FEMA
6	FAFDS	First American Flood Data Surfaces
		CoreLogic
	Oher Potential Data Sources	FATHOM (4.5 to 6.5 Ranking)
		USACE or other Federal Data (0.5 to 4.5 Ranking)
		Regional or Local Community Data (0.5 to 6.5 Ranking)

Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

FLOOD TYPE

- Riverine
- Coastal
- Dams and Levee

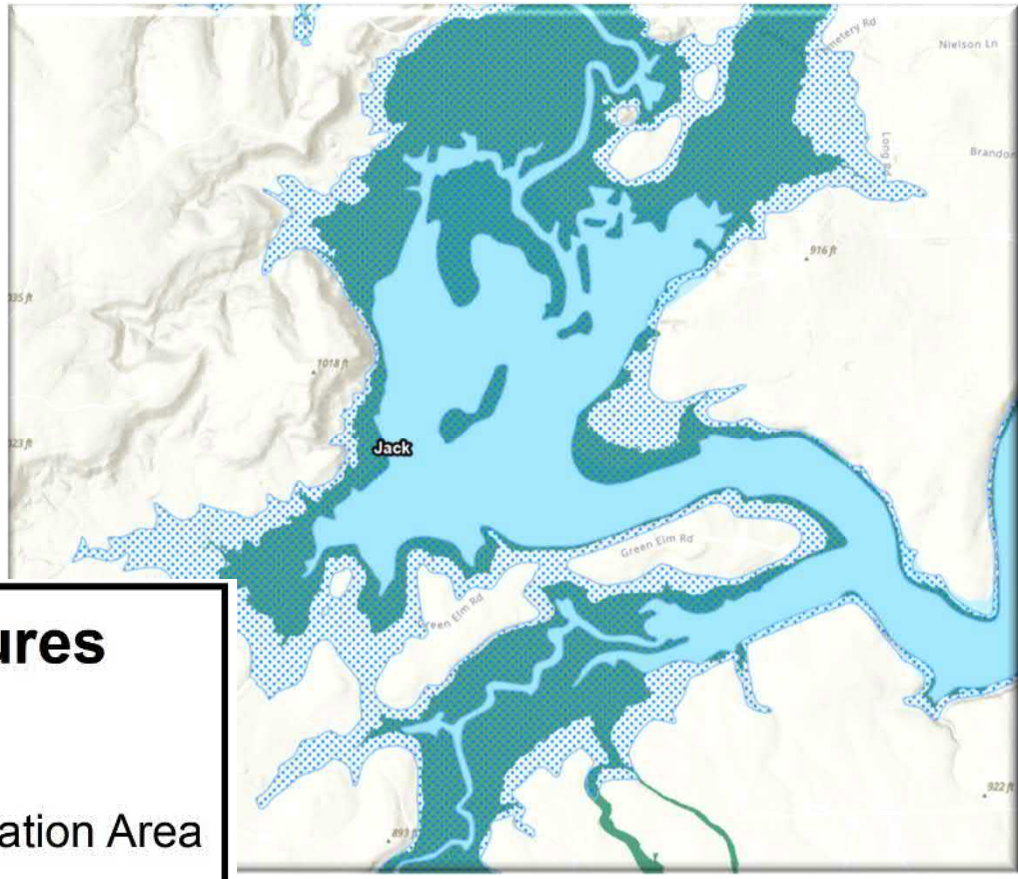


Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

FLOOD TYPE

- Riverine
- Coastal
- Dams and Levee



Key To Features

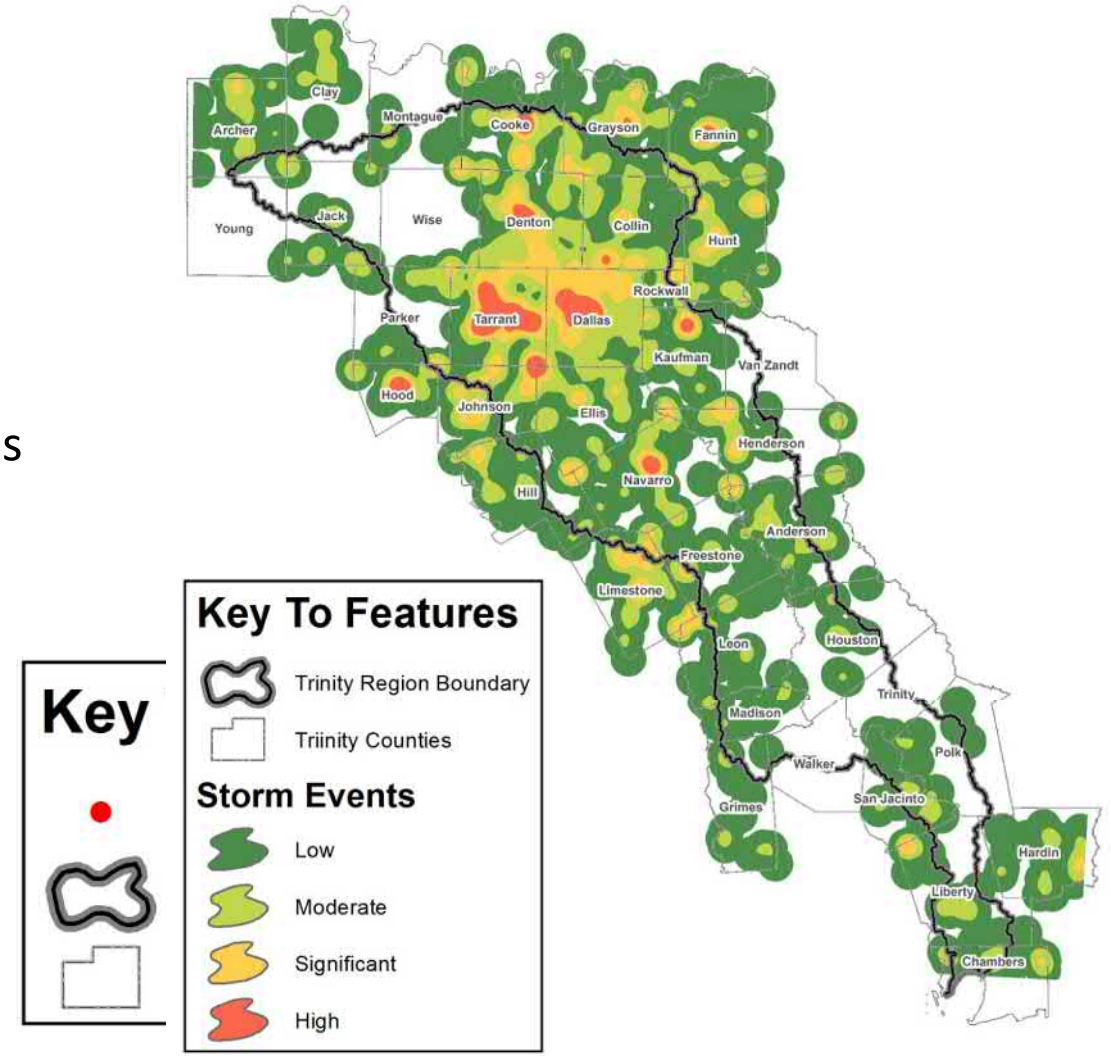
- Lake
- Dam Inundation Area
- BLE Mapping

Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

FLOOD TYPE

- Riverine
- Coastal
- Dams and Levee
- Possible Flood-prone Areas

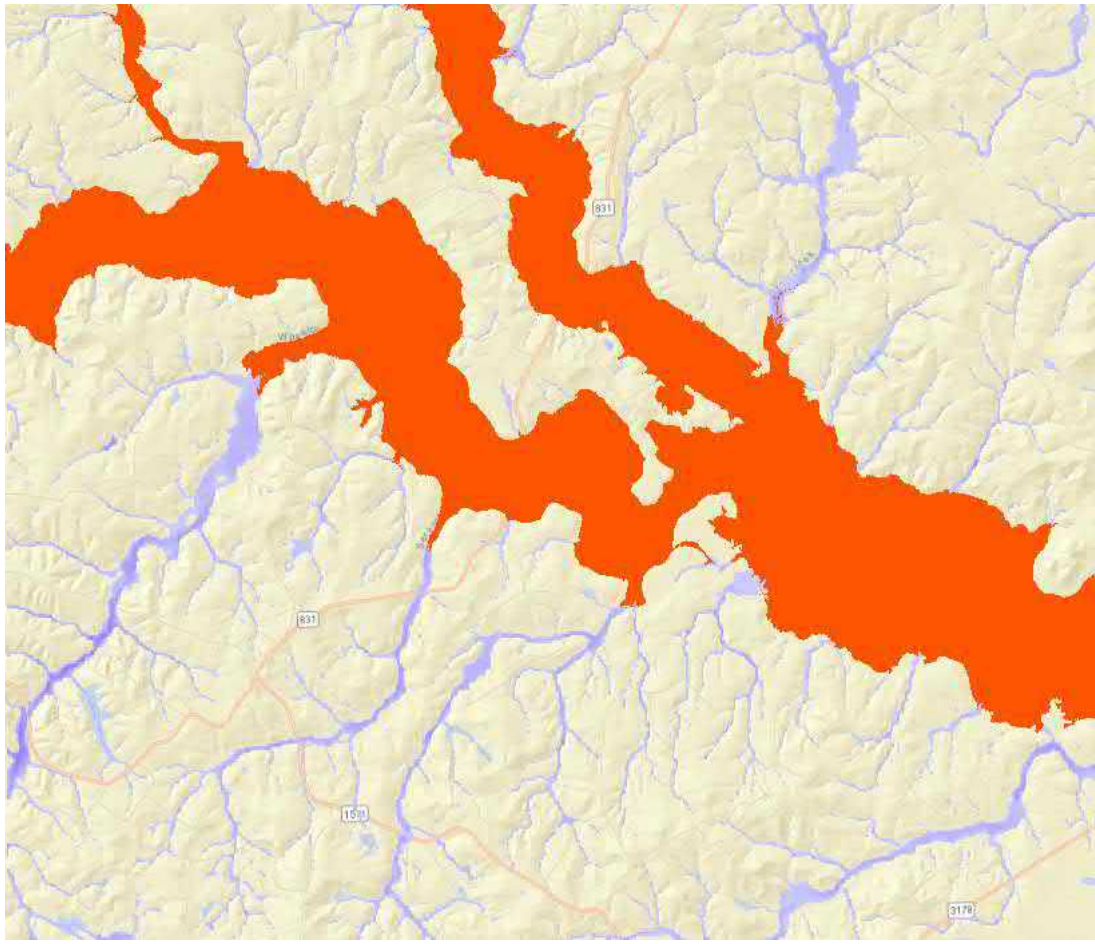


Task 2A – Existing Conditions Flood Risk Assessment

EXISTING FLOOD HAZARD

FLOOD TYPE

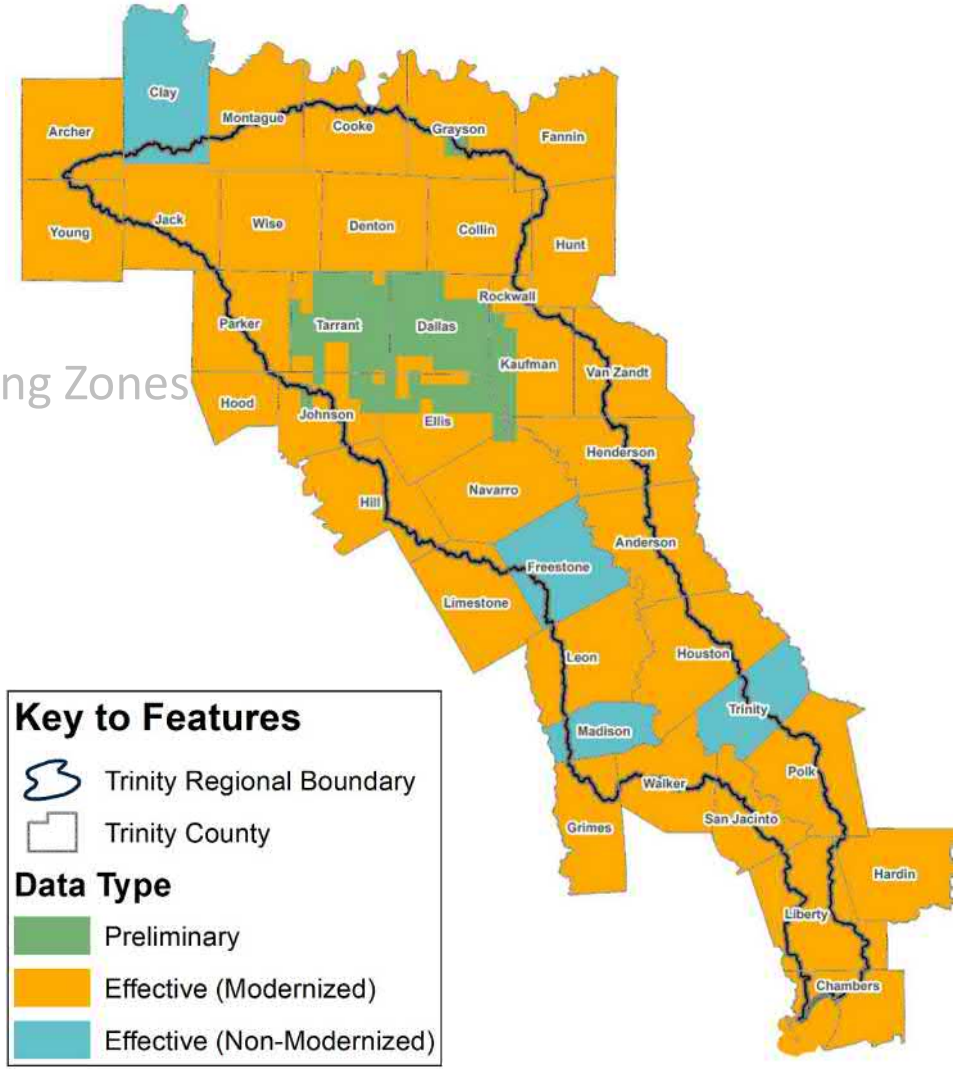
- Riverine
- Coastal
- Dams and Levee
- Possible Flood-prone Areas
- Pluvial/Urban flooding



Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

- Dam Mapping Areas
- Levee Mapping Areas
- Community Identified Urban Flooding Zones
- Historic Flood Event Hotspots
- Non-Modernized FEMA Counties

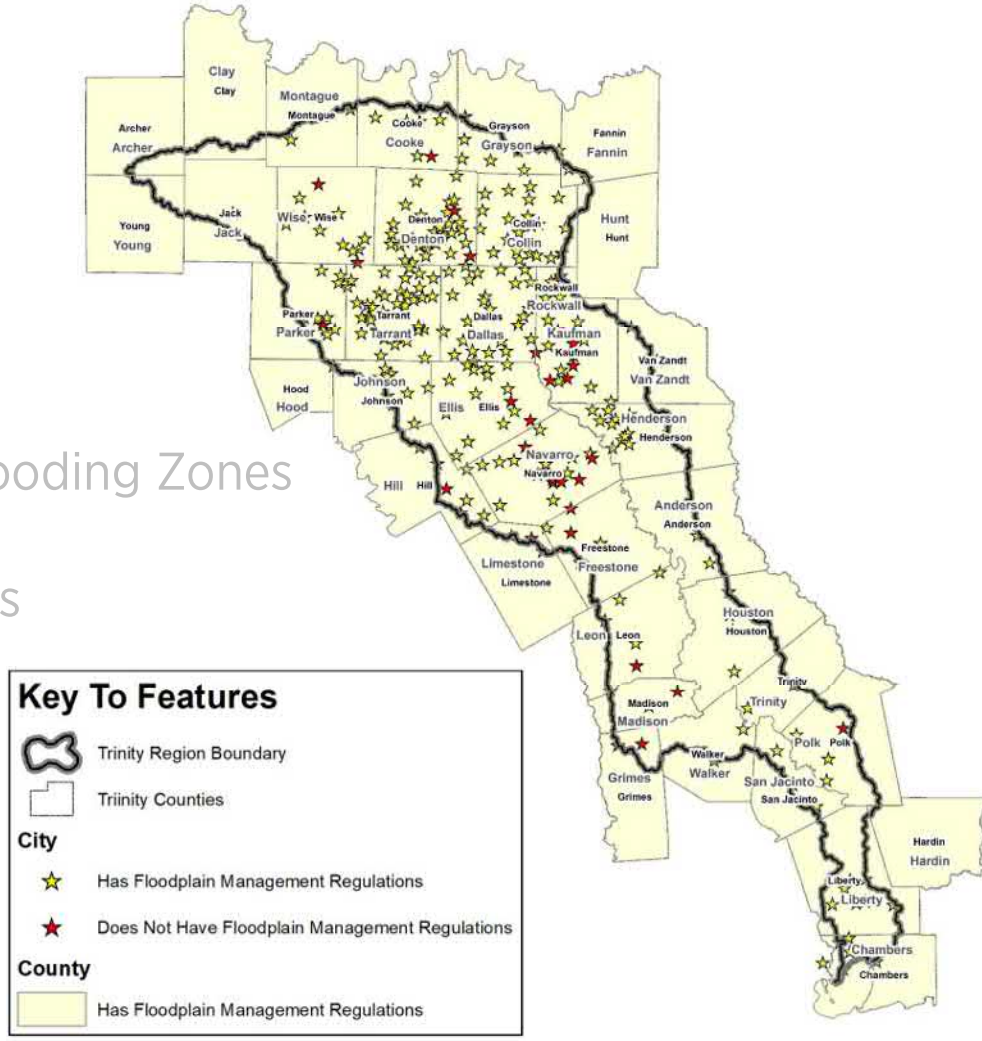


Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

- Dam Mapping Areas
- Levee Mapping Areas
- Community Identified Urban Flooding Zones
- Historic Flood Event Hotspots
- Non-Modernized FEMA Counties
- Communities with no FMRs

FMR – Floodplain Management Regulations



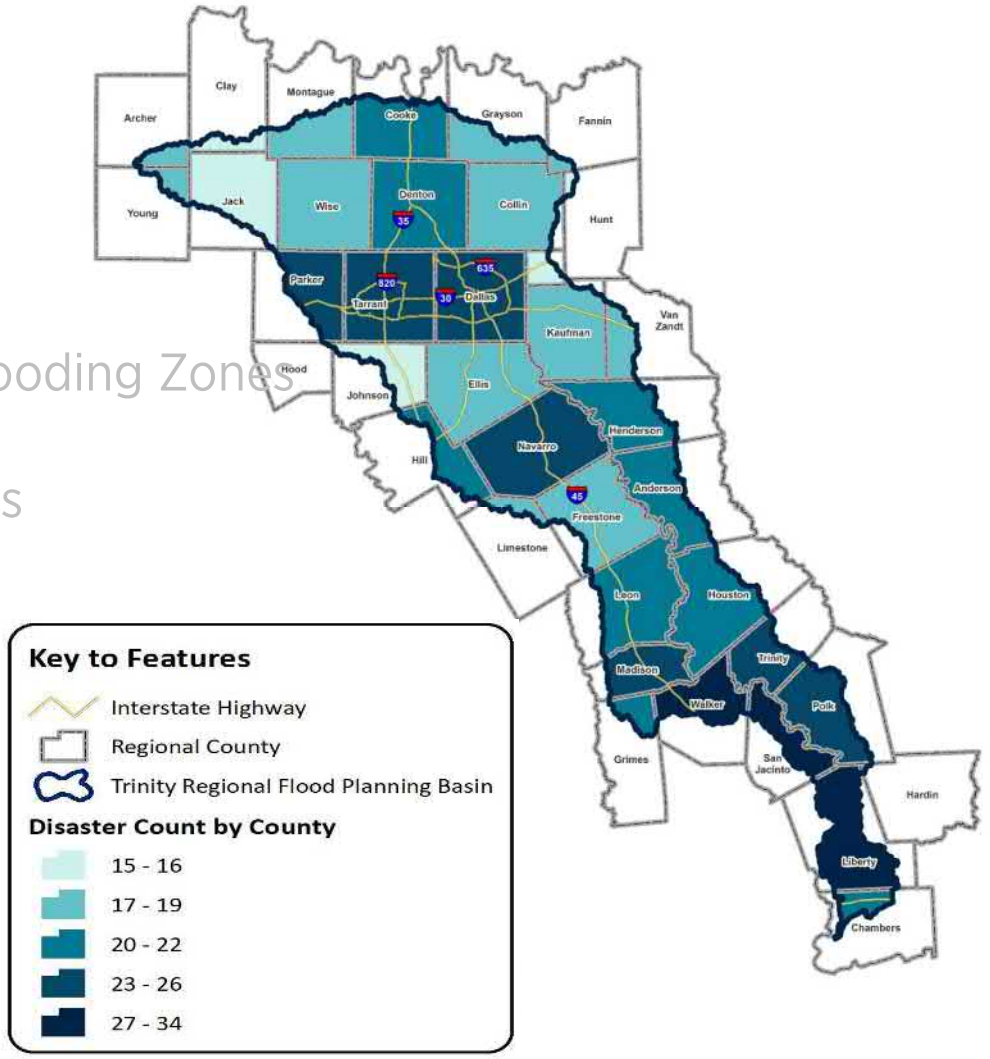
Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

- Dam Mapping Areas
- Levee Mapping Areas
- Community Identified Urban Flooding Zones
- Historic Flood Event Hotspots
- Non-Modernized FEMA Counties
- Communities with no FMRs

FMR – Floodplain Management Regulations

- Disaster Declarations



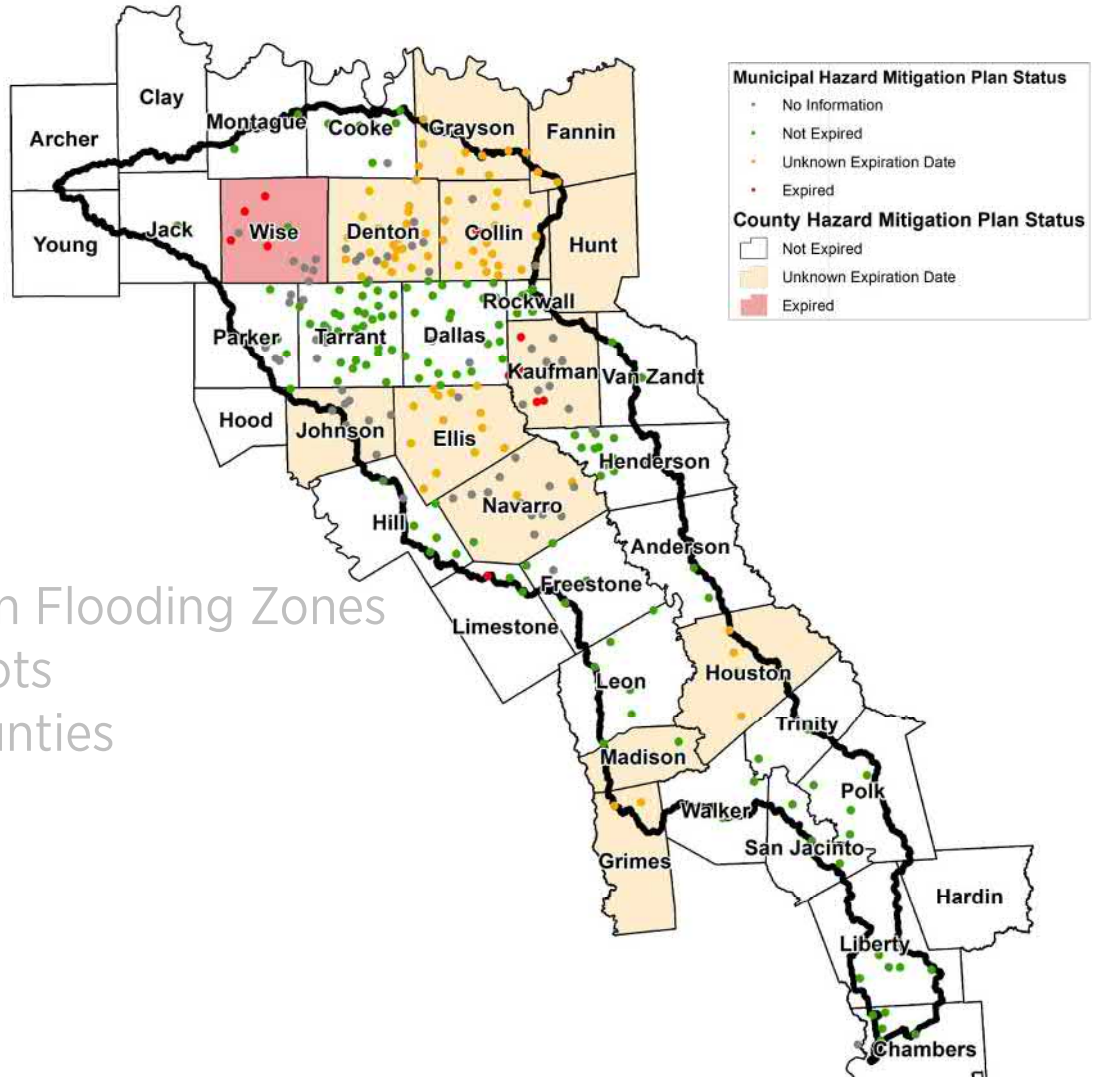
Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

- Dam Mapping Areas
- Levee Mapping Areas
- Community Identified Urban Flooding Zones
- Historic Flood Event Hotspots
- Non-Modernized FEMA Counties
- Communities with no FMRs

FMR – Floodplain Management Regulations

- Disaster Declarations
- Communities with no HMPs



Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

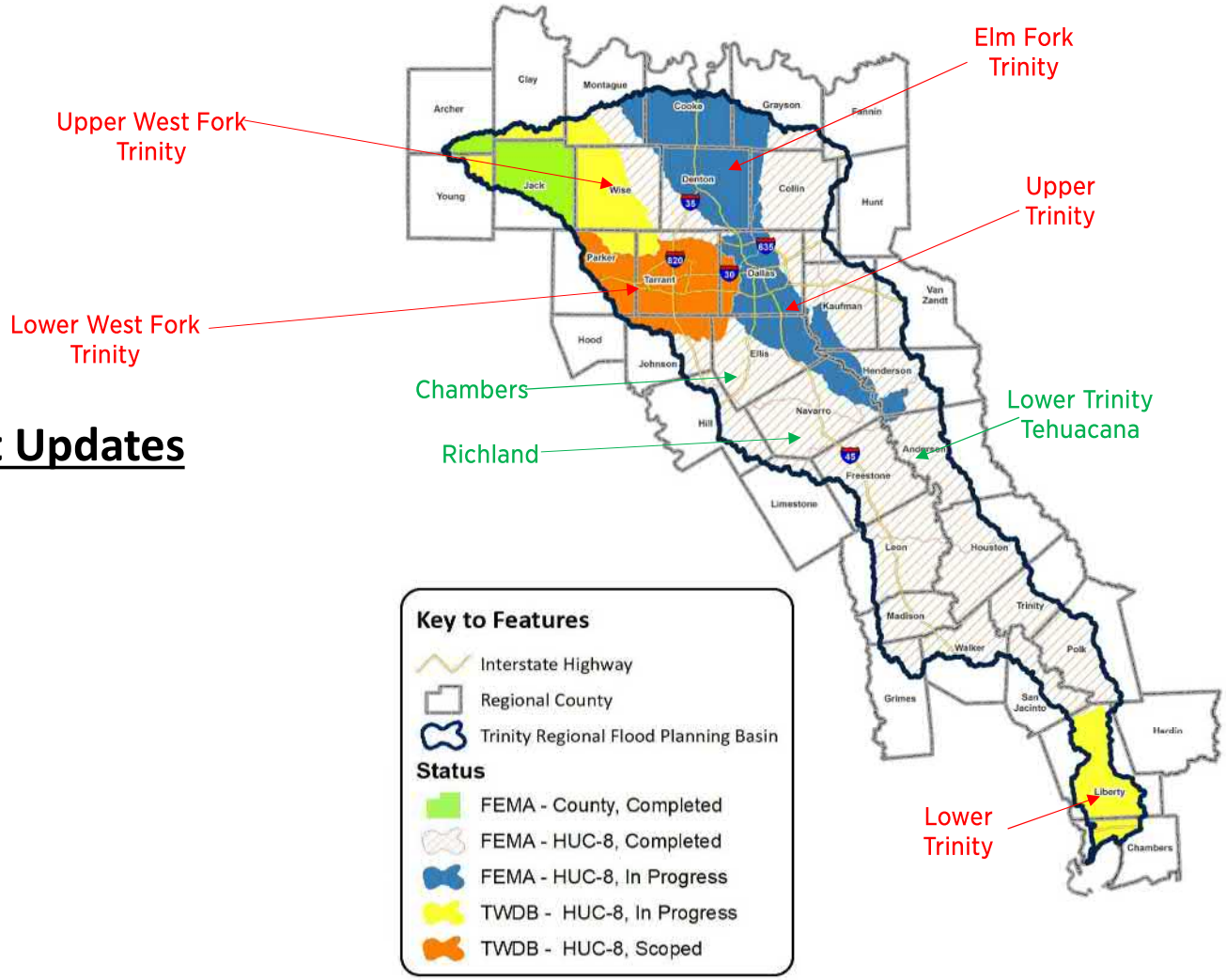
Changes in Physical, Climate, and Engineering Methodologies since Date of Effective Analysis (PCE Factors)
Outdated Modeling Methodology
Major Change in Discharges
Signigicant Land Use Change
Addition/Removal Major Flood Control Structures
Addition/Removal Hydraulic Structures
Availability of better Topography
Use of rural regression equation in Urban Areas
New Regresssion Equations
Significant Storms with High Water Marks

EXISTING FLOOD HAZARD

Task 2A – Existing Conditions Flood Risk Assessment

Existing Flood Quilt Updates

- BLE
- FATHOM



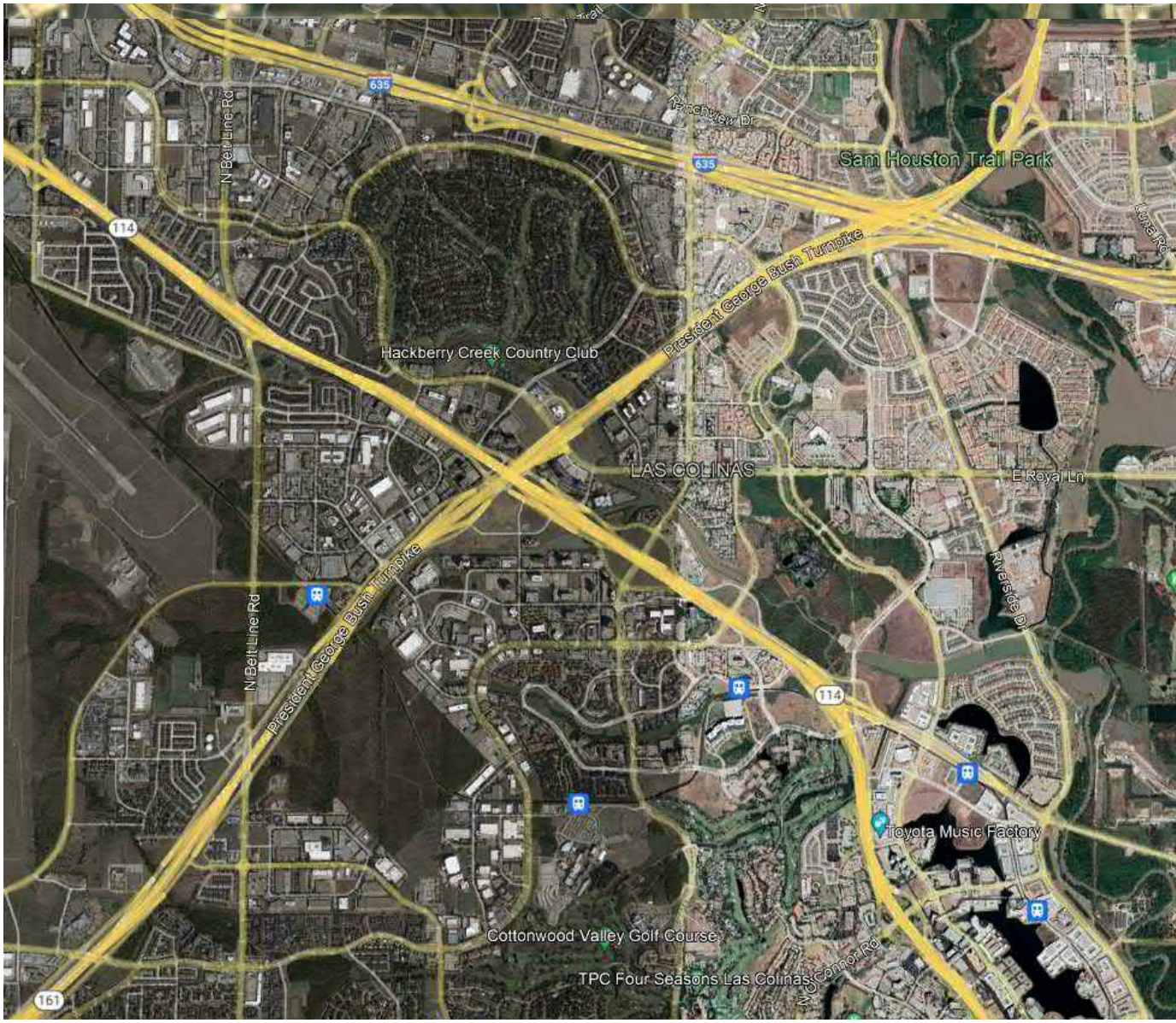
Task 2A – Existing Conditions Flood Risk Assessment

DATA GAPS

DATA GAPS

Hackberry Creek Watershed

1985 - 2020

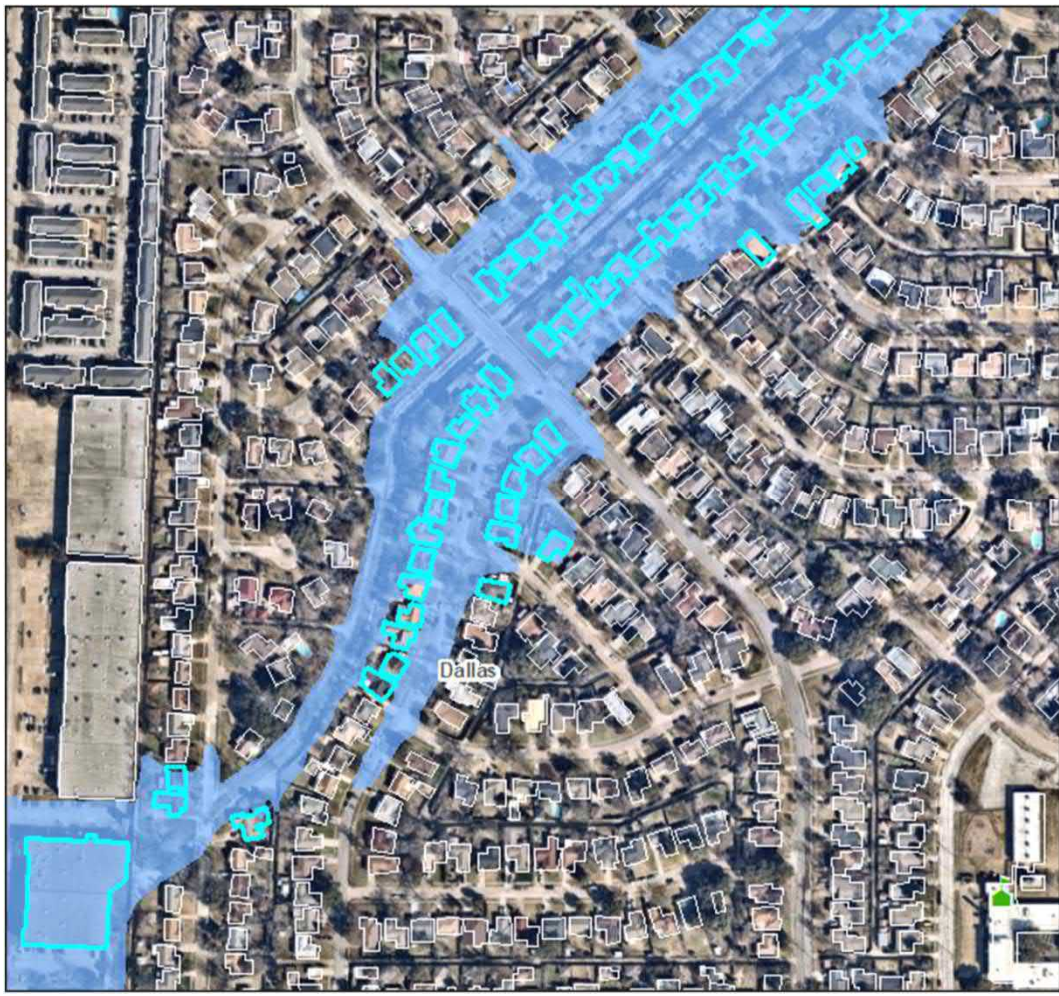


Task 2A – Existing Conditions Flood Risk Assessment

EXPOSURE

INVENTORY

- Buildings
- Population
- Critical Facilities
- Utilities
- Agriculture

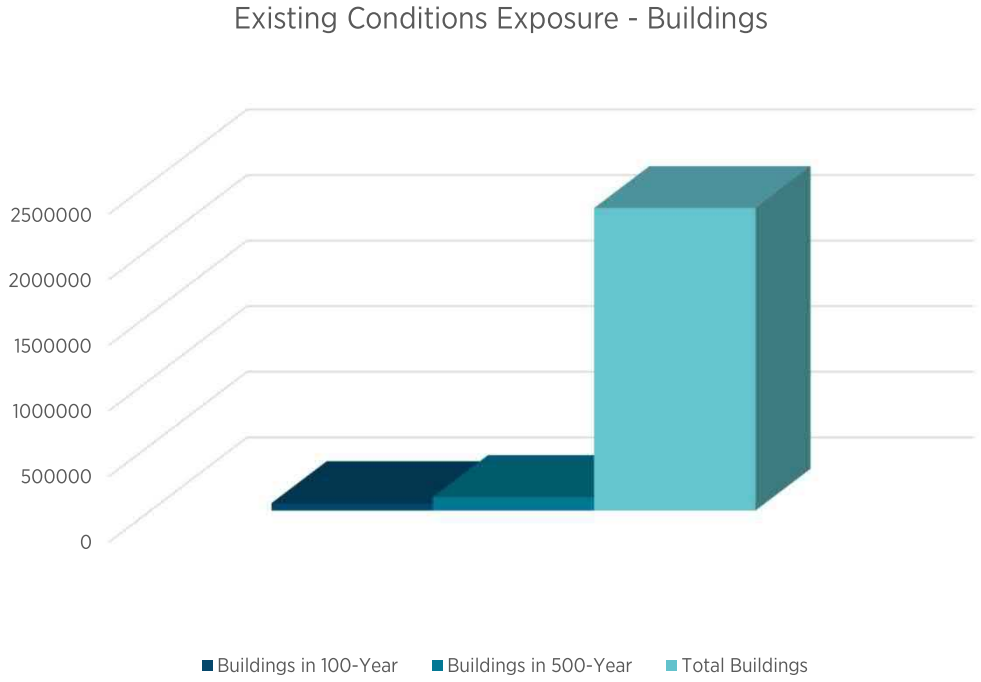


Task 2A – Existing Conditions Flood Risk Assessment

EXPOSURE

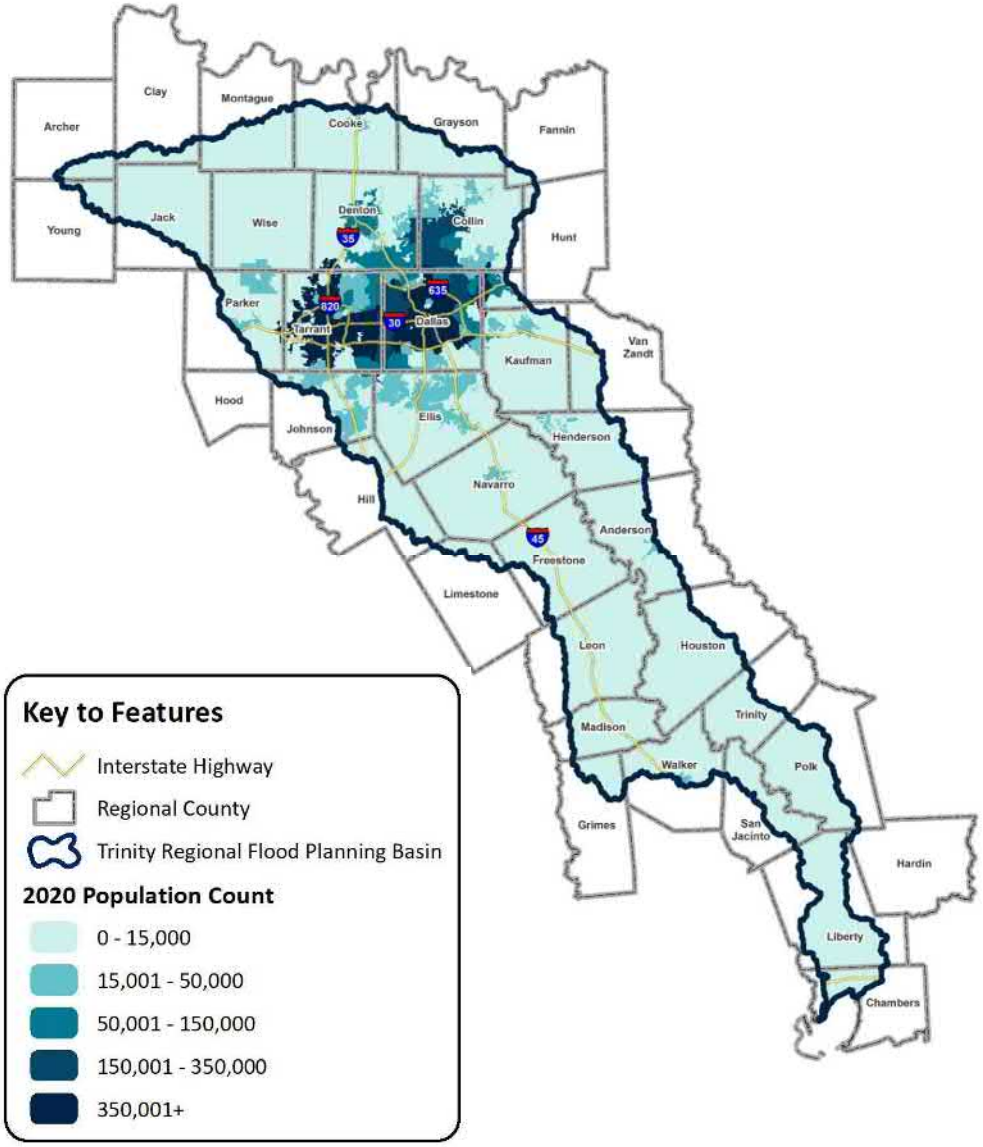
INVENTORY

- Buildings 
  - Agricultural
  - Residential
  - Commercial
  - Industrial
  - Public



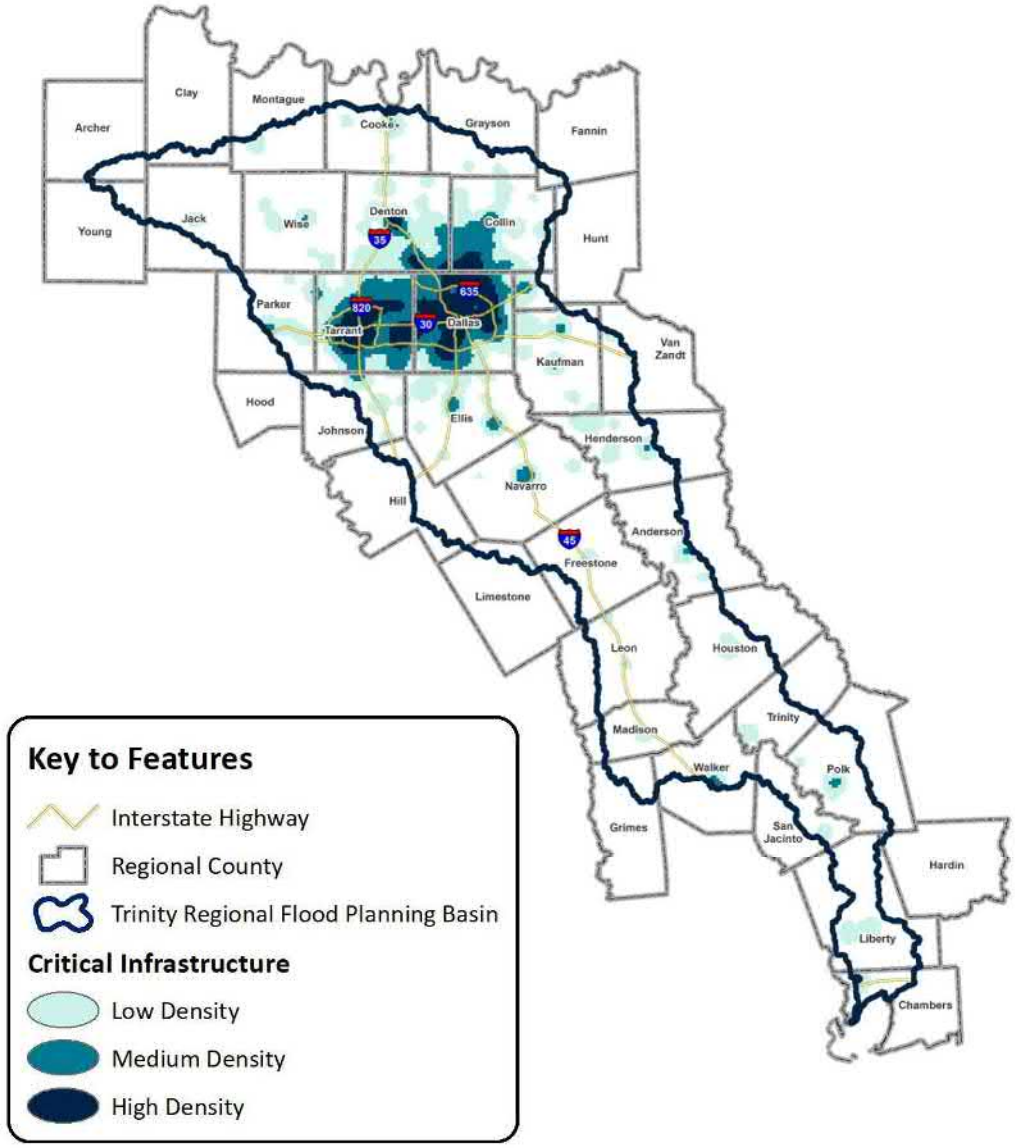
INVENTORY

- Population
  - Day and Night times
  - Estimated Pop: **8 million**



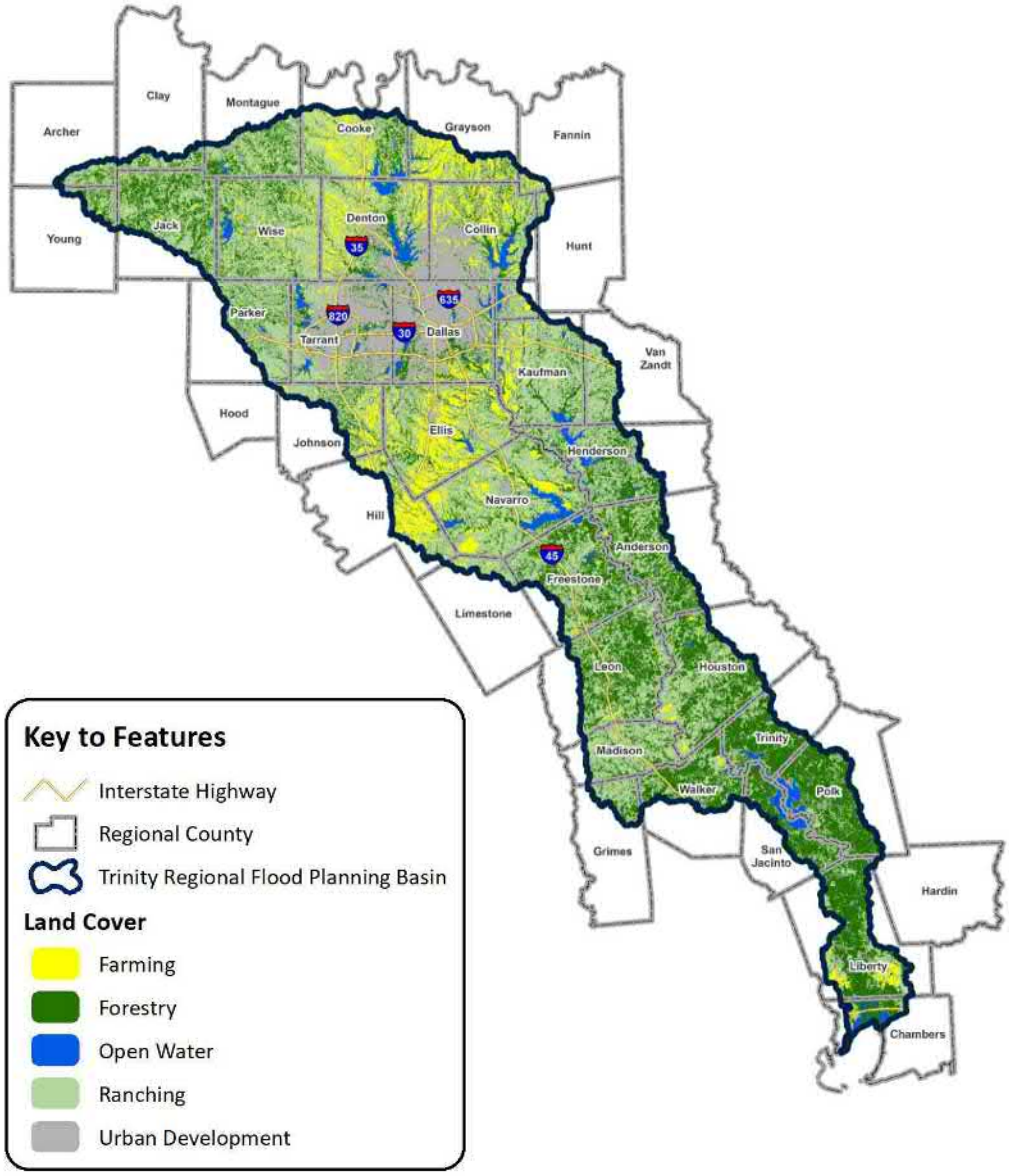
INVENTORY

- Critical Facilities
  - Hospitals
  - Schools (K to 12th)
  - Fire Stations
  - Police Stations
  - Nursing Homes
  - Emergency Shelters
  - Assisted Living Facilities
  - Emergency Shelters
  - Water/Waste Water Treatment Plants
  - Power Generating Facilities
  - Power Transmission Facilities



INVENTORY

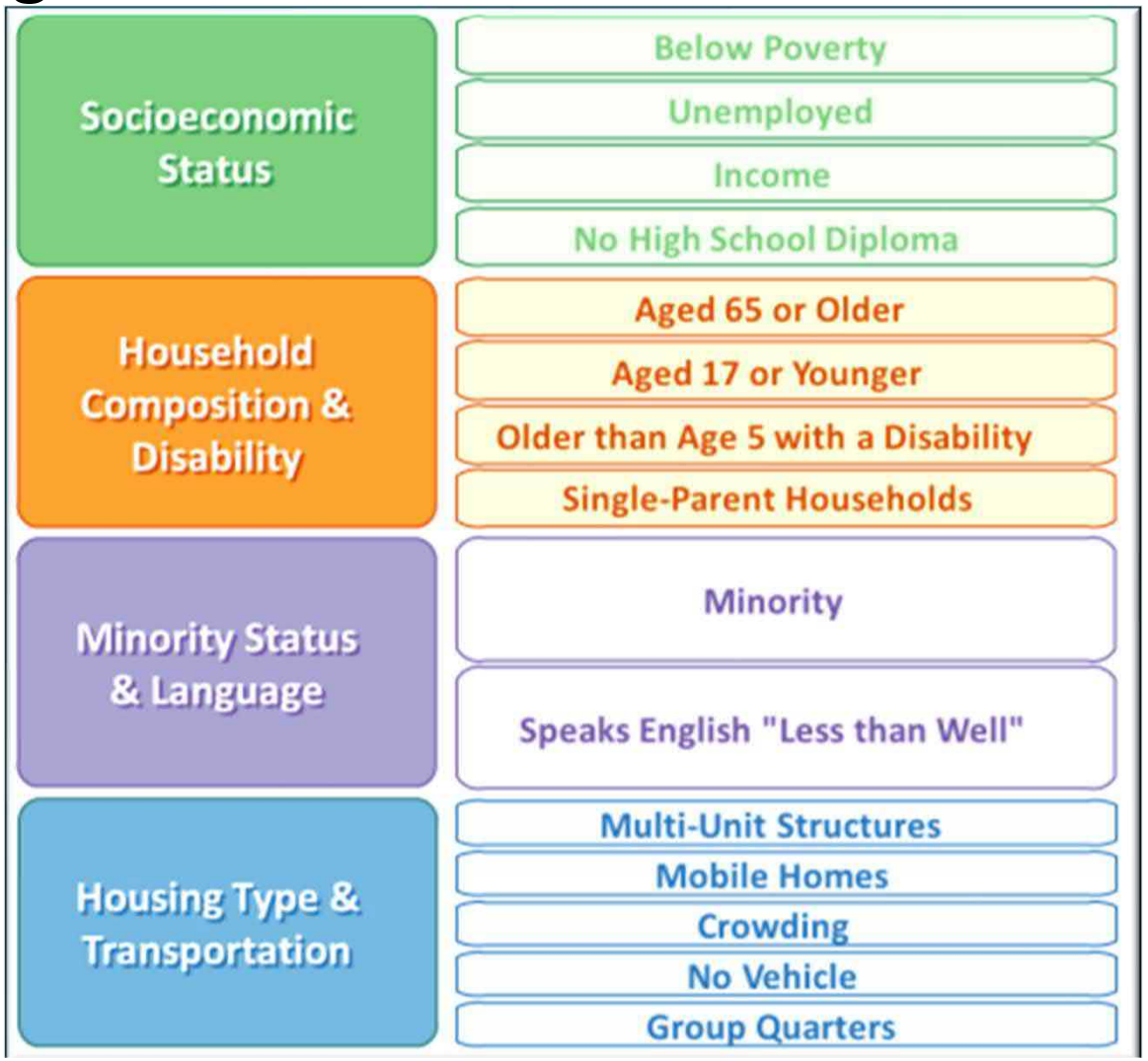
- Agricultural Areas
  - Farming
  - Ranching



Task 2A – Existing Conditions Flood Risk Assessment

VULNERABILITY

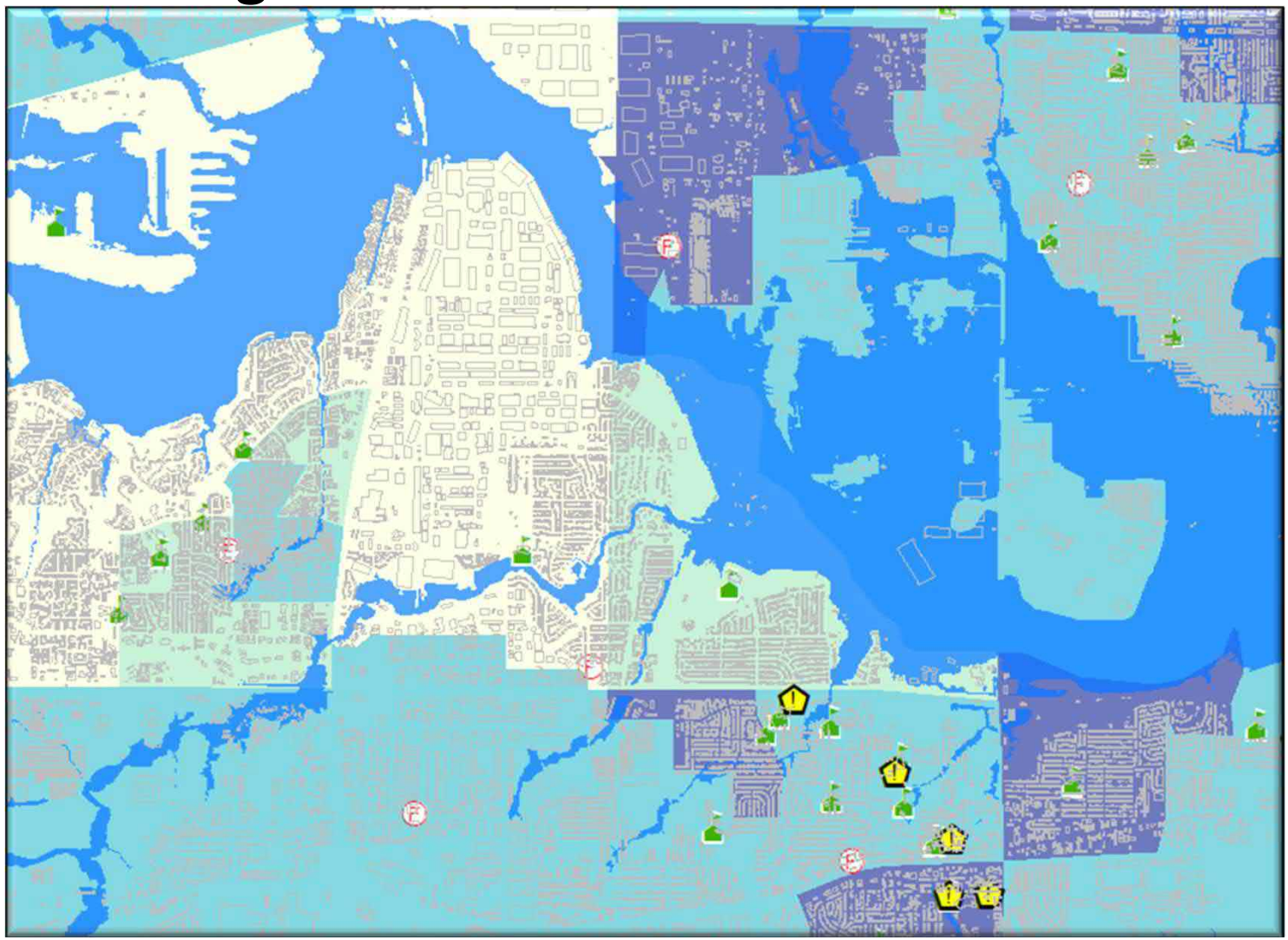
Social Impacts



Task 2A – Existing Conditions Flood Risk Assessment

VULNERABILITY

Social Impacts



FUTURE FLOOD HAZARD

Task 2B – Factors Affecting Future Conditions Floodplains

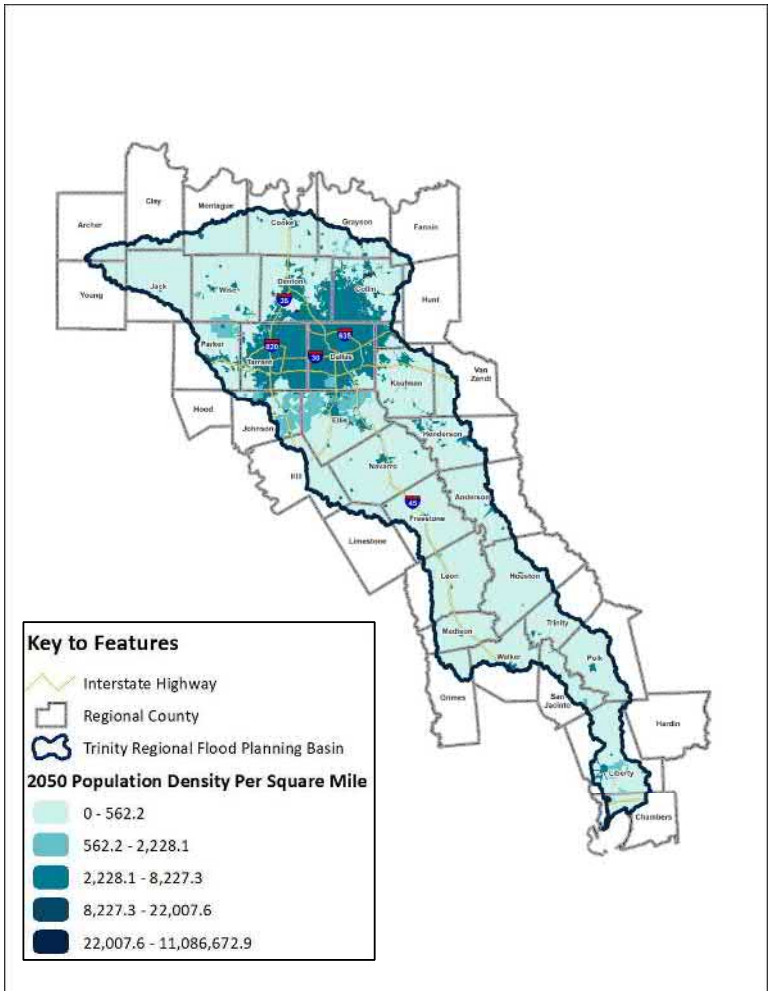
Population Increase/Urbanization

Climate Change on Extreme Events

FUTURE FLOOD HAZARD

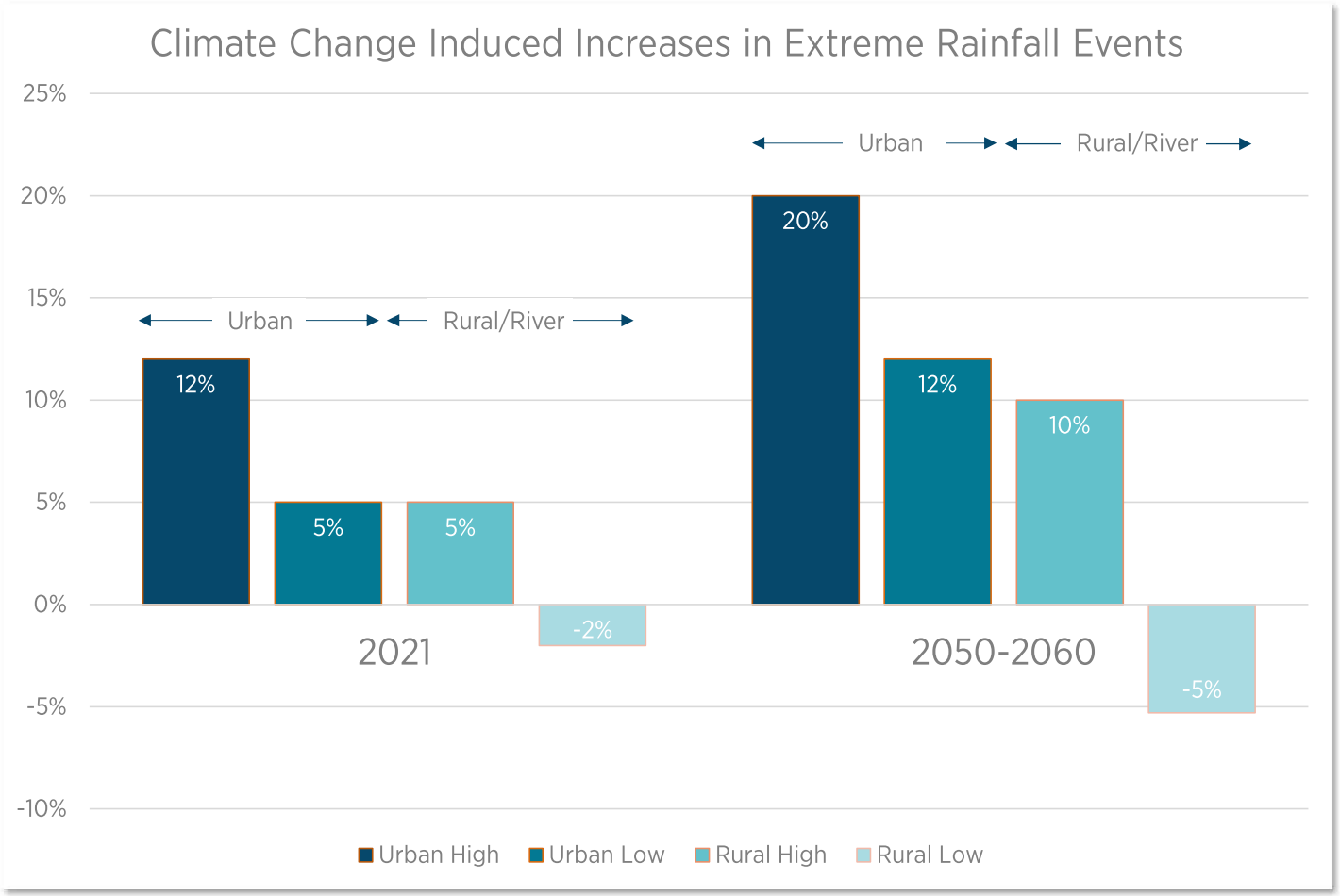
Task 2B – Population Increase/Urbanization

- 10 DFW surrounding communities projected to experience over **300%** increase in Population
- Urban areas in the mid basin area could experience over **34%** increase in population growth
- Lower Basin could experience overflow growth from the Houston/Galveston areas with Huntsville estimated to increase by **11%** and Dayton as much as **87%**



FUTURE FLOOD HAZARD

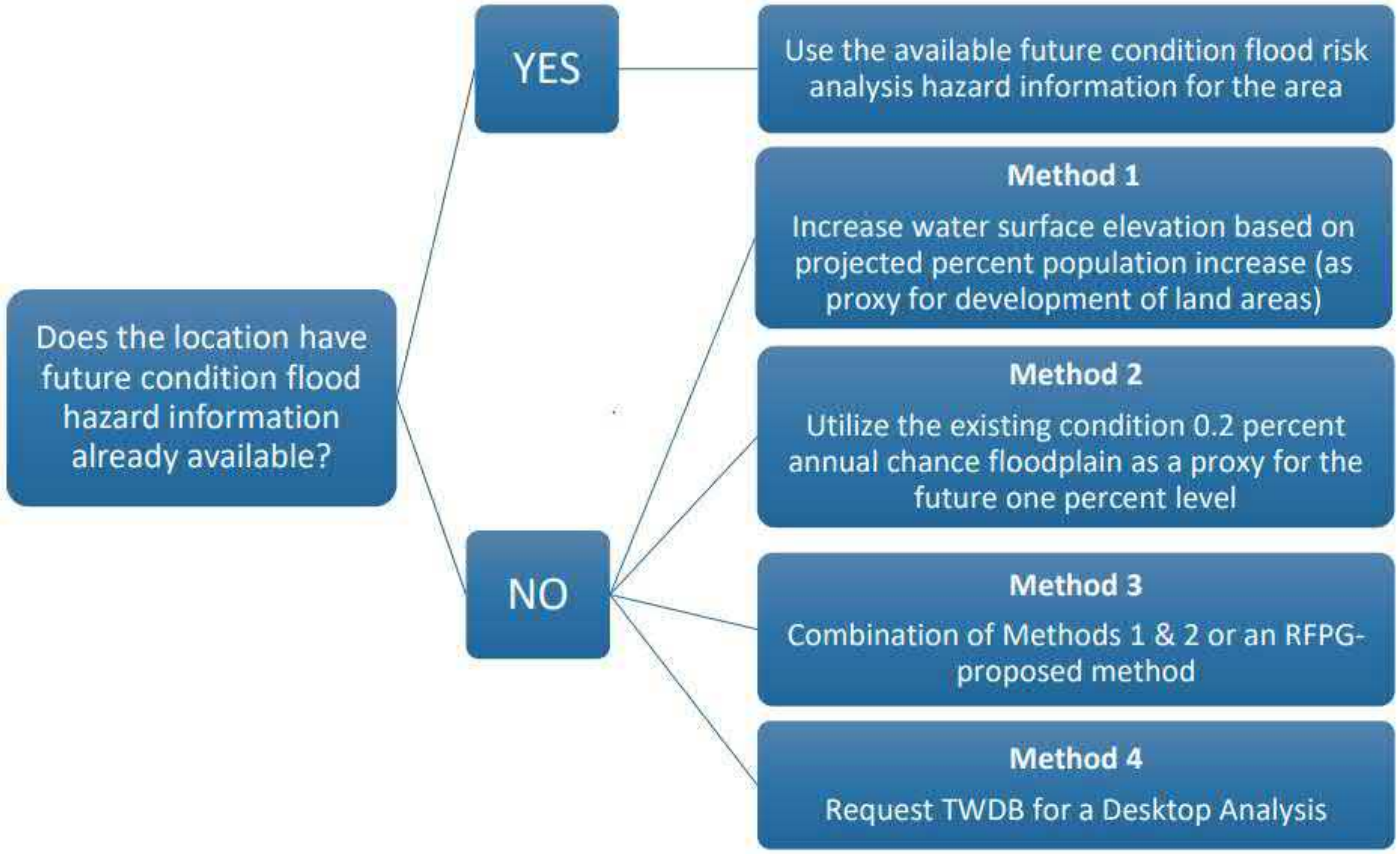
Task 2B – Climate Change on Extreme Events



**Information from the 2021 State Climatologist Report*

FUTURE FLOOD HAZARD

Task 2B – TWDB Tech Guidance for Determining Future Conditions



**April 2021 Technical Guidelines*

FUTURE FLOOD HAZARD

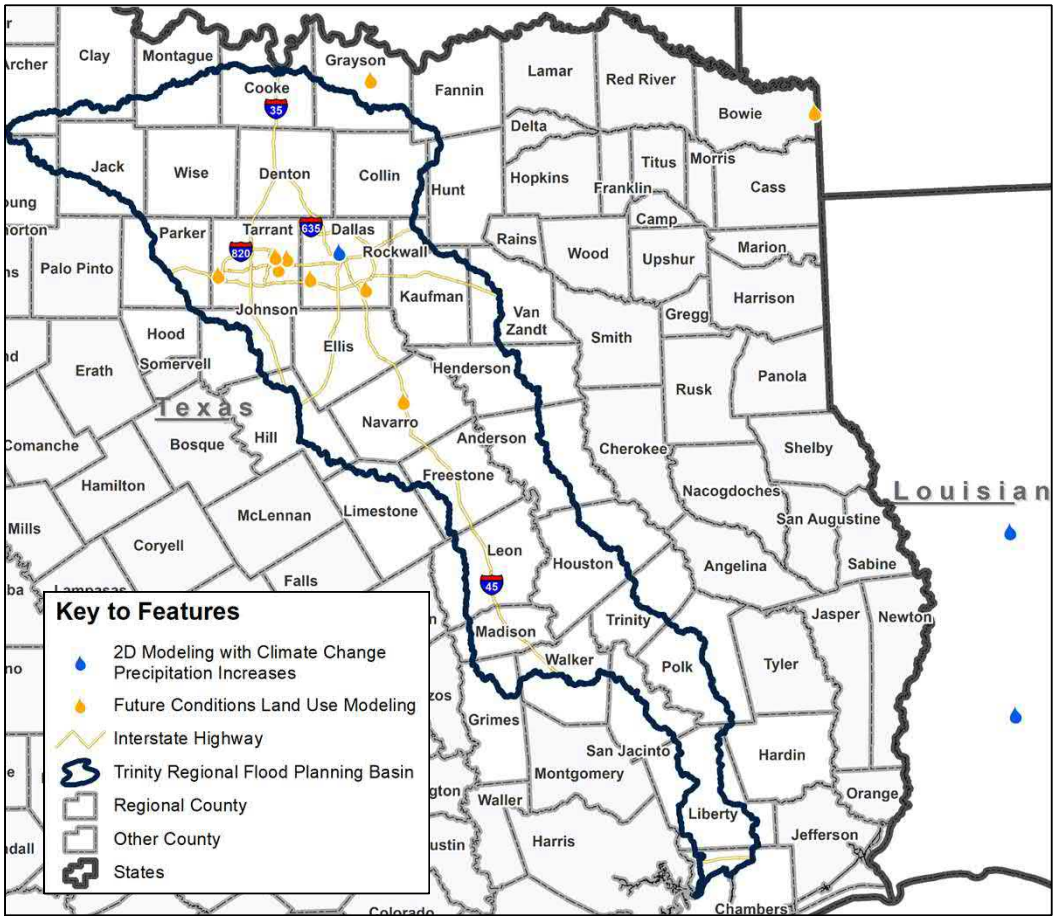
Task 2B –Future Conditions Assessment

Future Land Use Hydraulic Model Comparison

- Trinity River
- Parker County
- Grand Prairie
- Sherman
- Texarkana
- Corsicana

2D Modeling with Climate Change Increase Comparison

- Dallas
- Upper Calcasieu River



FUTURE FLOOD HAZARD

Task 2B –Future Conditions Assessment

Future Land Use Hydraulic Model Comparison

Location	Average WSEL Change Existing Vs Future 100yr (ft)	Average WSEL Change Existing 100yr vs 500yr (ft)
Parker County	0.1	0.8
Grand Prairie	0.2	1.4
Sherman	0.7	1.0
Texarkana	0.6	1.8
Corsicana	0.2	1.0

2D Modeling with Climate Change Increase Comparison

Location	Average WSEL Change Existing Vs Future 100yr (ft)	Average WSEL Change Existing 100yr vs 500yr (ft)
Dallas	0.2	Unavailable
Upper Calcasieu	0.4	1.7

Task 2B –Proposed Future Conditions Methodology

FUTURE FLOOD HAZARD

	Best Available		→		→		→		Most Approximate	
	Local Floodplain (if determined current)		NFHL AE		BLE		NFHL A / FAFDS		No FEMA or Better than Quilt	
	100YR	500YR	100YR	500YR	100YR	500YR	100YR	500YR	100YR	500YR
Existing	Local Study (if provided)	Local Study (if provided)	Floodplain quilt 100YR	Floodplain quilt 500YR	BLE 100YR	BLE 500YR	Zone A	Fathom 500YR or (Areas w/o 500YR) included as floodplain gaps	Fathom 100YR	Fathom 500YR
Future	Local Study (if provided)	Local Study (if provided)	Existing 500YR or Delta* Mapping	(Areas w/o 500YR) included as floodplain gaps	BLE 500 or Delta* Mapping	(Areas w/o 500YR) included as floodplain gaps	Fathom 500YR, Machine Learning or Delta* Mapping	(Areas w/o 500YR) included as floodplain gaps	Fathom 500YR or Delta* Mapping	(Areas w/o 500YR) included as floodplain gaps

** vertical or horizontal buffering*

FUTURE FLOOD HAZARD

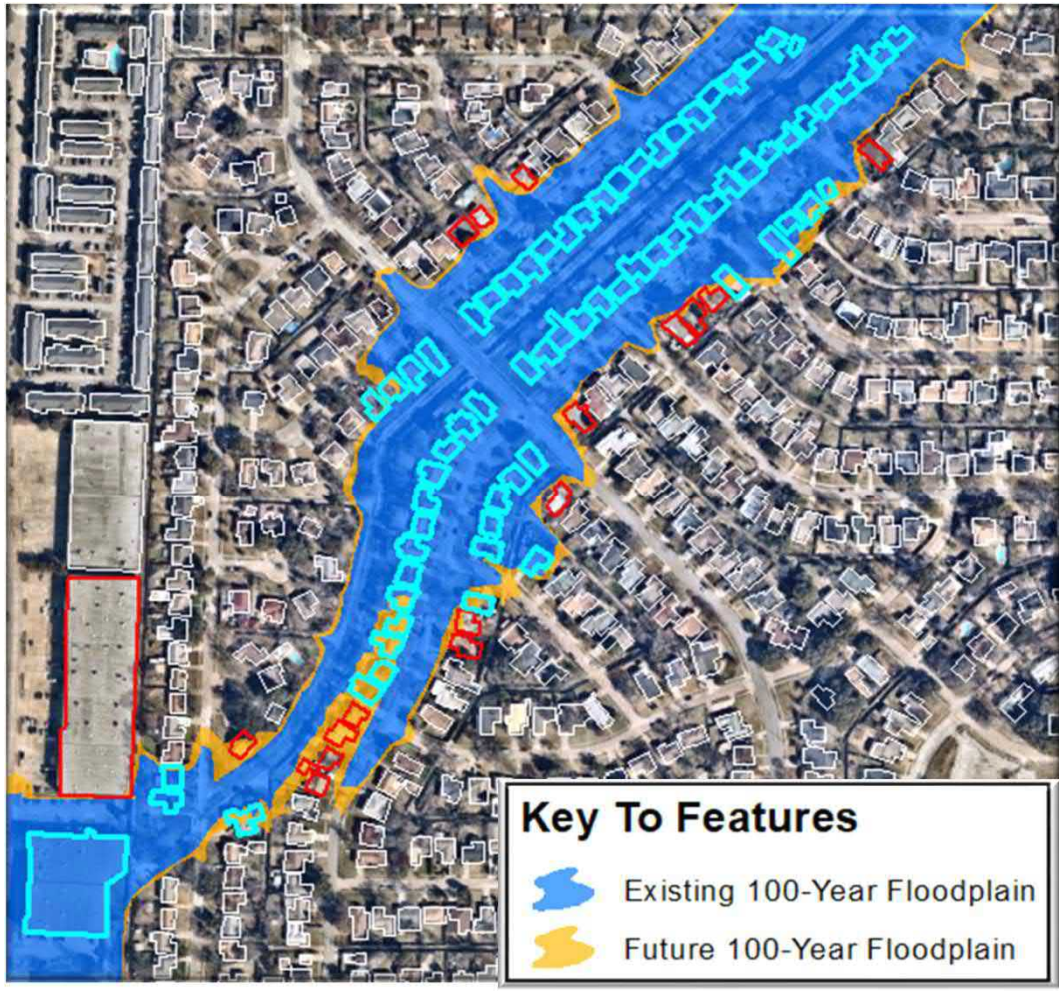
Task 2B – Future Conditions Flood Risk Assessment

Future Mapping

- Exposure Analysis
- Vulnerability Analysis

Methodology

- Ex 500yr = Fut 100yr
- Area of application
  - Entire basin
  - Areas of expected growth only



Ch. 3 Floodplain Management Practices and Goals

Consider Approval of Goals

Discussion of Floodplain Management Practices

Consider Approval of Recommending or Adopting Specific Floodplain Management Practices

Region 3 Trinity RFPG: Draft Specific Goal Statements

As Reviewed and Revised by Region 3 RFPG on 08/31/21

Goal 1. Improving Flood Warning & Public Safety

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

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

Goal 2. Improving Flood Analyses

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

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

Goal 3. Reducing Property Damage & Loss

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

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

Goal 4. Floodplain Preservation

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

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

Goal 5. Flood Infrastructure Improvement

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

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

Goal 6. Expanding Flood Education & Outreach

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

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

Goal 1. Improving Flood Warning & Public Safety

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

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

Goal 2. Improving Flood Analyses

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

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

Goal 3. Reducing Property Damage & Loss

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

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

Goal 4. Floodplain Preservation

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

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

Goal 5. Flood Infrastructure Improvement

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

Goals	Specific Goal Statements	Short Term (2033)	Long Term (2053)
A	Increase the number of nature-based practices as part of flood risk reduction projects.	Establish a baseline measurement	30%
B	Improve flood infrastructure and properly maintain streams and drainage channels to protect agricultural lands from flooding	5 stream miles	50 stream miles

Goal 6. Expanding Flood Education & Outreach

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

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

Consider approval of floodplain management goals

Floodplain Management Standards

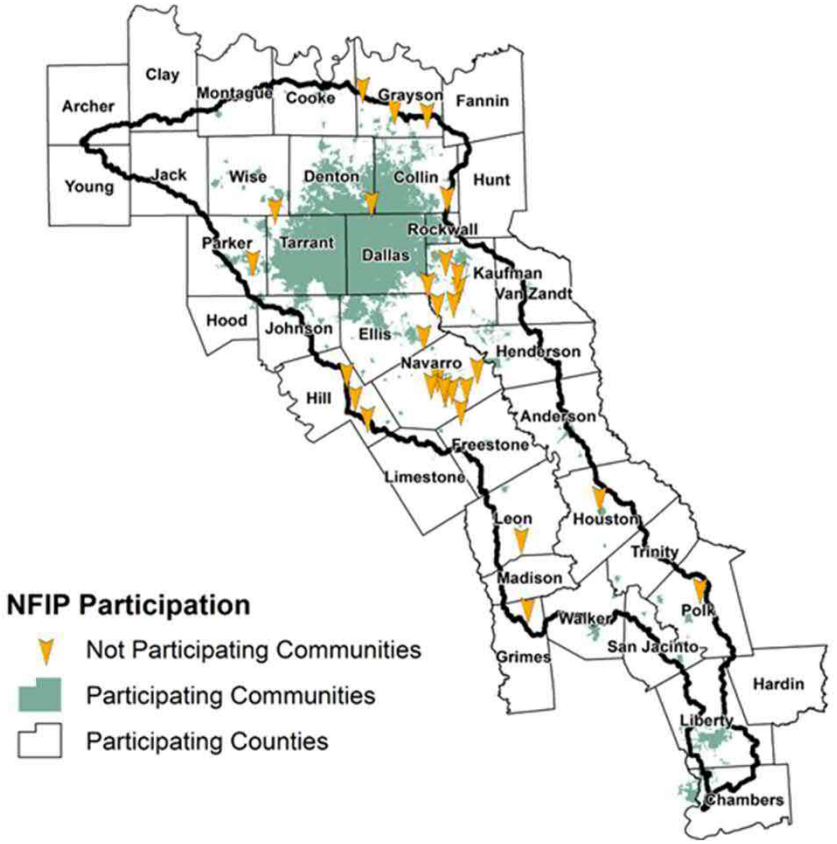
Summary of common floodplain management practices within the region

Data sources

- City ordinances
- County court orders
- National Flood Insurance Program (NFIP) participation
- Community Rating System (CRS)
- Higher standards
- Survey responses
- TWDB Guidance Document

National Flood Insurance Program (NFIP)

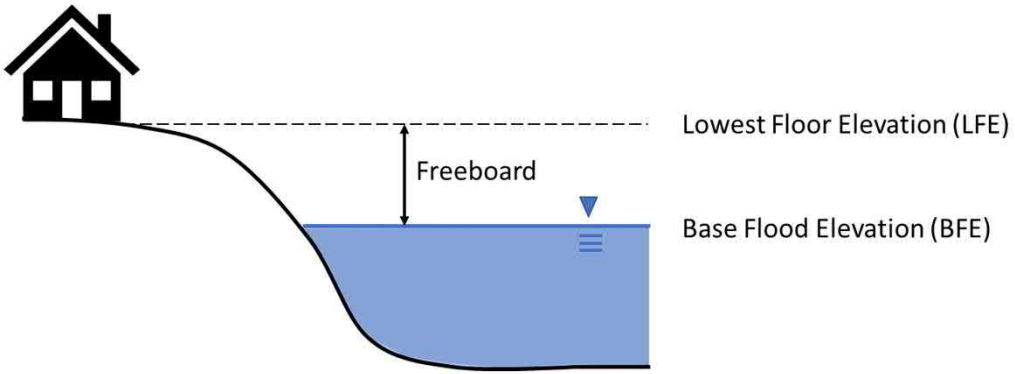
- Overseen by Federal Emergency Management Agency (FEMA)
- Establishes the <u>minimum</u> standards for floodplain regulation



Community Rating System (CRS)

- Voluntary FEMA program
- Available to cities and counties
- Local activities result in a CRS score
- Lower CRS score = greater savings on flood insurance premiums
- Participate in CRS program in Trinity Region
  - 19 cities
  - 1 county

Higher standards (TWDB definition)



Freeboard

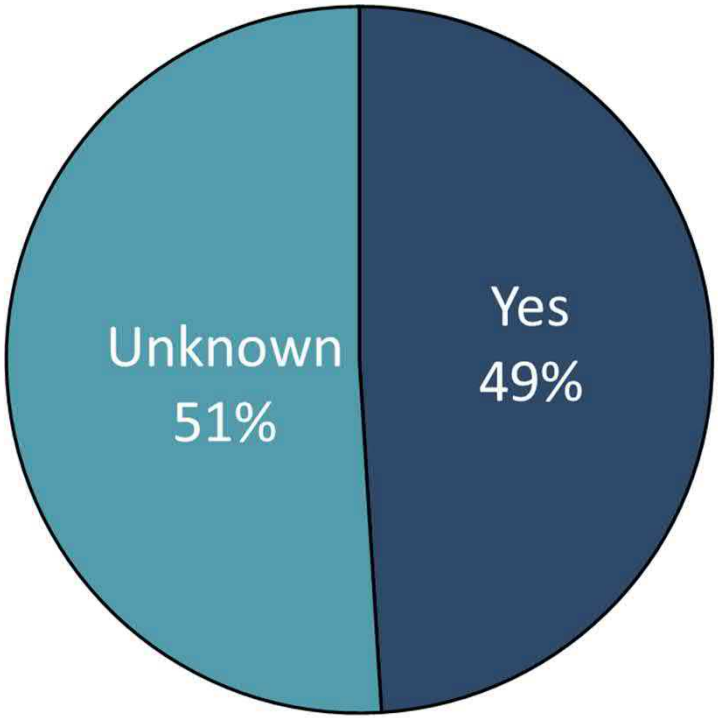
Freeboard	Current 1% ACE Conditions	Future 1% ACE Conditions
At or above current base flood elevations	36	0
BFE + 1 foot	19	10
BFE + 1.5 feet	1	1
BFE + 2 feet	93	41
BFE + 3 feet	9	3
Total	**158**	**55**

Note: Trinity RFPG survey responses as of Aug 9, 2021 and TFMA Higher Standards Survey 2019-2020

Additional data sources

- NCTCOG iSWM
  - Detention structure discharge criteria
  - Flood mitigation/downstream assessments
  - Finished floor elevations

Draft snapshot of higher standards



Enforcement

Level of Enforcement	Number of Responses	Percent
High Activity	21	26%
Moderate Activity	26	32%
Low Activity	10	12%
None	8	10%
I do not know	16	20%
Total	**81**	**100%**

Note: Trinity RFPG survey responses as of Aug 9, 2021

Floodplain management practices

- TWDB definition
  - Strong (significant regulation that exceed NFIP standards with enforcement, or community belongs to the Community Rating System)
  - Moderate (some higher standards, such as freeboard, detention requirements or fill restrictions)
  - Low (regulations meet the minimum NFIP standards)
  - None (no floodplain management practices in place)

Floodplain management practices

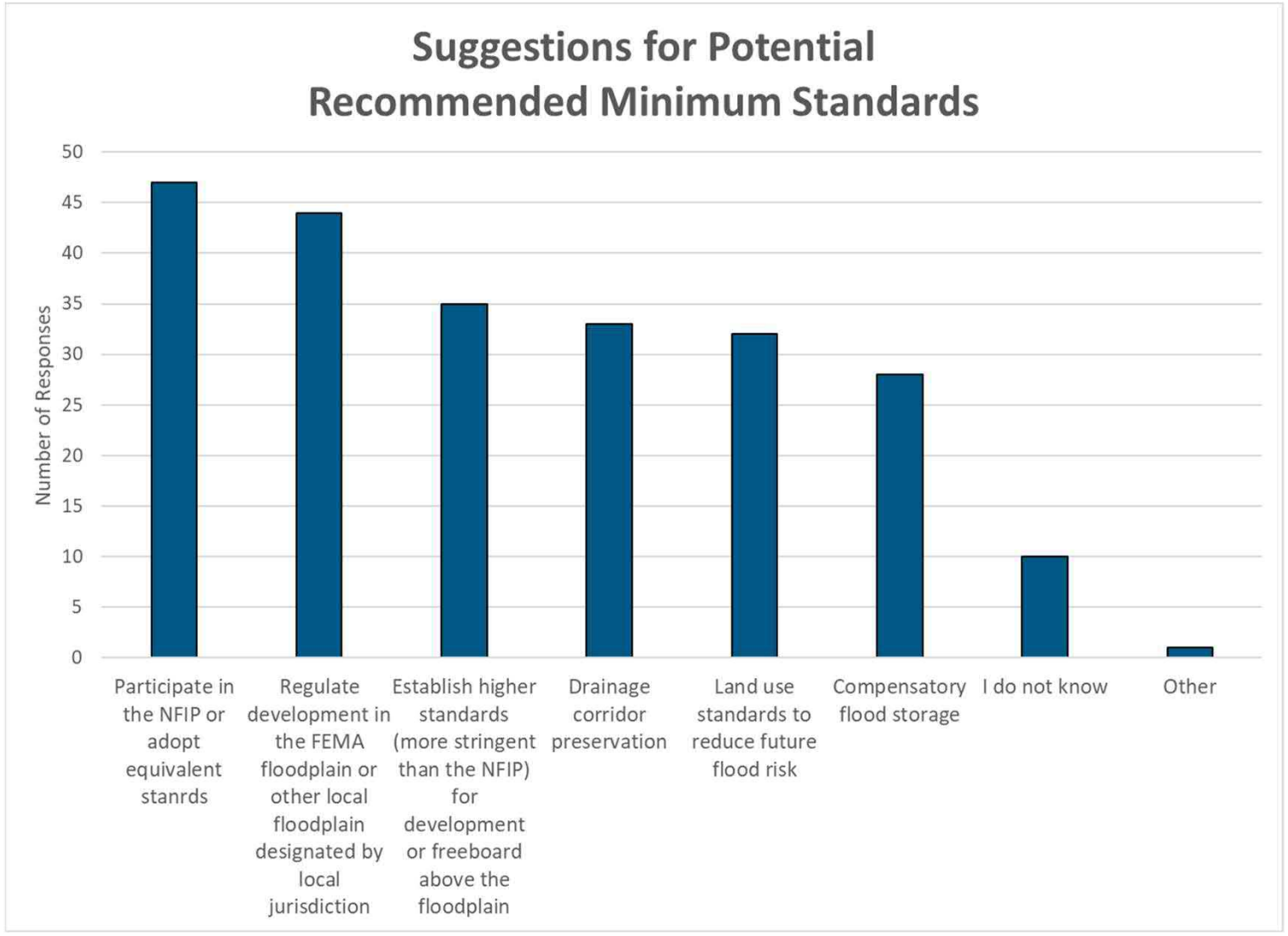
Description	Number of Responses	Percent
Strong	35	11%
Moderate	20	6%
Low	95	29%
None	8	2%
Unknown	170	52%
Total	**328**	**100%**

Note: Trinity RFPG survey responses as of Aug 9, 2021

Survey Responses for Potentially **Recommending** Consistent Minimum Floodplain Management Standards

Description	Number of Responses	Percent
Yes	53	62%
No	11	12%
I don’t know	22	26%
Total	**86**	**100%**

Note: Trinity RFPG survey responses as of Aug 9, 2021

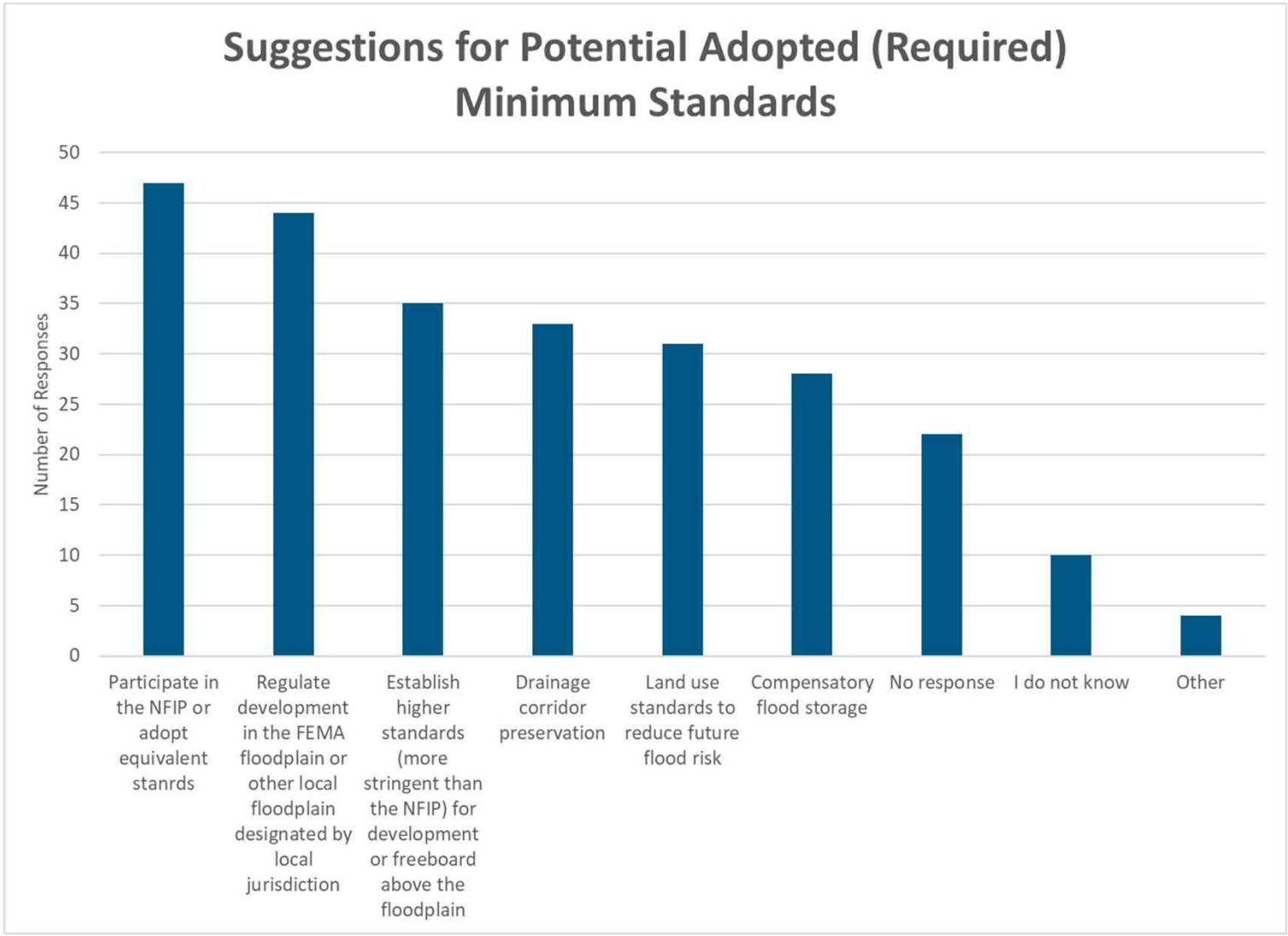


Note: Trinity RFPG survey responses as of Aug 9, 2021

Survey Responses for Potentially Adopting (Requiring) Consistent Minimum Floodplain Management Standards

Description	Number of Responses	Percent
Yes	42	49%
No	12	14%
I don’t know	32	37%
Total	**86**	**100%**

Note: Trinity RFPG survey responses as of Aug 9, 2021



Note: Trinity RFPG survey responses as of Aug 9, 2021

Consider potential floodplain management strategies

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

Consider recommending or adopting standards

- Recommend = suggest
  - Standard is encouraged but not required
- Adopt = required
  - Standard must be met before a FME, FMS or FMP can be considered for potential inclusion in plan

Consider approval of recommending or adopting (requiring) specific floodplain management practices

Ch. 4 Flood Mitigation Needs & Potentially Feasible Solutions

Approach and Examples

DRAFT MEMORANDUM

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

801 Cherry Street, Suite 2800 + Fort Worth, Texas 76102 + 817-735-7300 + FAX 817-735-7491

www.freese.com

TO: Region 3 Trinity Regional Flood Planning Group

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

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

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

DATE: 9/15/2021

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

Introduction

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

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

Definitions

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

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

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

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

Background

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

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

Table 1: Flood Risk Reduction Action Types

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

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

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

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

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

Identification

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

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

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

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

Guidance	Factors to Consider
1. Most prone to flooding that threatens life and property	• Area overlapped by inundation mapping and/or included in any historical flooding record • Building footprints / polygons within flood hazard layer • Critical facilities with evacuation routes impacted by flooding • Fully developed flood models (where available) • Low water crossings • Agricultural areas at risk of flooding

Guidance	Factors to Consider
2. Locations, extent and performance of current floodplain management and land use policies and infrastructure	• Communities not participating in NFIP and/or without NFIP equivalent or higher standards • Disadvantaged / Underserved communities • City / County design manuals • Community Rating System (CRS) score • Land use policies • Floodplain ordinance(s)
3. Inadequate inundation mapping	• No mapping • Presence of Fathom / BLE / FEMA Zone A flood risk data • Detailed FEMA models older than 10 years
4. Lack of H&H models	• Communities with zero models • Communities with limited models
5. Emergency need	• Damaged or failing infrastructure • Other emergency conditions
6. Existing models, analysis and flood risk mitigation plans	• Exclude flood mitigation plans already in implementation • Leverage existing models, analyses, and flood risk mitigation plans • Benefit-Cost Ratio > 1
7. Already identified and evaluated flood mitigation projects	• Exclude flood mitigation projects already in implementation • Leverage existing flood mitigation projects • Benefit-Cost Ratio > 1
8. Historic flooding events	• Disaster declarations • Flood insurance claim information • Other significant local events
9. Already implemented flood mitigation projects	• Exclude areas where flood mitigation projects have already been implemented unless significant residual risk remains
10. Additional other factors deemed relevant by RFPG	• Alignment with RFPG goals • Alignment with TWDB guidance principles

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

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

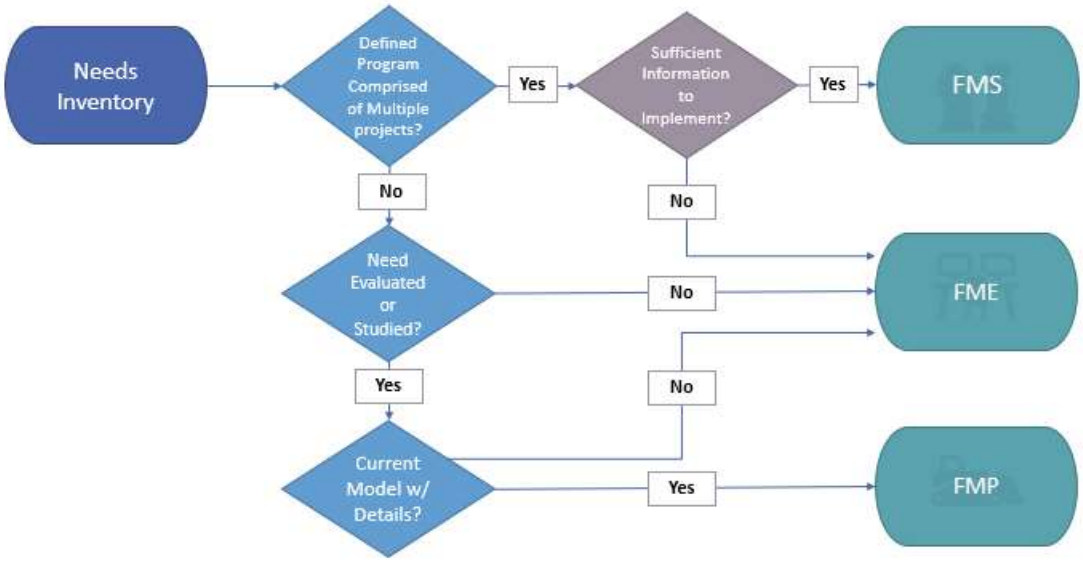
The TC anticipates several potential actions will be identified, primarily FMEs, to address gaps in available flood risk data associated with the first planning cycle. The *Rules* and *SOW* require FMSs and FMPs to be developed in a sufficient level of detail to be included in the RFP and recommended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

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

Evaluation

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

Figure 1: Potential Flood Risk Reduction Action Screening Process



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

Selection

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

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

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

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

Schedule

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

Table 3: Proposed Timeline of Activities

Flood Planning Process Activity	Anticipated Date
TC delivers *Process for Identification and Evaluation of Potential FMEs and Potentially Feasible FMPs and FMSs* TM to RFPG for review	September 16, 2021
RFPG considers approval of Process at September meeting	September 23, 2021
TC presents identified potential FMEs and potentially feasible FMPs and FMSs to **RFPG**	November 2021
TC refines list of identified potential FMEs and potentially feasible FMPs and FMSs and deliver ITM to **RFPG** for review	November 2021 – December 2021

Flood Planning Process Activity	Anticipated Date
RFPG considers approval to submit TM	December 2021
TC delivers TM to **TWDB**	January 7, 2022
TWDB review TM; **TC** continue process to evaluate FMEs, FMPs, and FMSs	January 2022 – TBD
TWDB issues NTP on Task 5; **TC** to begin process of recommending FMEs, FMPs, and FMS for inclusion in RFP	TBD (after NTP by TWDB)

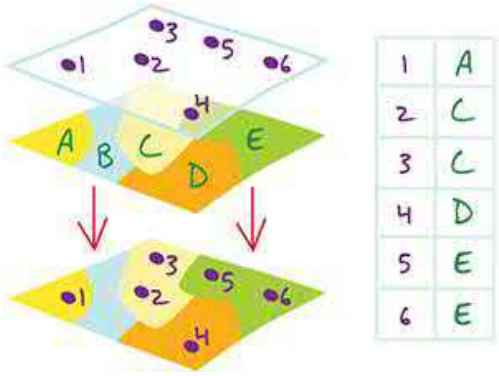
When reviewing and considering whether to approve drafts of the TM, the RFPG members should do so with the understanding that the TWDB has established the TM as a "draft, mid-point, work-in-progress deliverable…to demonstrate that [the RFPG] are making appropriate progress towards the development of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

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

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

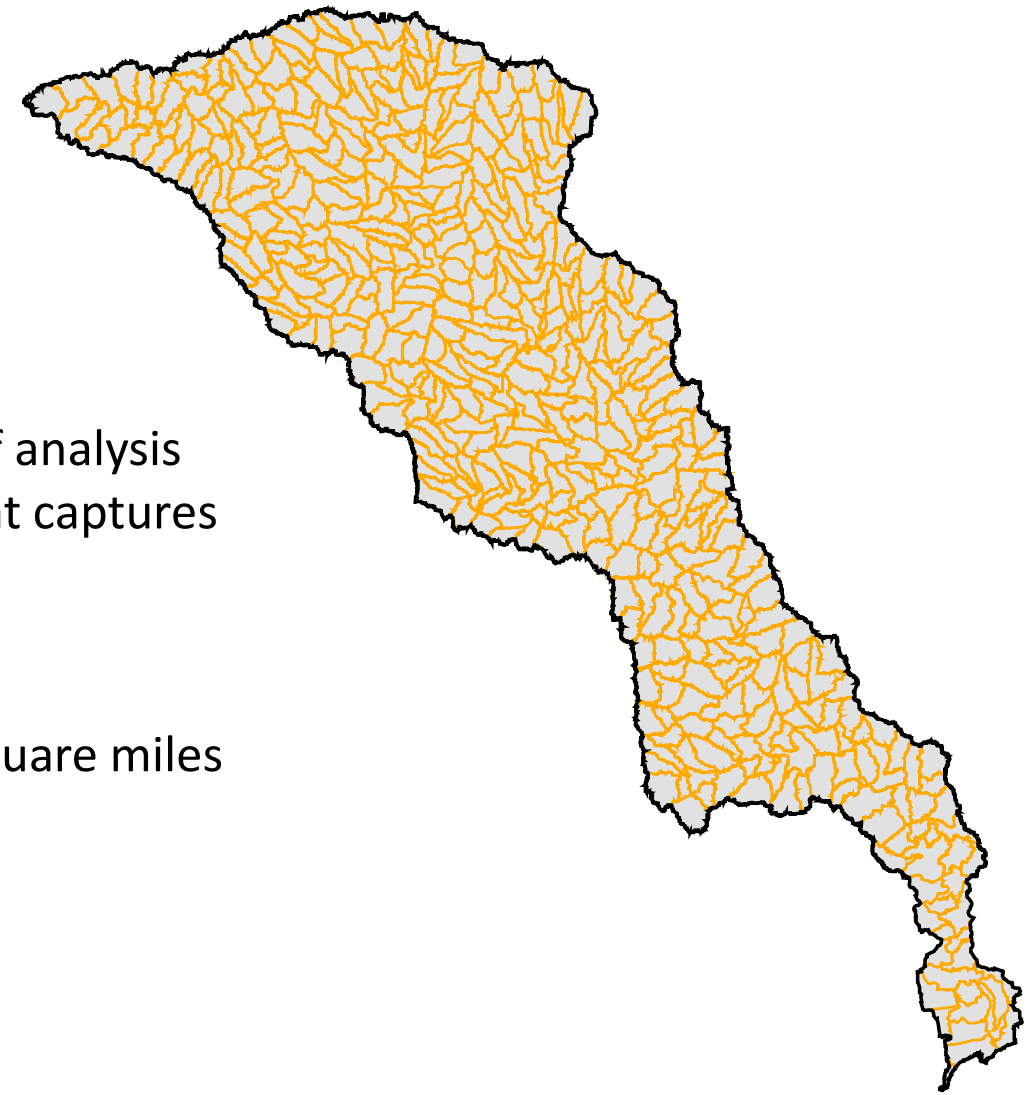
Task 4A: Process for Identifying Areas of Greatest Need (Screening Analysis)

Most prone to flooding that threatens life & property	Locations, extent, & performance of policies & infrastructure	Prone to flooding with inadequate inundation maps	Prone to flooding with w/o H&H models
Emergency need	Existing models, analysis, & flood risk mitigation plans	Already identified flood mitigation projects	
Historic flooding events	Already implemented flood mitigation projects	Other relevant factors	



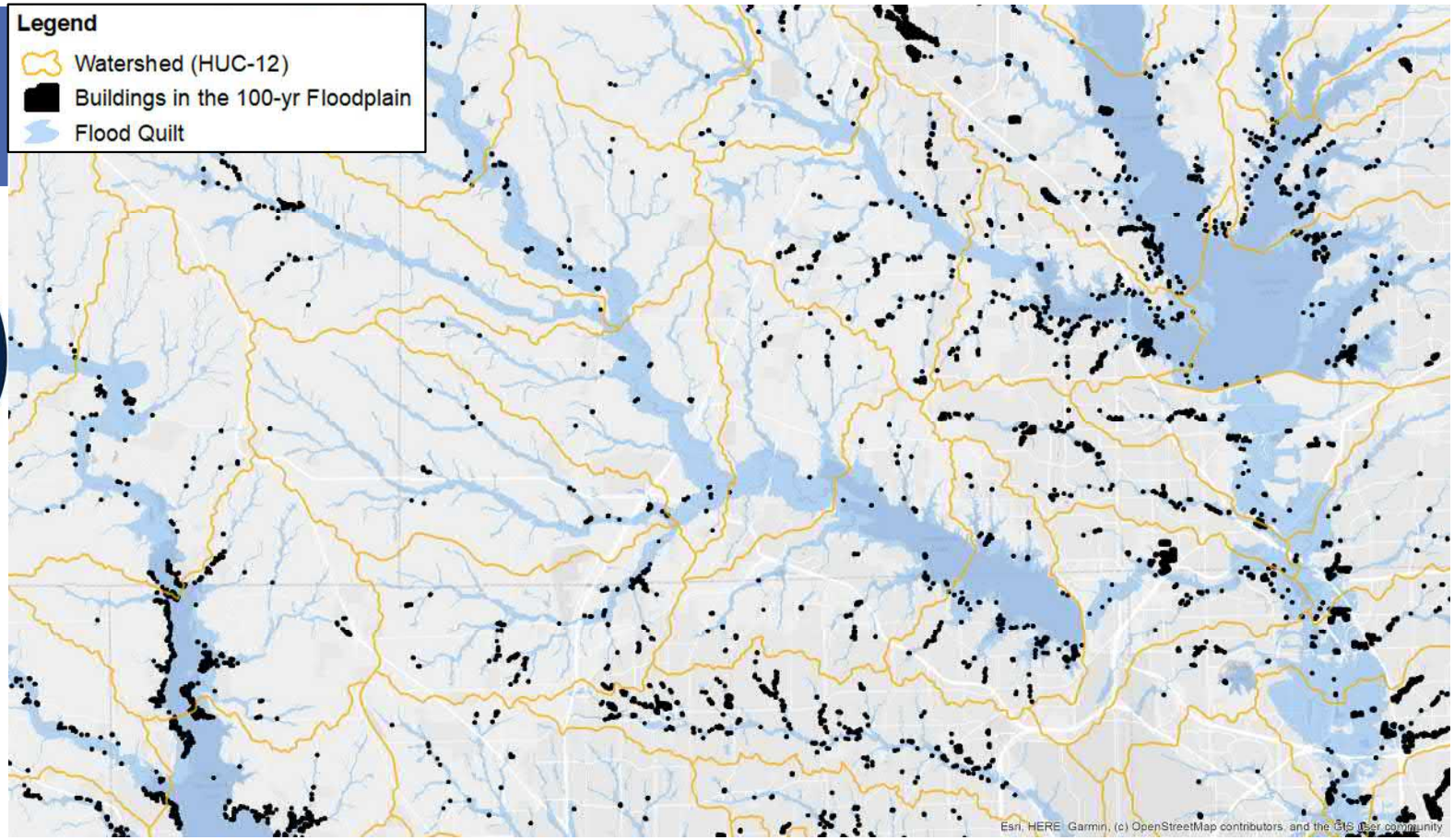
Task 4A
Unit of Analysis

- HUC = Hydrologic Unit Code
- **HUC 12** will be used as unit of analysis (local sub-watershed level that captures tributary systems)
- **471** HUC 12 sub-watersheds
- HUC 12 average area = ~40 square miles



Task 4A Example - Fort Worth to Denton, Texas

Most prone to flooding that threatens life & property



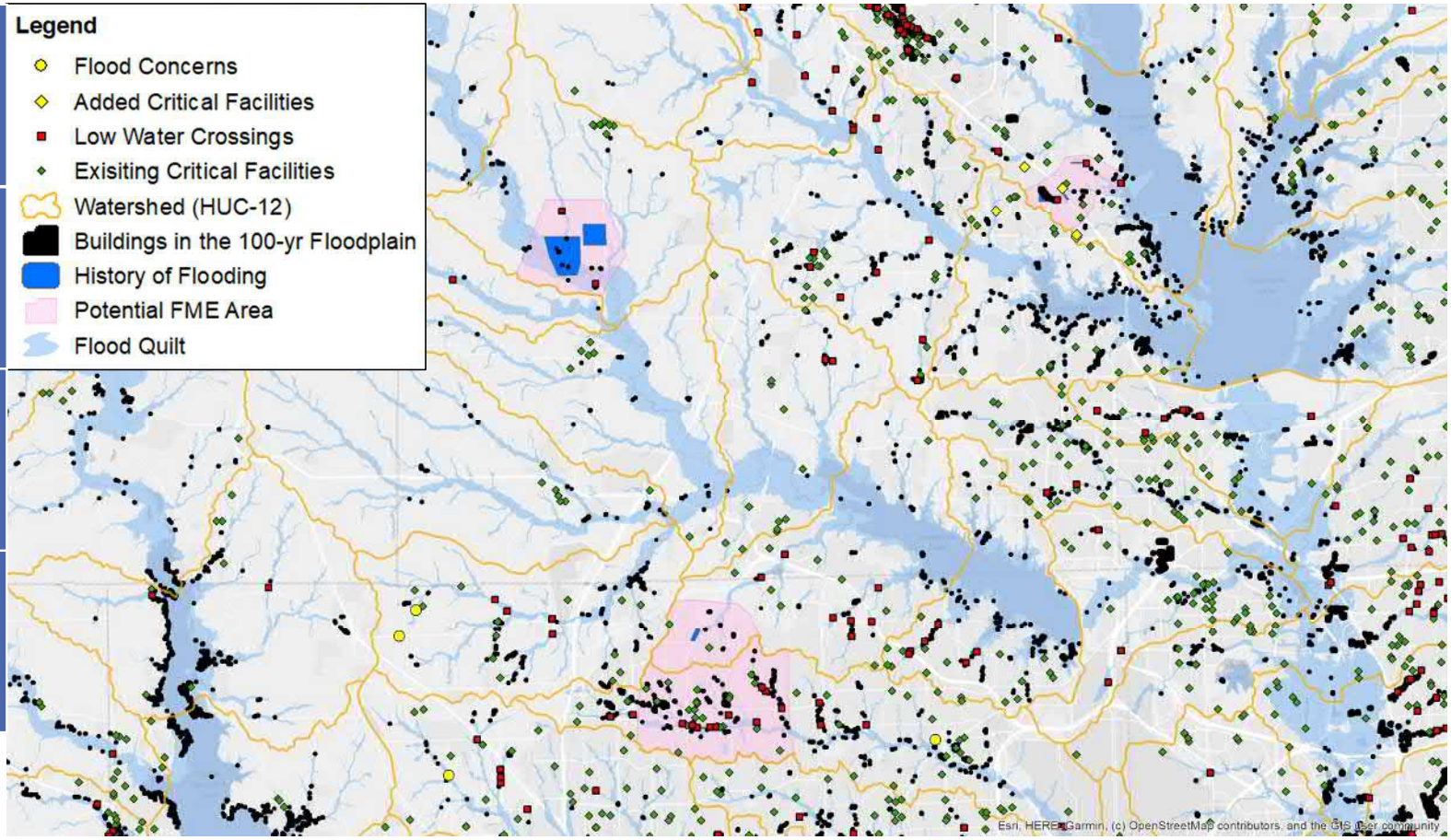
Task 4A Example - Fort Worth to Denton, Texas

Most prone to flooding that threatens life & property

Historic flooding events

Emergency need

Prone to flooding with inadequate inundation maps



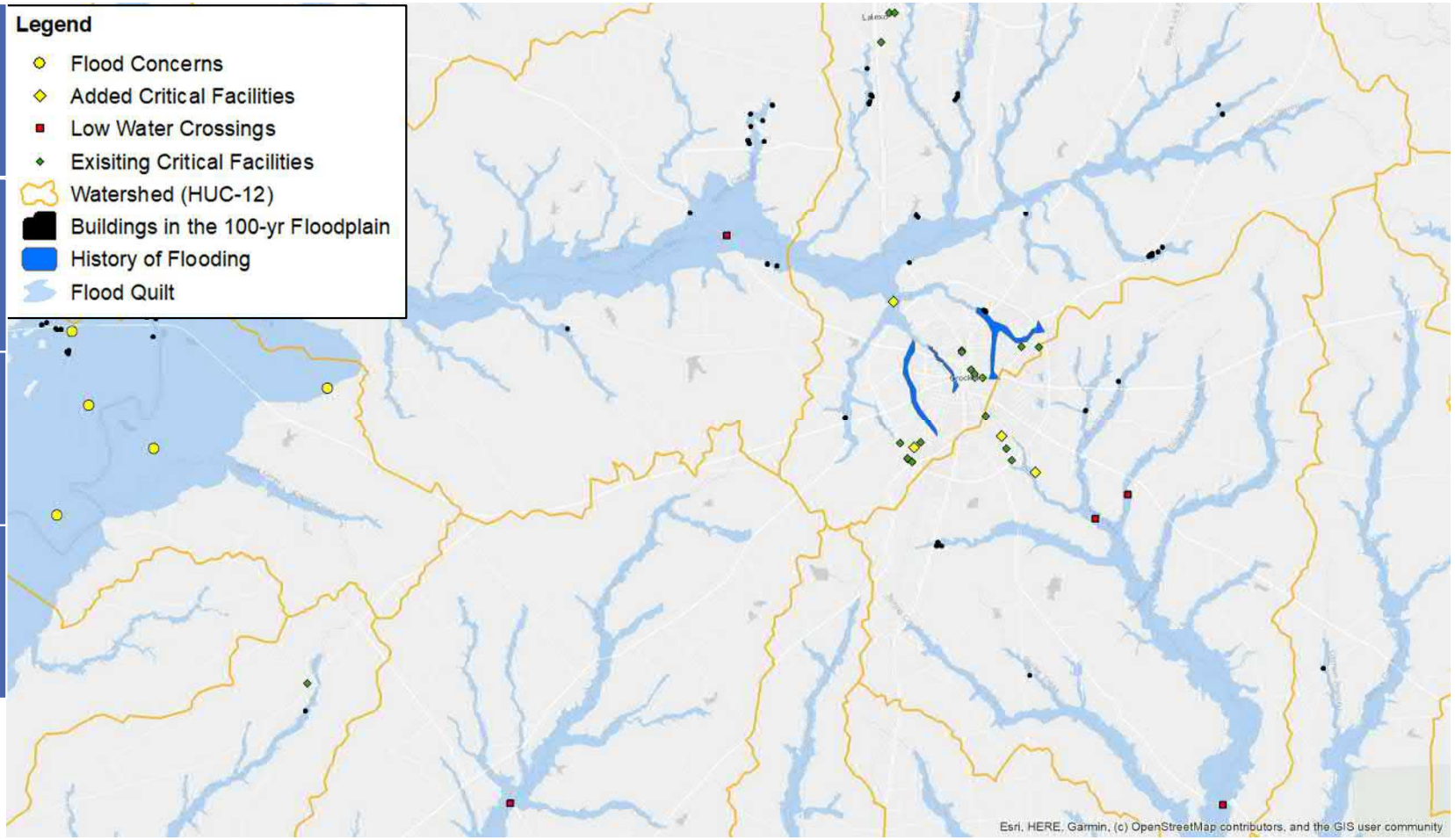
Task 4A Example - Crockett, Texas

Most prone to flooding that threatens life & property

Historic flooding events

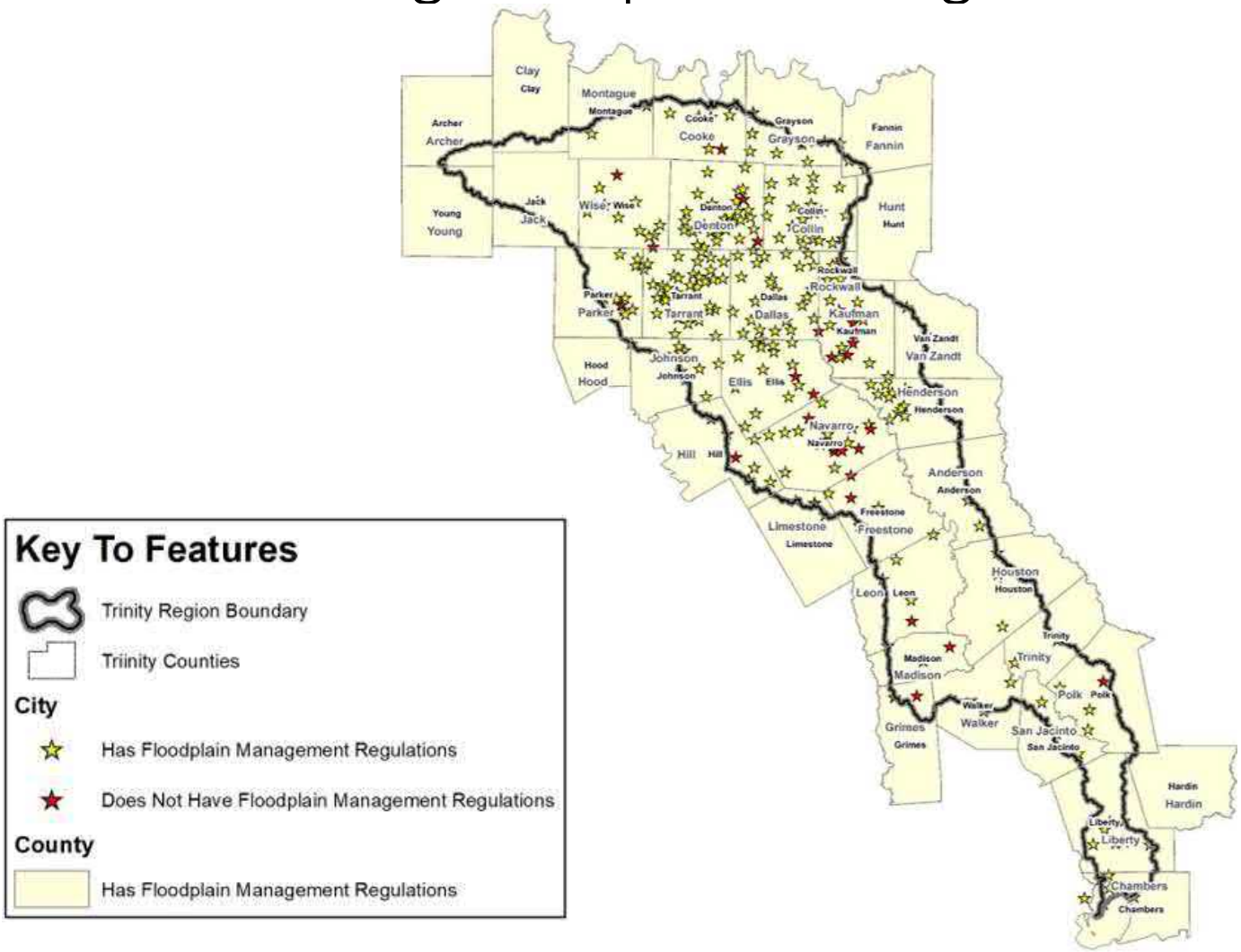
Emergency need

Prone to flooding with inadequate inundation maps



Task 4A - Existing Floodplain Management Regulations

Locations, extent, & performance of policies & infrastructure



Key To Features

Trinity Region Boundary

Triinity Counties

City

Has Floodplain Management Regulations

Does Not Have Floodplain Management Regulations

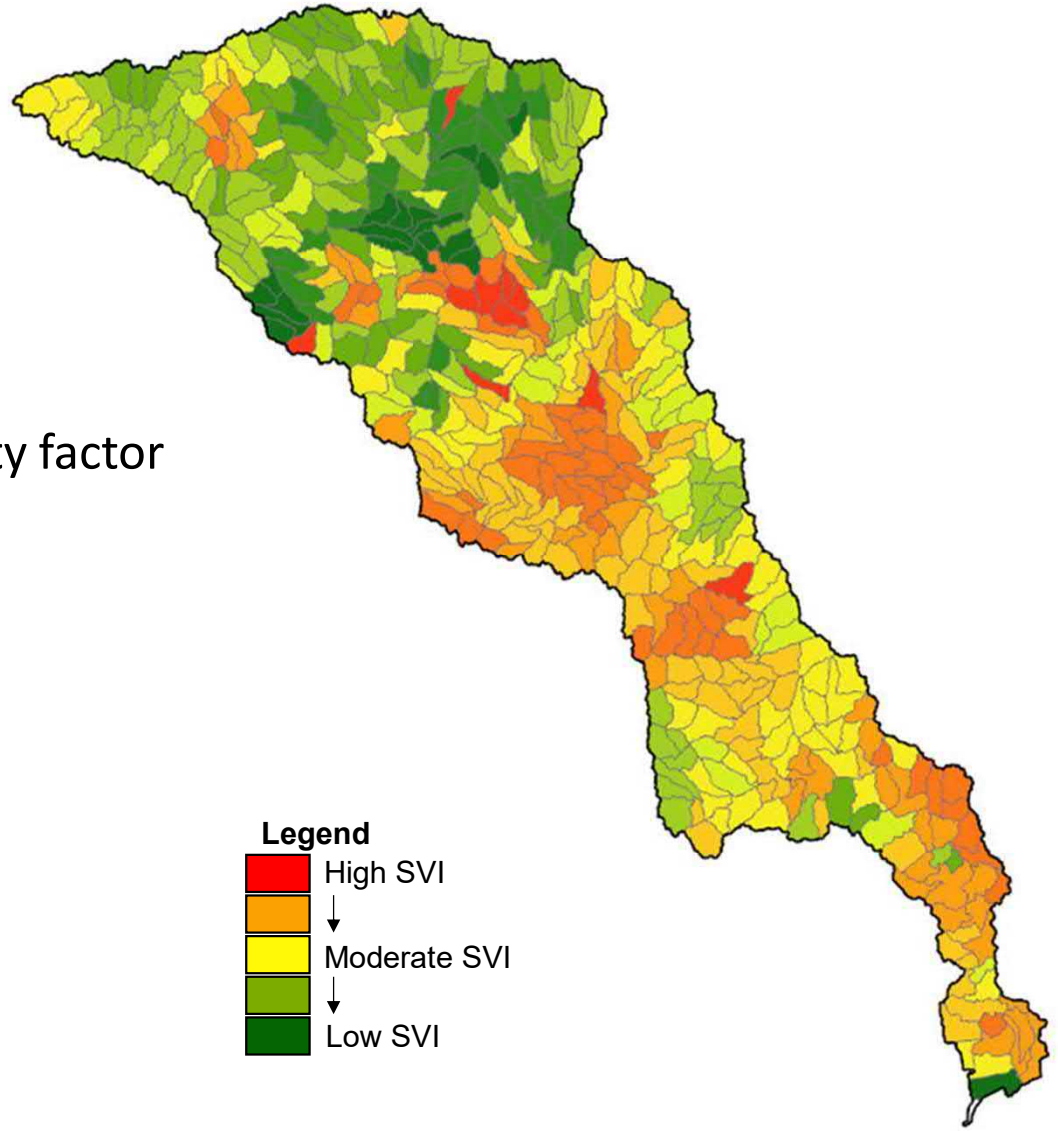
County

Has Floodplain Management Regulations

Other relevant factors

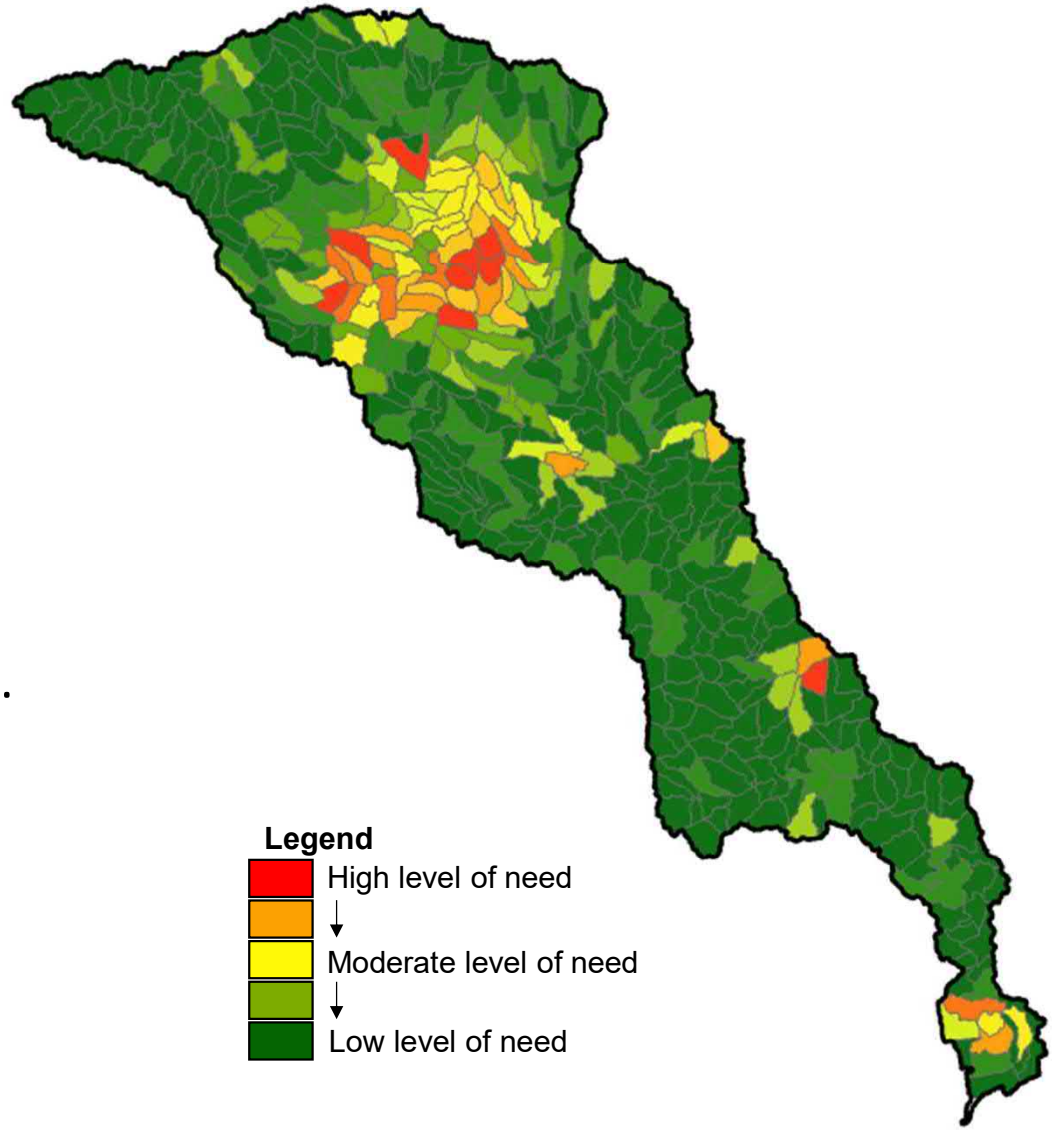
Task 4A – Social Vulnerability Index

- SVI to be used as a criticality factor

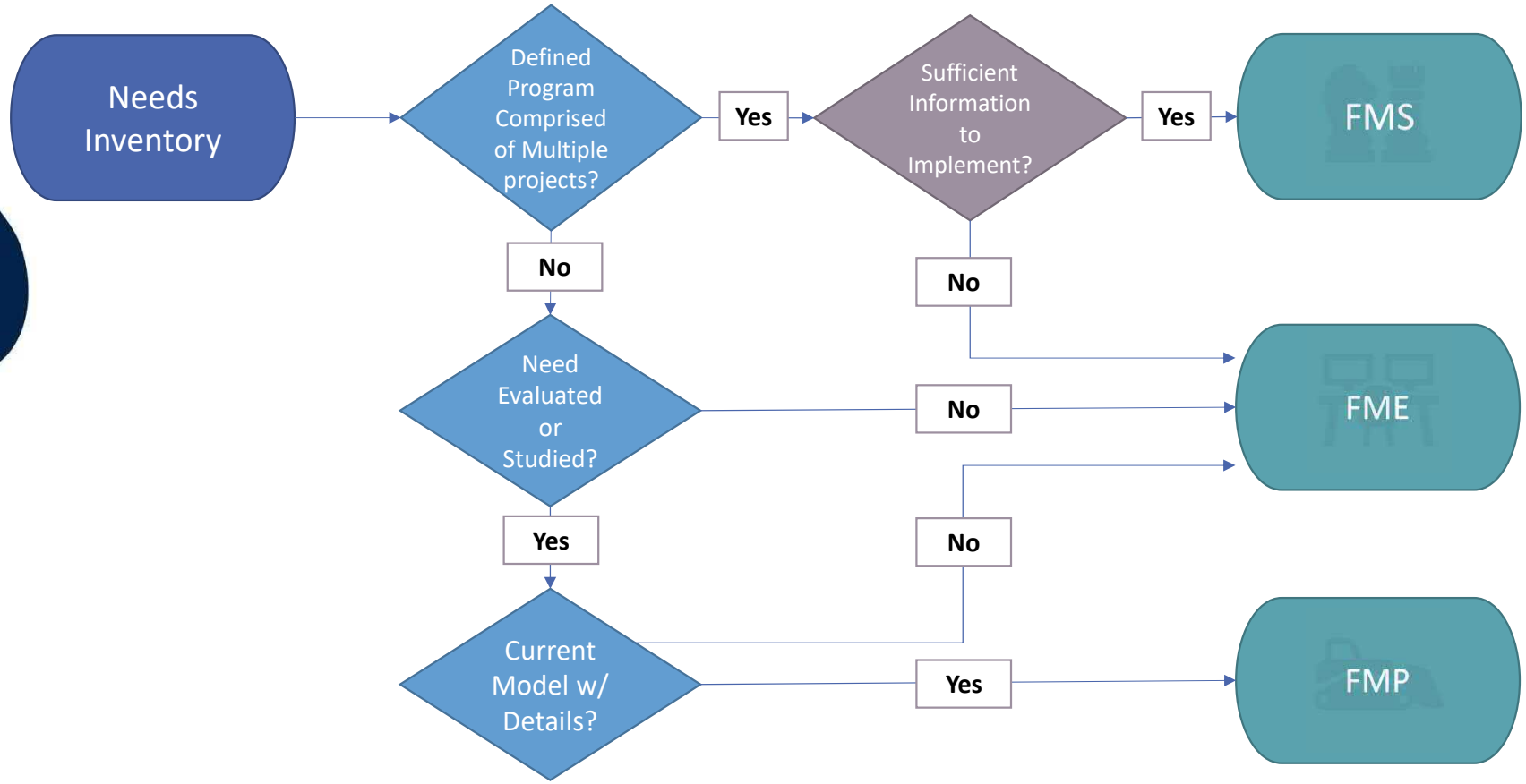


Task 4A Results

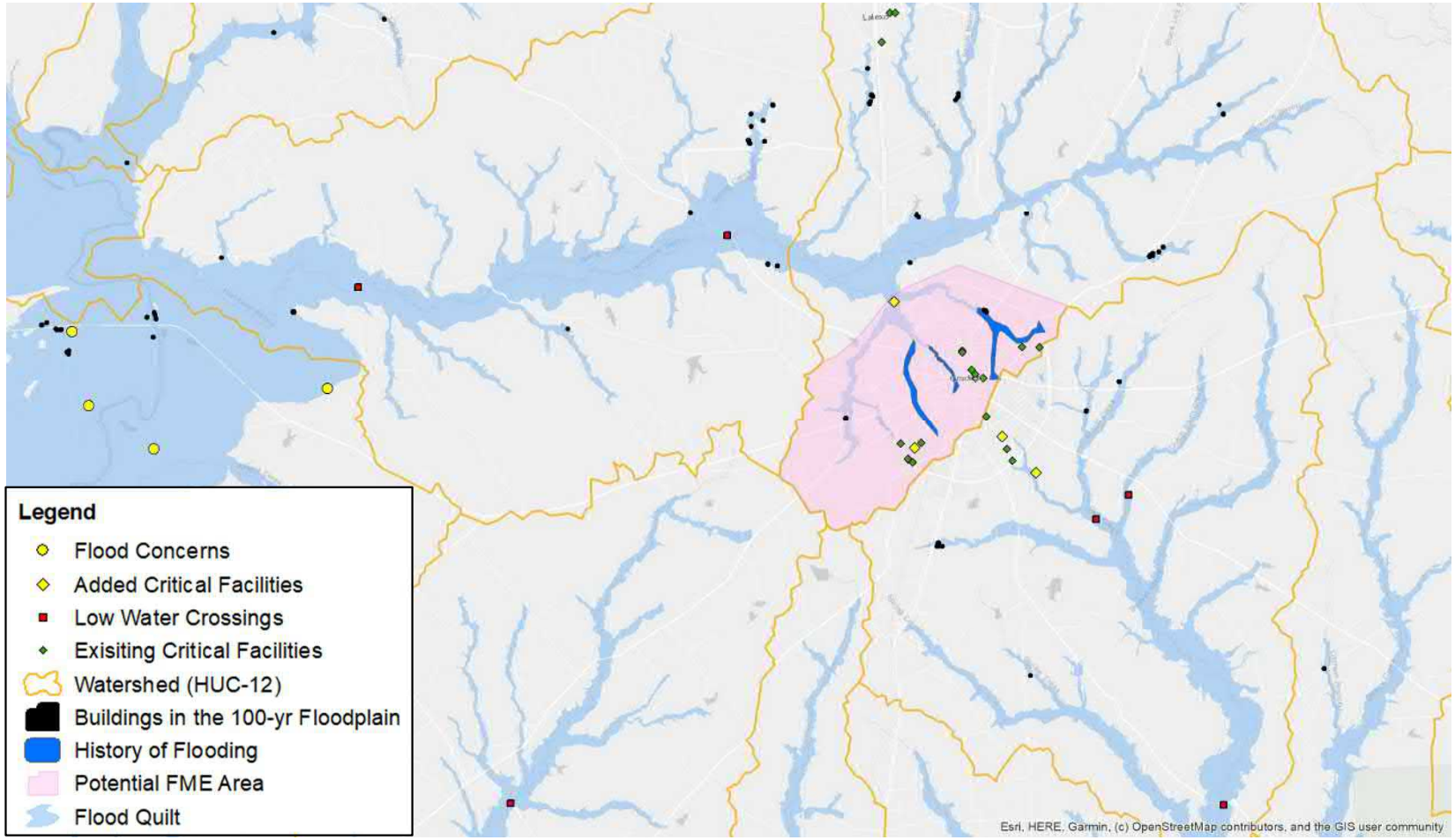
- Hot spots are generated based on layering the data from previous tasks.
- This is a GIS process using a ranking/scoring system to determine the “worst” spots or where to focus our efforts.
- Divided into HUC-12 boundaries as potential project boundaries.



Process for Identifying FME, FMS, FMP



Example for Potential FME - Crockett, Texas



Consider approval of process to identify potential FMEs and potentially feasible FMSs and FMPs

Ch. 8 Administrative, Regulatory & Legislative Discussion

4000 Fossil Creek Boulevard
Fort Worth, Texas 76137
(817) 847-1422
Fax (817) 232-9784

DRAFT MEMORANDUM

TO:	Region 3 Trinity Regional Flood Planning Group (RFPG)	**DATE:**	September 15, 2021
FROM:	Stephanie Griffin	**AVO:**	43791.001 000800
EMAIL:	sgriffin@halff.com		
SUBJECT:	Potential Ideas for Consideration in Chapter 8 Administrative, Regulatory and Legislative Recommendations – Trinity Regional Flood Plan		

Throughout the development of the Trinity Regional Flood Plan, the RFPG has discussed multiple topics during its meetings that warrant future discussion and consideration for potential inclusion in the plan with regards to potential Administrative, Regulatory and Legislative Recommendations. This memo serves as the buoy for the Trinity RFPG to place potential ideas for future discussion and decision-making with regards to Chapter 8.

As of August 31, 2021, the following ideas have been suggested for potential consideration by the RFPG:

1. Assist smaller jurisdictions in preparing funding applications or make the application process easier. Current funding opportunities require significant time and resources to prepare a project for application, as well as the application itself. The smaller jurisdictions have fewer resources to put together a project to a point where the project is detailed enough for a funding application. The application forms are also time consuming and confusing. Even phased applications can be challenging for jurisdictions with limited resources. Thus, the smaller jurisdictions get left behind in current funding opportunities. (June 24, 2021 RFPG meeting)
2. Add legislative ability to allow counties the opportunity to establish and assess drainage (stormwater) utility fees. Legislation is needed to allow counties and others with flood control responsibilities to establish drainage (stormwater) utilities and collect fees for these services. Extend Local Government Code, Title 13, Subtitle A, Chapter 552 to allow counties the opportunity to establish and collect drainage utilities/fees (August 19, 2021 RFPG meeting and August 31, 2021 Goals Subcommittee meeting)
3. TxDOT design criteria should require all roadways to be elevated above the 1% ACE water surface elevation. (August 31, 2021 Goals Subcommittee meeting)
4. Funding for projects that benefit agricultural activities should not be scored or awarded based on a traditional benefit-cost ratio. (August 31, 2021 Goals Subcommittee meeting)
5. Flooding does not recognize jurisdictional boundaries. Remove barriers that prevent jurisdictions from working together to provide regional flood mitigation solutions. Provide for regional detention across jurisdictional boundaries. (August 31, 2021 Goals Subcommittee meeting)
6. Develop and allocate State funding to assist privately-owned dam owners with the costs associated in repairing and maintaining dam structures. (August 31, 2021 Goals Subcommittee meeting)

The following represents consultant team ideas through September 15, 2021.

1. Establish common criteria across the region or subregions (common floodplain management standards).
2. Clarify the phrase “regional flood entity responsibilities” and what that includes.
3. Educate county officials regarding the county’s ability/authorization to establish and enforce higher development standards.
4. Provide for alternative revenue generating sources of funding.
5. Provide funding and/or assistance to develop floodplain maps.
6. Develop a statewide database and tracking system to document flood-related fatalities that is publicly available.
7. Address the concern of “takings” with regards to floodplain development regulations, comprehensive plans, land use regulations and zooming ordinances.
8. Allow counties to have zoning authority.
9. Establish a levee safety program similar to the dam safety program.

Ch. 8 Discussion of Potential Recommendations

- Administrative
- Regulatory
- Legislative
- Other

LOOK-AHEAD

October
- No meeting

November
- Chapter 1 review
- Chapter 2 updates
- Chapter 3 review
- Chapter 4 updates

December
- Tech Memo approval

January 2022
- Tech Memo submitted to TWDB

February
- Chapter 2 review
- Chapter 4 review
- Tech Memo addendum approval

March
- Tech Memo addendum submitted to TWDB

10. Updates from adjoining coastal regions

11. Updates from Planning Group Sponsor

12. Administrative costs

13. General public comments

Limit 3 minutes per person

14. Announcements

15. Meeting date for next meeting

16. Agenda items for next meeting

17. Adjourn