



# Caddo Parish Hazard Mitigation Plan Update Public Meeting

November 2, 2023

Shreveport, LA



# Introductions

- **Caddo Parish OHSEP Director/Parish Staff**
- **Stephenson Disaster Management Institute (SDMI) at LSU**
  - Chris Rippetoe – Hazard Mitigation Program Manager
  - Jason Martin – Emergency Management Analyst
- **Governor's Office of Homeland Security and Emergency Preparedness**
  - Jeffrey Giering – State Hazard Mitigation Officer
  - Marion Pearson – Hazard Mitigation Planner



# Agenda



**Introductions**



**Hazard Mitigation  
Overview**



**Planning Process**



**Risk Assessment  
Maps**



**Public Outreach  
Activities**



# Why We're Here



**2023 CADDO PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN**

UNINCORPORATED CADDO PARISH,  
BELCHER, BLANCHARD, GILLIAM,  
GREENWOOD, HOSSTON, IDA,  
MOORINGSPOUT, OIL CITY,  
RODESSA, SHREVEPORT, VIVIAN

STATE OF LOUISIANA

This document has been prepared by:  
Louisiana Governor's Office of Homeland Security  
and Emergency Preparedness  
7667 Independence Blvd.  
Baton Rouge, LA 70806

With Support From:  
Department of Geography and Anthropology  
Department of Construction Management  
Louisiana State University  
Baton Rouge, LA 70803

University of New Orleans Center for Hazards Assessment, Response & Technology  
[UNO-CHART]  
2000 Lakeshore Drive  
New Orleans, LA 70148

HAZARD MITIGATION GUIDE  
2018



# Hazard Mitigation Is...

- Any action taken to reduce long term risk to life and property;
- On-going process that occurs before, during, and after disasters;
- Mitigation actions help prevent damage to a community's infrastructure, economic, cultural and environmental assets;
- Minimize operational downtime and accelerate recovery of government and the private sector after an event;
- ***Implementation of mitigation actions leads to building stronger, safer and smarter!***



# Why the Plan is Required

- Disaster Mitigation Act of 2000 (DMA 2000)
  - Section 322 of the Act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard mitigation plans as a precondition for receiving FEMA mitigation project grants.
- Title 44 Code of Regulations (CFR) §201.6
  - Meet federal requirements for approval and eligibility for FEMA Hazard Mitigation Assistance grant programs.



- The approved Caddo Parish Hazard Mitigation Plan will allow for distribution of HM funding following future disasters.



# Planning Process to Date

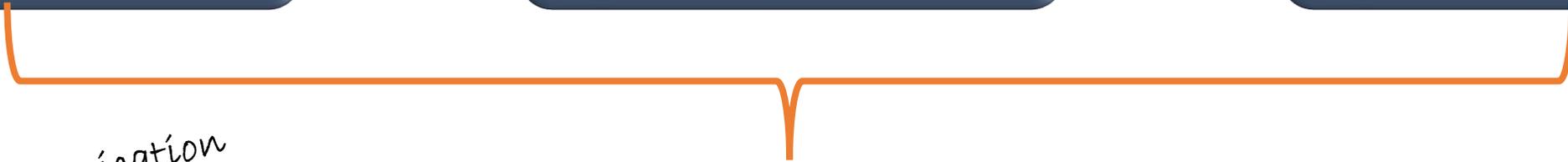
Initial Planning Meeting with OHSEP



Full Planning Committee Meeting



Risk Assessment Review with Planning Committee

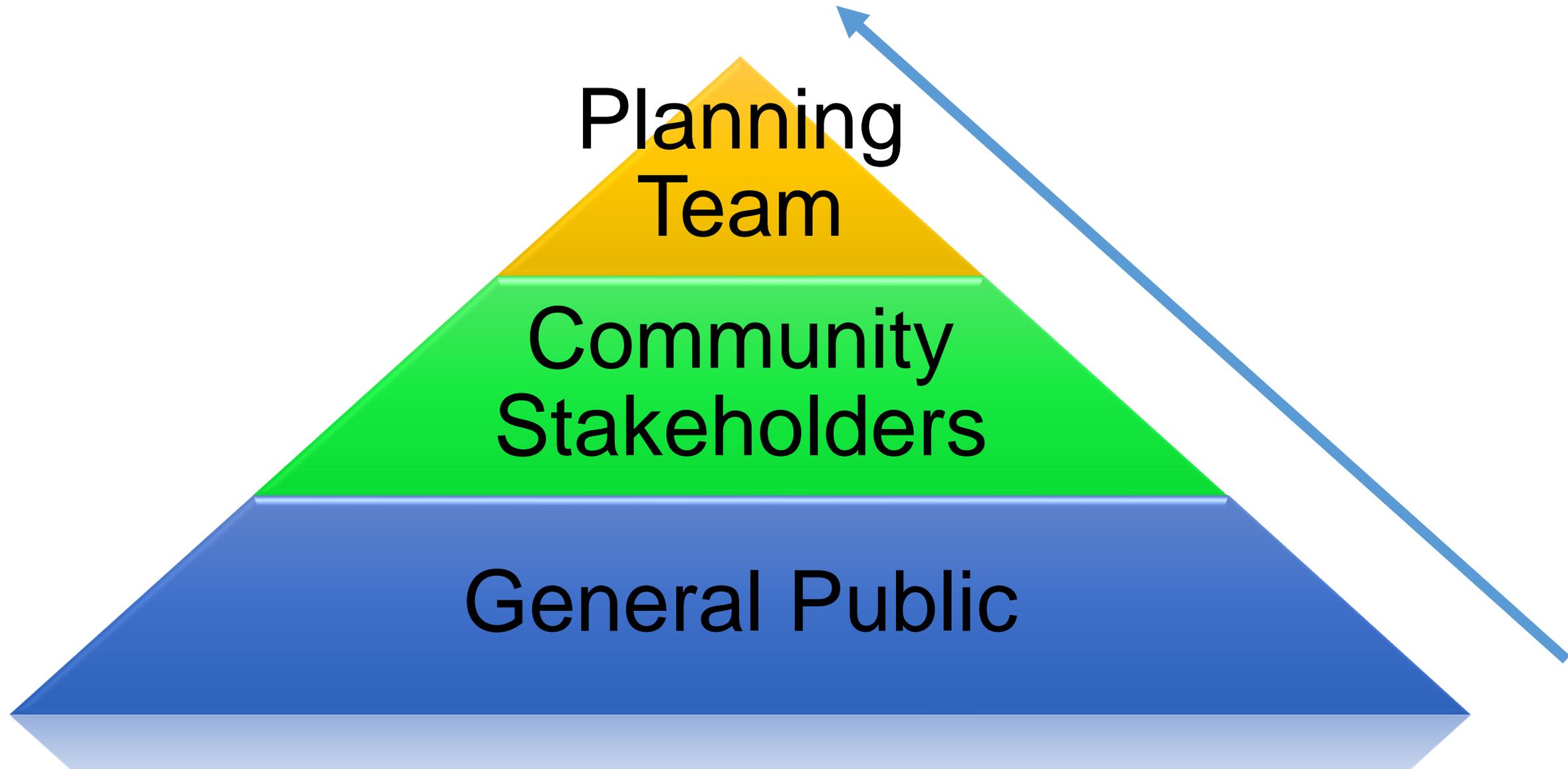


Public Meeting

*Constant communication with Parish and Committee members!*



# Collaborative Planning Approach



# Hazard Mitigation Plan Development

## 2023 CADDO PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

UNINCORPORATED CADDO PARISH,  
BELCHER, BLANCHARD, GILLIAM,  
GREENWOOD, HOSSTON, IDA,  
MOORINGSPOUT, OIL CITY,  
RODESSA, SHREVEPORT, VIVIAN



# Plan Layout

- **Section 1: Introduction**
  - Updated parish description
  - Updated demographics
  - Economics
- **Section 2: Hazard Identification and Parish-wide Risk Assessment**
- **Section 3: Capability Assessment**
- **Section 4: Mitigation Strategies**
  - New actions
  - Action updates
  - Survey results



# Plan Layout

- **Appendix A:** Planning Process
- **Appendix B:** Plan Maintenance
- **Appendix C:** Parish Critical Facilities
- **Appendix D:** Plan Adoption
- **Appendix E:** State Required Worksheets



# Hazard Identification and Risk Assessment

- The plan includes descriptions of the natural hazards that affect the jurisdictions in the planning area.
- The hazards identification includes the following:
  - *locations affected*
  - *extent or strength*
  - *previous occurrences*
  - *probability of future events*



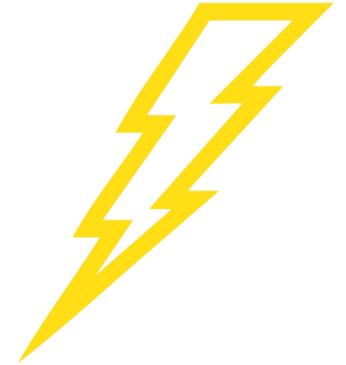
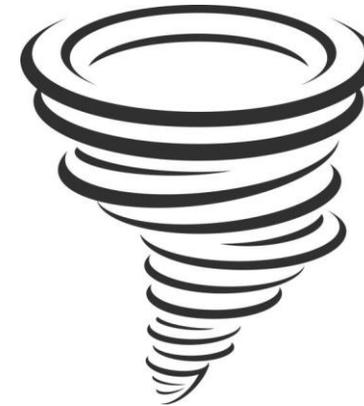
# Hazard Identification And Risk Assessment

- Based on Currently Profiled Prevalent Natural Hazards
- Identify Any New Hazards
- Previous Occurrences
- Impact from Events
- Probability of Future Events
- Critical Facilities
- Future Development Trends
- Future Hazard Impacts
- Zoning and Land Use



# Hazard Identification And Risk Assessment

- Dam Failure
- Drought
- Excessive Heat
- Flooding
- Levee Failure
- Thunderstorms
- Tornadoes
- Tropical Cyclones
- Wildfires
- Winter Weather

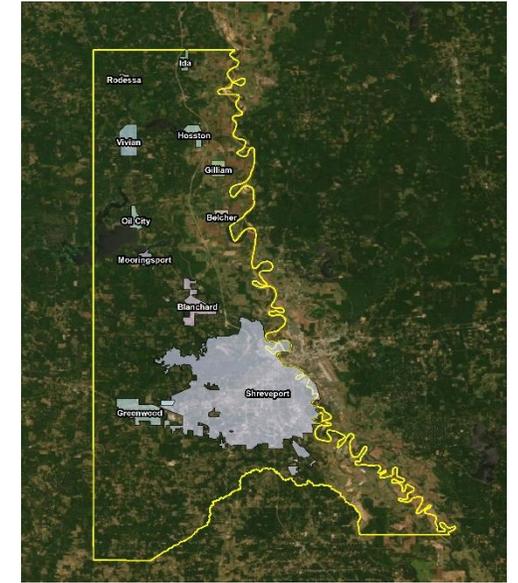


# Risk Matrix for Caddo Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Dam Failure	1	3	4	1	3	2.4
Drought	3	2	4	2	3	2.8
Excessive Heat	3	2	4	1	2	2.5
Flooding	4	4	3	4	3	3.65
Levee Failure	1	3	4	1	3	2.4
Thunderstorms - Hail	4	2	3	3	1	2.7
Thunderstorms - Lightning	4	2	2	3	1	2.5
Thunderstorms - Wind	4	2	3	3	1	2.7
Tornadoes	4	3	2	4	3	3.2
Tropical Cyclones	3	4	4	1	4	3.3
Wildfires	3	3	4	1	2	2.75
Winter Weather	3	4	4	1	2	3

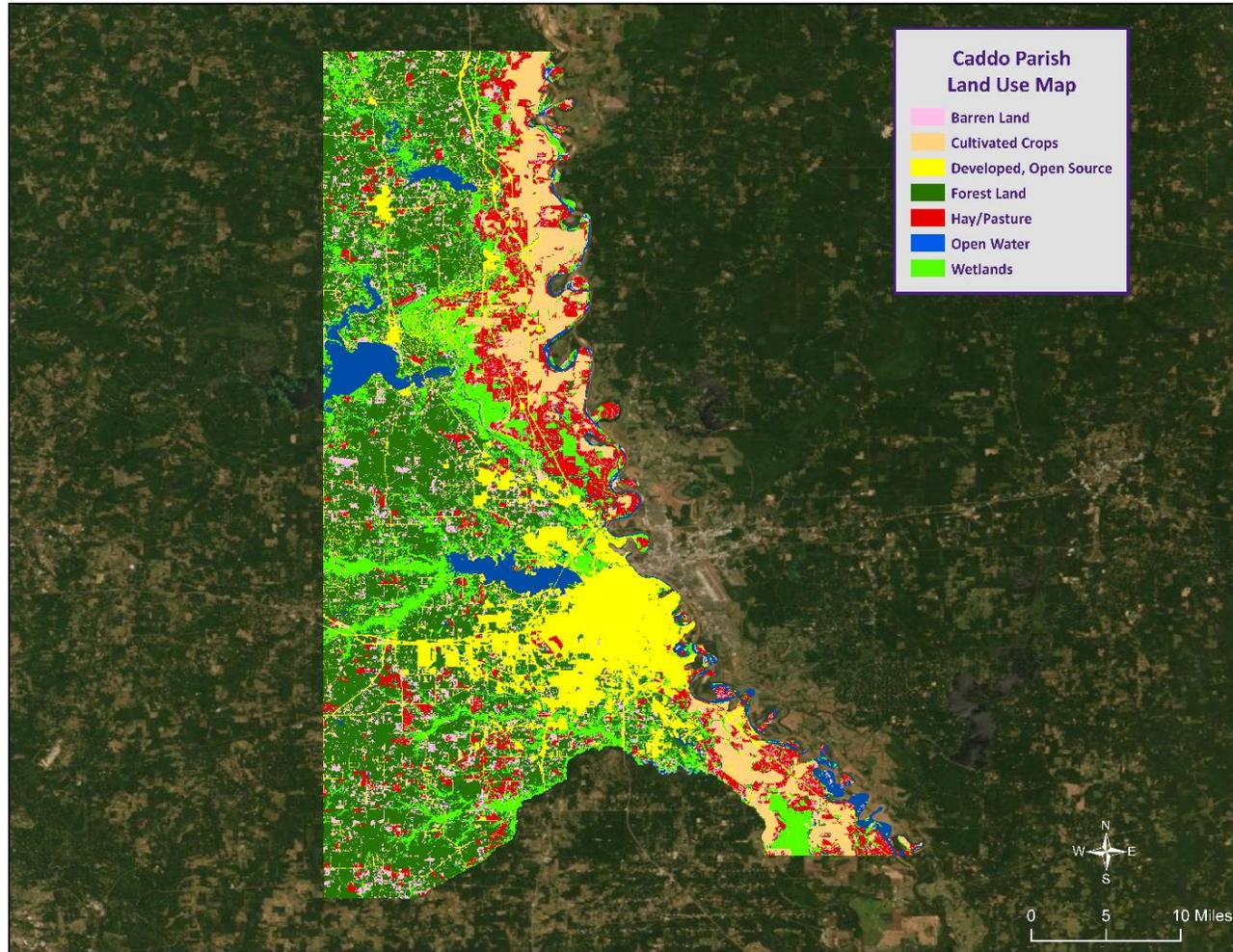
Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9





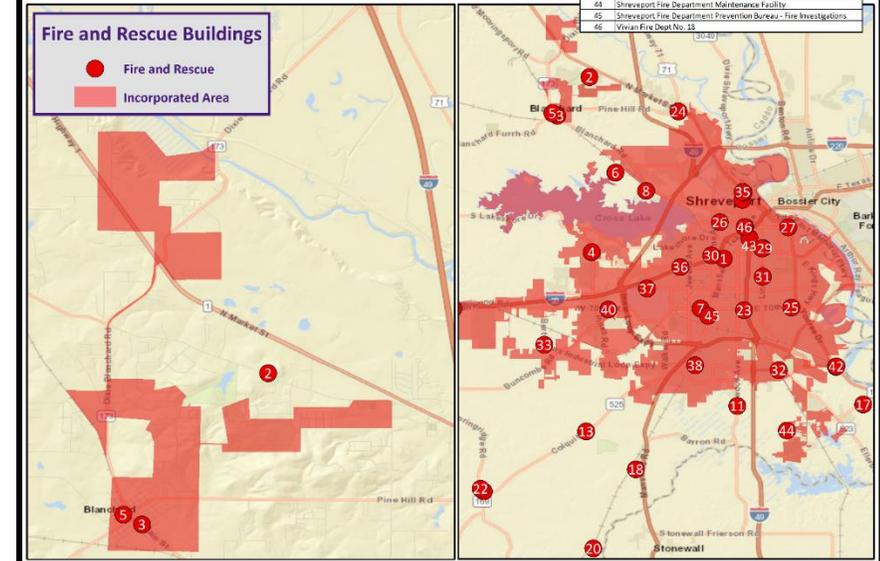
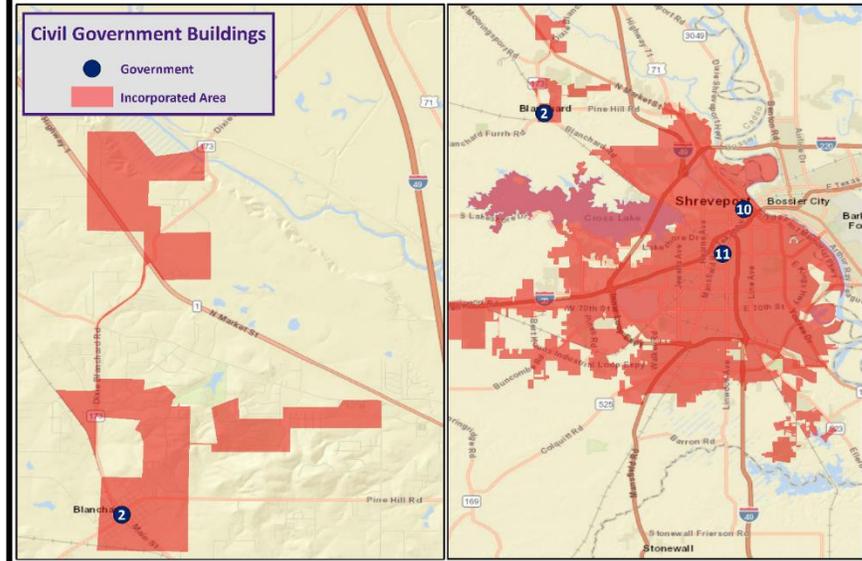
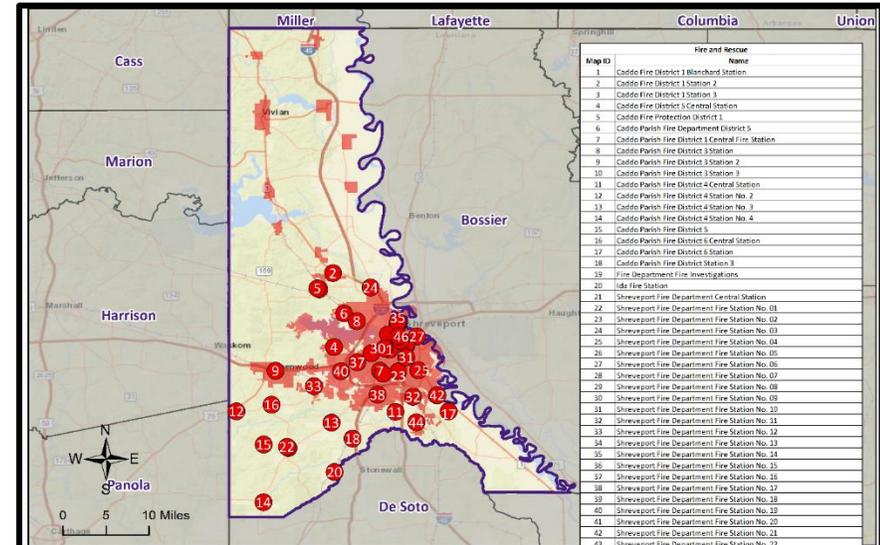
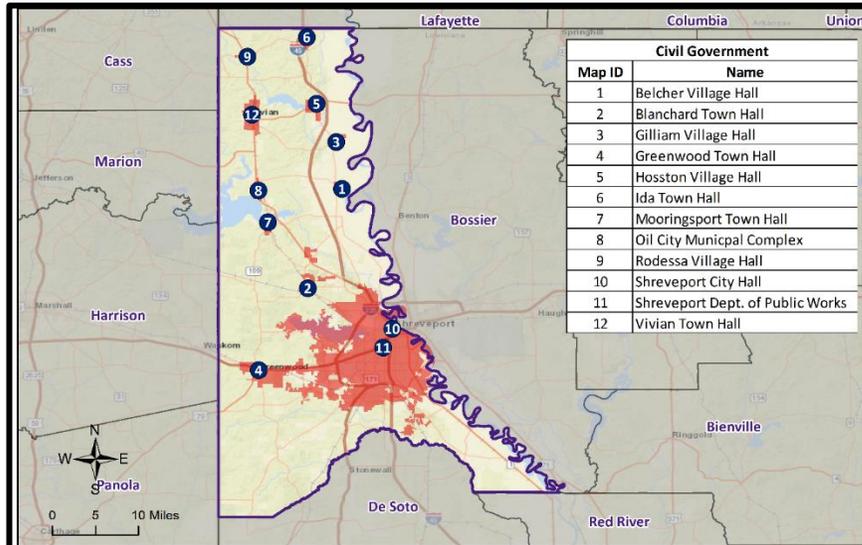
# Risk Assessment Maps

# Caddo Parish Land Use



Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	106,276	19%
Wetlands	85,984	16%
Forest Land (Not including forested wetlands)	221,428	40%
Urban/Development	99,266	18%
Water	34,790	6%

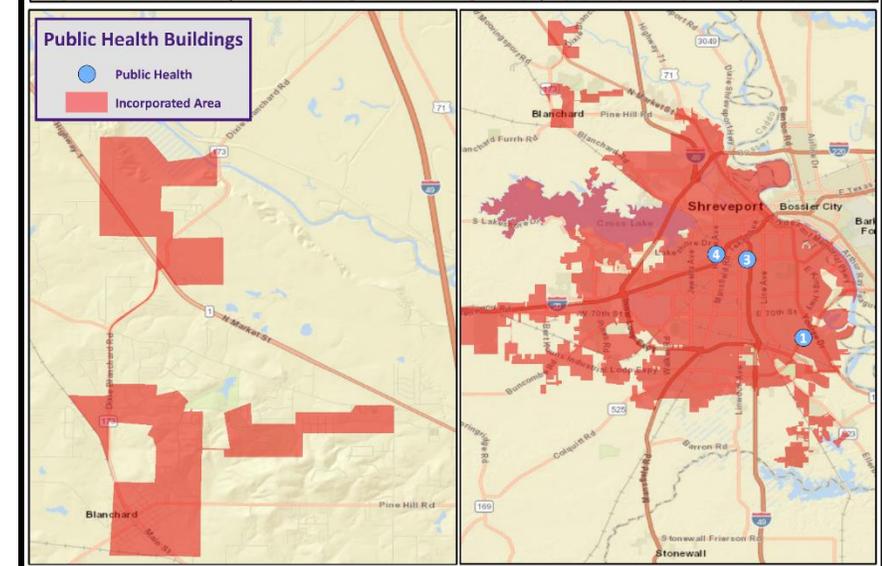
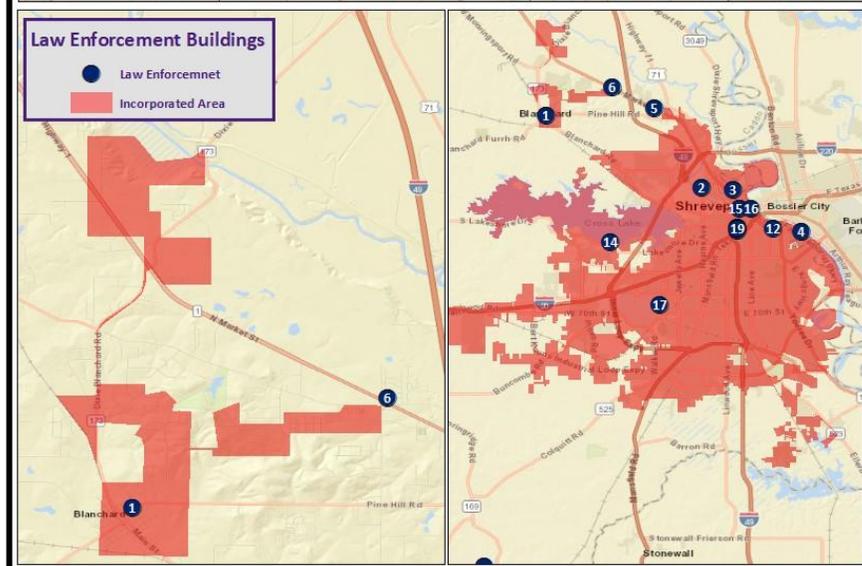
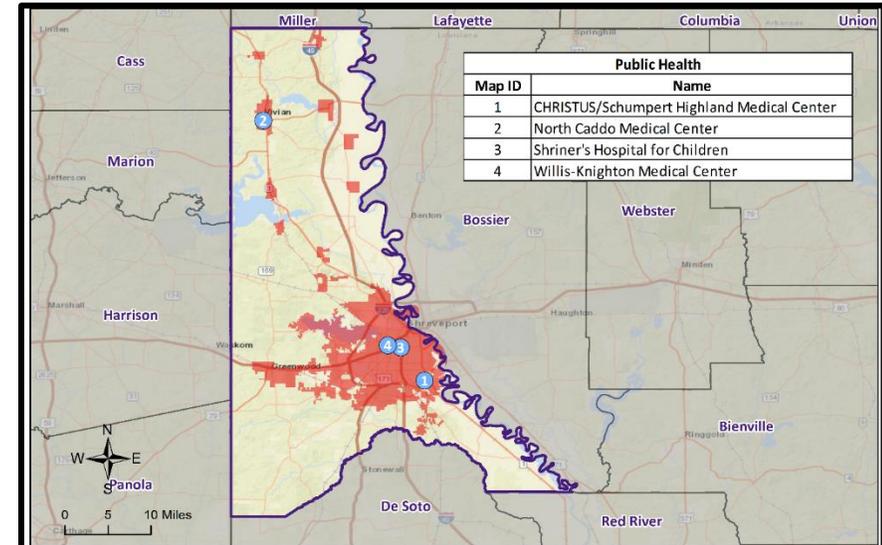
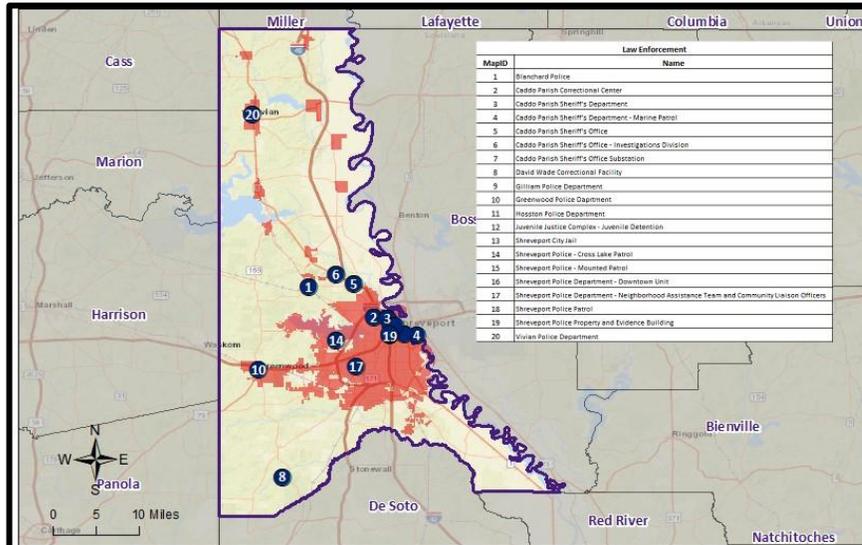
# Caddo Parish Critical Facilities



## Civil Government

## Fire & SAR

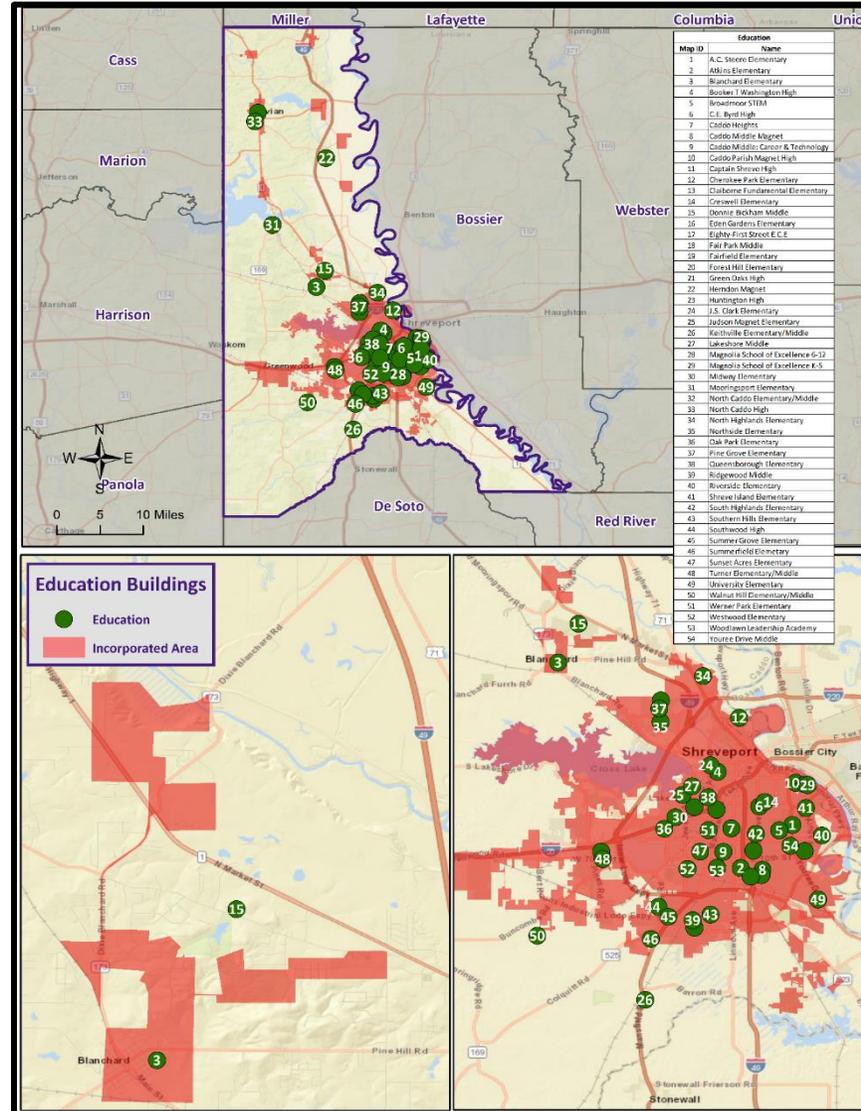
# Caddo Parish Critical Facilities



**Law Enforcement**

**Public Health**

# Caddo Parish Critical Facilities



## Public Education

# Dam Failure

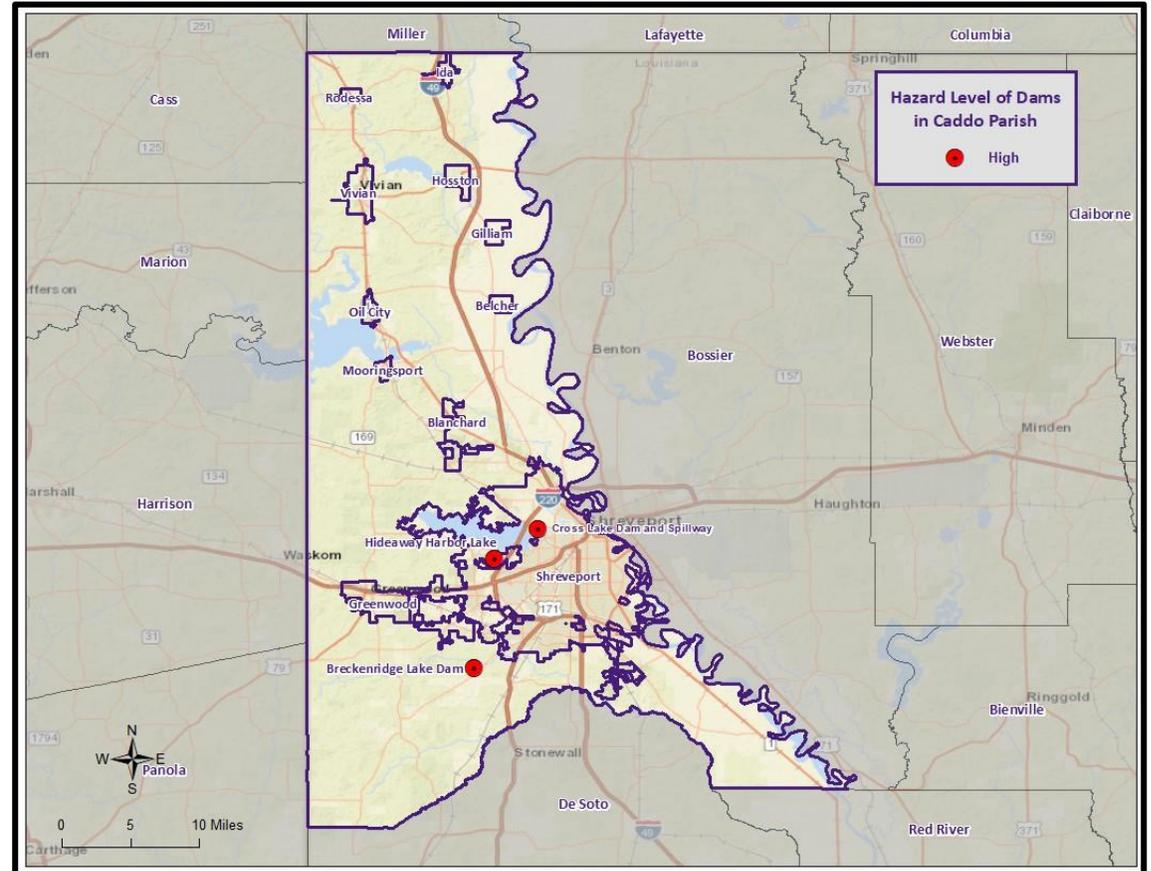


- A dam is a barrier across flowing water that obstructs, redirects, or slows the flow, often creating a reservoir or lake.
- There are five main causes of dam failure:
  - ✓ Overtopping
  - ✓ Foundation Defects
  - ✓ Cracking
  - ✓ Inadequate maintenance and upkeep
  - ✓ Piping



# Location of Dams in Caddo Parish

System	Rating	Height (ft)	Storage (Acre-Feet)	Dam Type	Last Inspection Date
Cross Lake Dam and Spillway	High	50	215,000	Earth	8/26/2022
Breckenridge Lake Dam	High	21	200	Earth	10/13/2022
Hideaway Harbor Lake	High	17	400	Earth	10/13/2022



# Drought

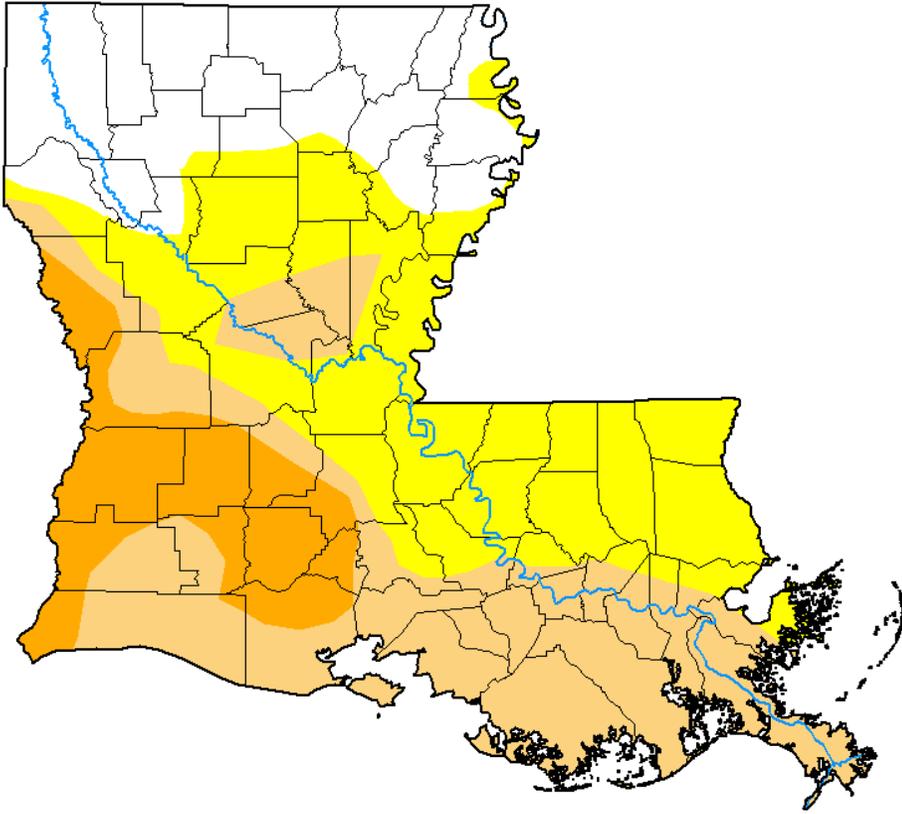


- A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water either by evaporation or transpiration through plant leaves.
- There are four classes of drought:
  - ✓ Meteorological Drought
  - ✓ Hydrologic Drought
  - ✓ Agricultural Drought
  - ✓ Socioeconomic Drought
- Generally, the entire parish will be affected by drought
  - Not limited to one particular location within the parish



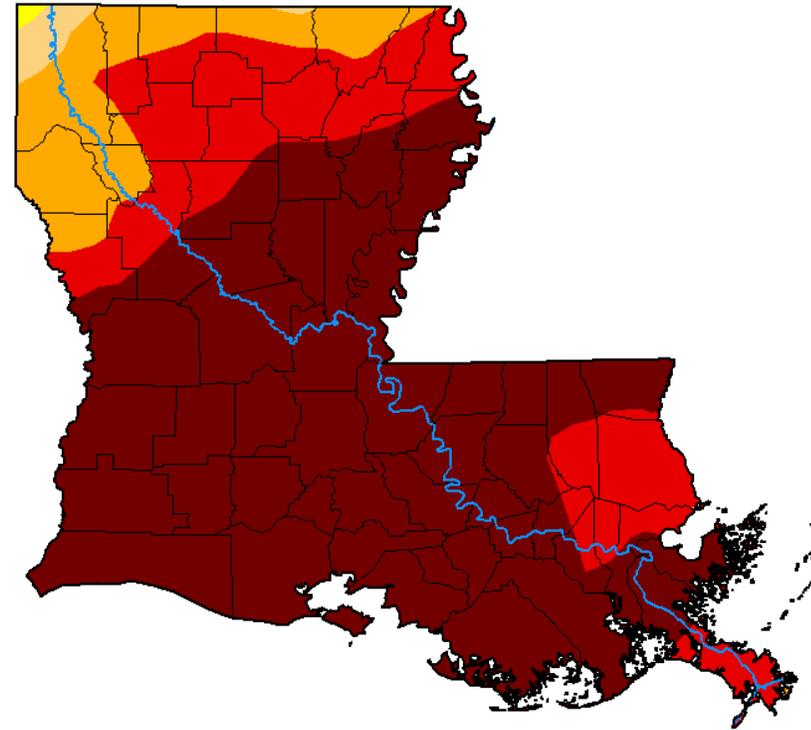
# State-wide Drought Monitor

July 25, 2023



U.S. Drought Monitor  
Louisiana

October 24, 2023  
(Released Thursday, Oct. 26, 2023)  
Valid 8 a.m. EDT



**Intensity:**

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

**Author:**

Rocky Bilotta  
NCEI/NOAA



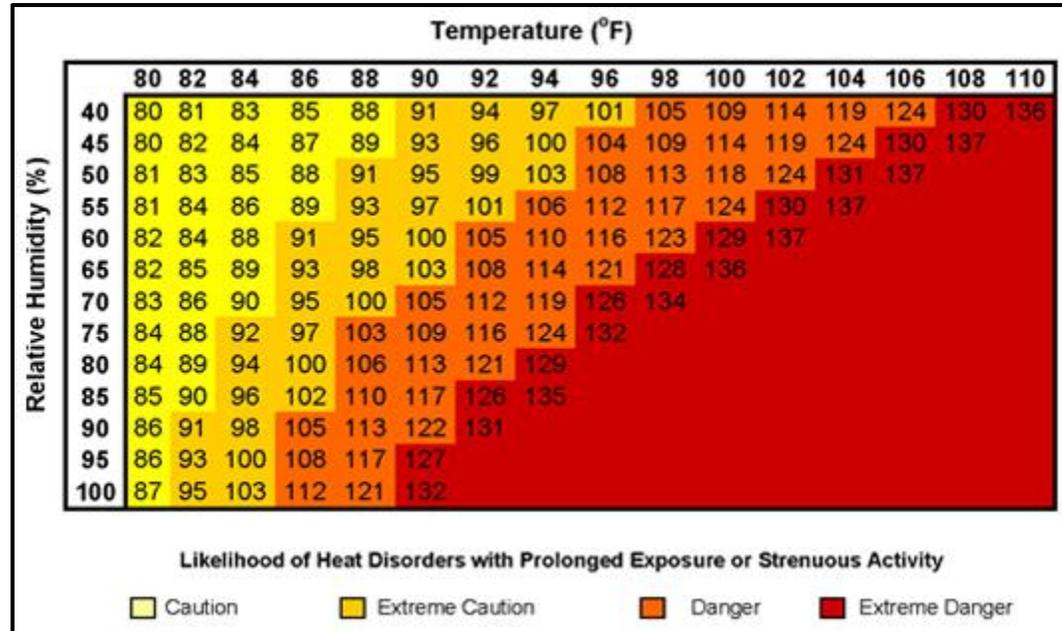
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# Excessive Heat

- No universal definition for Excessive Heat
- Often seen in conjunction with regional drought
- Heat waves are easier to define
  - At least 5 consecutive days where the daily max temperature exceeds the average max temperature by 9 degrees



# Excessive Heat



Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning.
91°F to 103°F	Moderate	Implement precautions and heighten awareness.
103°F to 115°F	High	Additional precautions to protect workers.
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures.



# Flooding

- A flood is the overflow of water onto land that is usually not inundated.
- The National Flood Insurance Program defines a flood as “a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.”



# Flooding

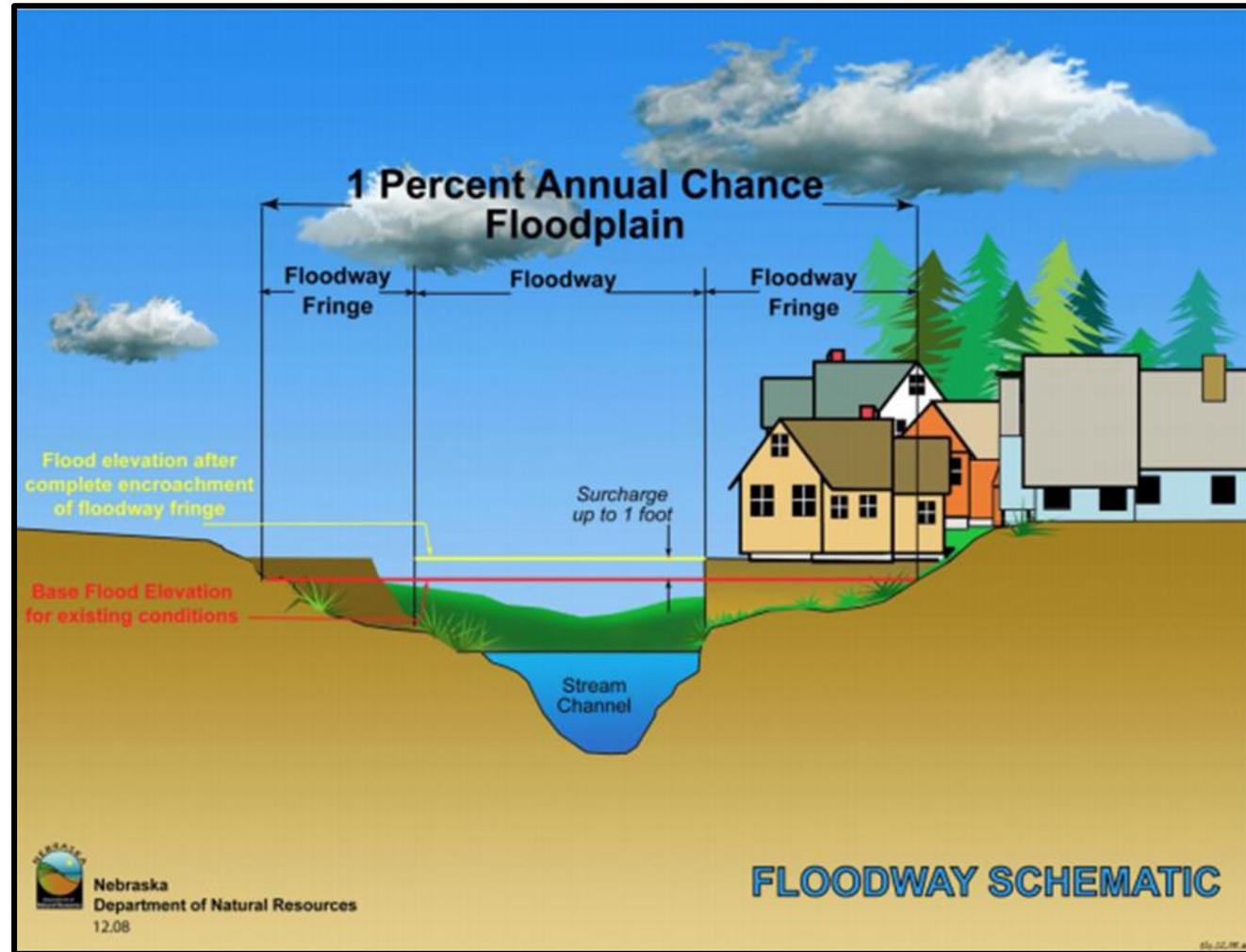


In Louisiana, six specific types of flooding are of main concern:

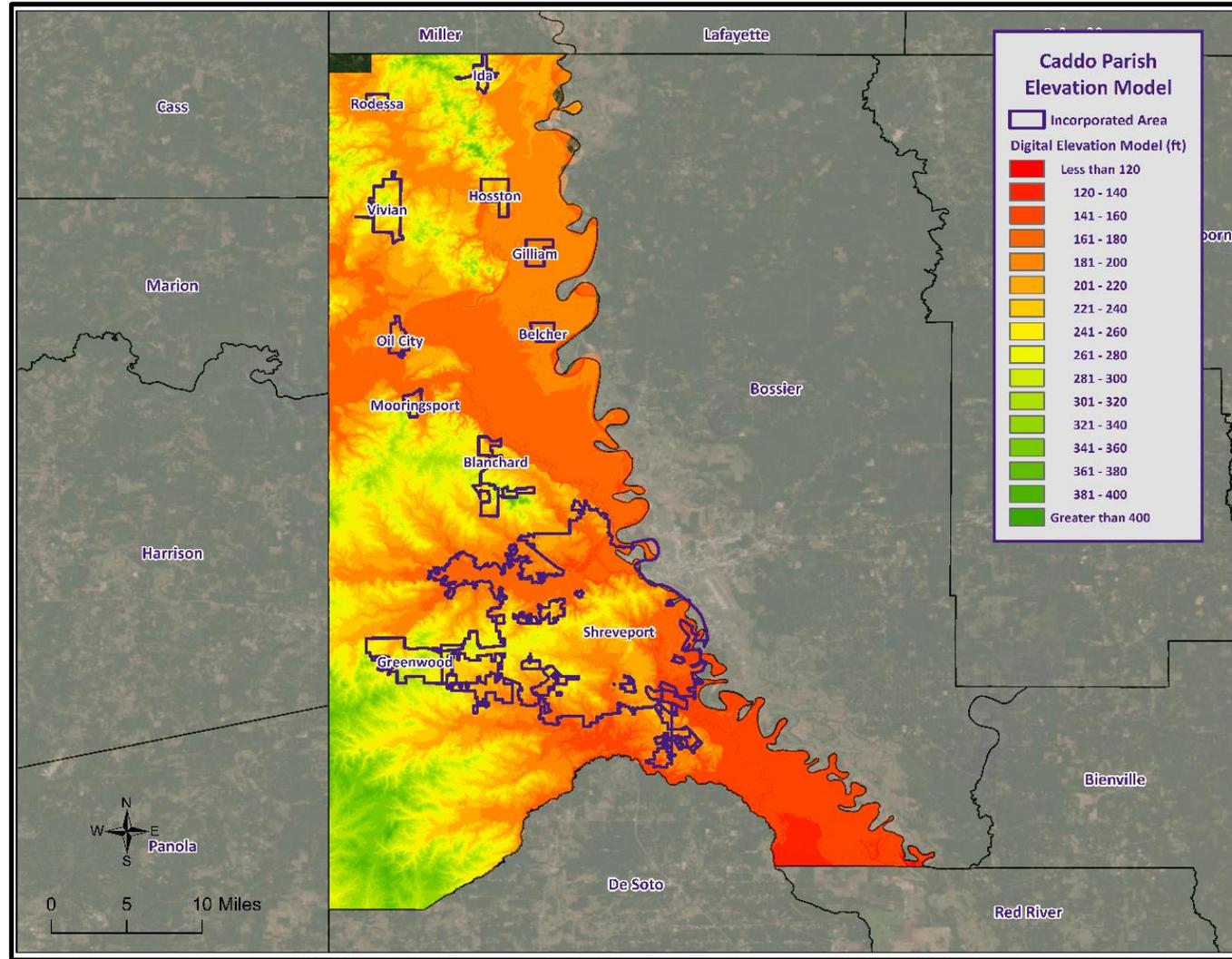
- Riverine
- Flash
- Ponding
- Backwater
- Urban
- Coastal



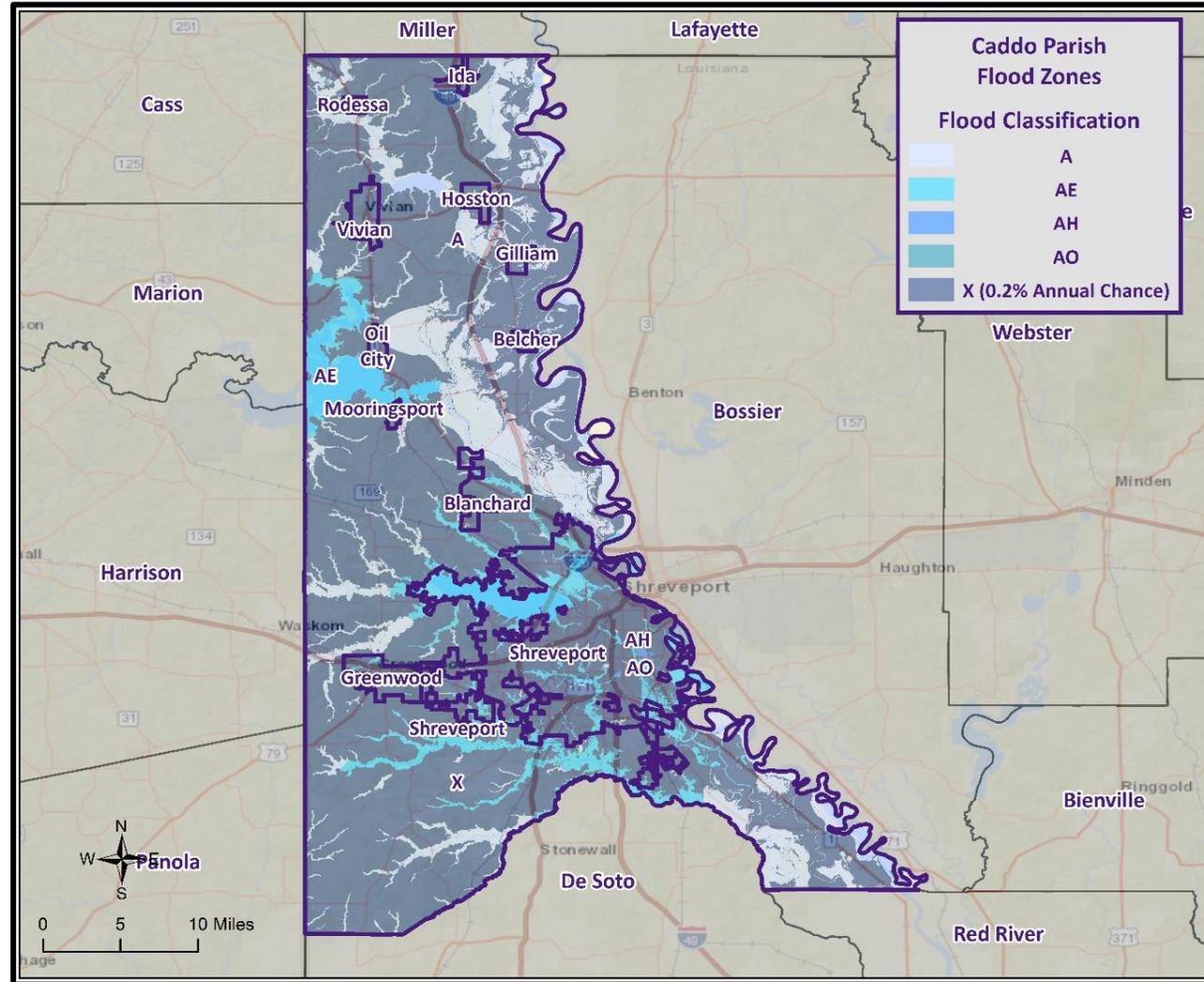
# Floodway Diagram



# Digital Elevation Model

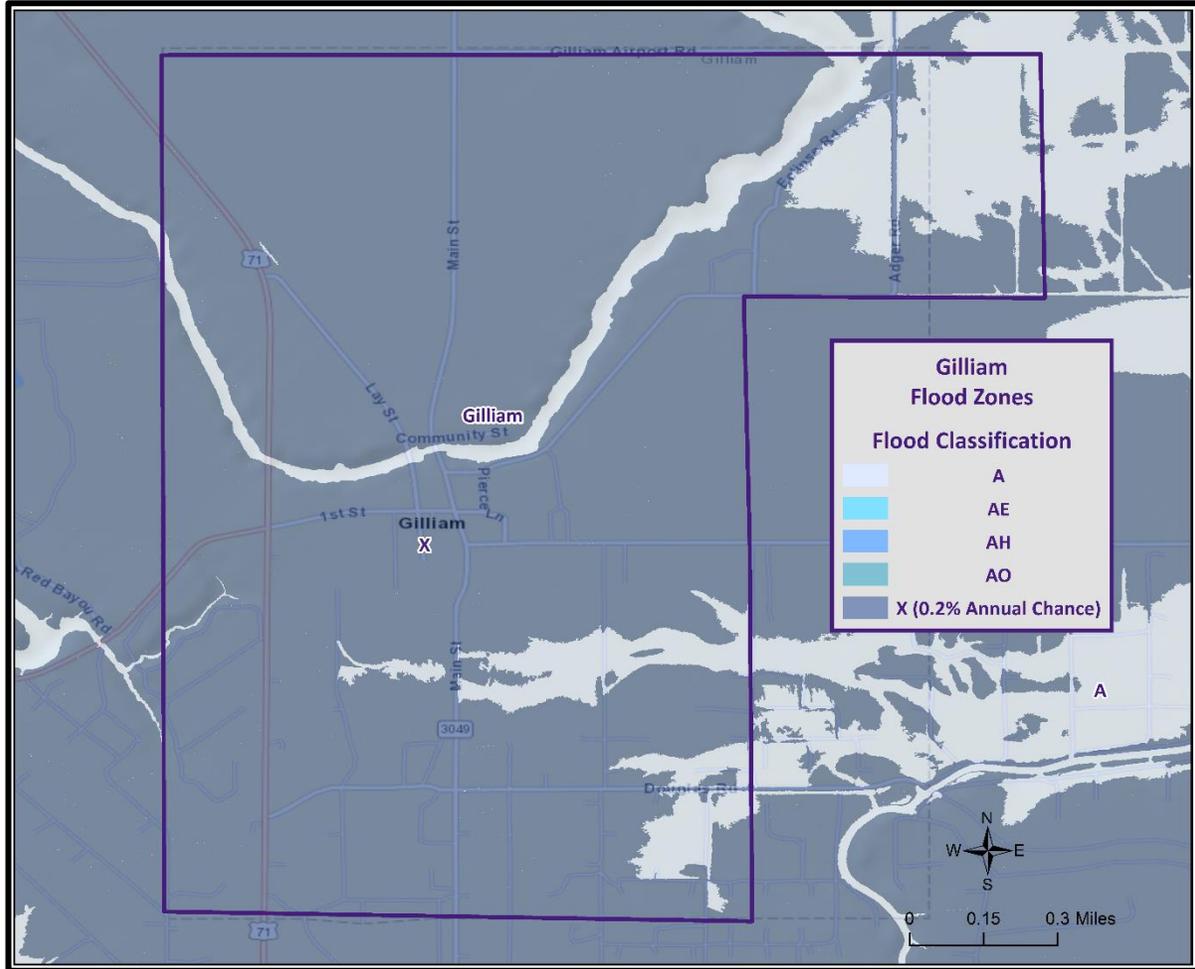


# Caddo Parish Flood Map

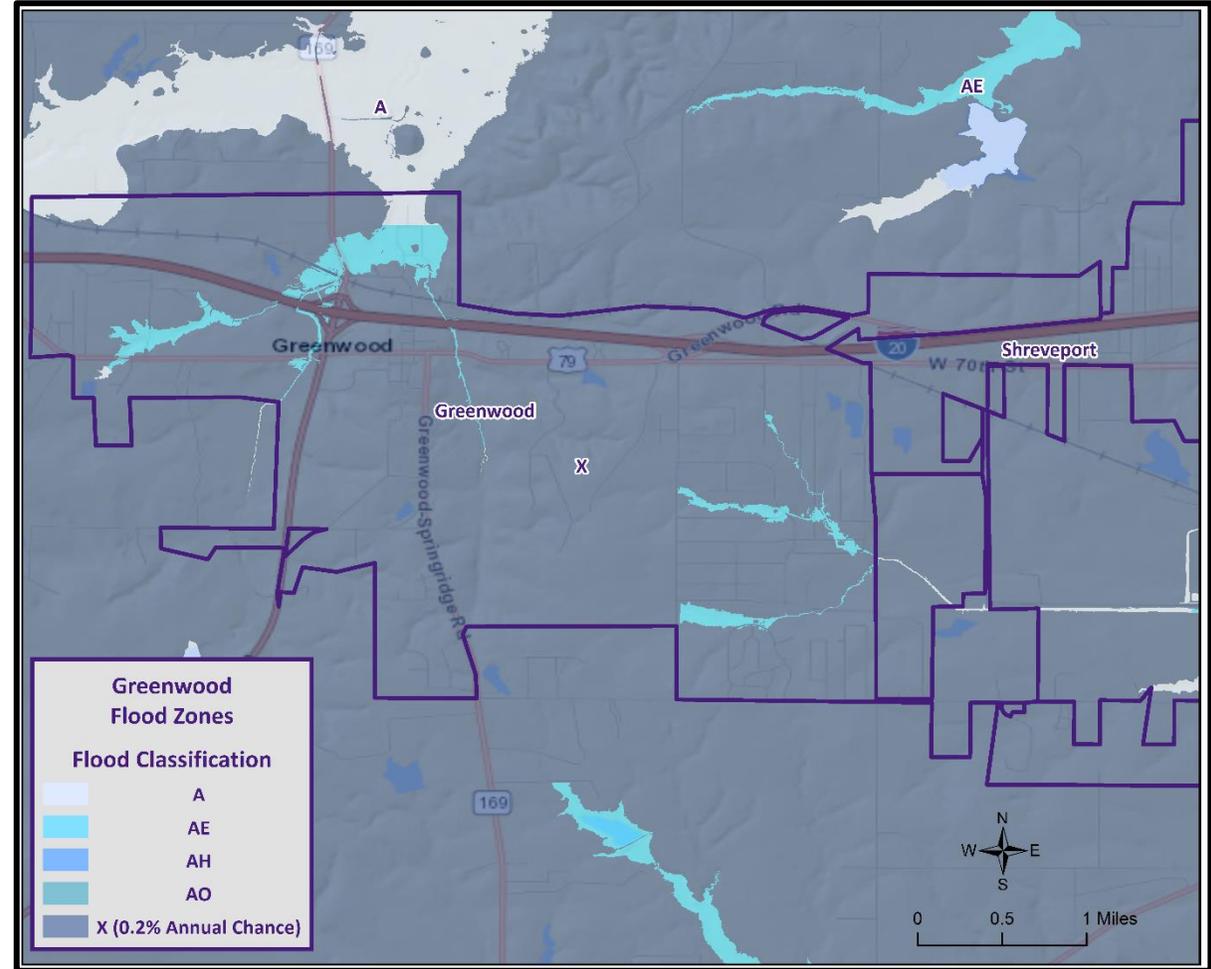




# Municipal Flood Maps

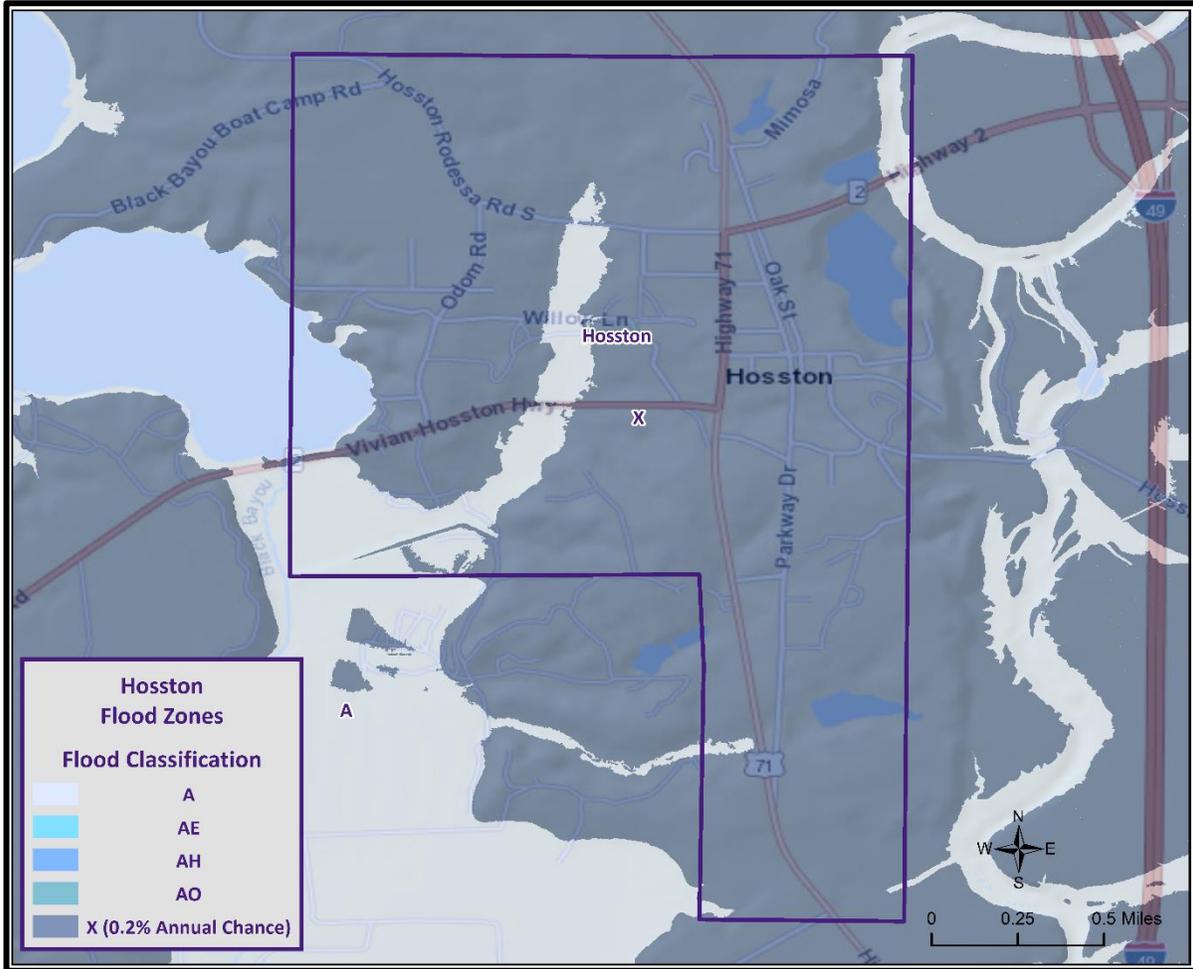


**Gilliam**

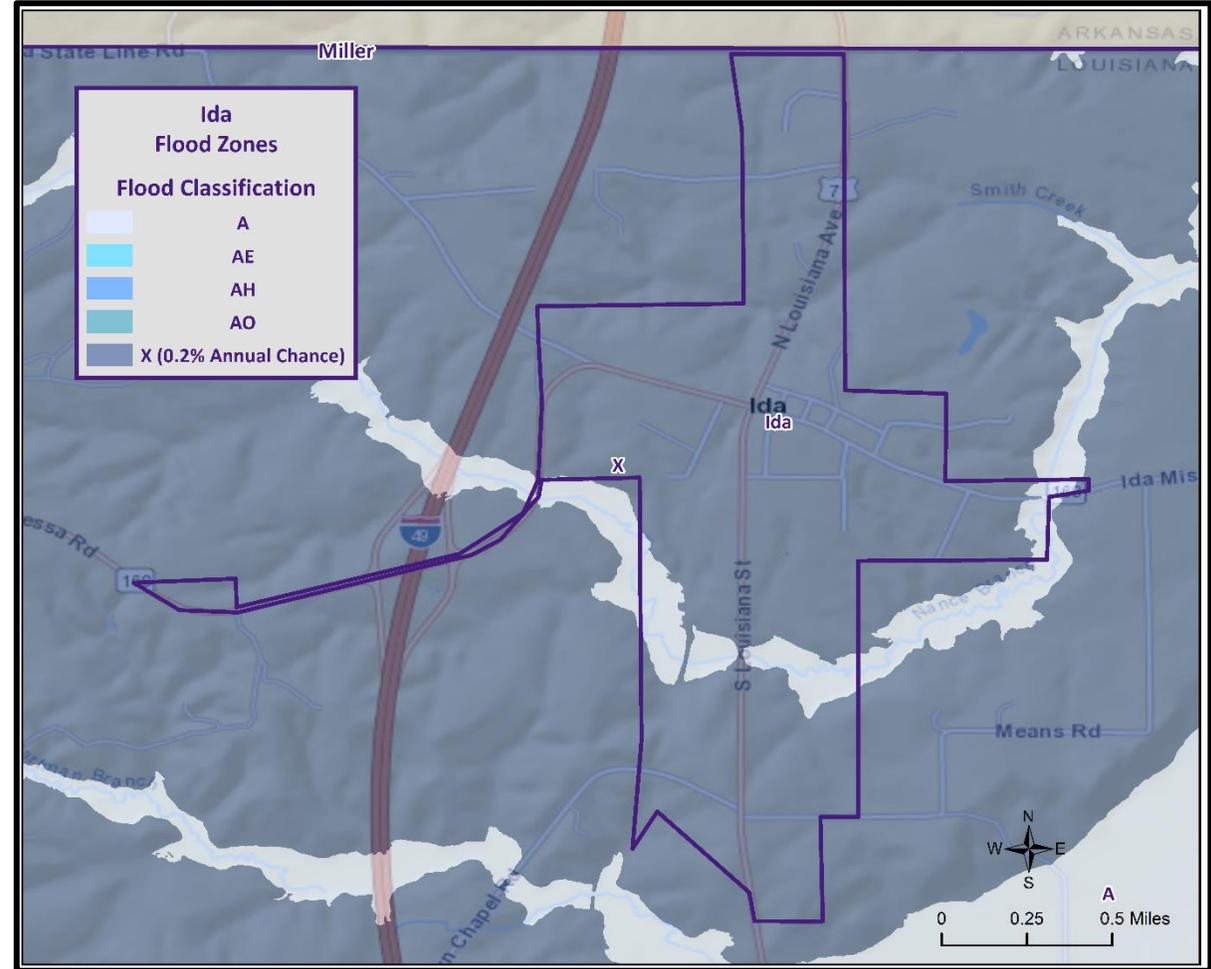


**Greenwood**

# Municipal Flood Maps

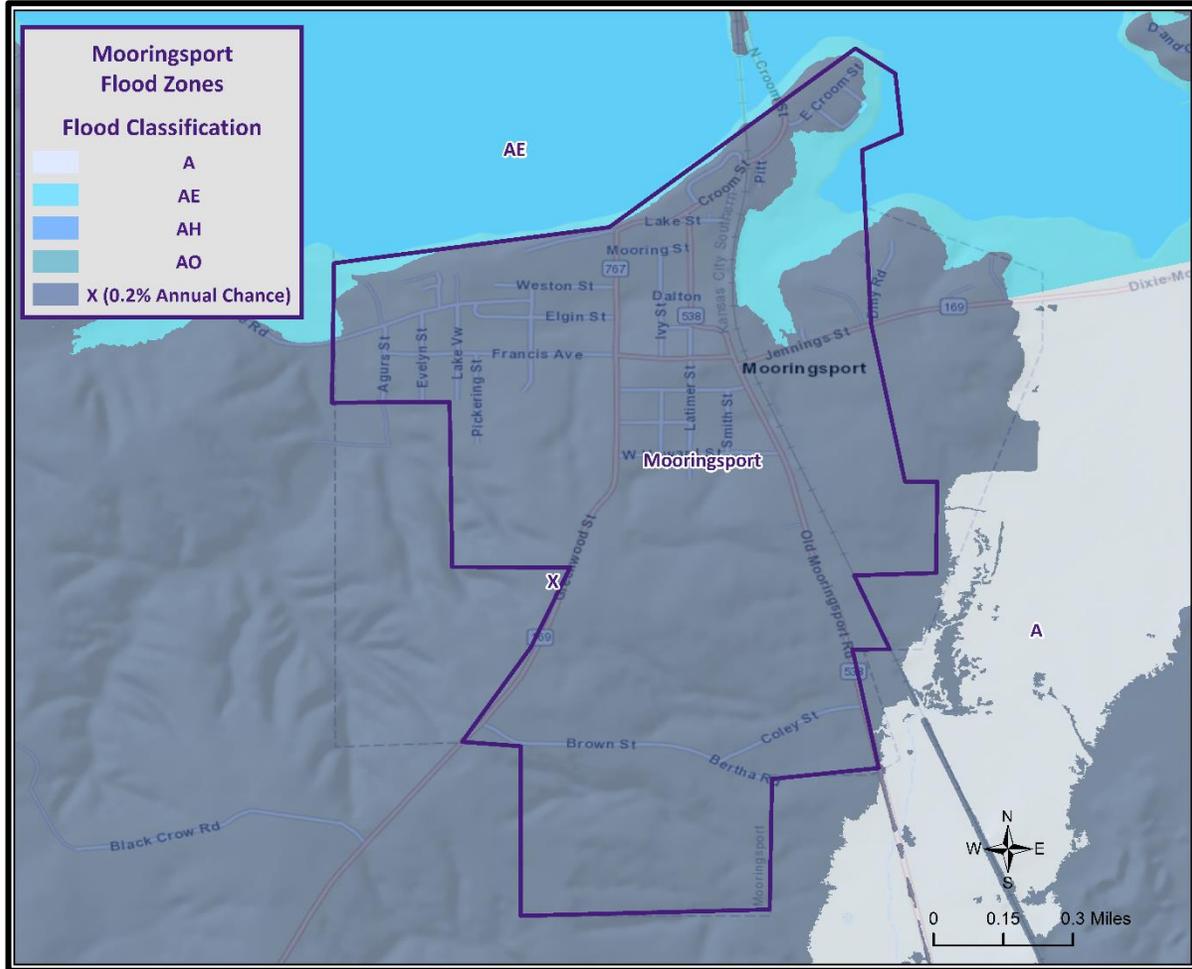


**Hosston**

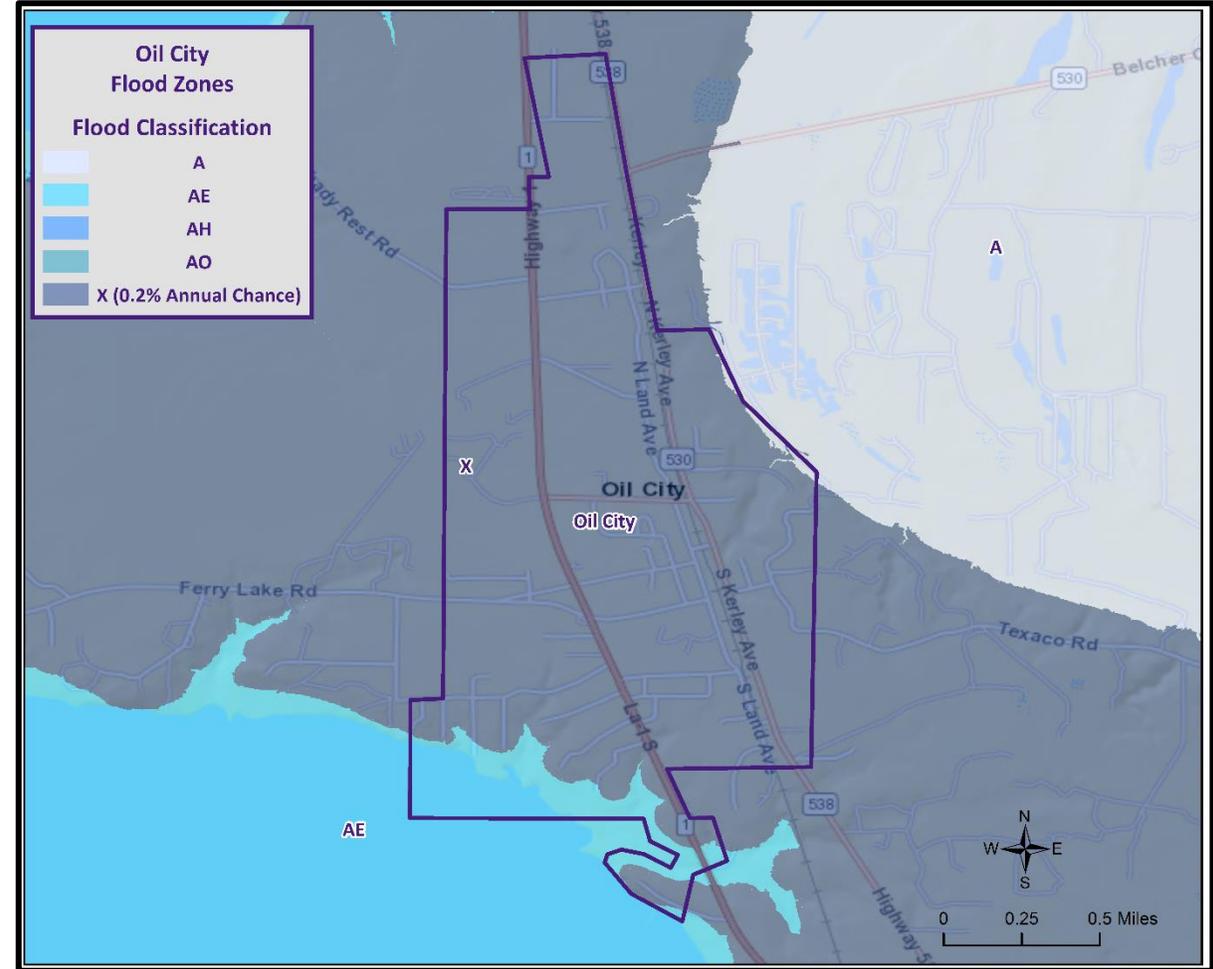


**Ida**

# Municipal Flood Maps

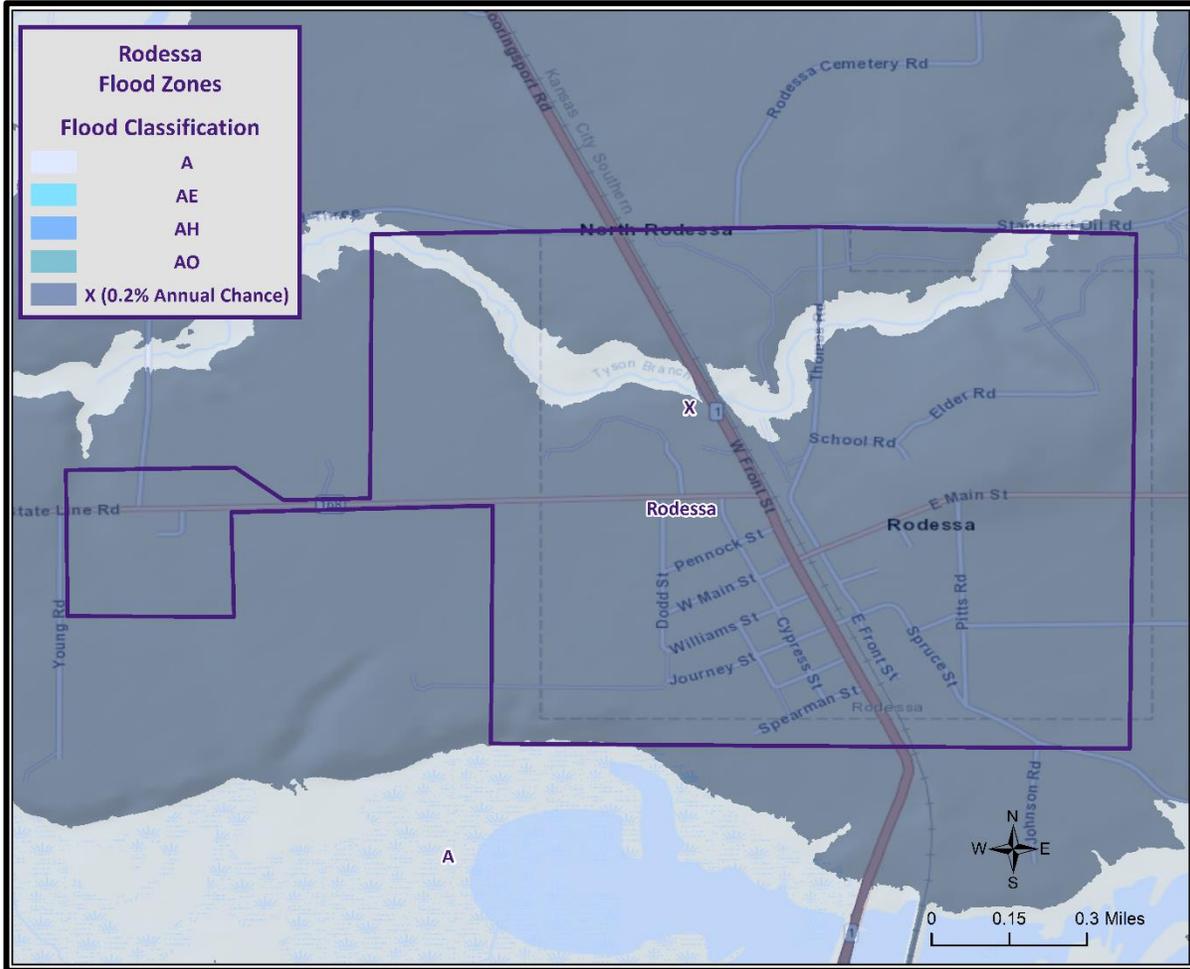


**Mooringsport**

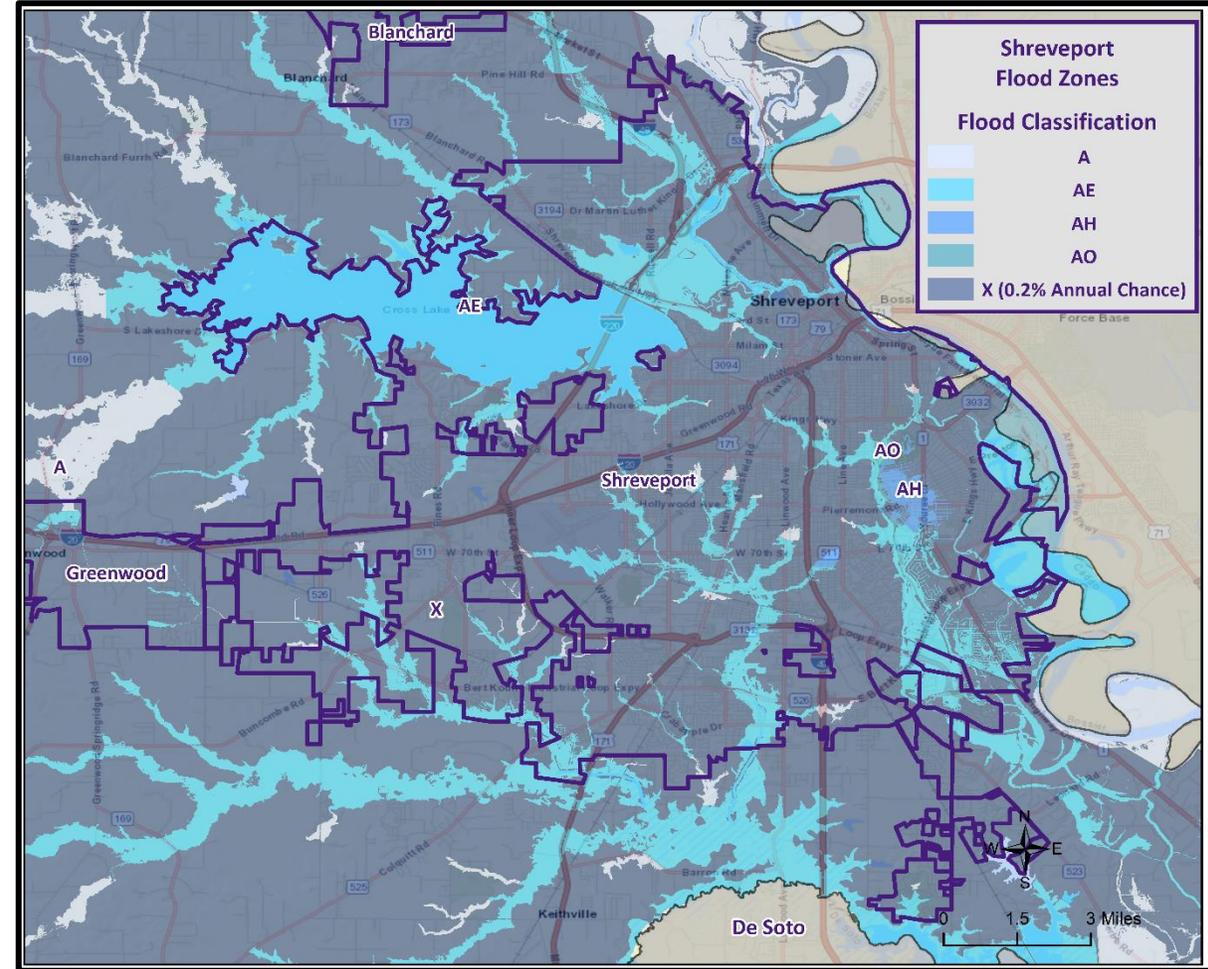


**Oil City**

# Municipal Flood Maps

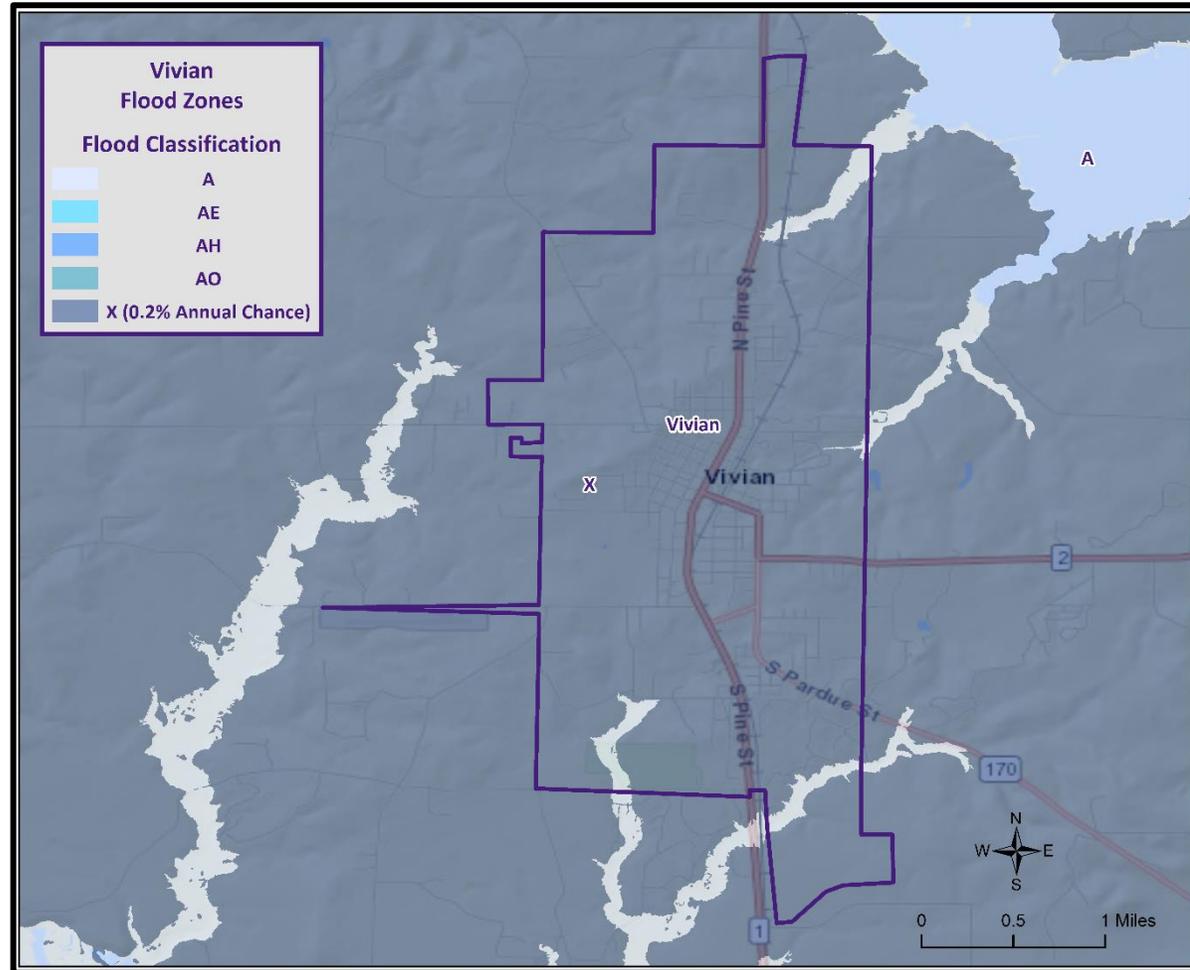


**Rodessa**



**Shreveport**

# Municipal Flood Maps



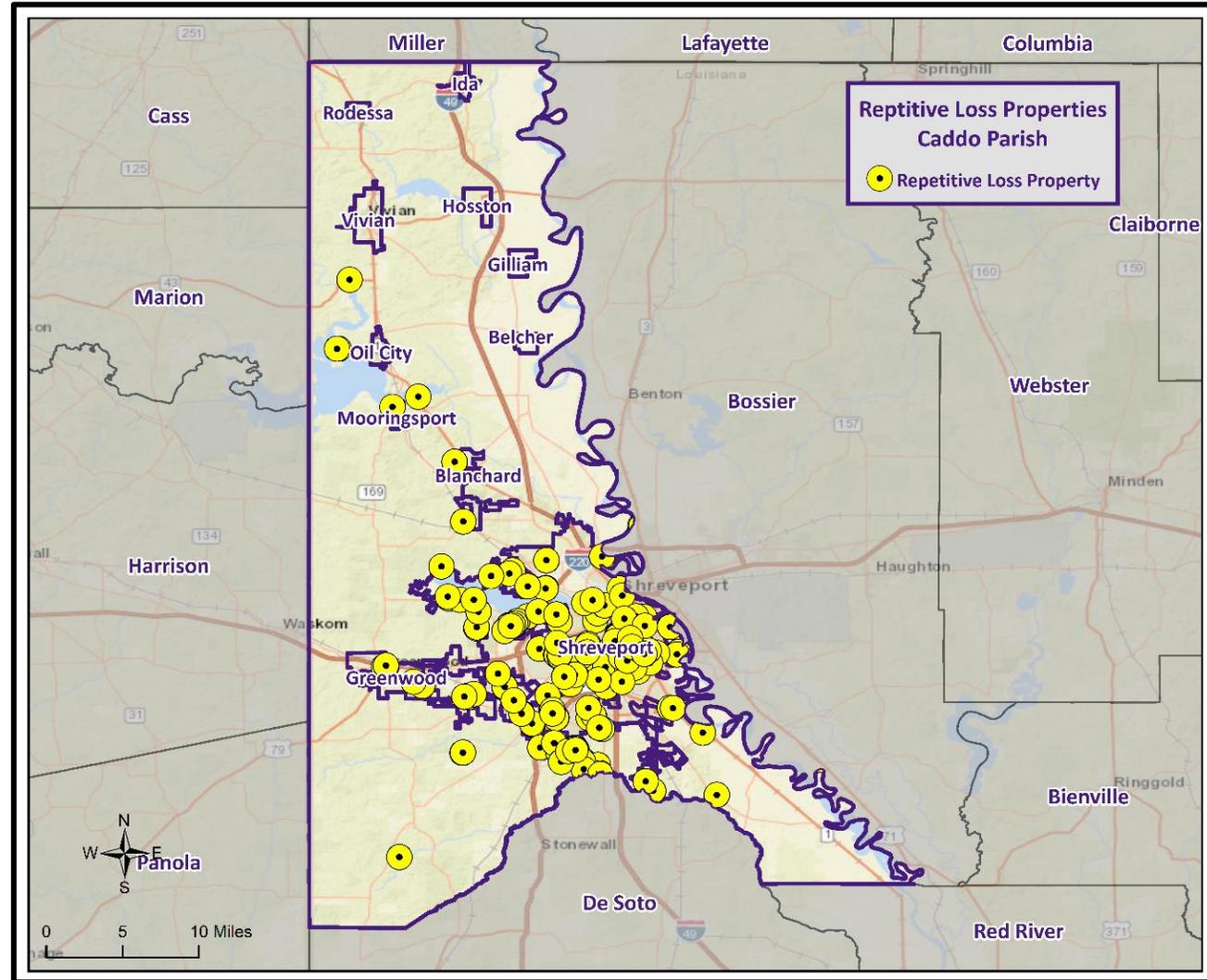
**Vivian**

# Flooding

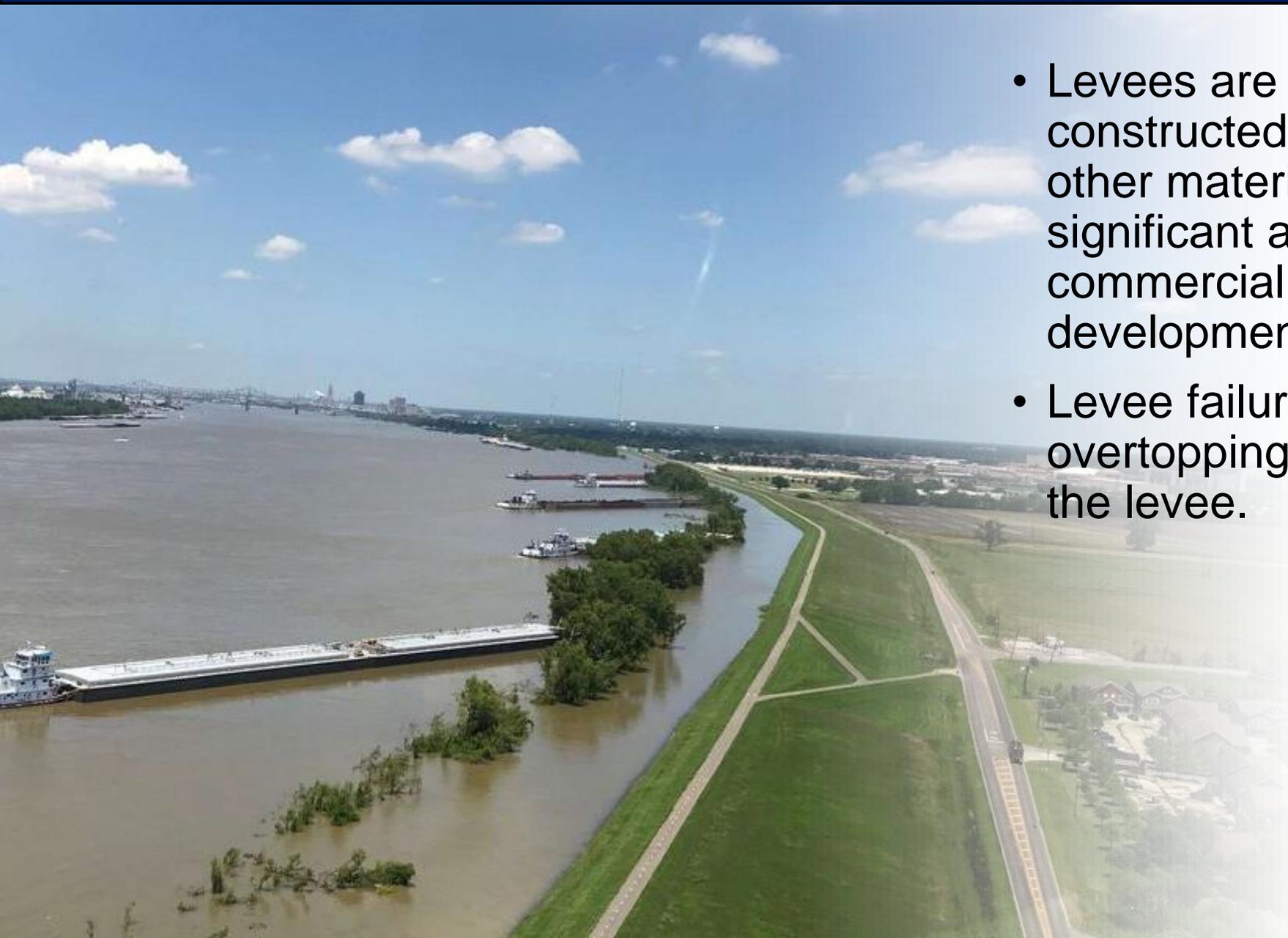


- Some areas flood more often than other properties, even more than those in the mapped 100-year floodplain.
- FEMA defines a “repetitive loss” property as one which has received two flood insurance claim payments for at least \$1,000 over any 10-year period since 1978.
- There are currently around 160,000 repetitive loss properties in the U.S.
- These properties comprise 1% of the NFIP policy base, but they account for approximately 30% of the country’s flood insurance claim payments.

# Repetitive Loss Properties



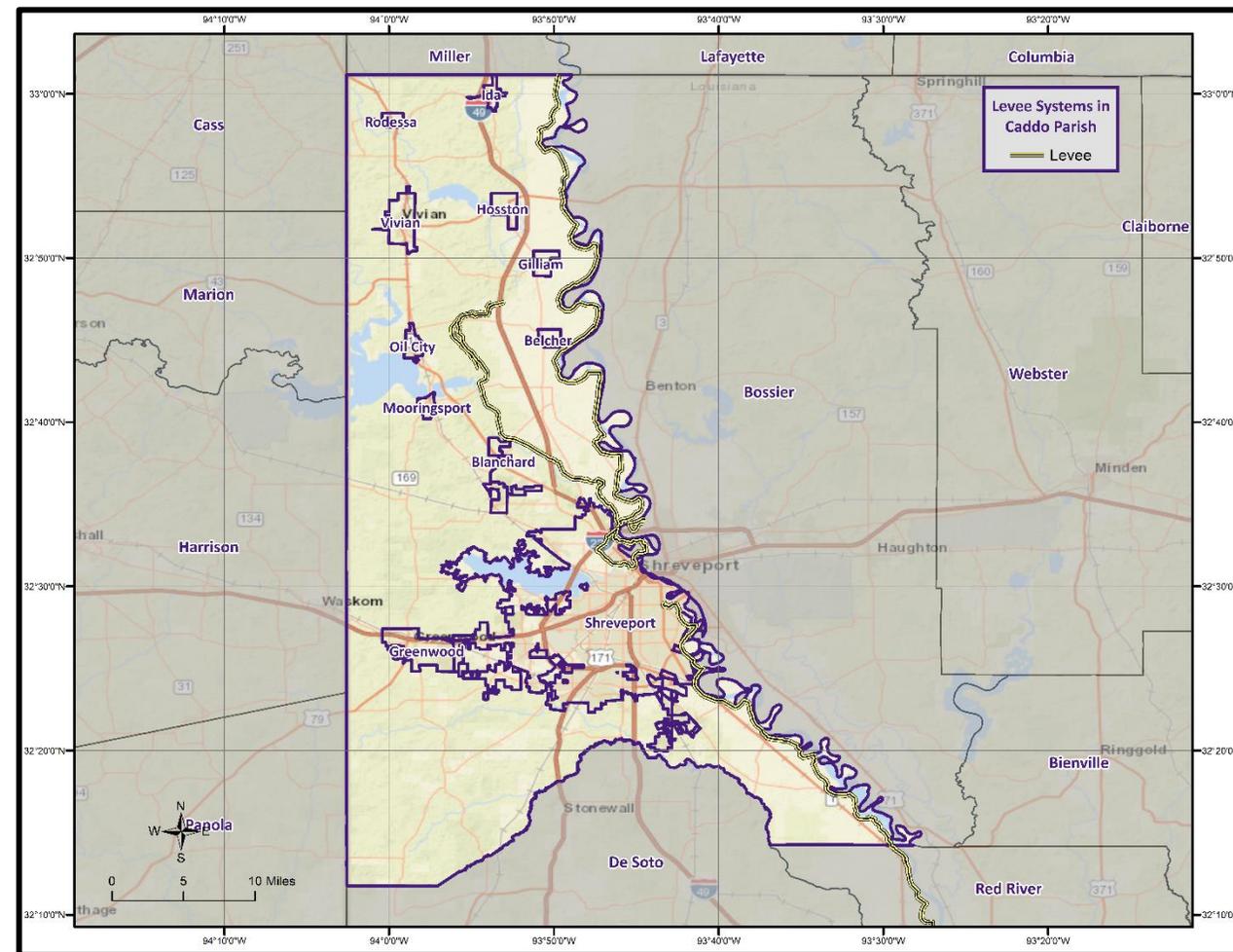
# Levee Failure



- Levees are flood control barriers constructed of earth, concrete, or other materials that protect significant areas of residential, commercial, or industrial development.
- Levee failure involves the overtopping, breach, or collapse of the levee.

# Location of Levees in Caddo Parish

System	Risk	Height (ft)	Population	Buildings	Property Value
Black Bayou-Pine Island	Low	18	37	36	\$10M
Caddo North LA	Low	12	1,708	856	\$205M
Caddo South LA	Moderate	12	77,645	13,675	\$7.88B
Red River-West Agurs	Moderate	12	10,582	1,352	\$1.23B
Red River East Bank	Not Screened	Unknown	Unknown	Unknown	Unknown
Twelve Mile Bayou	Low	15	621	324	\$101M



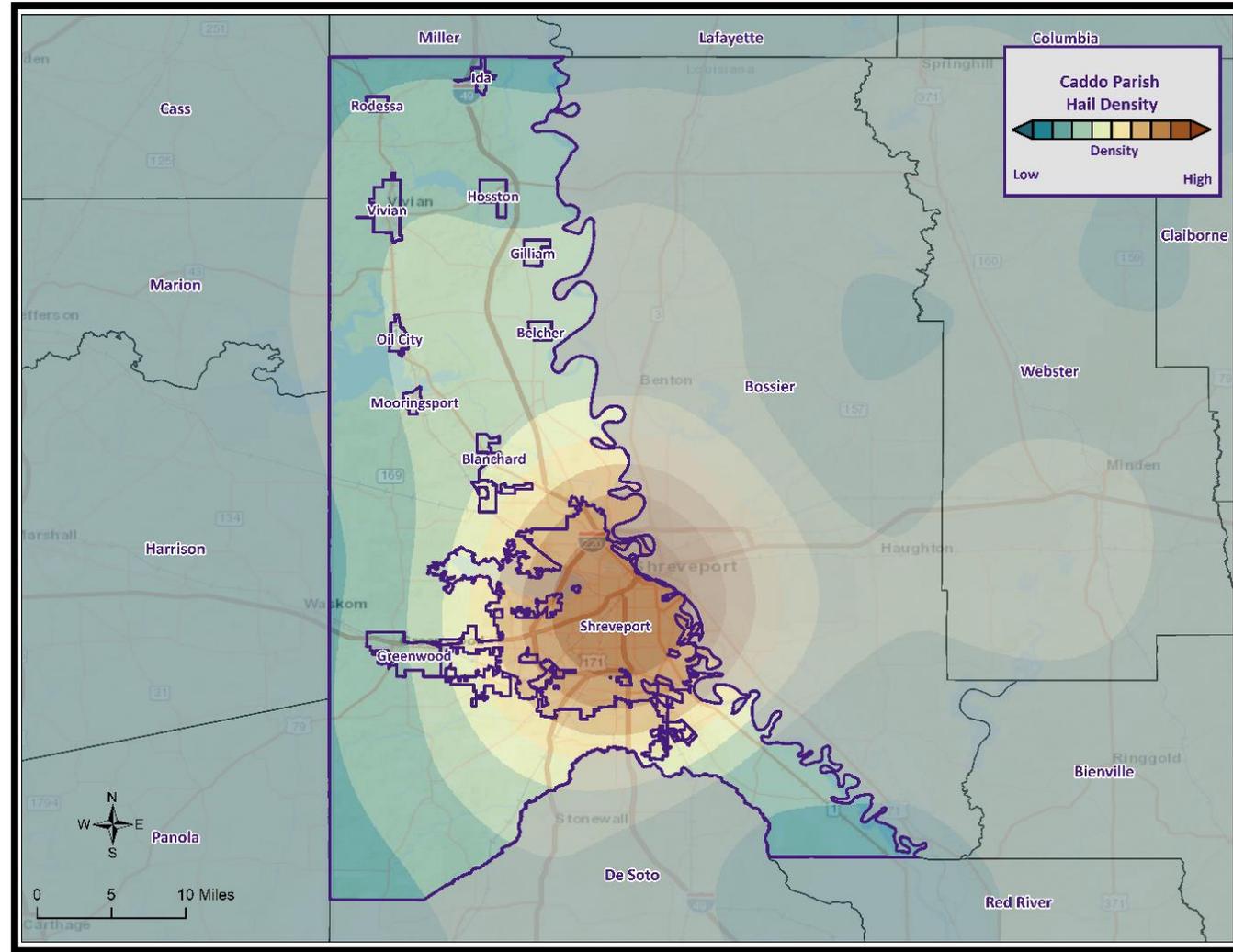
# Thunderstorms



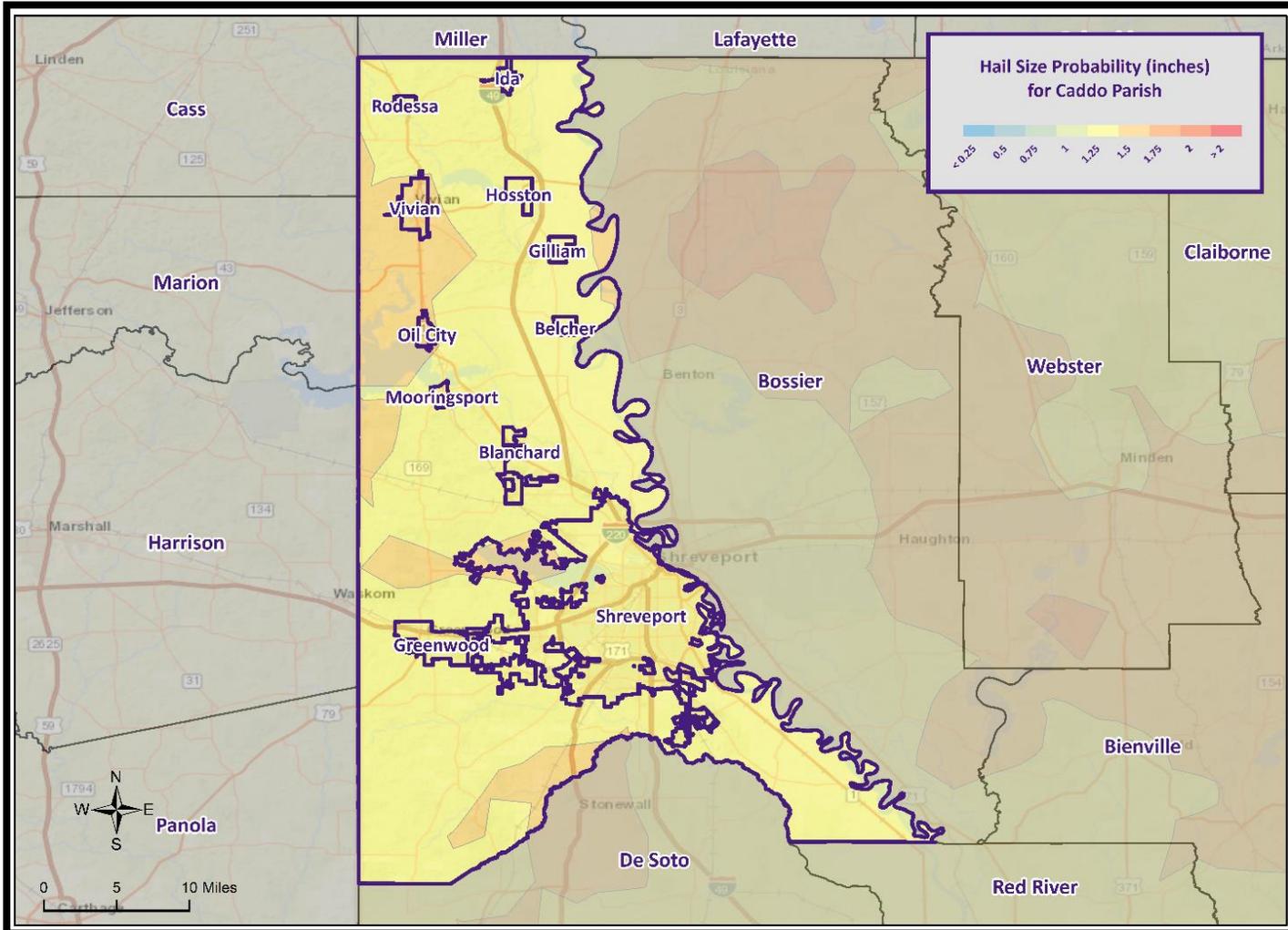
- A **thunderstorm**, also known as an **electrical storm**, a **lightning storm**, or a **thundershower**, is a type of storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder.
- They are usually accompanied by strong winds, heavy rain, and sometimes snow, sleet, or hail.
- Thunderstorms may line up in a series or rainband, known as a squall line. Strong or severe thunderstorms may rotate, known as supercells. While most thunderstorms move with the mean wind flow through the layer of the troposphere that they occupy, vertical wind shear causes a deviation in their course at a right angle to the wind shear direction.



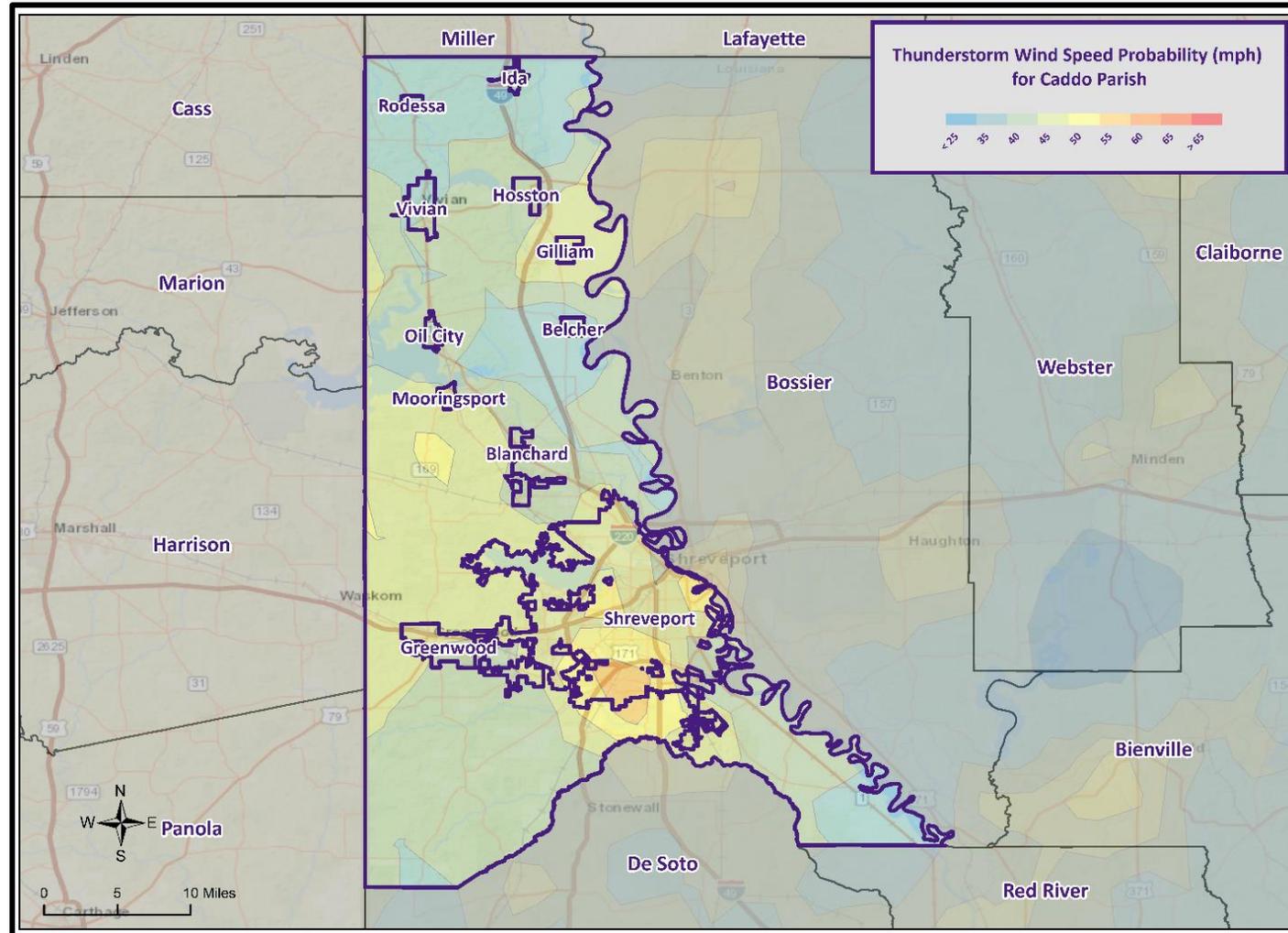
# Hailstorm Density



# Maximum Hail Size Probability



# Maximum Wind Speed Probability



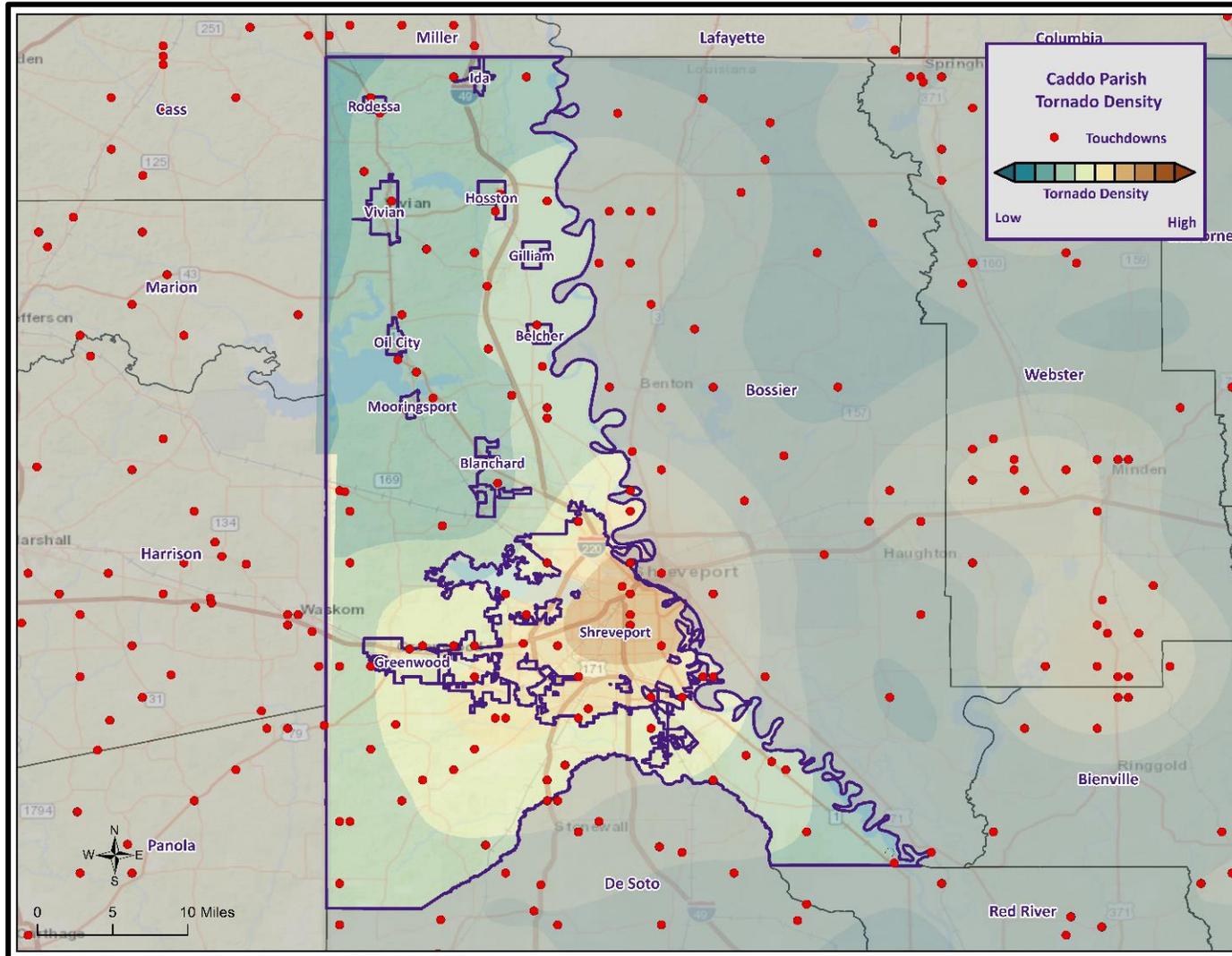
# Tornadoes

- Tornadoes are rapidly rotating funnels of wind extending between storm clouds and the ground.
- Tornadoes are the most severe storms for their size, and 70% of the world's reported tornadoes occur within the continental United States.

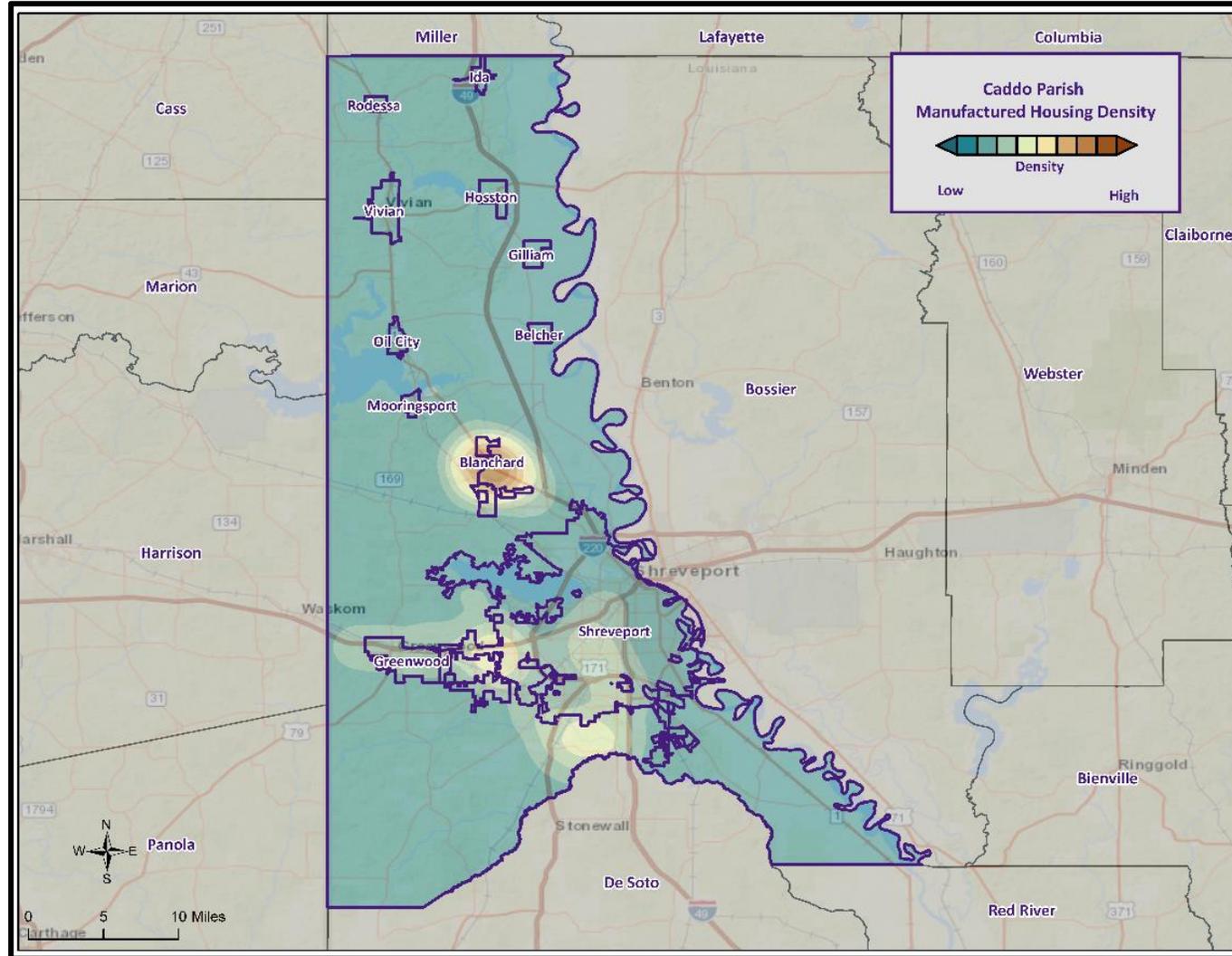
ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph



# Tornadoes in Caddo Parish



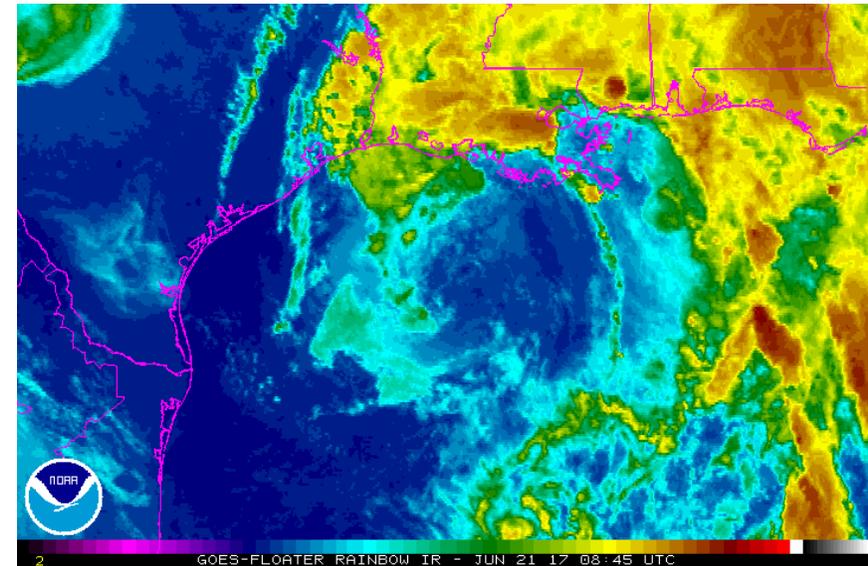
# Manufactured Home Density



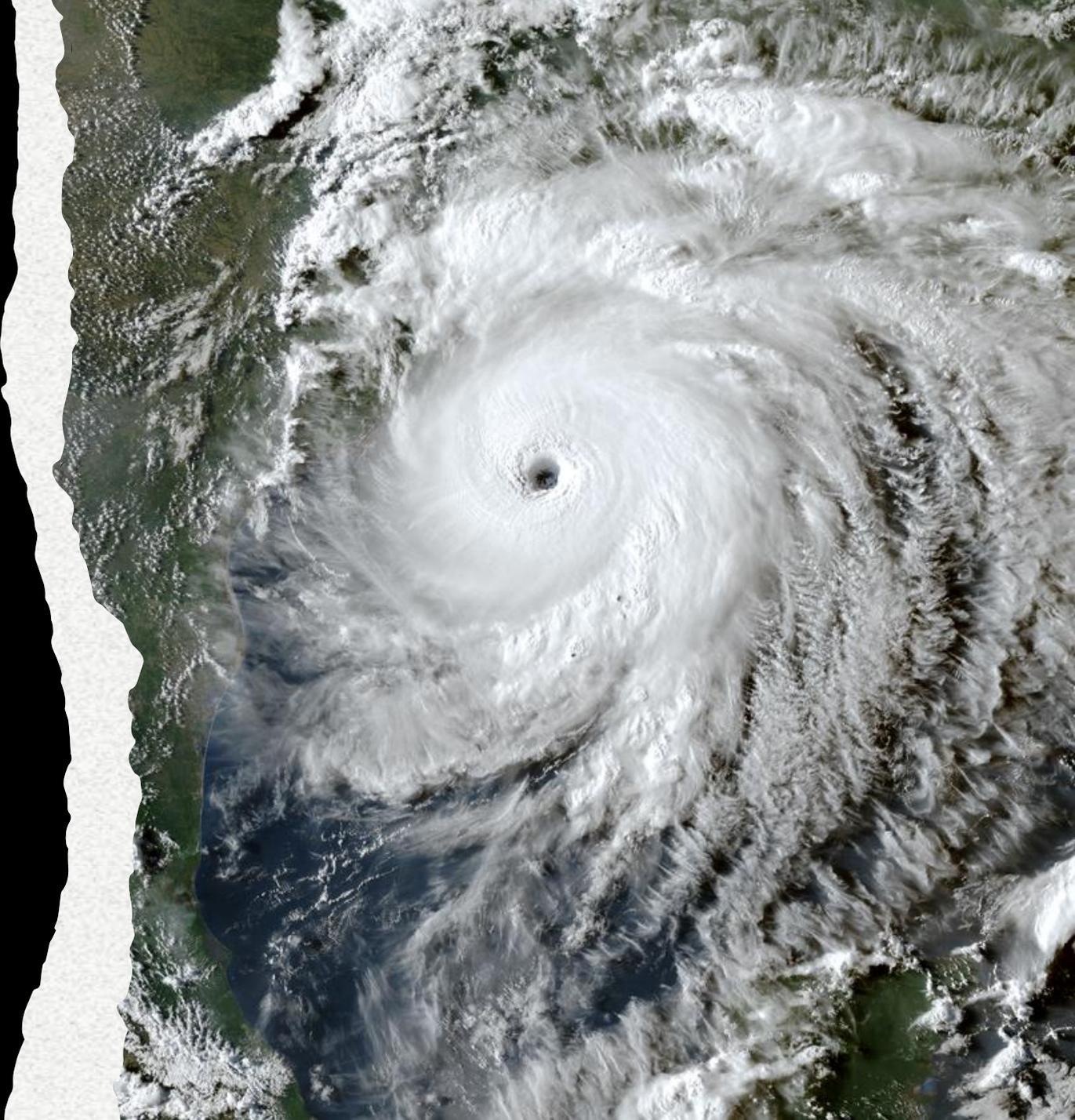
# Tropical Cyclones

- Tropical cyclones are defined spinning, low-pressure air masses that draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes

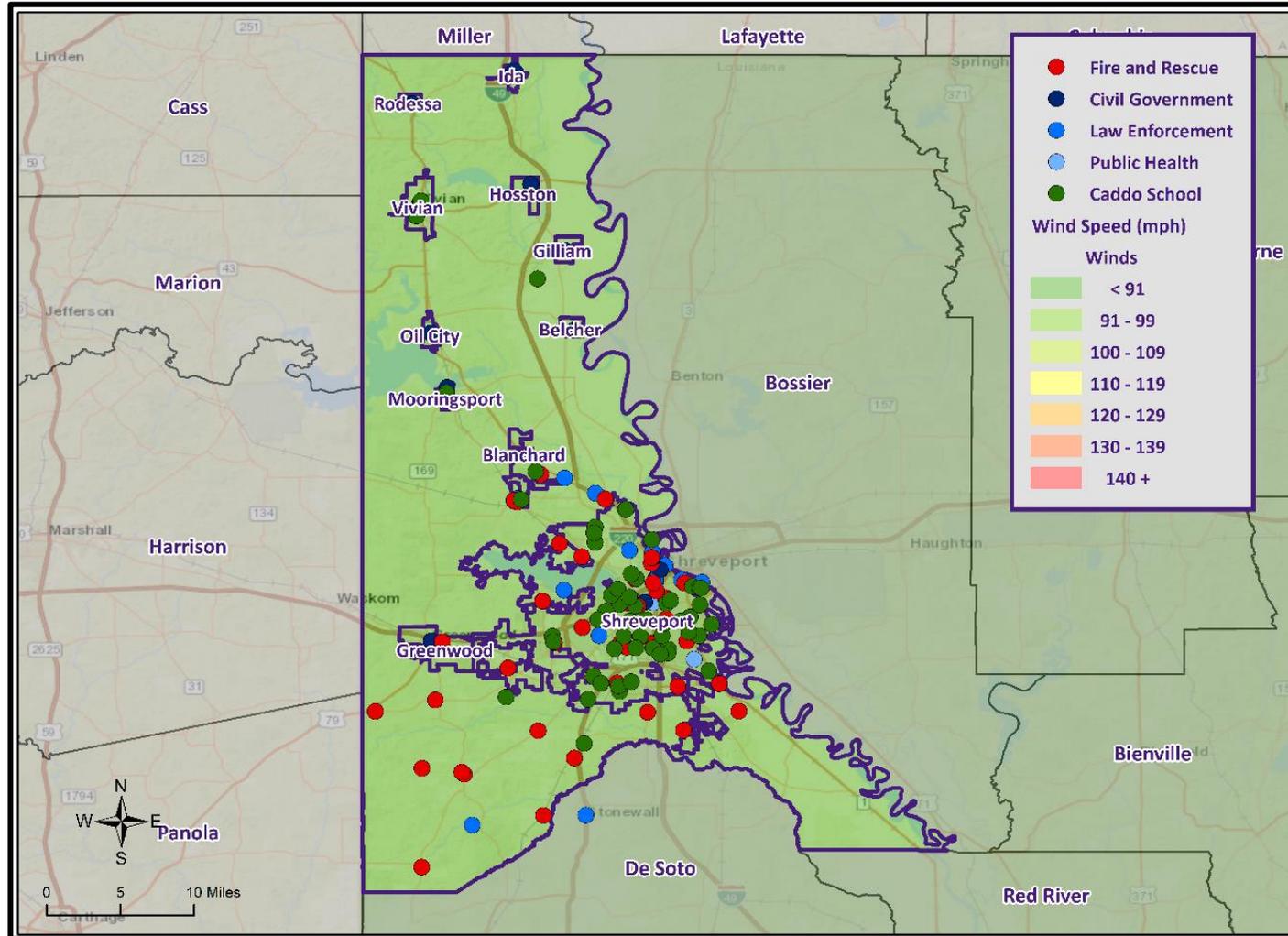
Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major damage to exposed mobile homes, evacuation of some shoreline residents
Category 3	111-130 mph (178-209 km/hr)	Devastating damage will occur. Some structural damage to small buildings; serious flooding at coast and many smaller structures near coast destroyed
Category 4	131-155 mph (210-249 km/hr)	Catastrophic damage will occur. High risk of injury or death to people, livestock, and pets due to flying and falling debris. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.
Category 5	> 155 mph (249 km/hr)	Catastrophic damage will occur. People, livestock, and pets are at very high risk of injury or death from flying or falling debris.  A high percentage of frame homes will be destroyed. Long-term power outages and water shortages will render area uninhabitable for weeks or months.



# Hurricane Laura (2020)



# Wind Speed Impacts on C.I.

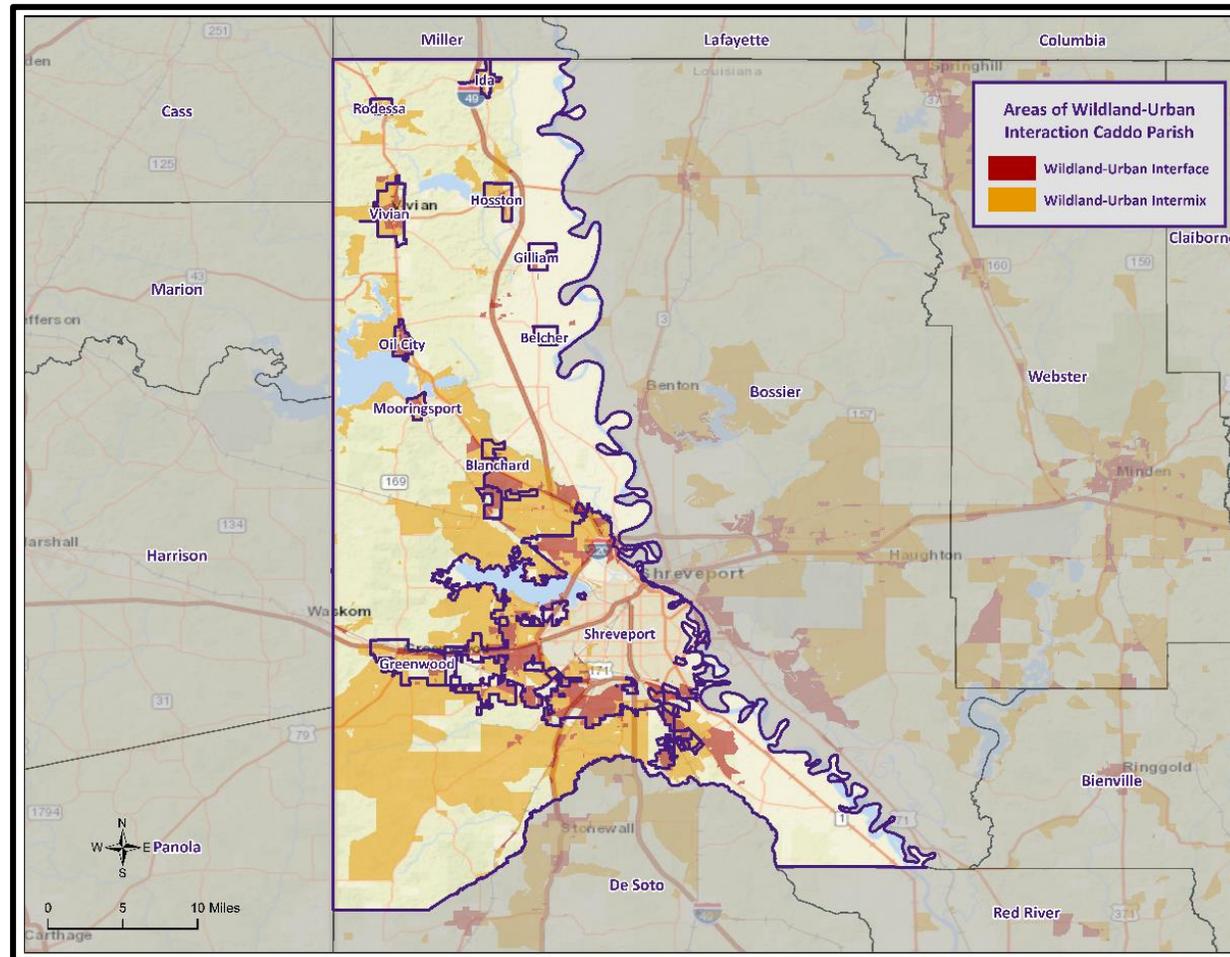


# Wildfires

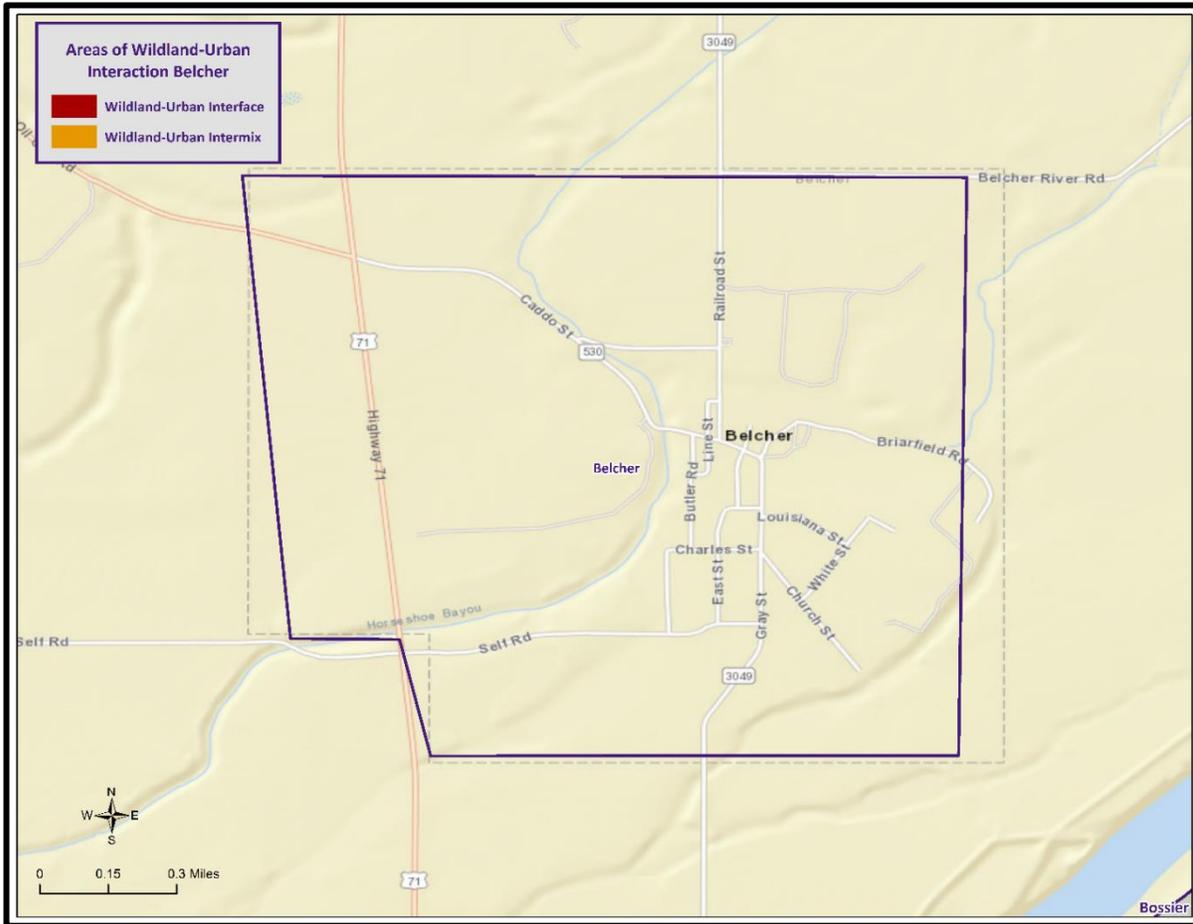


- A wildfire is combustion in a natural setting, marked by flames or intense heat.
- Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns
- While loss of timber is a problem, the real hazard is when wildfires threaten developed areas. As more development moves into and next to forested areas, the hazards to people and property increases.

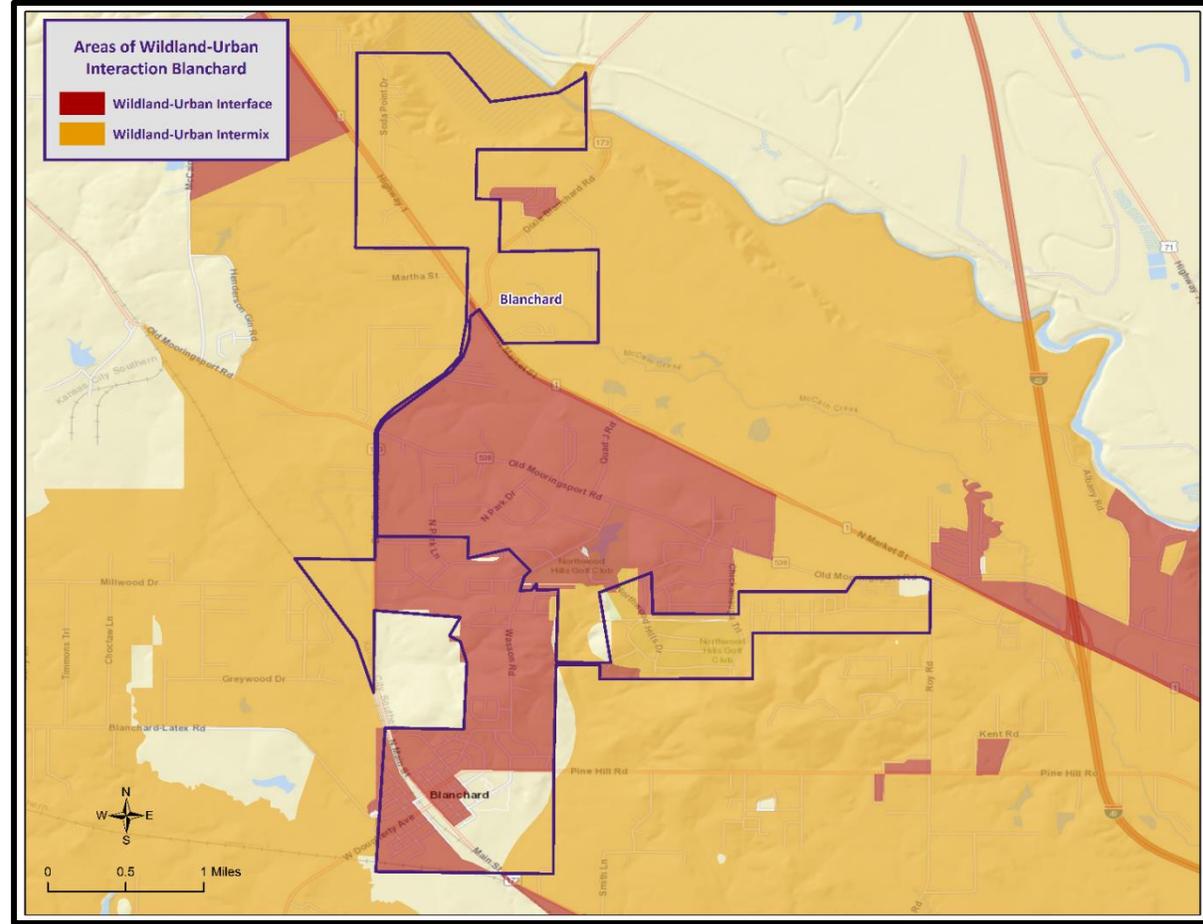
# Wildland-Urban Interaction in Caddo Parish



# Municipal WUI Maps

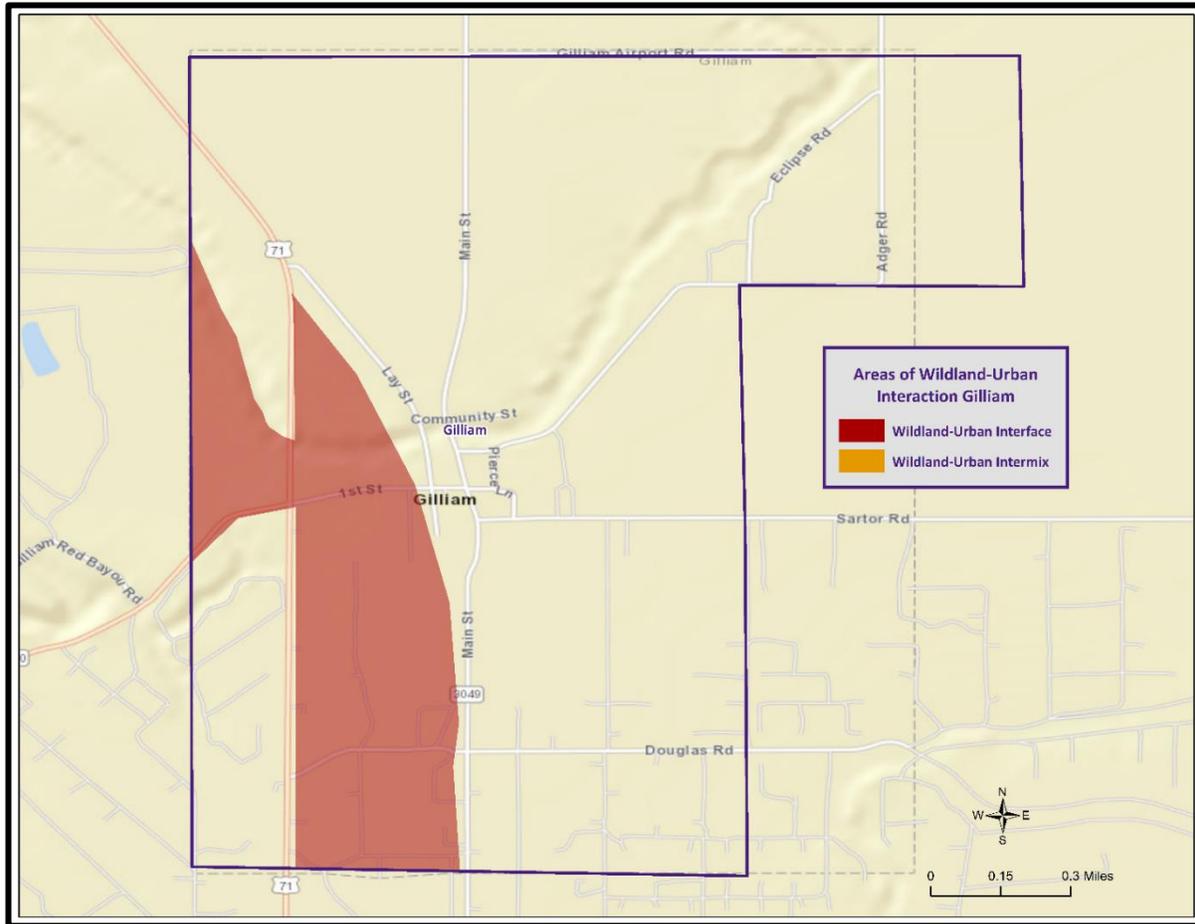


**Belcher**

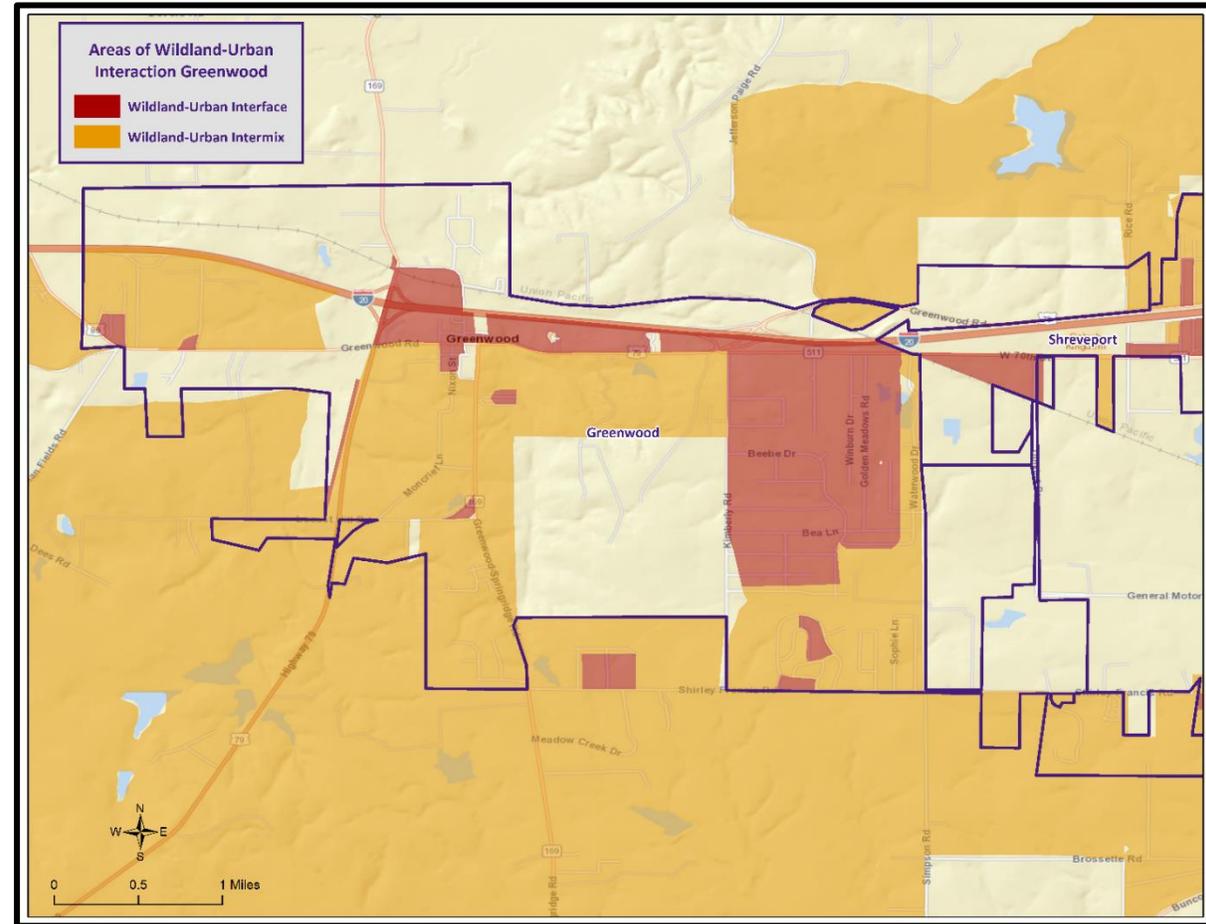


**Blanchard**

# Municipal WUI Maps

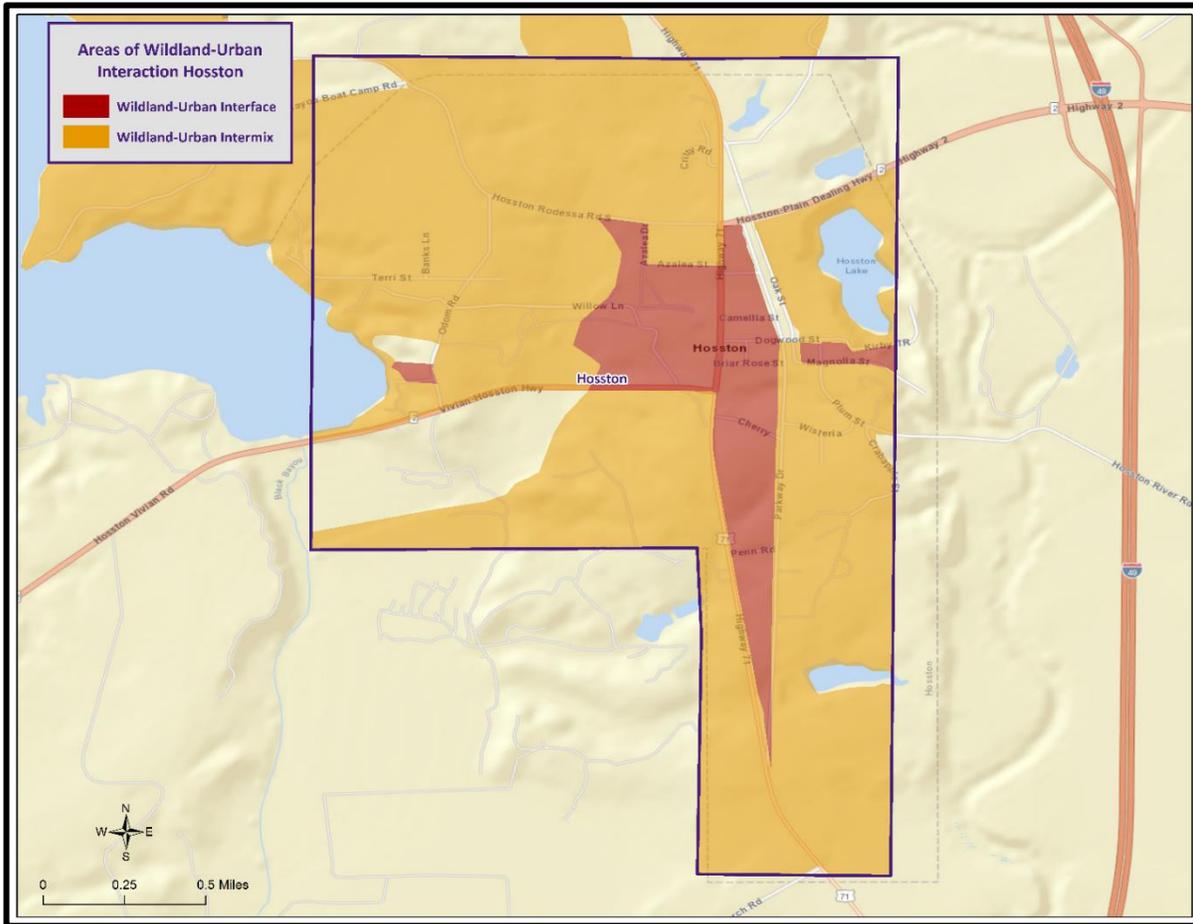


**Gilliam**

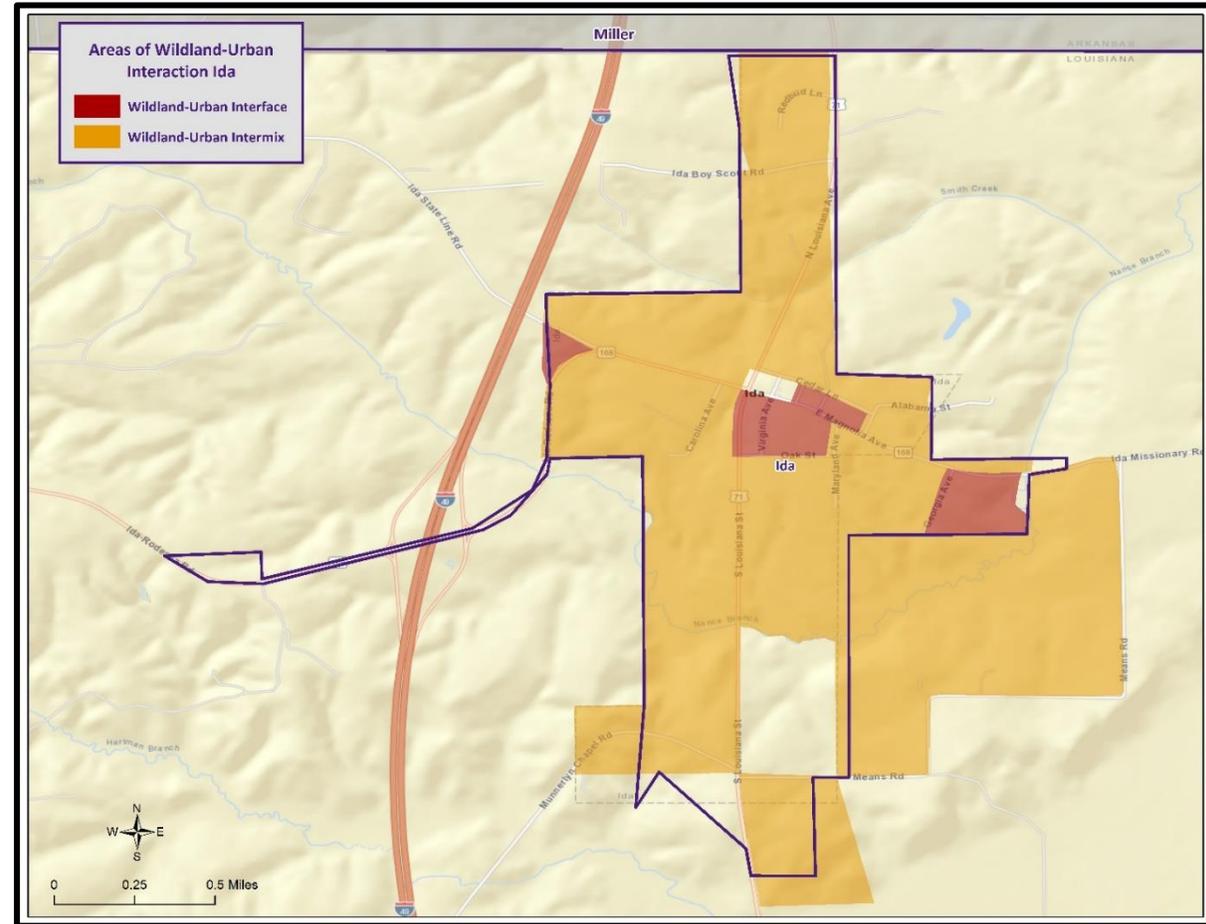


**Greenwood**

# Municipal WUI Maps



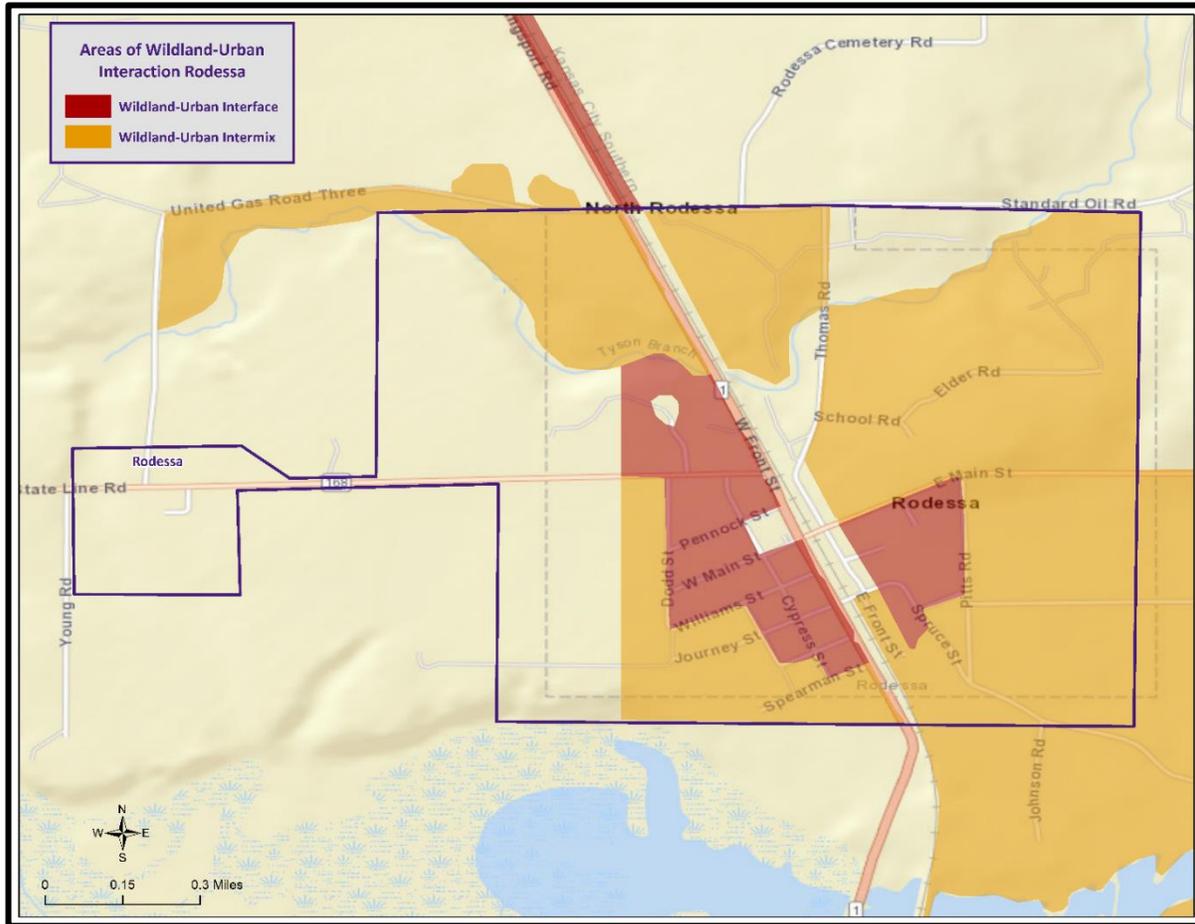
**Hosston**



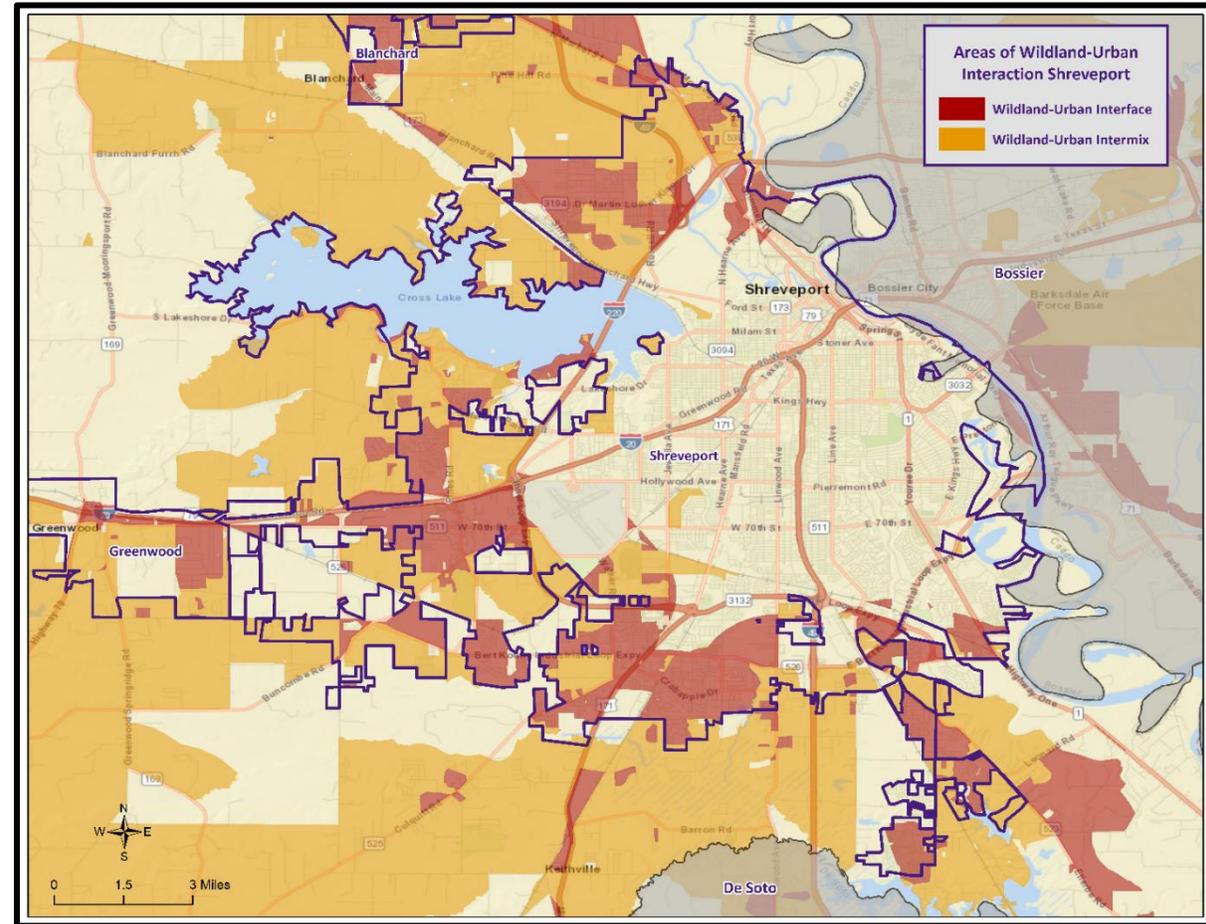
**Ida**



# Municipal WUI Maps

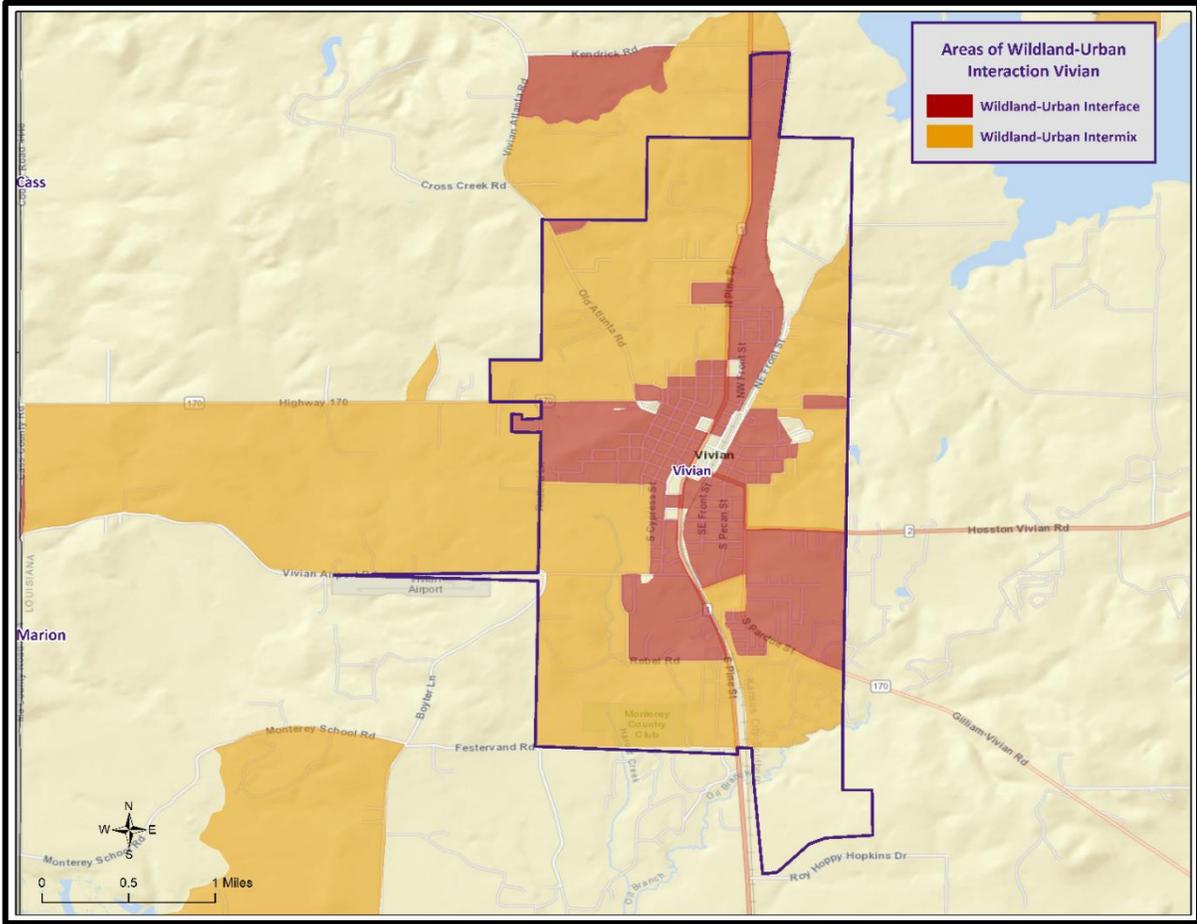


**Rodessa**



**Shreveport**

# Municipal WUI Maps



**Vivian**

# Winter Weather

- Occurs when humid air from the Gulf of Mexico meets a cold air mass from the north.
- As the temperature falls, precipitation may fall in the form of snow or sleet.
- If the ground temperature is cold enough but air temperature is above freezing, rain can freeze instantly on contact with the surface, causing massive ice storms.



# Caddo Parish Mitigation Goals

- Improve/enhance critical public facilities and equipment to ensure operability before, during, and after hazard events
- Enhance public safety and protect lives from dangers of natural hazards
- Facilitate sound development in the parish to reduce or eliminate the potential impact of hazards
- Enhance public awareness of natural hazards and understanding of disaster preparedness





# Parish Hazard Mitigation Project Update

Caddo OHSEP/  
Caddo Parish Commission Discussion

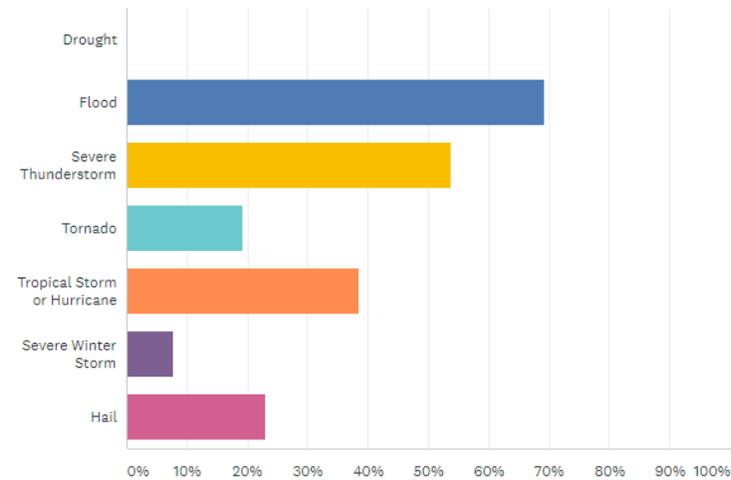
# Public Outreach Activity #1

## Hazard Mitigation Public Opinion Survey

[https://lsu.qualtrics.com/jfe/form/SV\\_eDkvBmOIJextmya](https://lsu.qualtrics.com/jfe/form/SV_eDkvBmOIJextmya)

Which of these natural disasters have you or someone in your household experienced in the past five years? (Check all that apply)

Answered: 26 Skipped: 1



# Public Outreach Activity #2

Please fill out an incident questionnaire!



## CADDO PARISH PUBLIC MEETING

### PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

#### 1. HAZARD TYPE(S):

- A. DAM FAILURE
- B. DROUGHT
- C. EXCESSIVE HEAT
- D. FLOODING
- E. LEVEE FAILURE
- F. THUNDERSTORMS
- G. TORNADOES
- H. TROPICAL CYCLONES
- I. WILDFIRES
- J. WINTER WEATHER

#### 2. DESCRIBE INCIDENT OR ISSUE:

#### 3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

#### 4. INTENSITY:

A. DEPTH (FLOODING) OR SIZE (HAIL ETC.):

B. WIND STRENGTH

#### 5. RECURRING OR ONE TIME:

A. IF RECURRING, HOW OFTEN:

6. WHAT TYPE OF INTERRUPTIONS  
DOES/DID THE INCIDENT OR ISSUE  
CAUSE? (BUSINESS CLOSURE, DAMAGE,  
EVACUATION, ETC.)

7. HOW LONG WAS THE INTERRUPTION  
(HOURS, DAYS, WEEKS ETC.)

8. HOW COULD THIS HAZARD OR  
IMPACT BE PREVENTED, FIXED  
OR ALLEVIATED?



# SDMI Hazard Mitigation Website

The screenshot shows the SDMI Hazard Mitigation Website for Caddo Parish. The header includes the LSU Stephenson Disaster Management Institute logo and navigation links for Intro, Events, FEMA Resources, Parish Plans, and Settings. The main content area is titled "Caddo Parish" and features a "PLAN DUE DATE: NOVEMBER 12 2022". A "DEVELOPMENT STATUS" progress bar shows the stages: PLAN DEVELOPMENT (yellow), PLAN REVIEW (purple), PLAN ADOPTION (purple), and COMPLETED (purple). Below the progress bar, the stages are labeled with "INITIAL PLANNING COMMITTEE", "TBD", "TBD", and "TBD". A "PARTICIPATING JURISDICTIONS" section lists various entities with radio buttons: Unincorporated Caddo Parish, Town of Mooringsport, Town of Vivian, Village of Belcher, Town of Greenwood, Town of Oil City, Town of Blanchard, Village of Hosston, Village of Rodessa, Village of Gilliam, Village of Ida, and City of Shreveport. A "PREVIOUS MEETINGS" section lists three events: "2022 CADDO PARISH HM INITIAL PLANNING COMMITTEE MEETING" (OCT 25, Shreveport, LA, 09:00 AM - 10:00 AM 10/25/2022), "2023 CADDO PARISH RISK ASSESSMENT AND PUBLIC MEETING" (NOV 2, Shreveport, LA, 11:00 AM - 12:30 PM 11/2/2023), and "2022 CADDO PARISH HM PLAN UPDATE KICKOFF MEETING" (OCT 4, Zoom, 10:00 AM - 11:00 AM 10/4/2022). A "PREVIOUS PLANS" section for 2016 offers download links for "CADDO HM PLAN", "CADDO PARISH KICK OFF MEETING", and "CADDO PARISH PUBLIC MEETING". The footer includes the LSU logo.

- Repository for materials used during update process
- <https://hmplans.sdmi.lsu.edu/Home/Parish/caddo>



# Contact Us

**Brant Mitchell, Director, CEM**

[bmitch9@lsu.edu](mailto:bmitch9@lsu.edu)

(225) 578-5939

**Chris Rippetoe, HM Project Manager, CFM**

[crippe2@lsu.edu](mailto:crippe2@lsu.edu)

(225) 578-6667

**Jason Martin, Emergency Management Analyst**

[jmar293@lsu.edu](mailto:jmar293@lsu.edu)

(225) 578-6264



