



Bossier Parish Hazard Mitigation Plan Update Public Meeting

June 22, 2023

Benton, LA



LSU | Stephenson Disaster
Management Institute

Introductions

- **Bossier 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



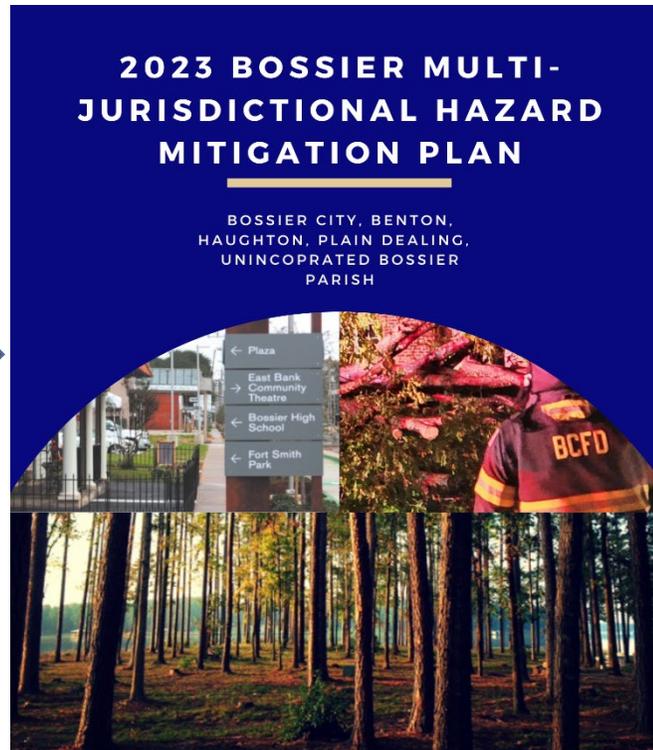
**Risk Assessment
Maps**



**Public Outreach
Activities**



Why Are We Here?



This document has been prepared by:
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With Support From:
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2000 Lakeshore Drive
New Orleans, LA 70148



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 Are We Required To Have A Hazard Mitigation Plan

- 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.

- Meet federal requirements of Title 44 Code of Regulations (CFR) §201.6 for approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs.



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

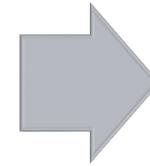


Planning Process to Date

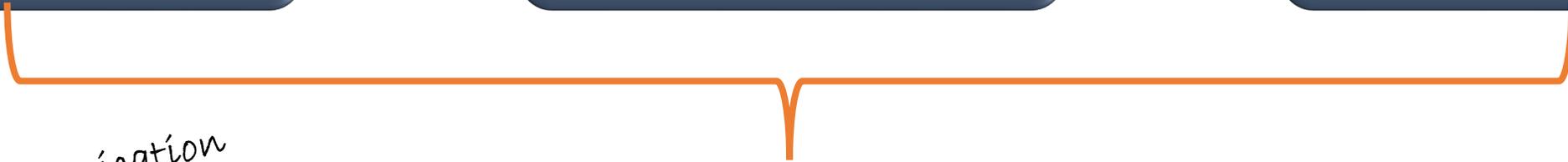
Initial Planning Meeting with OHSEP



Full Steering Committee Meeting



Risk Assessment Review with Planning Committee

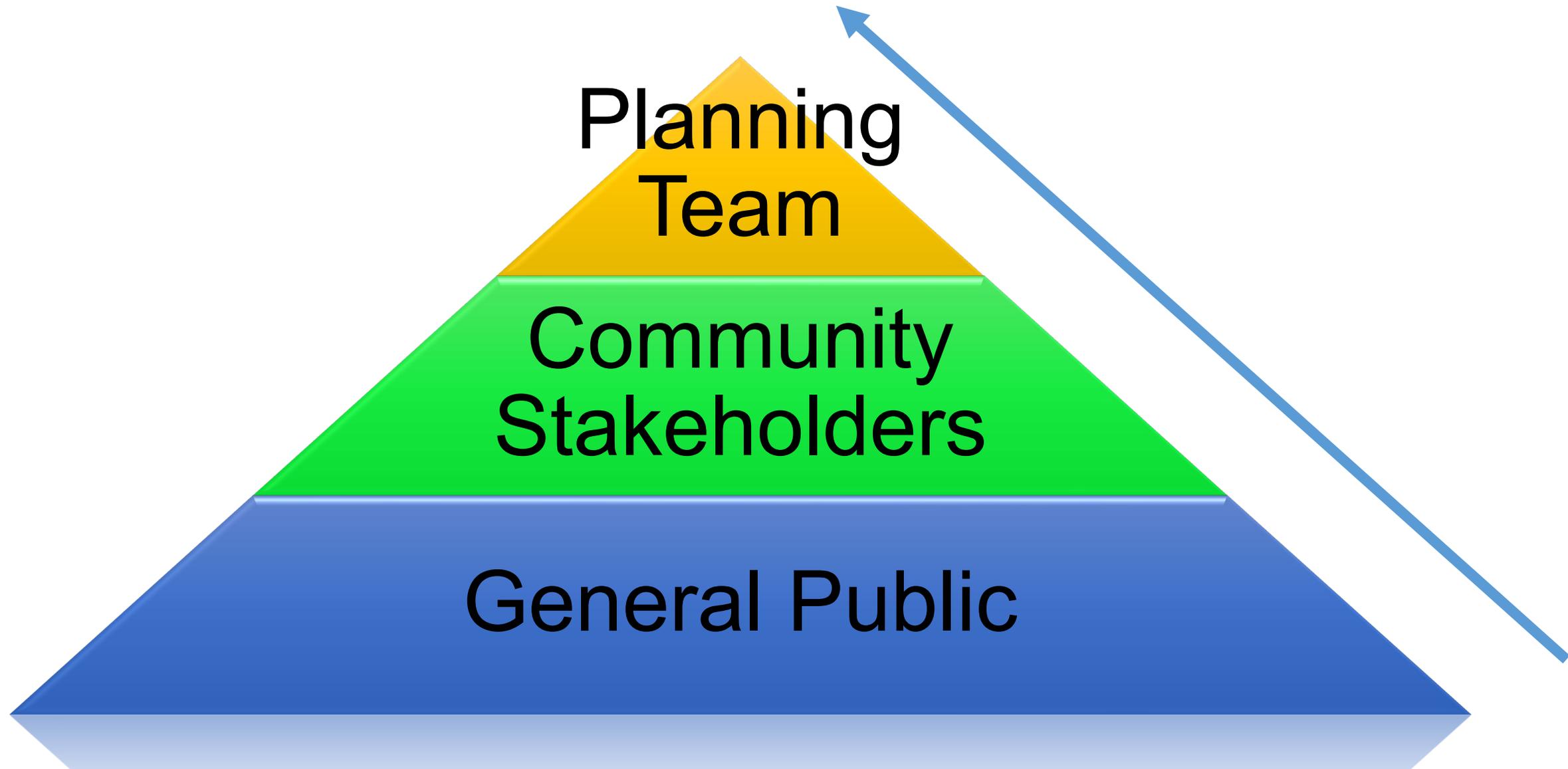


Public Meeting

Constant communication with Parish and Committee members!



Collaborative Planning Approach



Planning Development



BOSSIER
PARISH HAZARD MITIGATION
UPDATE – 2016



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



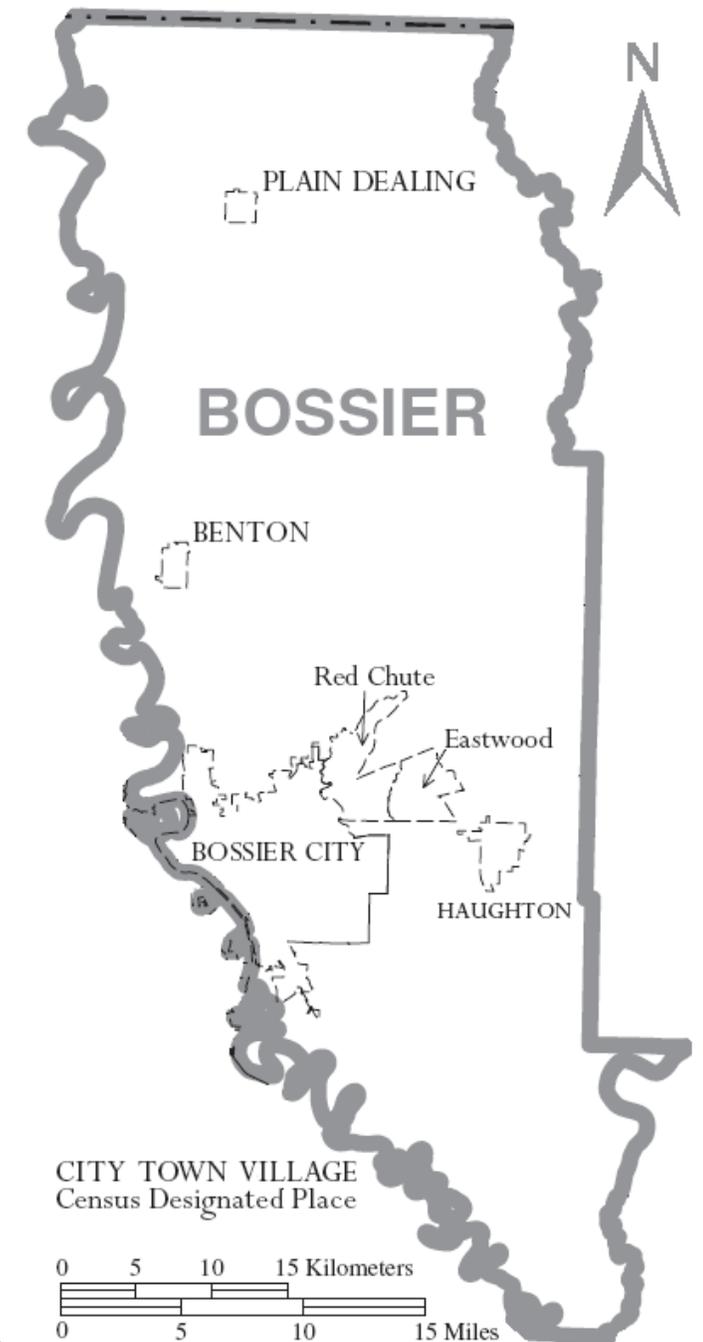
Plan Layout

- **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

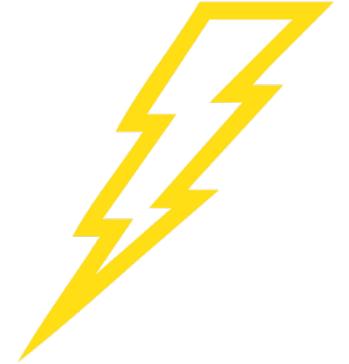
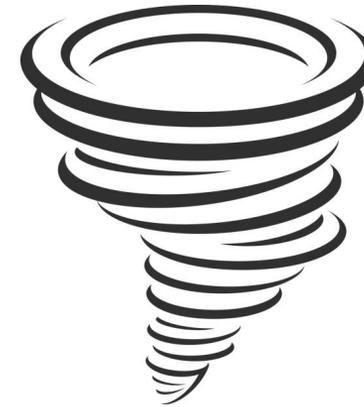
- Based on Currently Profiled Risks
- Any Newly Identified Risks
- Prevalent Hazards
- Previous Occurrences
- Probability of Future Events
- Assets Inventory
- Essential Facilities
- Hazard Impact
- Future Development
- Future Hazard Impacts
- Zoning and Land Use
- Hazard Profiles



Hazard Identification And Risk Assessment

- Dam Failure
- Drought
- Earthquakes*
- Flooding
- Levee Failure

- Thunderstorms
- Tornadoes
- Tropical Cyclones
- Wildfires
- Winter Weather

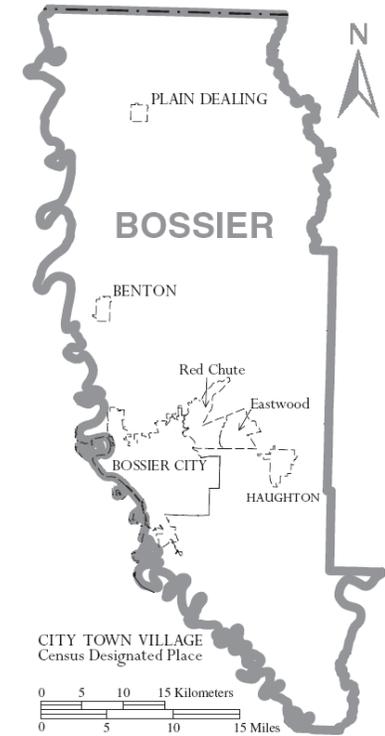


Risk Matrix For Bossier Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Dam Failure	1	2	1	4	2	1.85
Drought	3	2	4	2	3	2.8
Flooding	4	4	3	4	3	3.65
<u>Levee</u> Failure	1	2	1	4	2	1.85
Thunderstorms - Hail	4	2	3	3	1	2.7
Thunderstorms - Lightning	3	2	2	3	1	2.25
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	1	3	4	1	2	2.25
Winter Weather	3	2	2	4	2	2.55

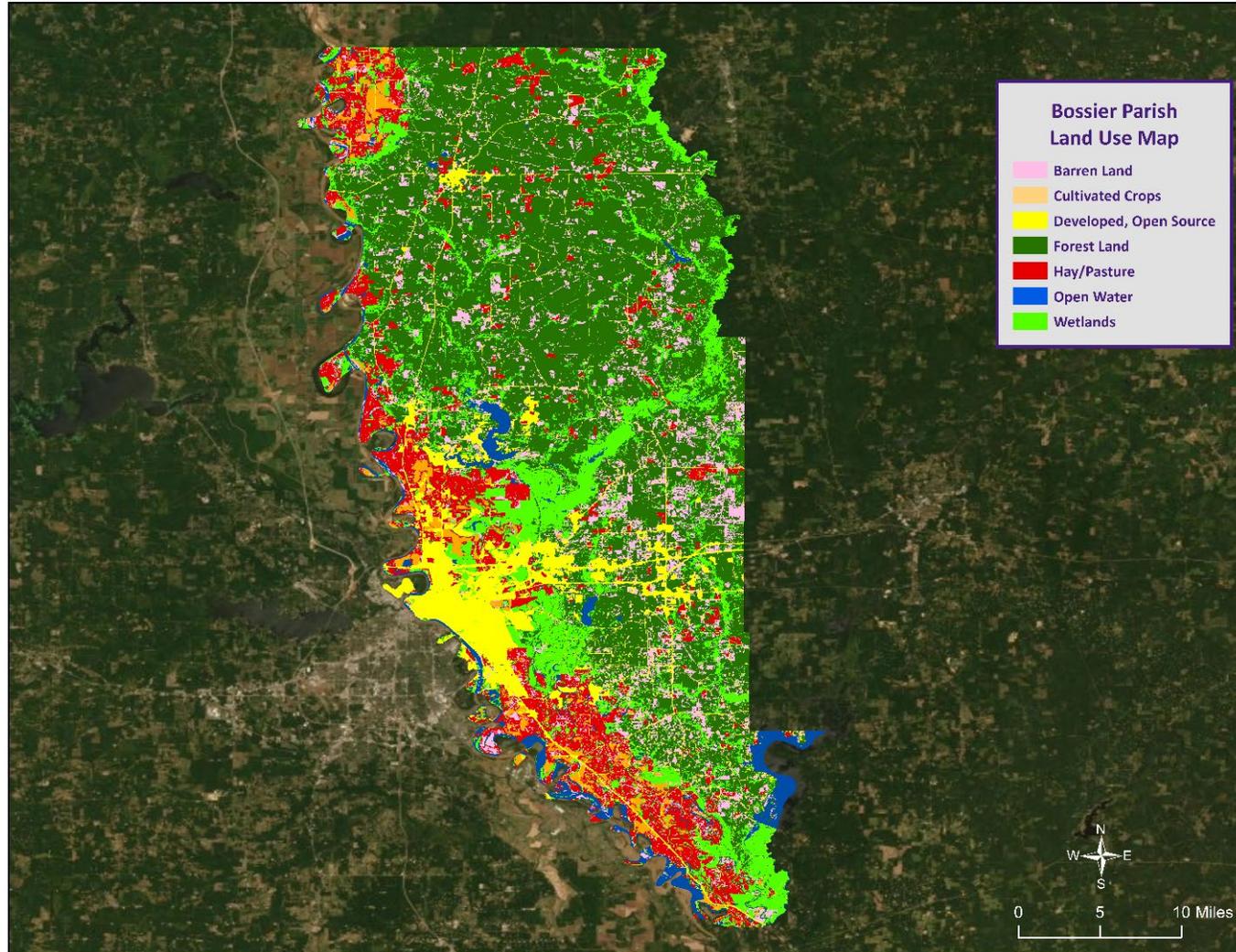
Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9





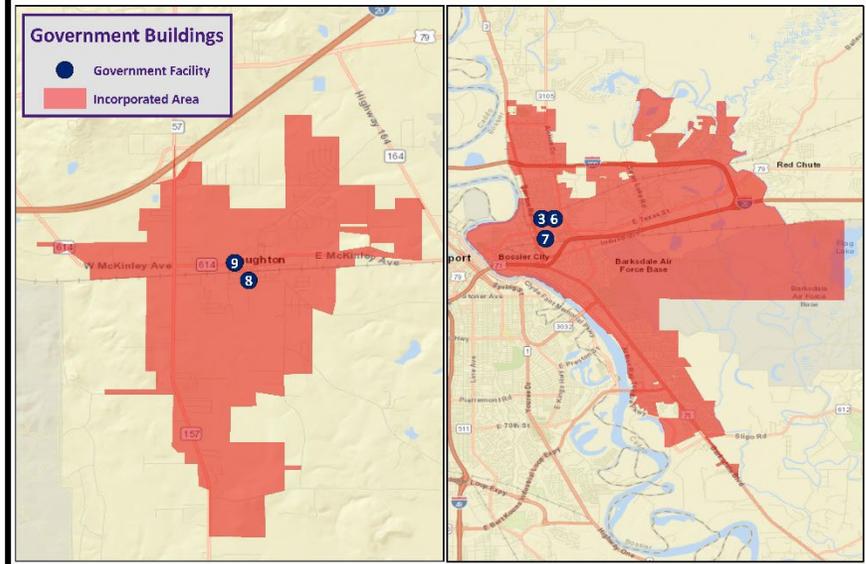
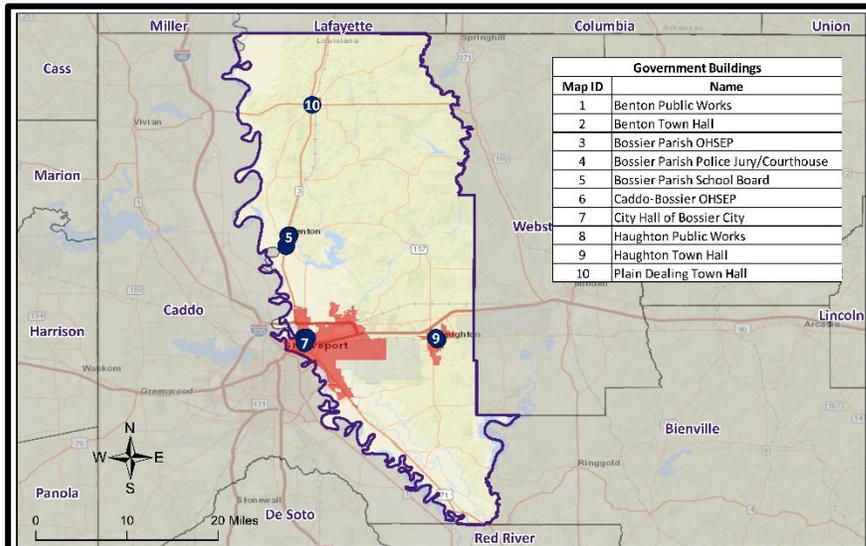
Risk Assessment Maps

Bossier Parish Land Use

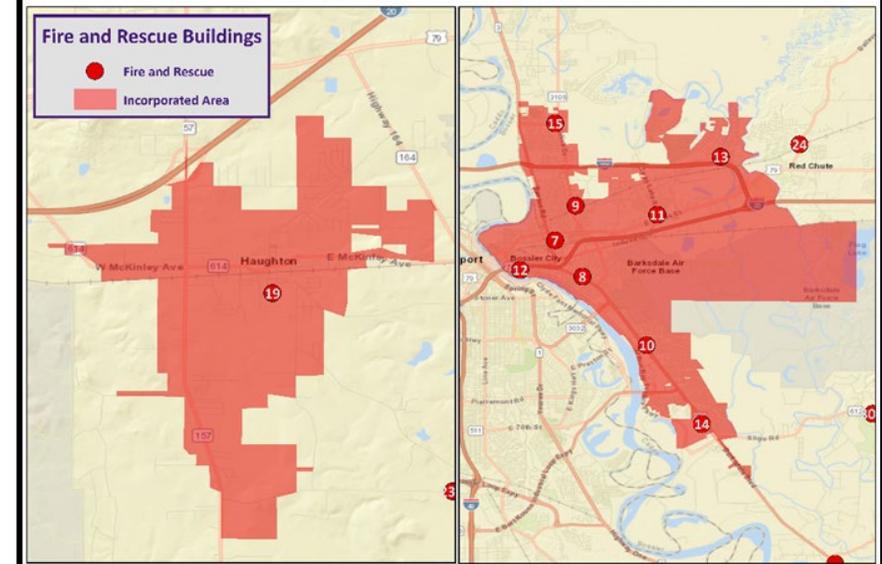
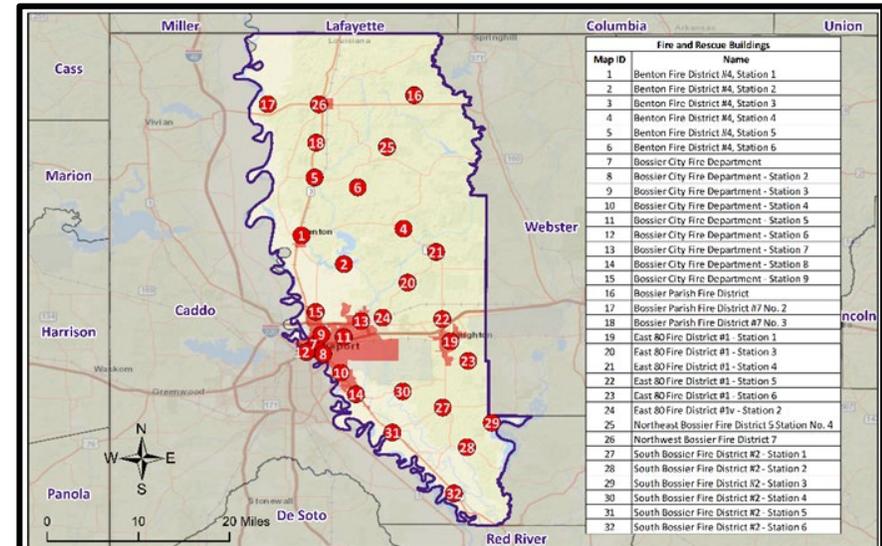


Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	130,991	24%
Wetlands	80,950	15%
Forest Land (Not including forested wetlands)	267,957	48%
Urban/Development	51,888	9%
Water	21,266	4%

Critical Facilities

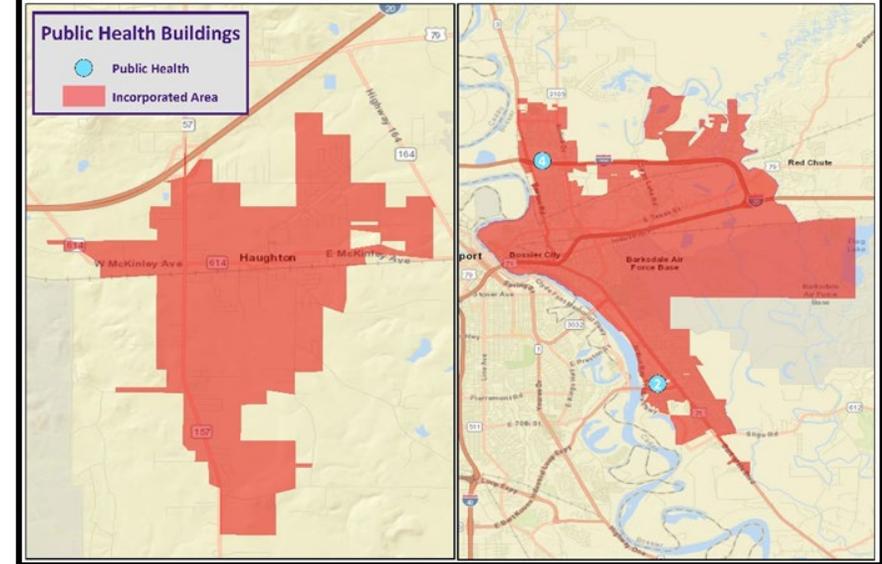
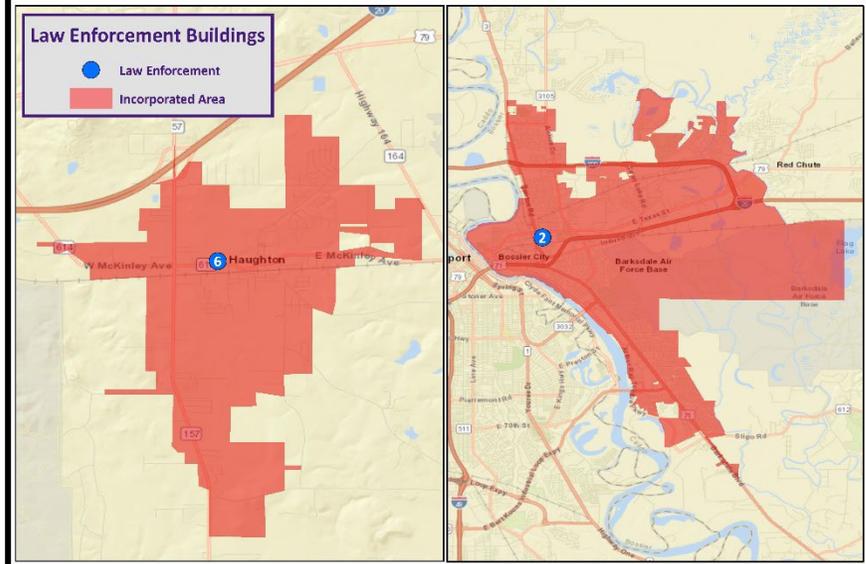
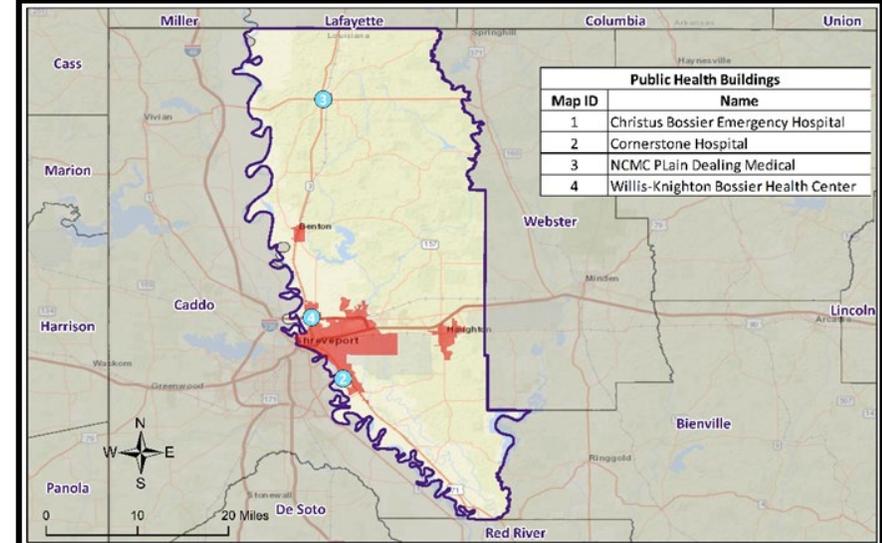
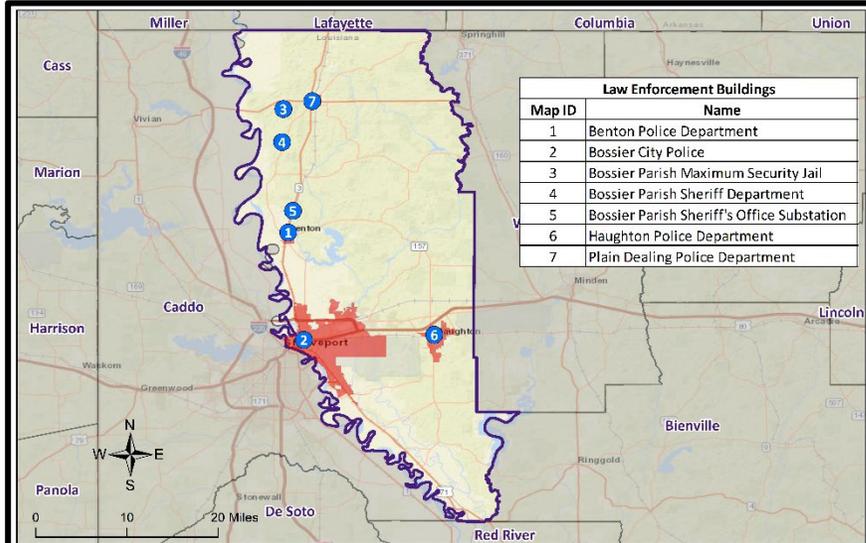


Civil Government



Fire & SAR

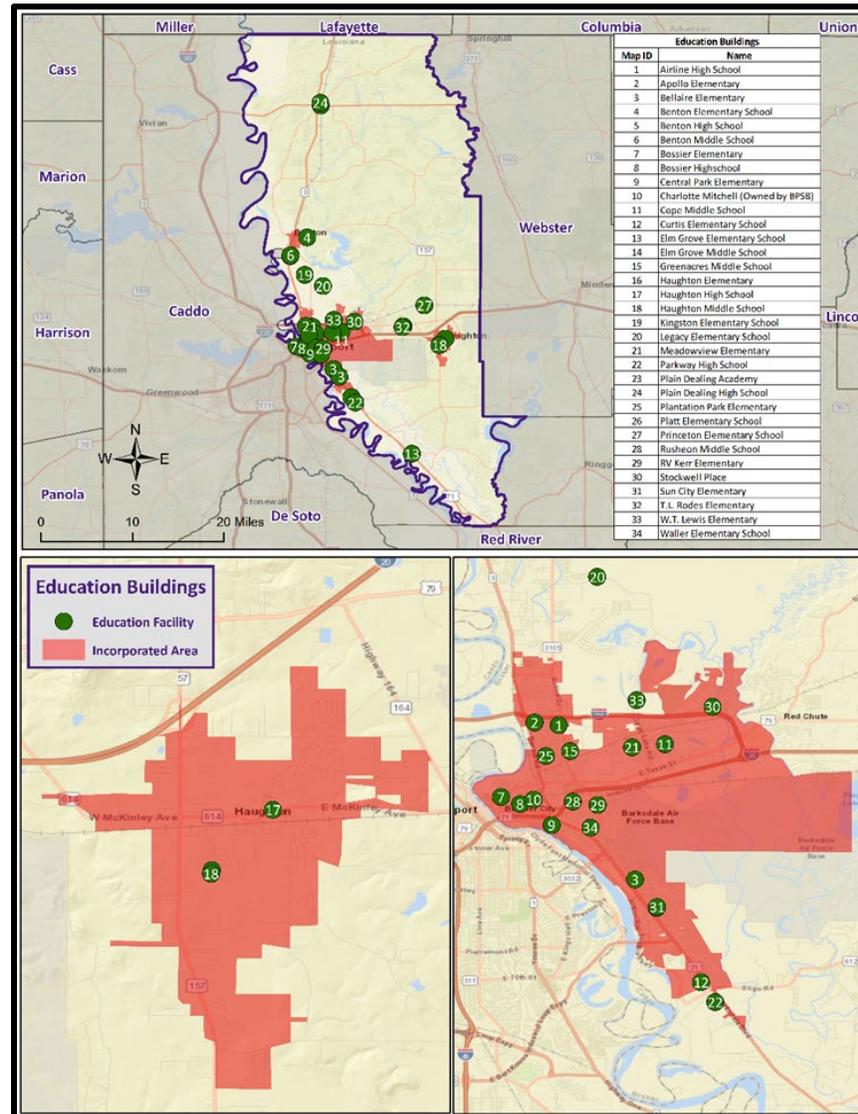
Critical Facilities



Law Enforcement

Public Health

Critical Facilities



Public Education

Dam Failure

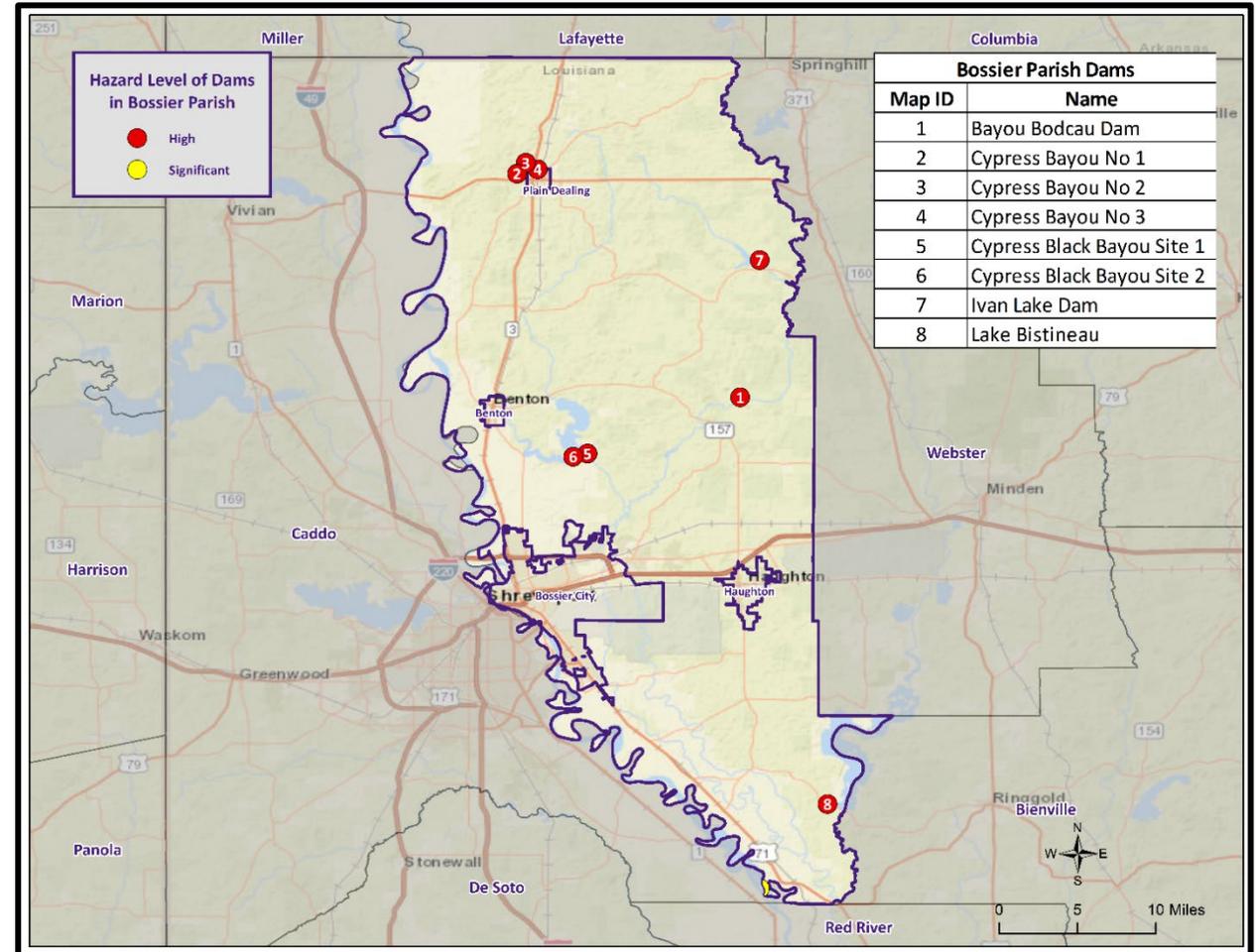


- A dam is a barrier across flowing water that obstructs, redirects, or slows the flow, often creating a reservoir or lake.
- There are five main causes of dam failure:
 - ✓ Overtopping
 - ✓ Foundation Defects
 - ✓ Cracking
 - ✓ Inadequate maintenance and upkeep
 - ✓ Piping



Location of Dams in Bossier Parish

System	Rating	Height (ft)	Storage (Acre-Feet)	Dam Type	Last Inspection Date
Bayou Bodcau Dam	High	76	1,197,700	Earth	4/10/2021
Cypress Bayou No 1	High	53	2,400	Earth	6/9/2020
Cypress Bayou No 2	High	43	2,450	Earth	3/4/2019
Cypress Bayou No 3	High	32	405	Earth	6/9/2020
Cypress Black Bayou Site 1	High	49	77,000	Earth	9/21/2020
Cypress Black Bayou Site 2	High	41	18,000	Earth	9/21/2020
Ivan Lake Dam	High	35	7,800	Earth	7/7/2020
Lake Bistineau	High	46	318,000	Earth	7/17/2020



Drought

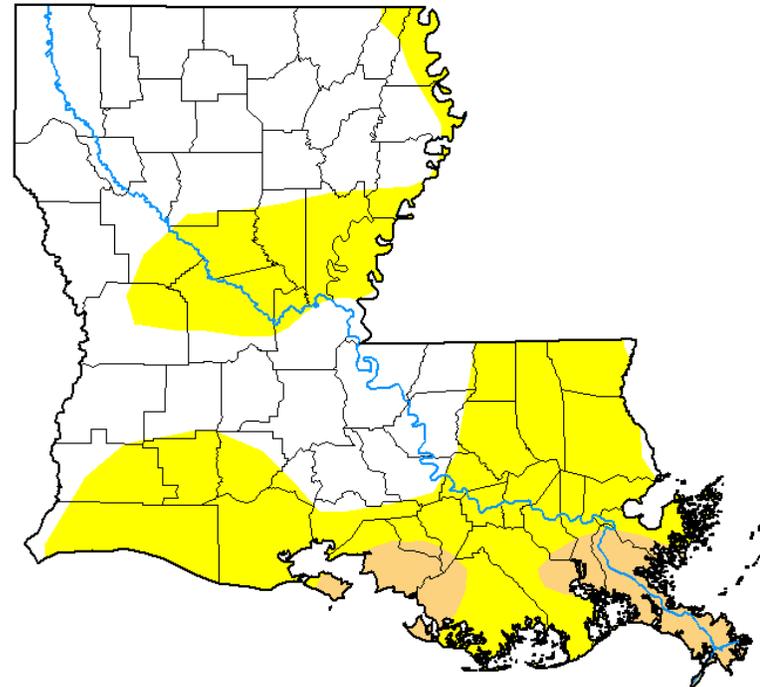


- A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water either by evaporation or transpiration through plant leaves.
- There are four classes of drought:
 - ✓ Meteorological 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

Drought Monitor

U.S. Drought Monitor Louisiana

June 13, 2023
(Released Thursday, Jun. 15, 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 <http://droughtmonitor.unl.edu/About.aspx>

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NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu

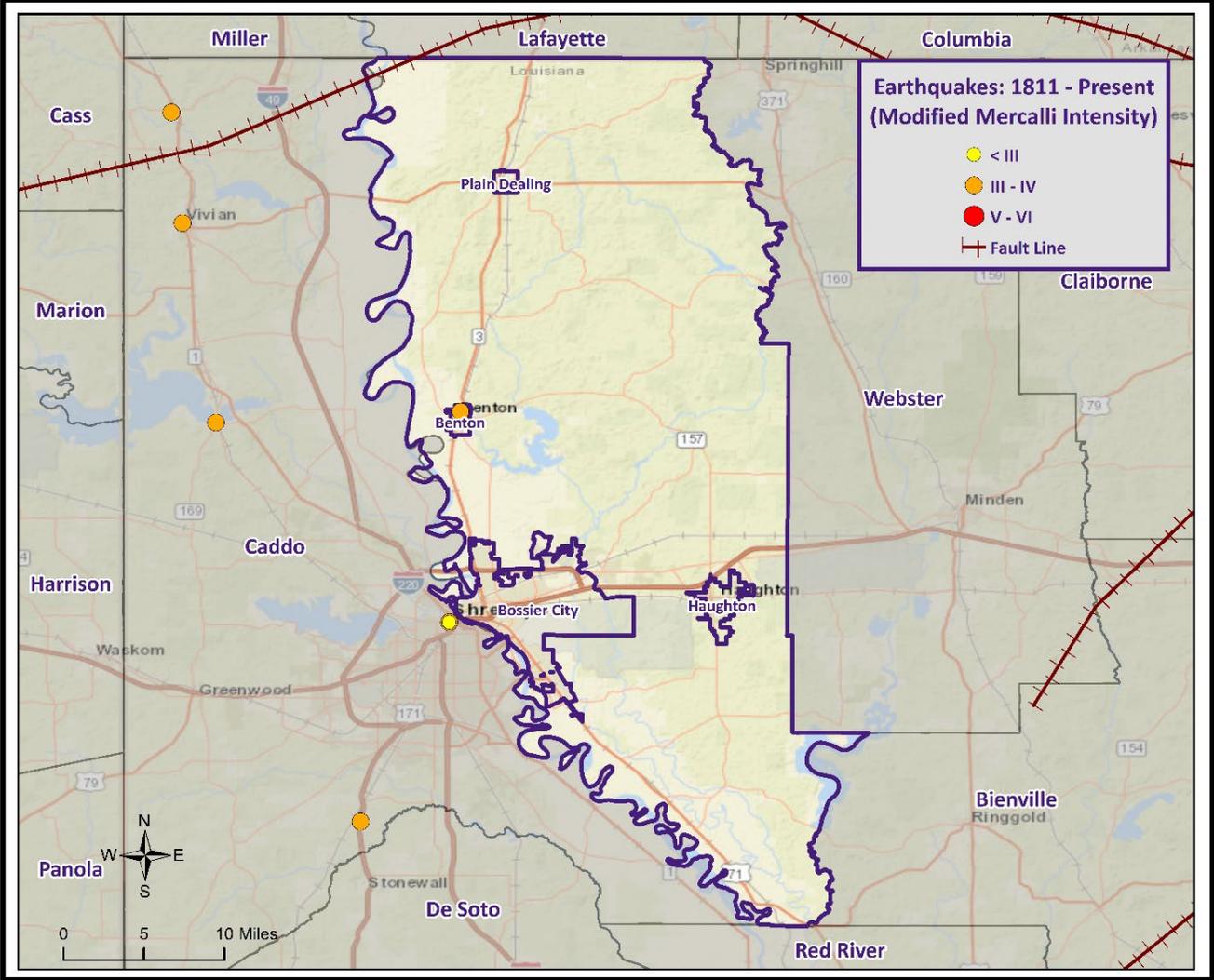


Earthquakes

- An earthquake is a sudden motion or trembling of the Earth caused by an abrupt release of stored energy in the rocks beneath the Earth's surface.
- The energy released results in vibrations which are known as seismic waves.
- Earthquakes are the leading cause of death by structural damage compared to other natural hazards in the world.
- Bossier Parish has one fault line running through the northwestern section of the parish.



Earthquakes



Date	Location	Intensity (MMI)
May 19, 1957	Benton	4

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.”



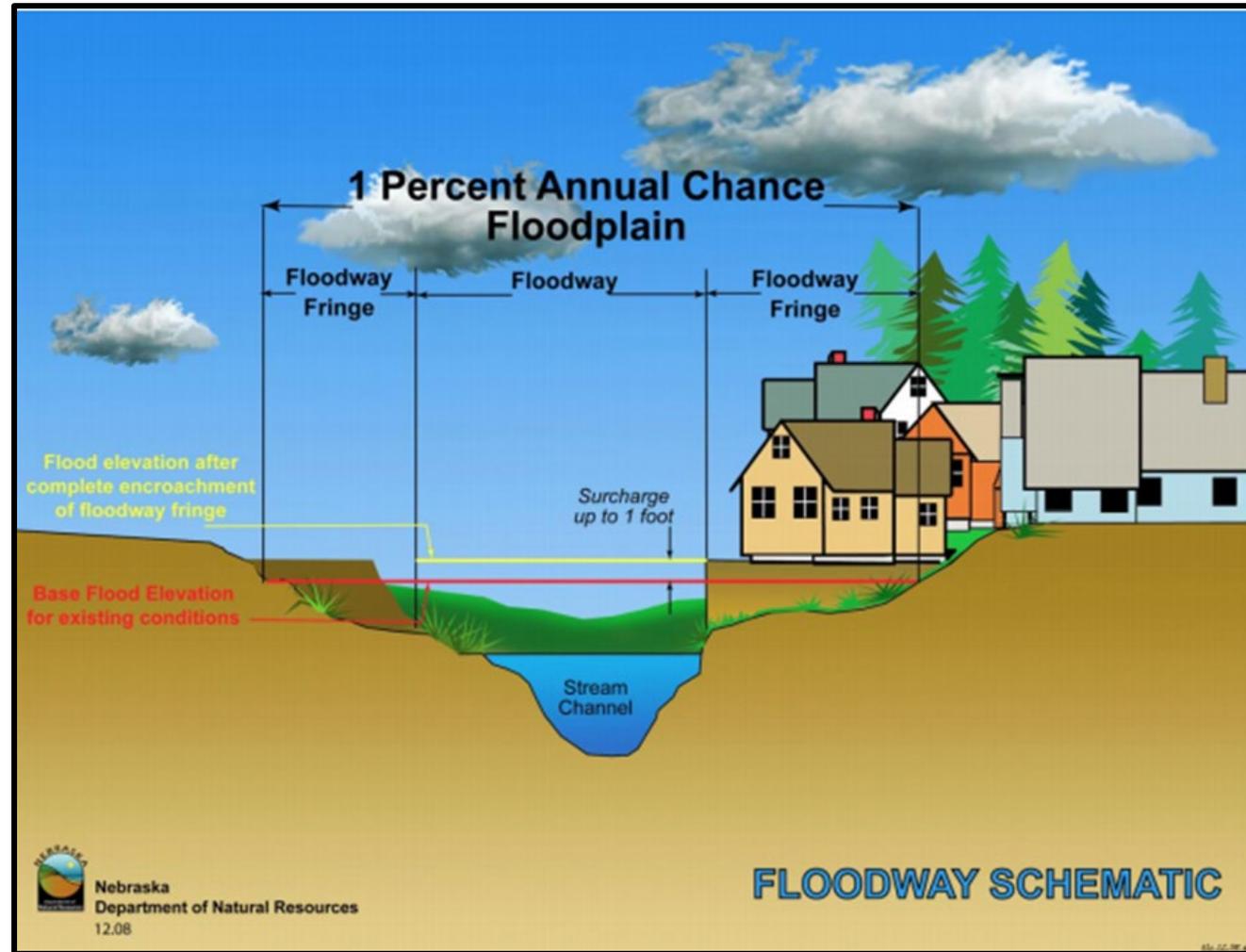


Flooding

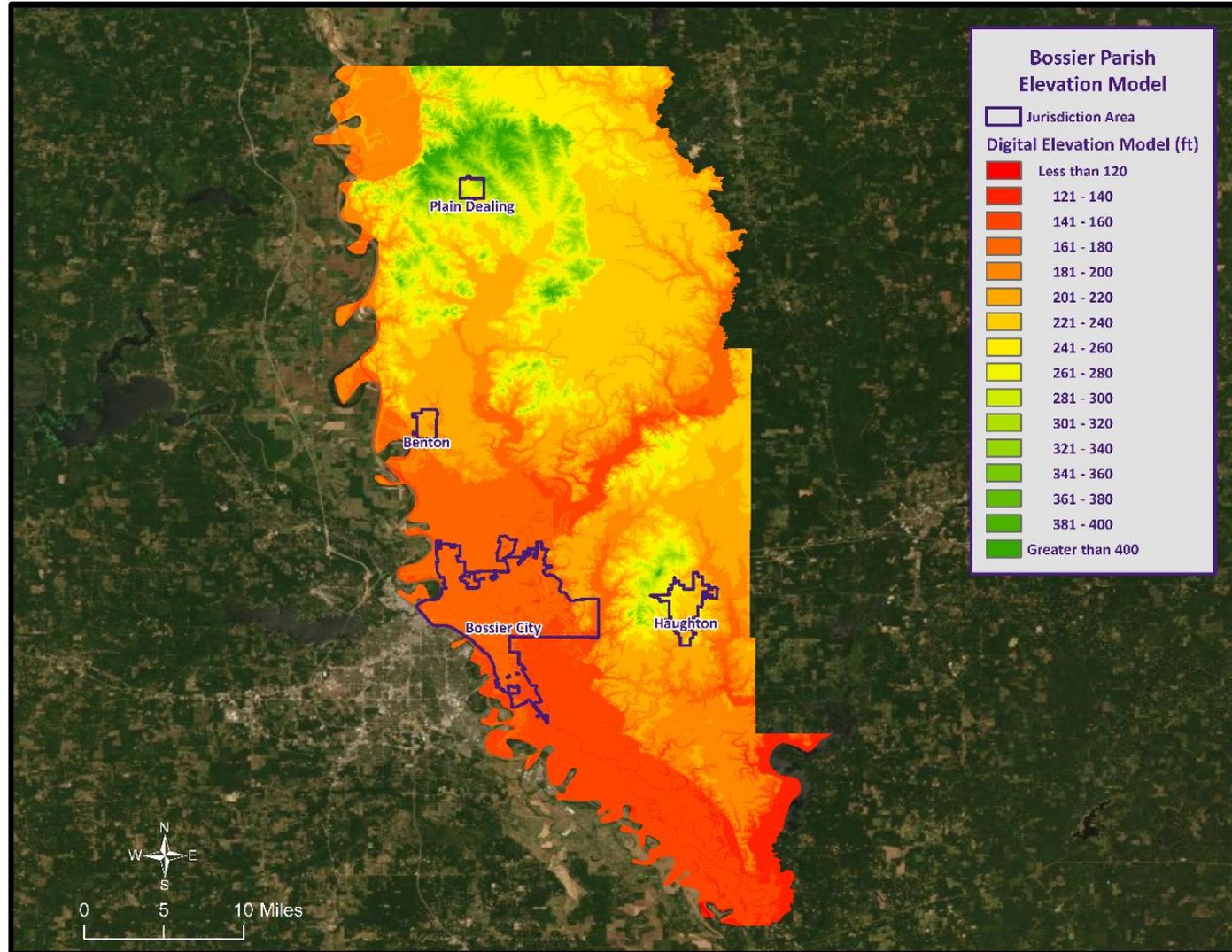
In Louisiana, six specific types of flooding are of main concern:

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

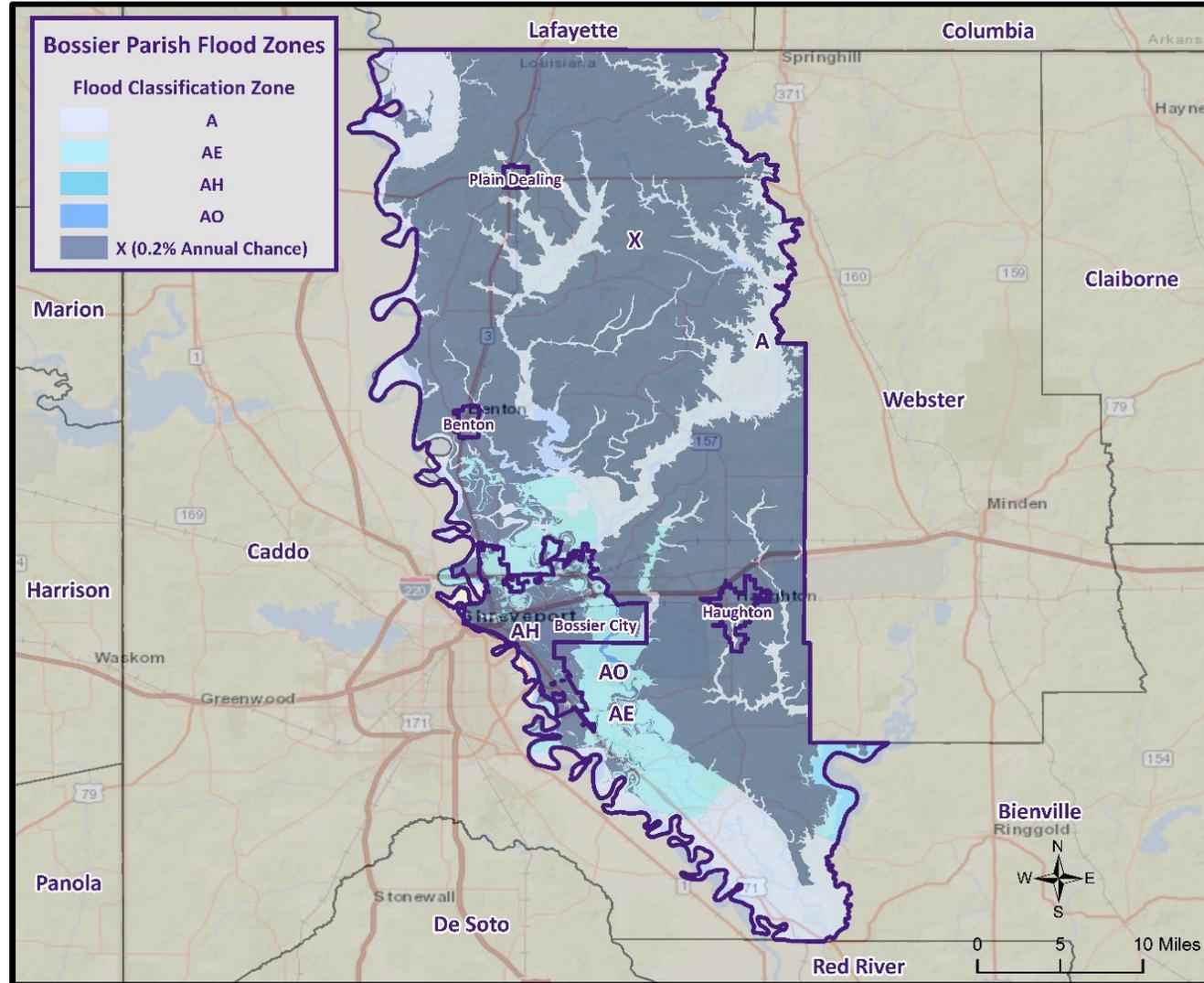
Floodway Diagram



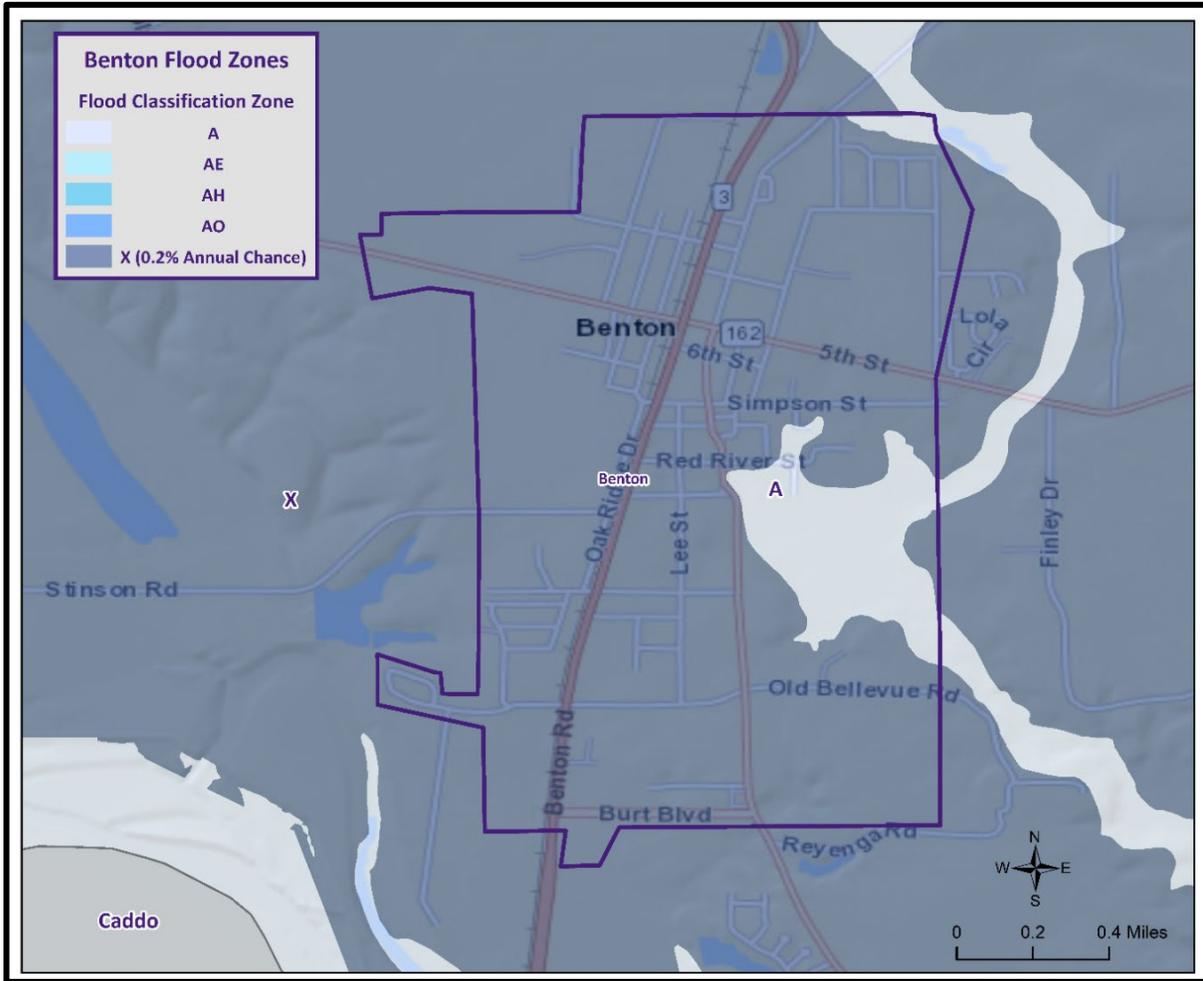
Digital Elevation Model



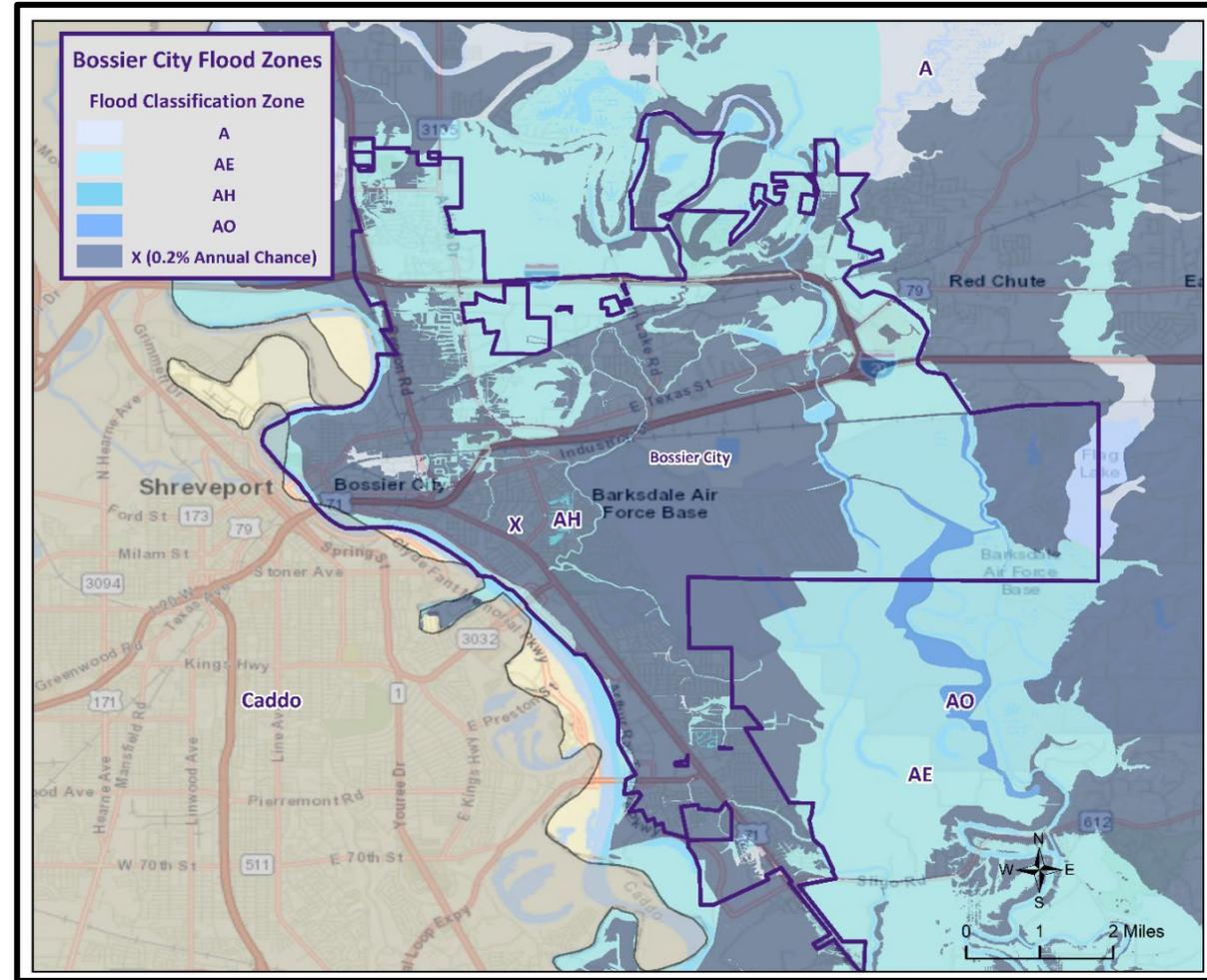
Bossier Parish Flood Map



Municipal Flood Maps

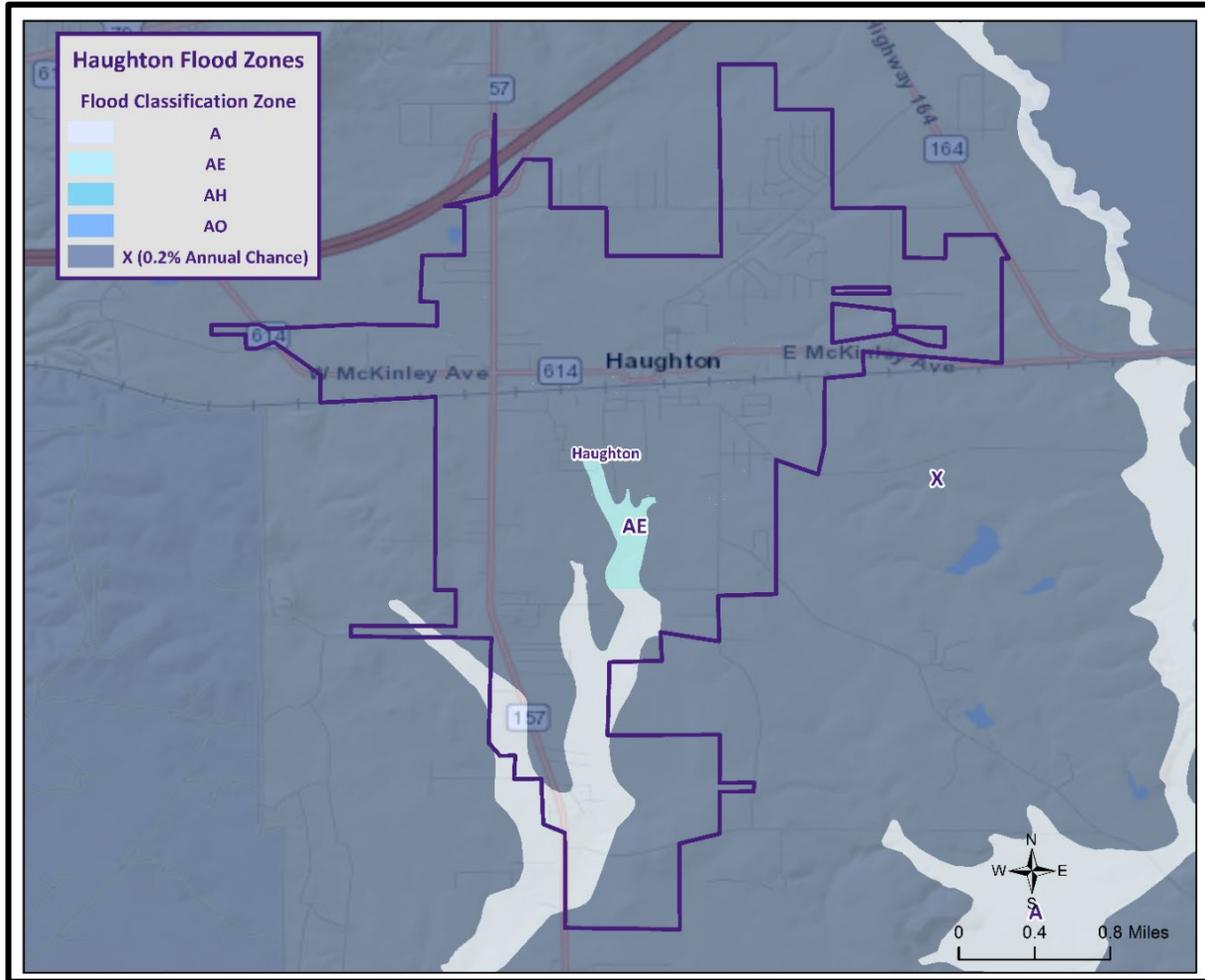


Benton

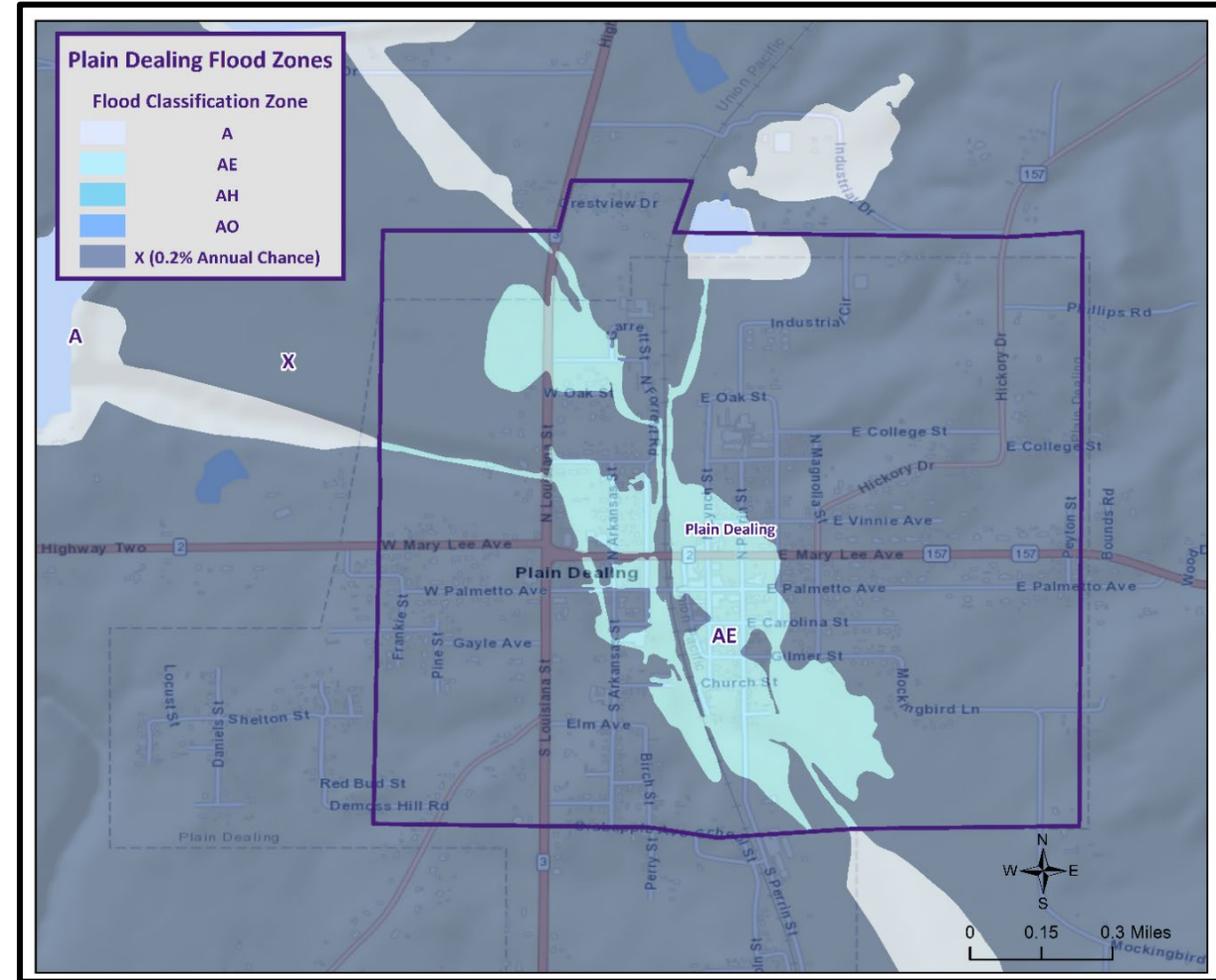


Bossier City

Municipal Flood Maps



Houghton



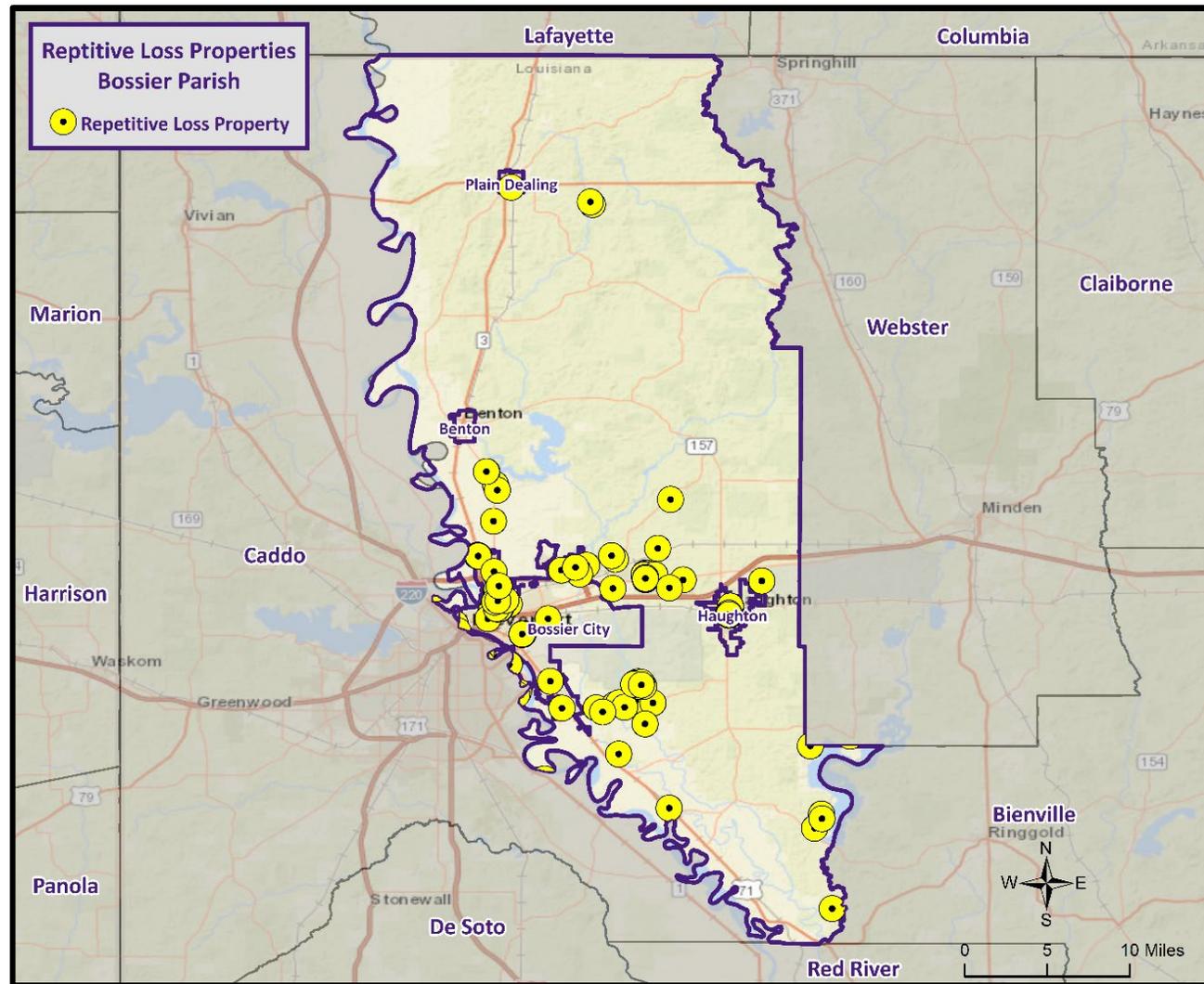
Plain Dealing

Flooding



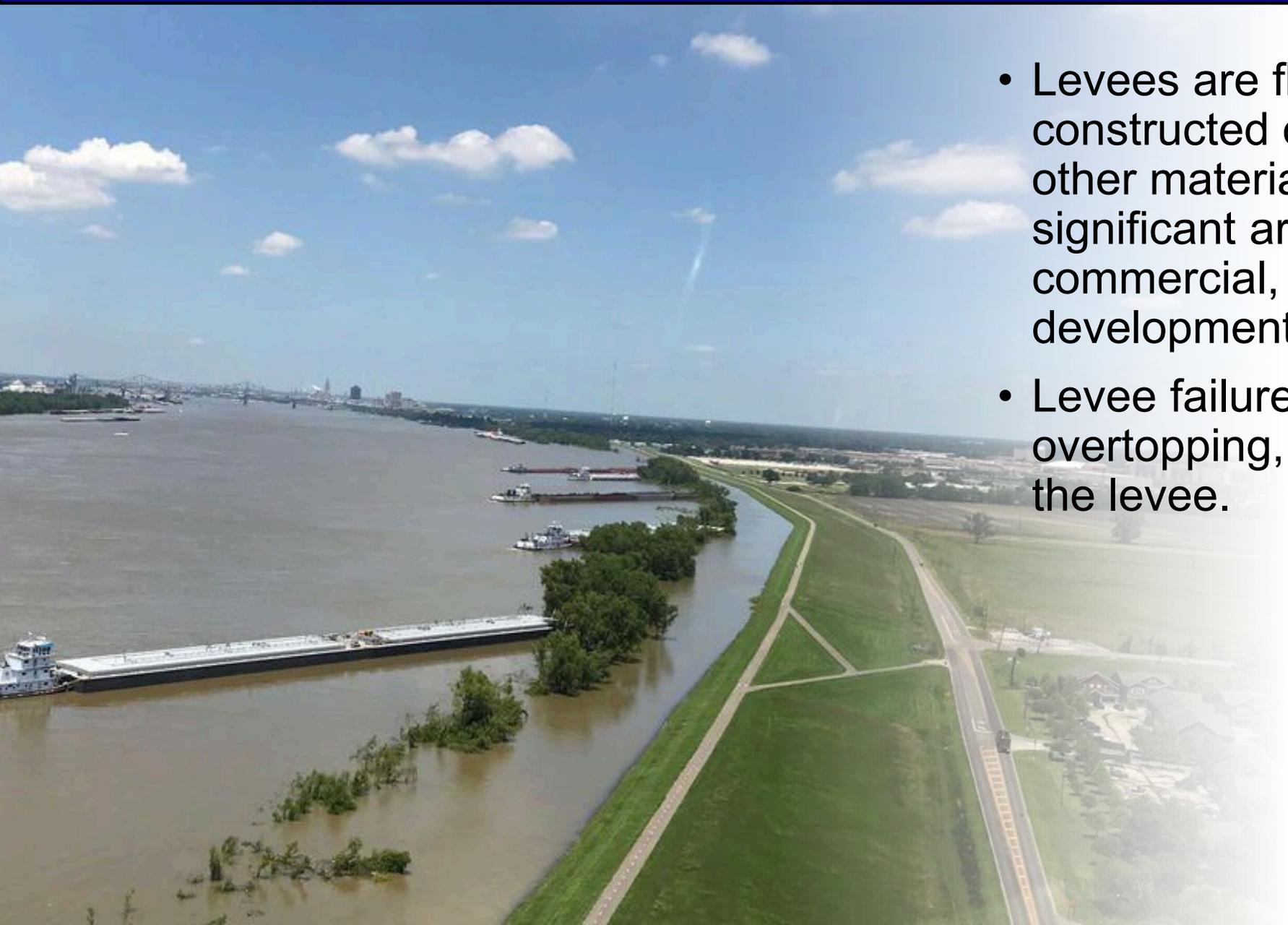
- Some areas flood more often than other properties, even more than those in the mapped 100-year floodplain.
- FEMA defines a “repetitive loss” property as one which has received two flood insurance claim payments for at least \$1,000 over any 10-year period since 1978.
- There are currently around 160,000 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



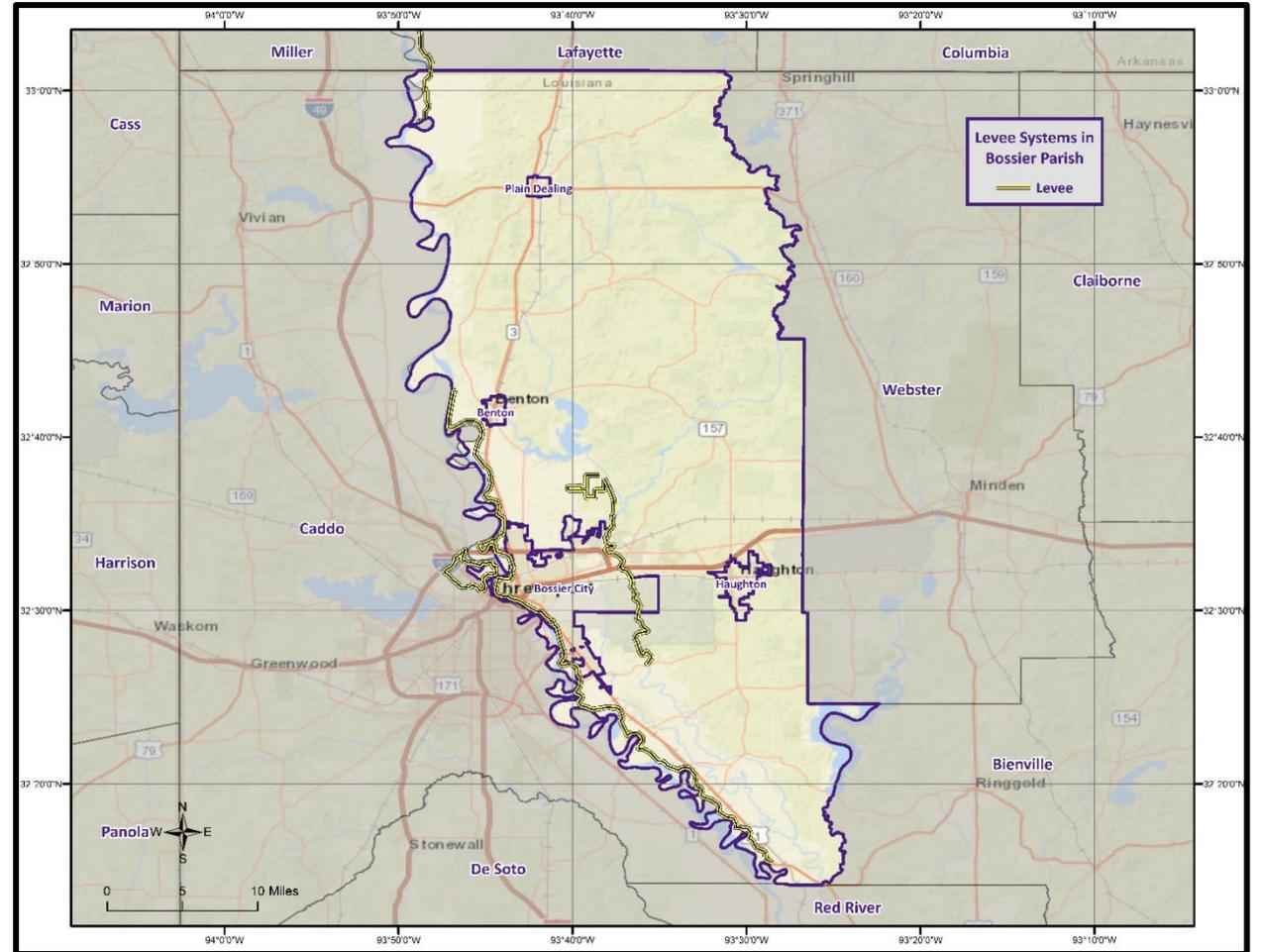
Levee Failure

- 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 Bossier Parish

Levee System	Length (Miles)	People at Risk	Structures at Risk	Property Value at Risk	Overall Risk
Bossier Levee	48.68	83,962	27,011	\$13.3 Billion	Moderate
Flat River Agricultural Canal Levee System	6.64	0	3	\$2.92 Million	Not Screened
Long Prairie	20.23	697	194	\$43.2 Million	Low
Red Chute Bayou	18.92	2,935	1,183	\$498 Million	Low
Red River – West Agurs	7.91	10,582	1,352	\$1.23 Billion	Moderate
Red River East Bank – South Levee System	2.5	0	2	\$0	Not Screened
Red River East Bank – North Bossier Auxiliary System	0.22	0	0	\$0	Not Screened



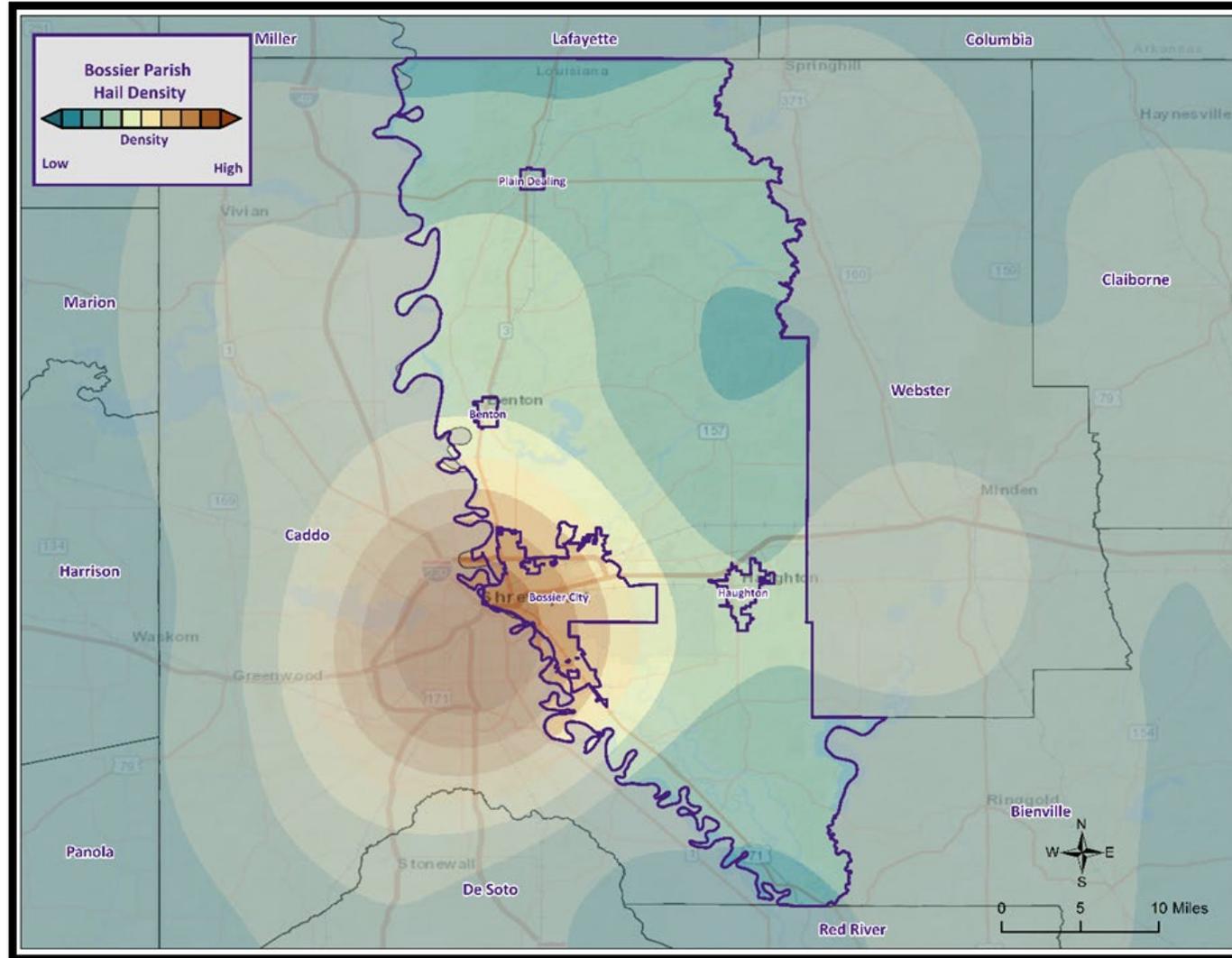
Thunderstorms



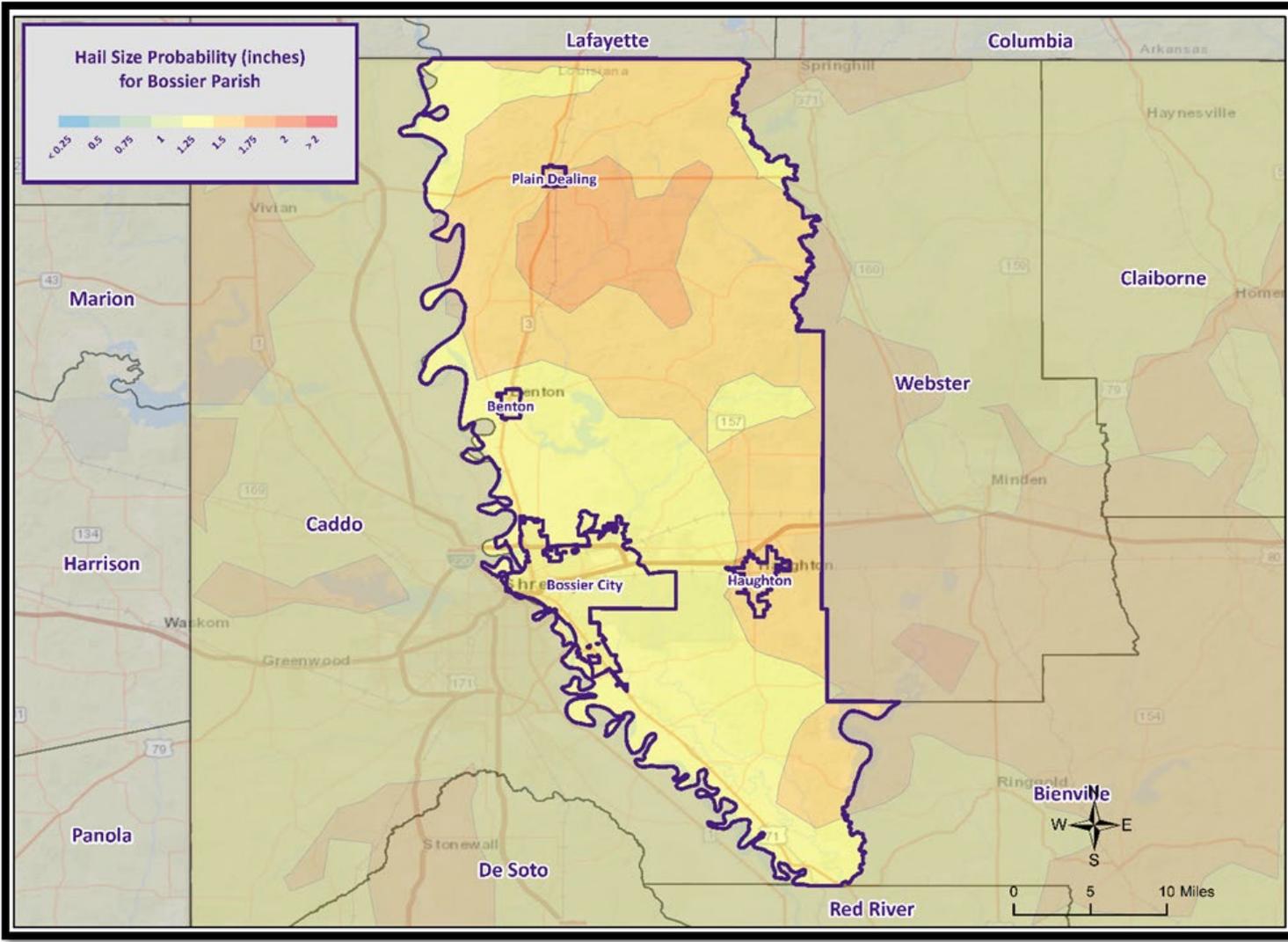
- A **thunderstorm**, also known as an **electrical storm**, a **lightning storm**, or a **thundershower**, is a type of storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder.
- They are usually accompanied by strong winds, heavy rain, and 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.



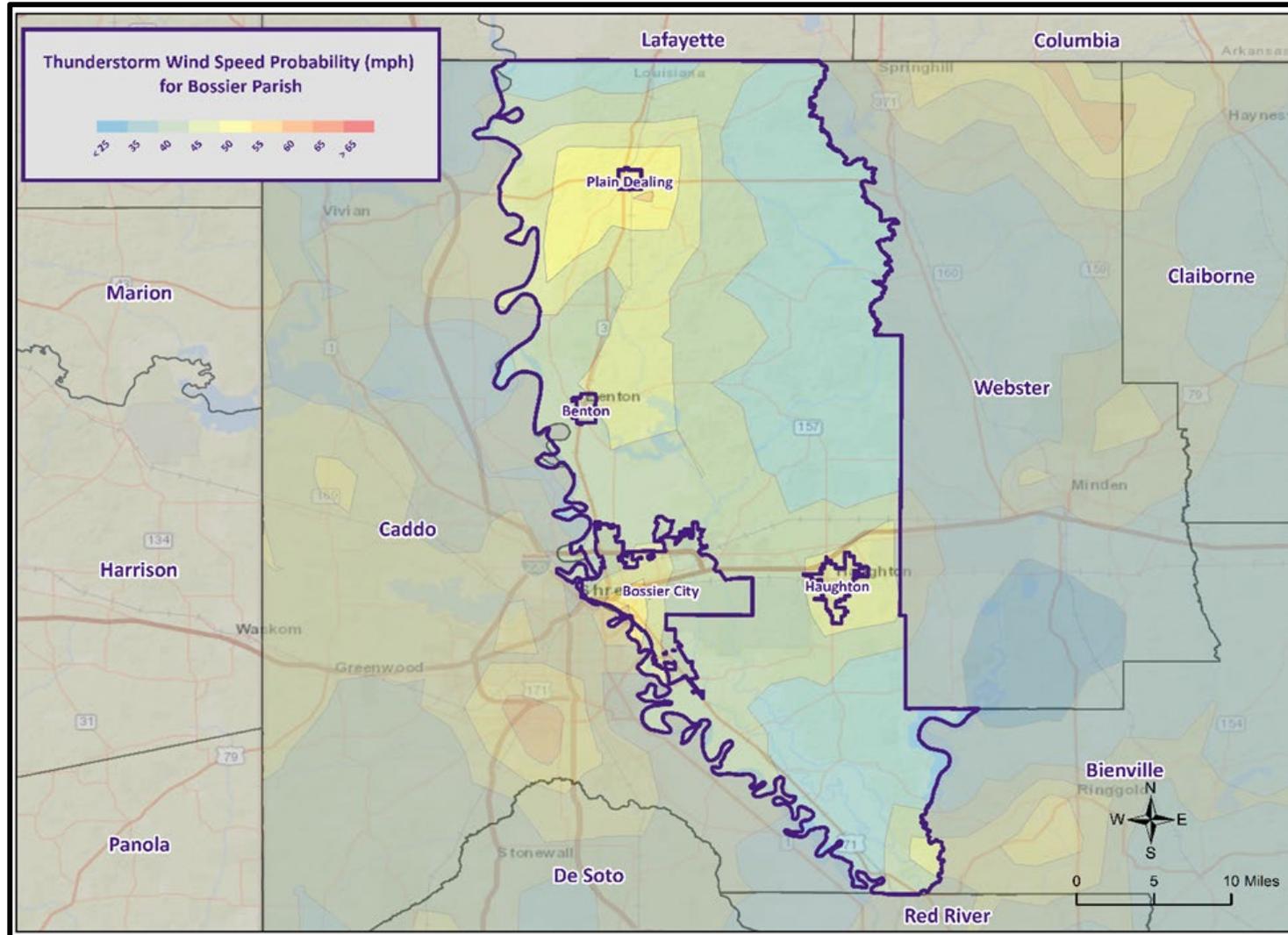
Hailstorm Density



Maximum Hail Size Probability



Maximum Wind Speed Probability



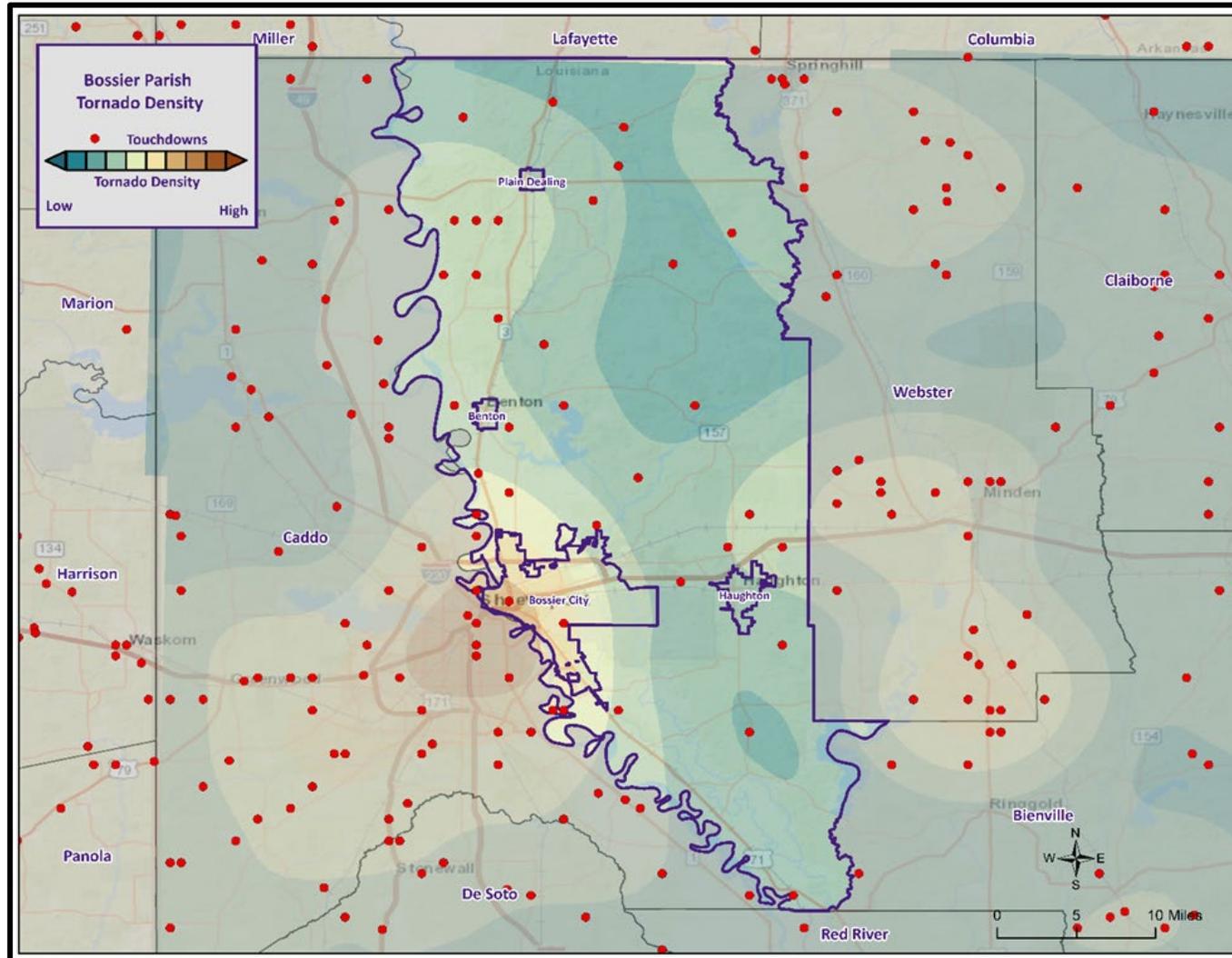
Tornadoes

- 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.

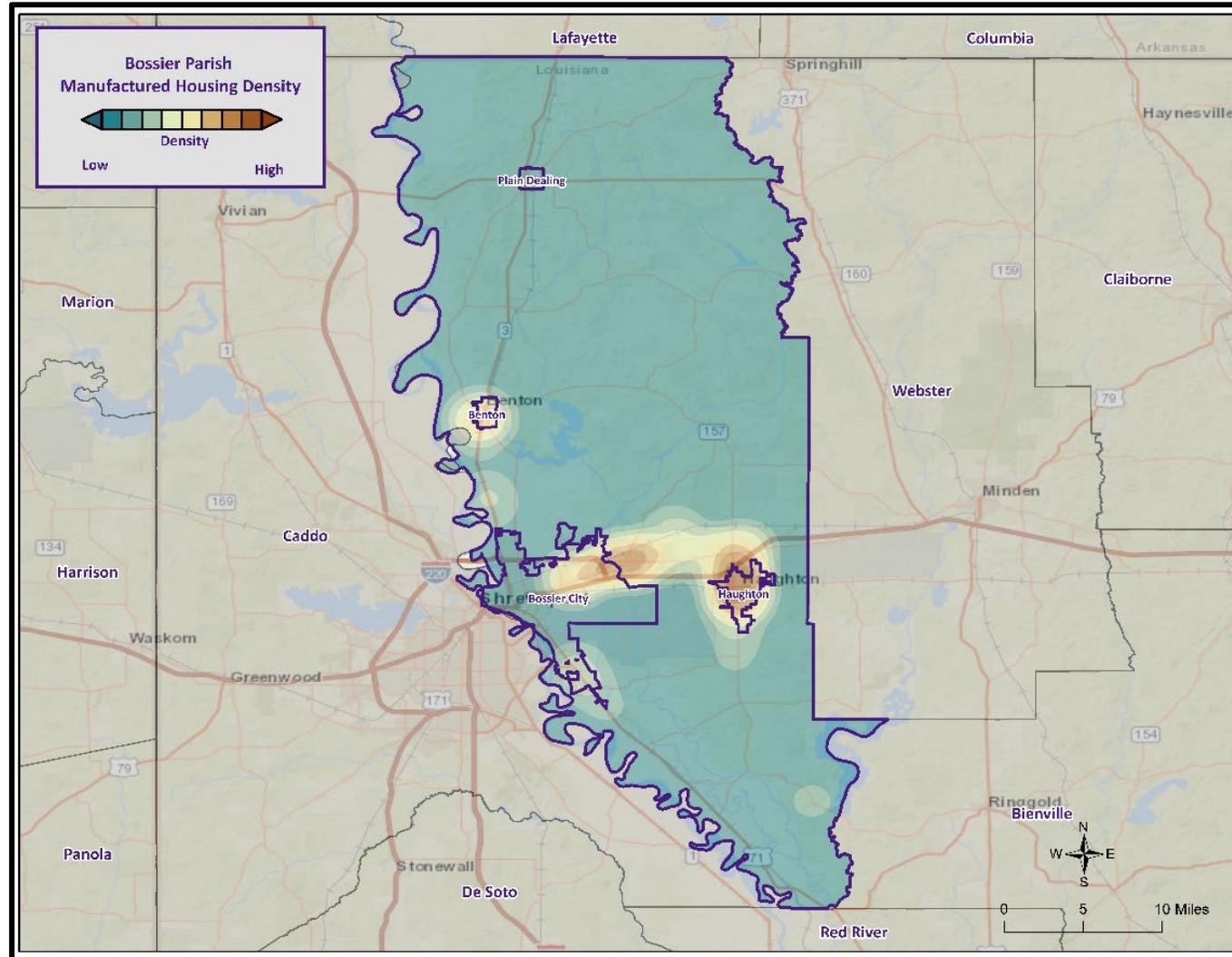
ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph



Tornadoes in Bossier Parish



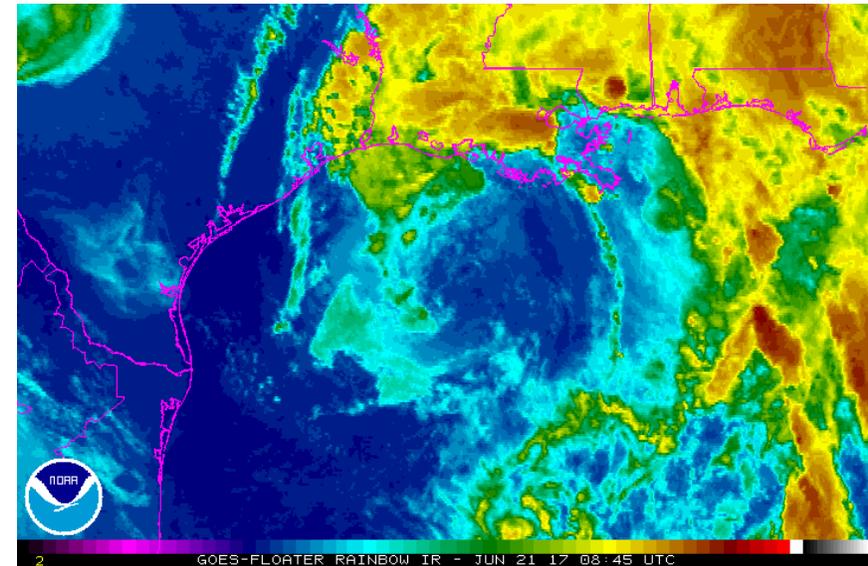
Manufactured Home Density



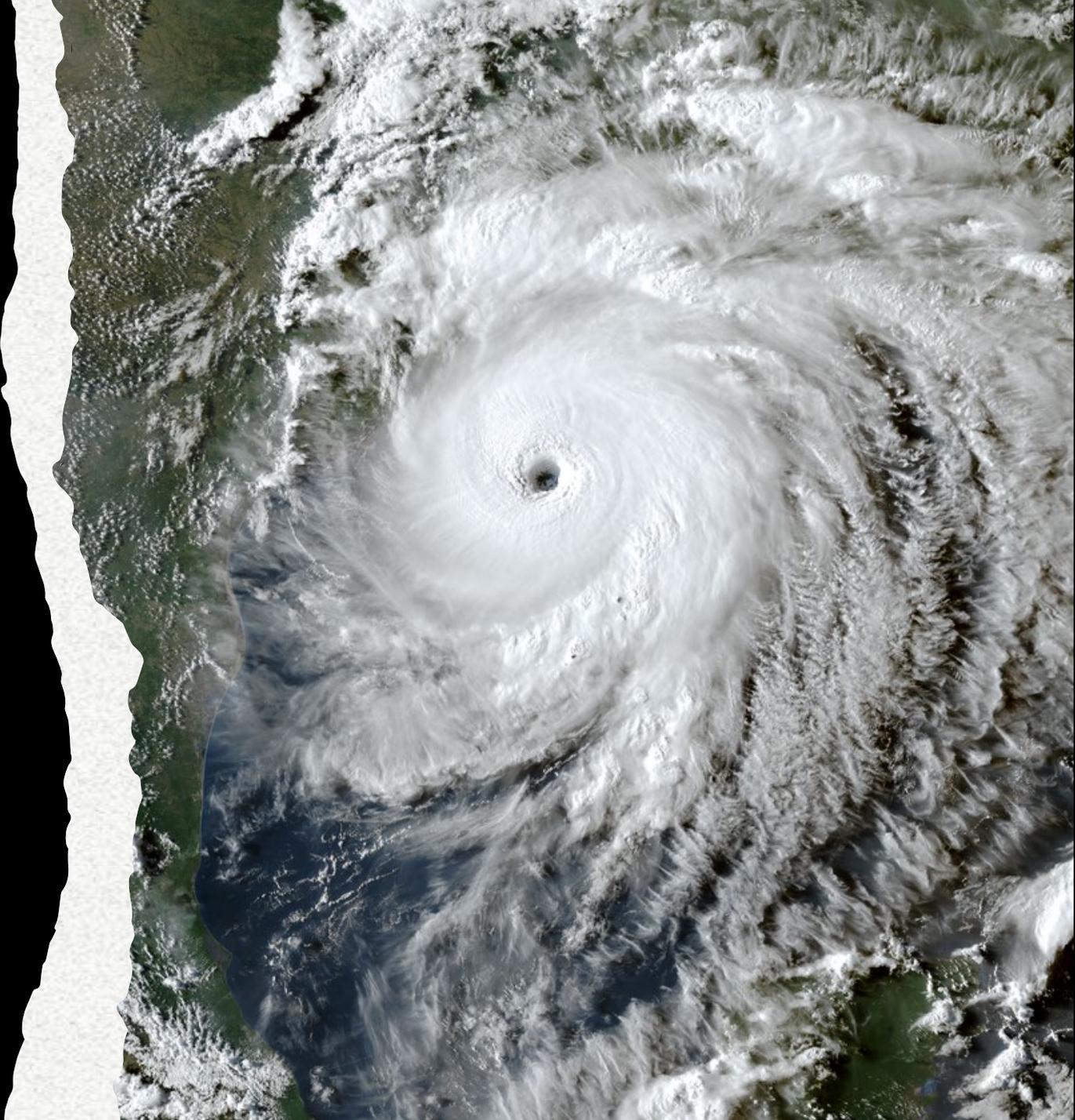
Tropical Cyclones

- 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

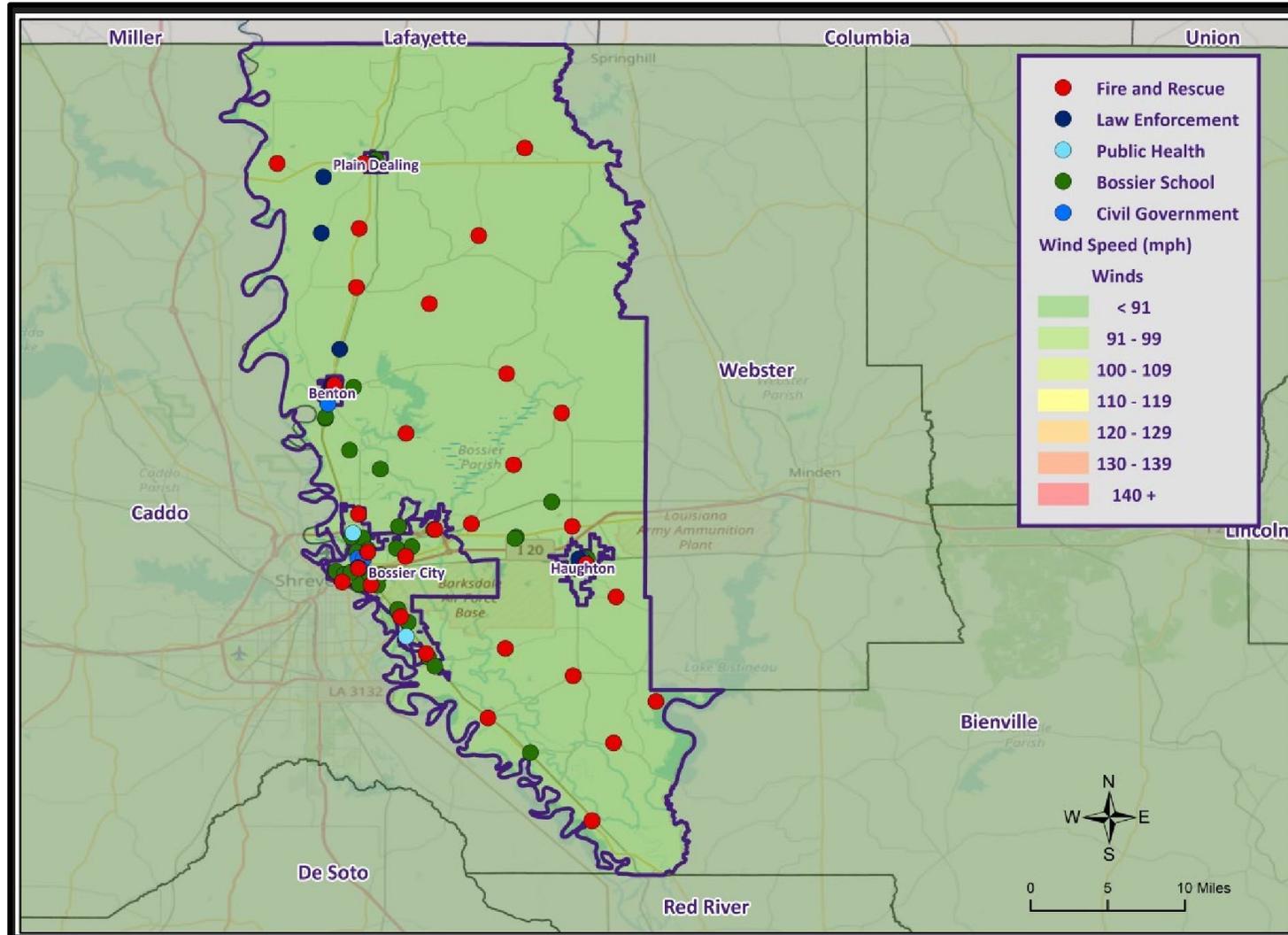
Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major 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.

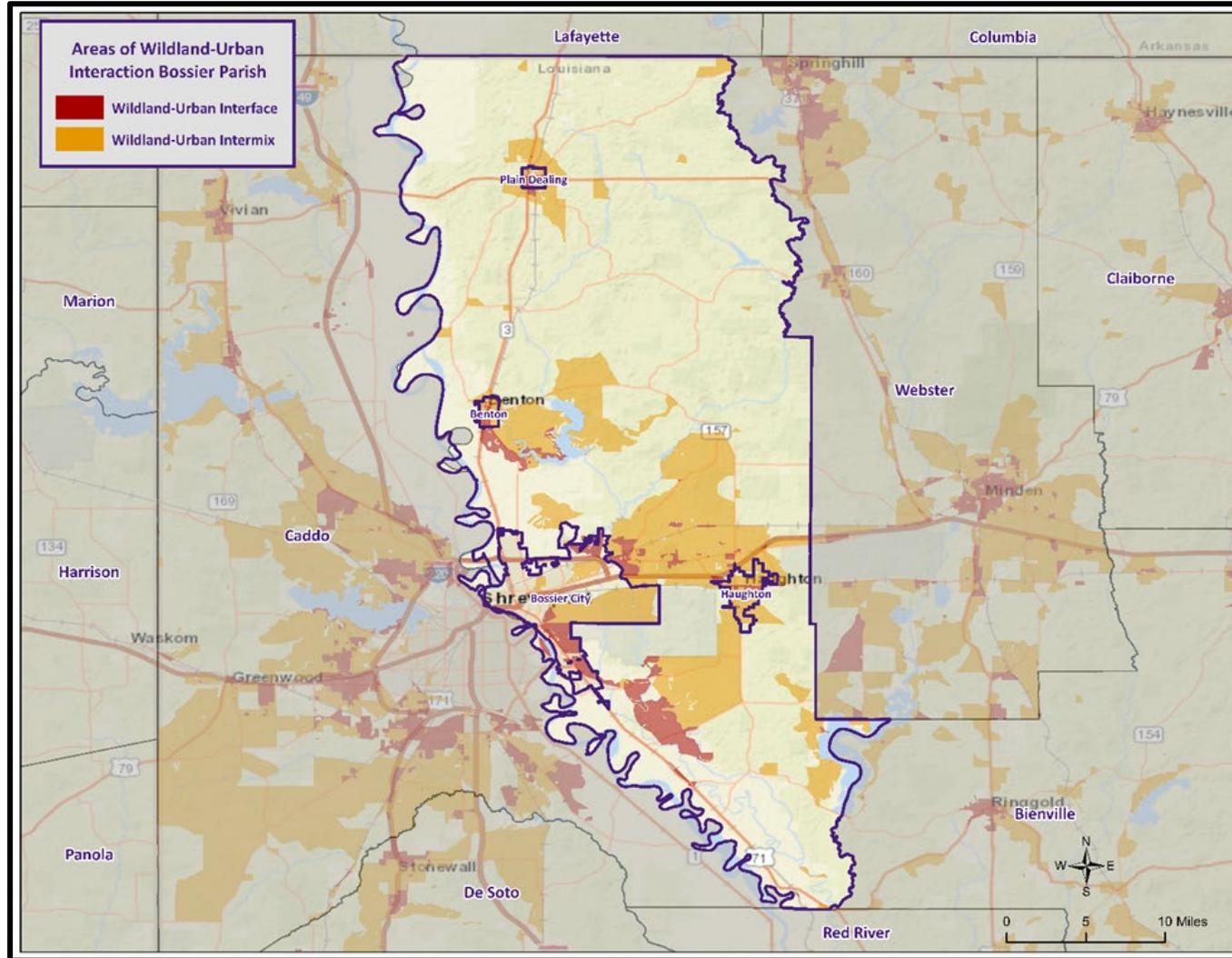


Wildfires

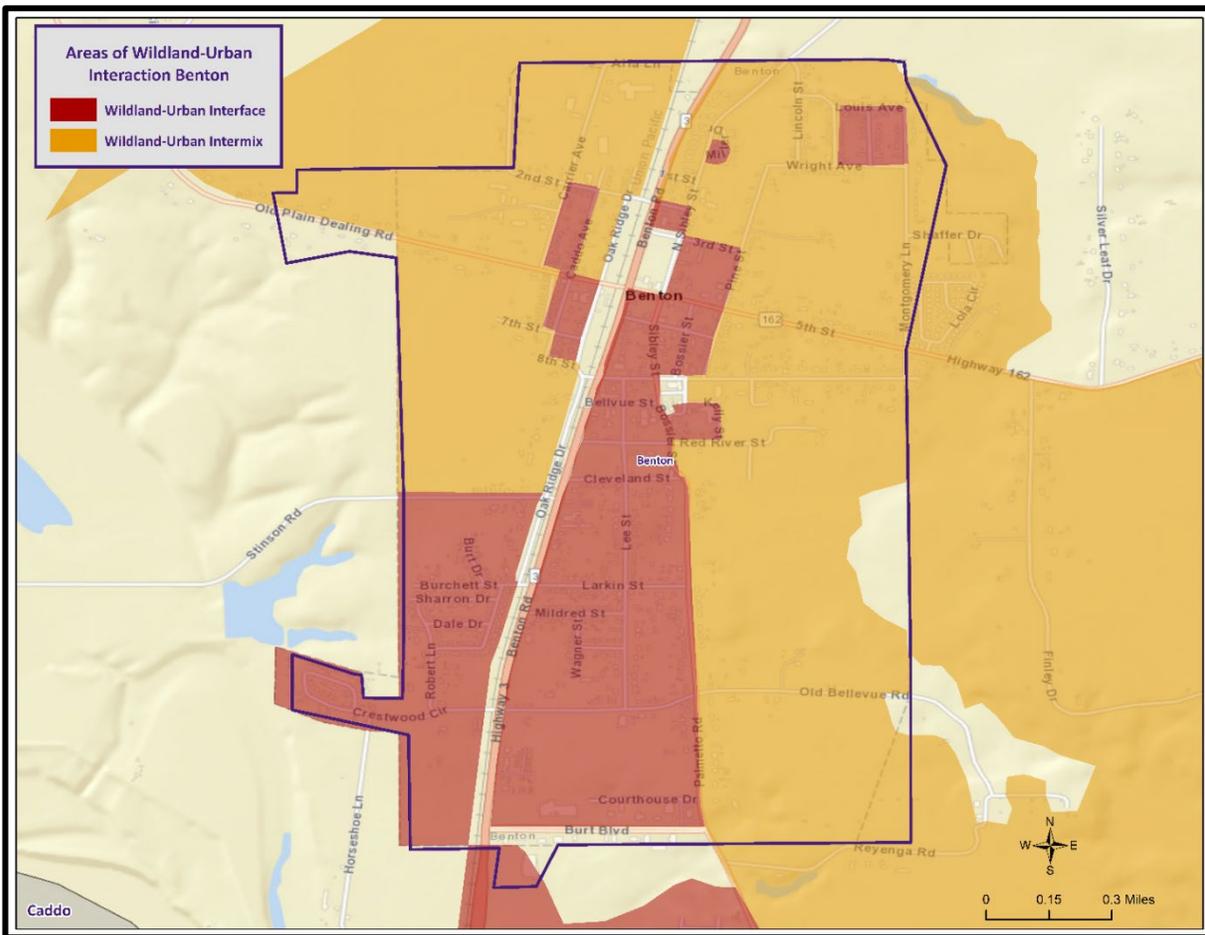


- A wildfire is combustion in a natural setting, marked by flames or intense heat.
- Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns
- While loss of timber is a problem, the real hazard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

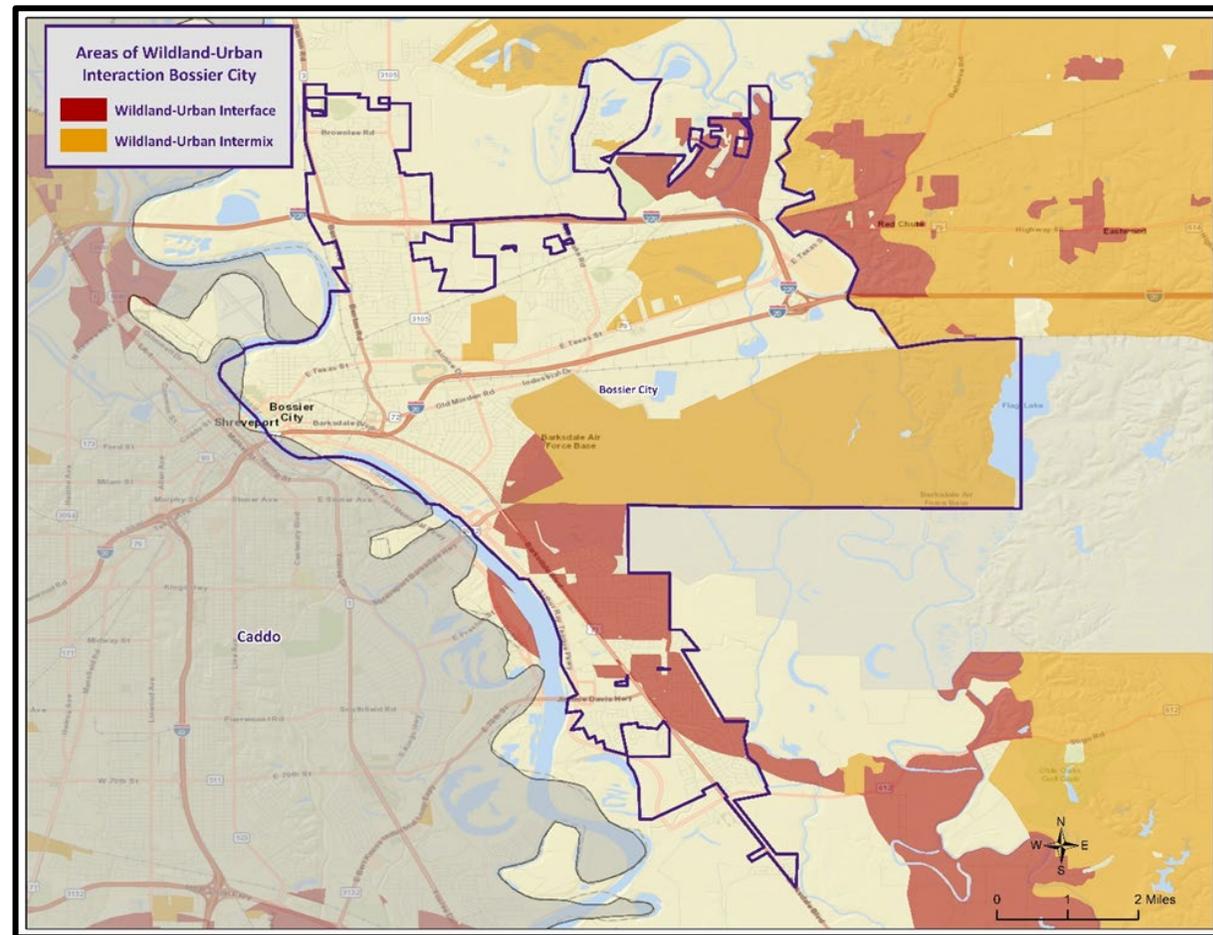
Wildland-Urban Interaction in Bossier Parish



Municipal WUI Maps

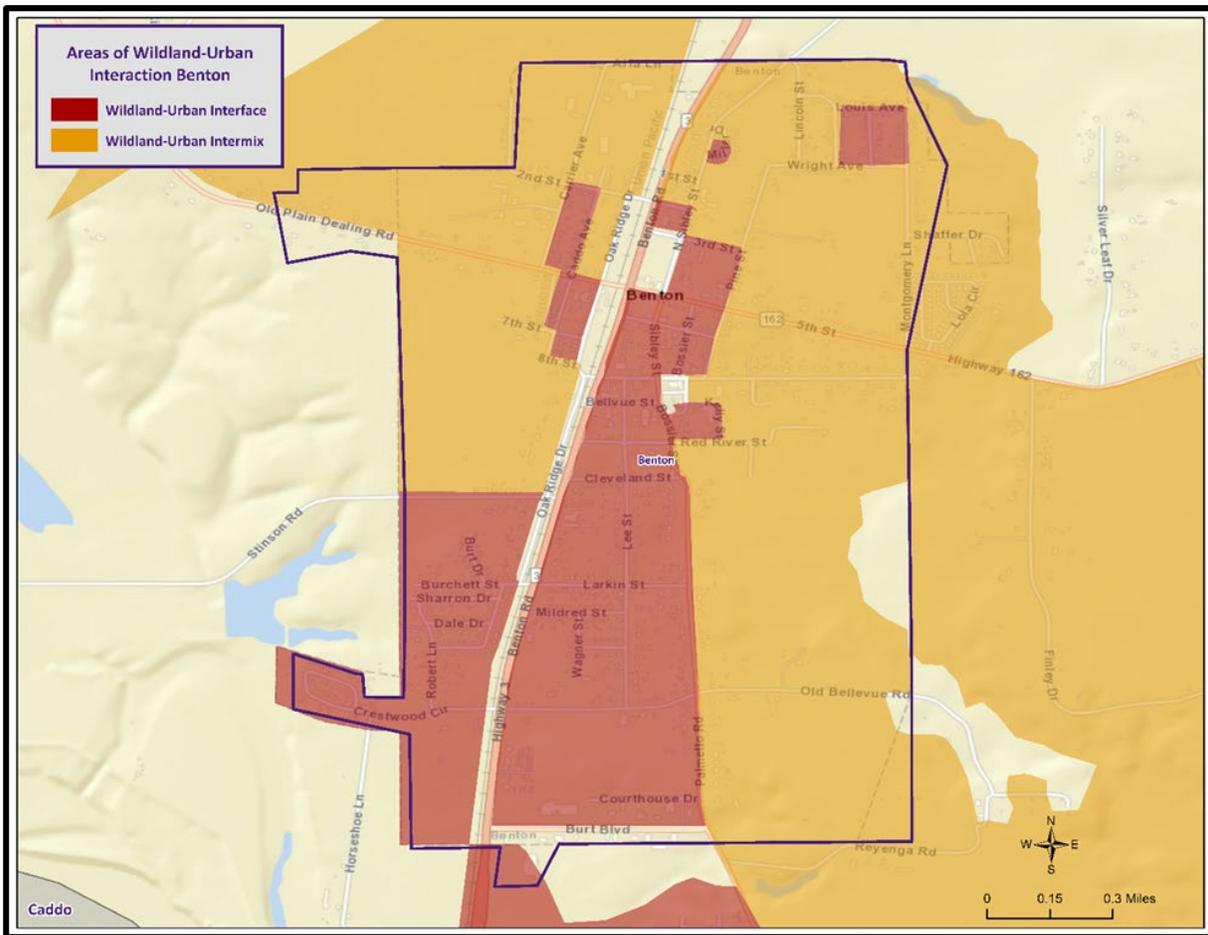


Benton

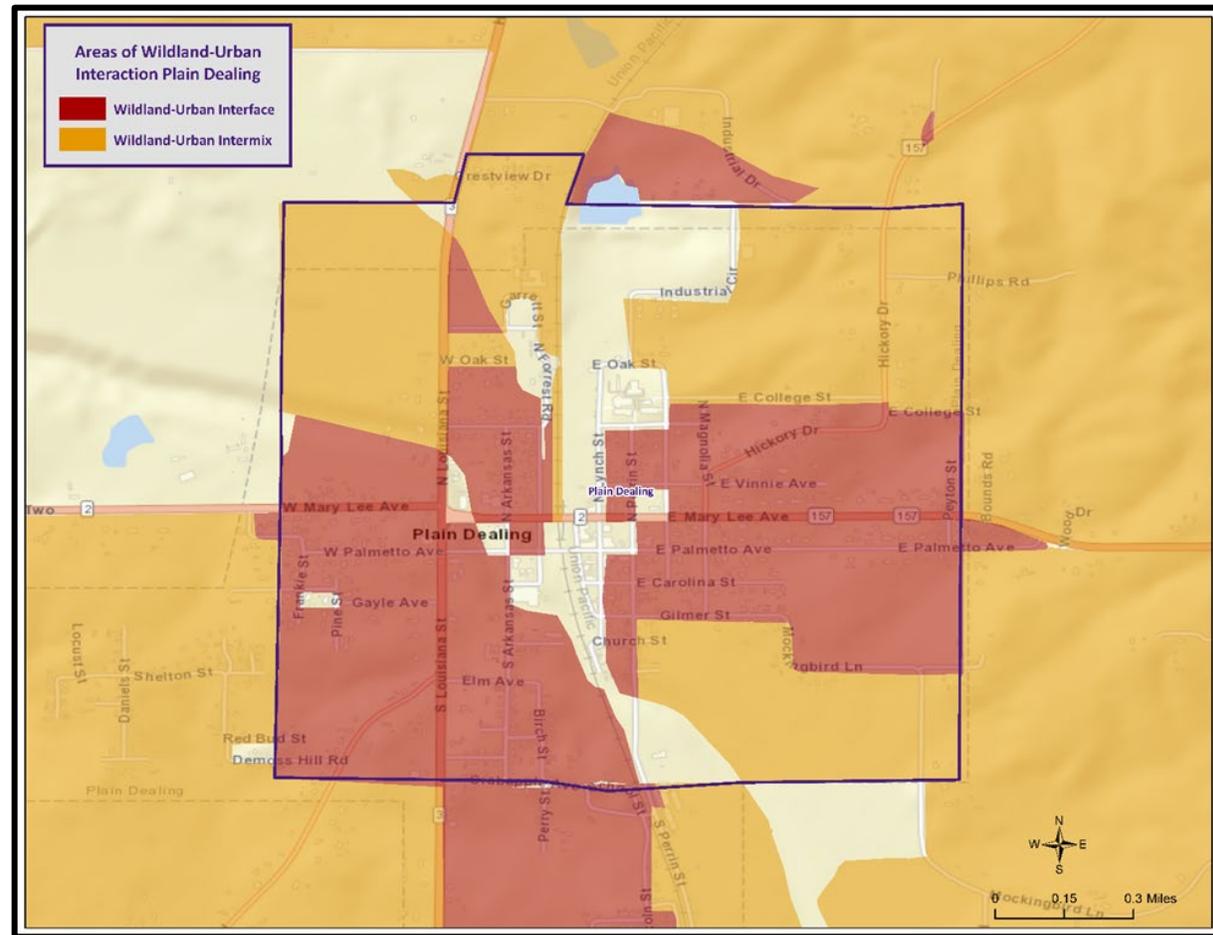


Bossier City

Municipal WUI Maps



Haughton



Plain Dealing

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.



Bossier Parish Mitigation Goals

- Enhance and develop emergency services, including response
- Protect lives and property from the dangers of natural hazards





Parish Hazard Mitigation Project Update

Bossier OHSEP/
Bossier Government Discussion

Public Outreach Activity #1

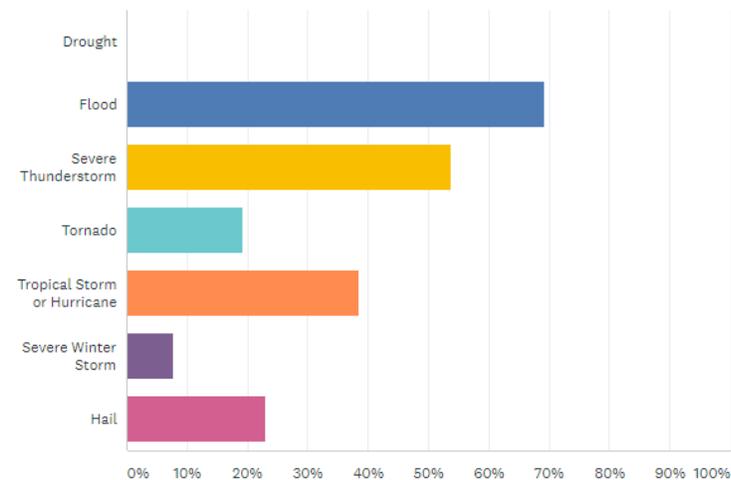
Hazard Mitigation Public Opinion Survey

https://lsu.qualtrics.com/jfe/form/SV_8vPmbELcDS0ivCC



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!



BOSSIER PARISH PUBLIC MEETING

**PUBLIC ACTIVITY:
INCIDENT/ ISSUE
QUESTIONNAIRE**

1. HAZARD TYPE(S):

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

F. OTHER:

2. DESCRIBE INCIDENT OR ISSUE:

3. LOCATION:

A. CITY:
B. ADDRESS OR AREA:
C. LOCALIZED OR DISPersed:

4. INTENSITY

A. DEPTH (FLOODING) OR SIZE (HAIL ETC.):
B. WIND STRENGTH:

5. RE-OCCURRING OR ONE-TIME

A. IF RE-OCCURRING, 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 PROBLEM OR IMPACT BE PREVENTED, FIXED OR ALLEVIATED?



SDMI Hazard Mitigation Website

The screenshot shows the SDMI Hazard Mitigation Website for Bossier Parish. The header includes the LSU Stephenson Disaster Management Institute logo and navigation links for 'SDMI HOME', 'Intro', 'Events', 'FEMA Resources', 'Parish Plans', and 'Settings'. The main content area is titled 'Bossier Parish' and features a 'PLAN DUE DATE: FEBRUARY 15 2022' badge. A 'DEVELOPMENT STATUS' progress bar shows four 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 several entities with radio buttons: Unincorporated Bossier Parish, Town of Benton, Town of Plain Dealing, City of Bossier City, and Town of Houghton. A calendar section shows two upcoming events: '2022 BOSSIER PARISH KICKOFF MEETING' on May 17 (LEPA Conference, 09:00 AM - 09:30 AM 5/17/2022) and '2022 BOSSIER PARISH INITIAL PLANNING COMMITTEE MEETING' on Oct 20 (Police Jury Meeting Room, Benton, LA, 09:00 AM - 10:00 AM 10/20/2022). A 'PREVIOUS PLANS' section for 2016 offers download links for 'BOSSIER HM PLAN', 'BOSSIER PARISH KICK OFF MEETING', and 'BOSSIER PARISH PUBLIC MEETING'. At the bottom, there is a 'Survey' section with an 'Access Survey' button.

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



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