



St Tammany Hazard Mitigation Plan Update Public Meeting

September 18, 2014

Mandeville, LA



Agenda

- Hazard Mitigation Planning Process – SDMI Staff
- Risk Assessment – SDMI Staff
- Update on Previous/Current Mitigation Projects – St. Tammany Parish
- Public Forum Breakouts – SDMI Staff/St. Tammany Parish



Hazard Mitigation – A Summary

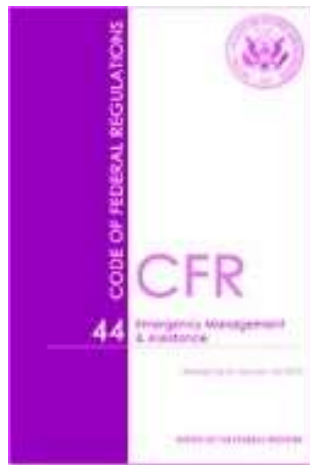
- Protect public safety and prevent loss of life and injury;
- Help accomplish community objectives, such as leveraging capital improvements, infrastructure protection, open space preservation, and economic resiliency;
- Prevent damage to a community's economic, cultural and environmental assets;
- Minimize operational downtime and accelerate recovery of government and the private sector after an event;

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 migration 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 St Tammany Parish Hazard Mitigation Plan will allow for distribution of HM funding following future disasters.

The Planning Team: A Multi-jurisdictional approach

Each jurisdiction has at least one representative on the planning team

- Slidell
- Mandeville
- Covington
- Madisonville
- Abita Springs
- Sun
- Folsom
- Pearl River

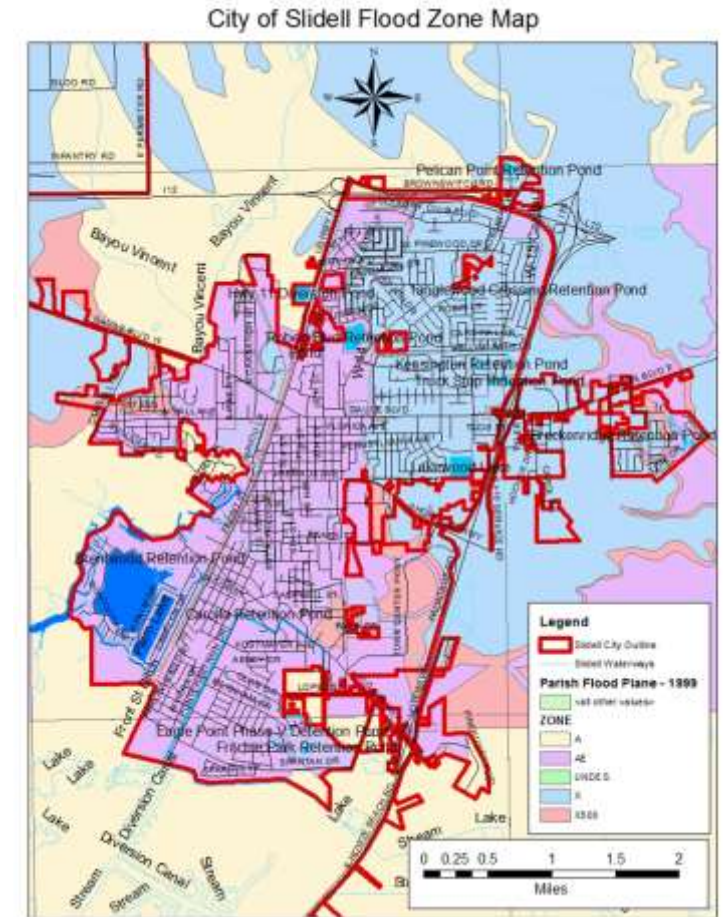


Collaborative Planning Approach



State of Louisiana Hazard Mitigation Plan - Slidell

- Slidell was highlighted in the Louisiana HM Plan for their comprehensive mitigation program
- Elevating existing homes above Base Flood Elevation (BFE) remains a priority for the City of Slidell. Even before Hurricane Katrina, the city actively supported efforts by its residents and business owners to elevate
- The city is also pursuing policies and programs that protect larger groupings of homes and businesses. These efforts included passing and enforcing zoning, subdivision, flood protection, and storm water management ordinances
- Slidell has taken a more holistic and long-term approach to flood hazard mitigation. The city supports elevating homes and businesses above the BFE. The City invests a large portion of its budget in capital projects intended to reduce the threat from flooding



Plan Update Timeline

Activity	Detail	When
Kick-off Meeting	Steering committee	August 2014
Jurisdiction-specific meetings and Worksheets	Jurisdictions	August 2014
Public Meeting	Steering committee and Public	September 2014
Plan development	Contractor (SDMI)	September – October 2014
Public plan review	Public	October 2014
Plan review-GOHSEP	GOHSEP	November 2014
Plan review-FEMA	FEMA	November-December 2014
Jurisdiction adoption of plan	Jurisdictions	January-March 2015
FEMA plan approval	FEMA	By 31 March 2015

*Timeline subject to change.



Risk Assessment: Hazard Identification

- The plan includes descriptions of the natural hazards that affect the jurisdictions in the planning area.
- A hazards identification should include the
 - locations affected
 - the extent or strength
 - previous occurrences
 - Probability of future events



Risk Assessment: Analyze Risk and Summarize Vulnerability

- Risk analysis involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard.
- This helps the community understand the greatest risks facing the area.
- Methods can include exposure risk analysis, historical analysis and scenario analysis.
- Through the risk analysis the community should be able to verbalize or create problem statements about the identified risks.



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

Types of flooding may include the following:

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



In Slidell alone, 6,723 structures are exposed to flood risk in the in the flood zone.

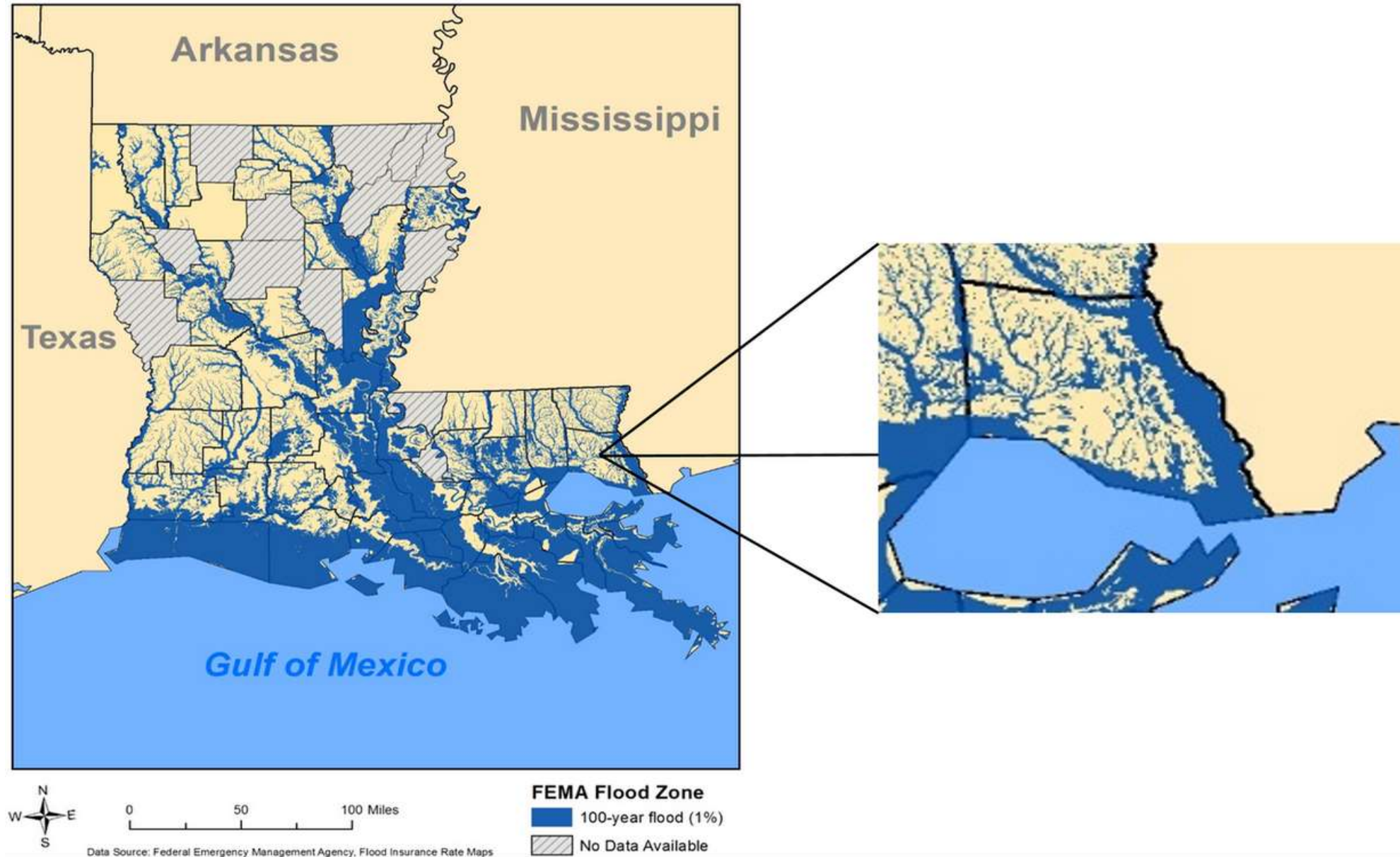


Repetitive Flooding

- 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.
- These properties are important to the National Flood Insurance Program and the Community Rating System because even though they comprise 1% of the policy base, they account for 30% of the country’s flood insurance claim payments.



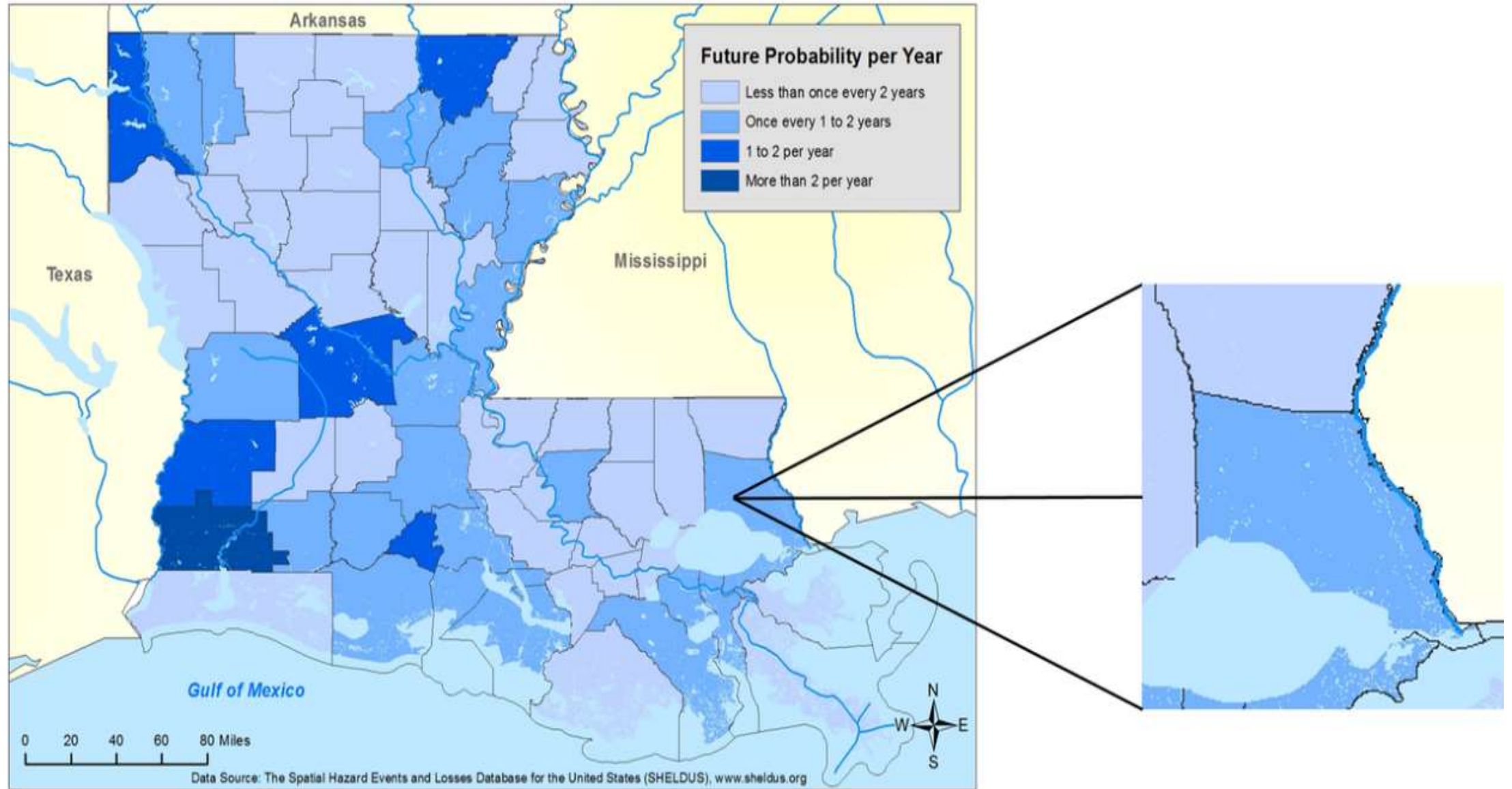
100 Year Flood



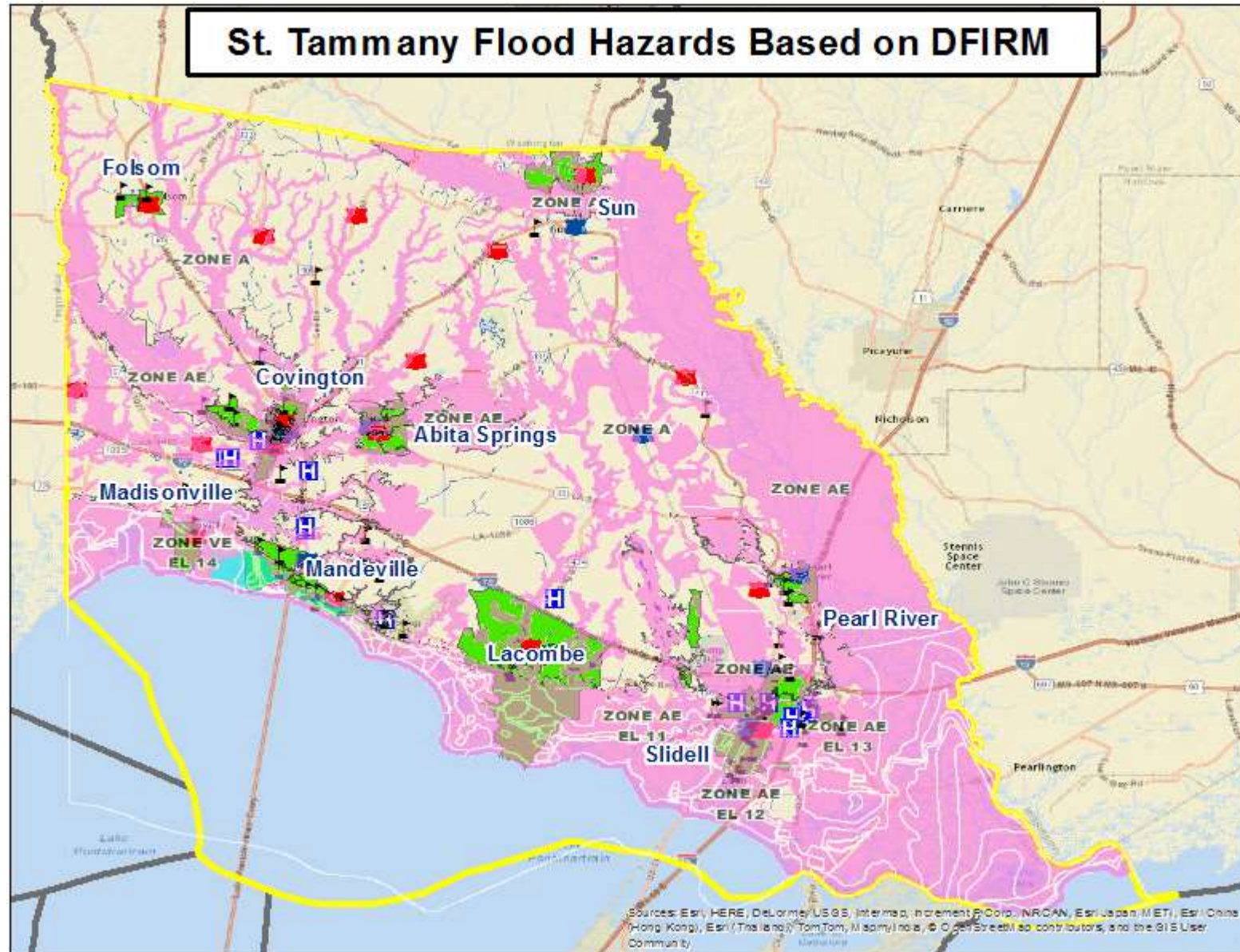
100 Year Flood Consequences

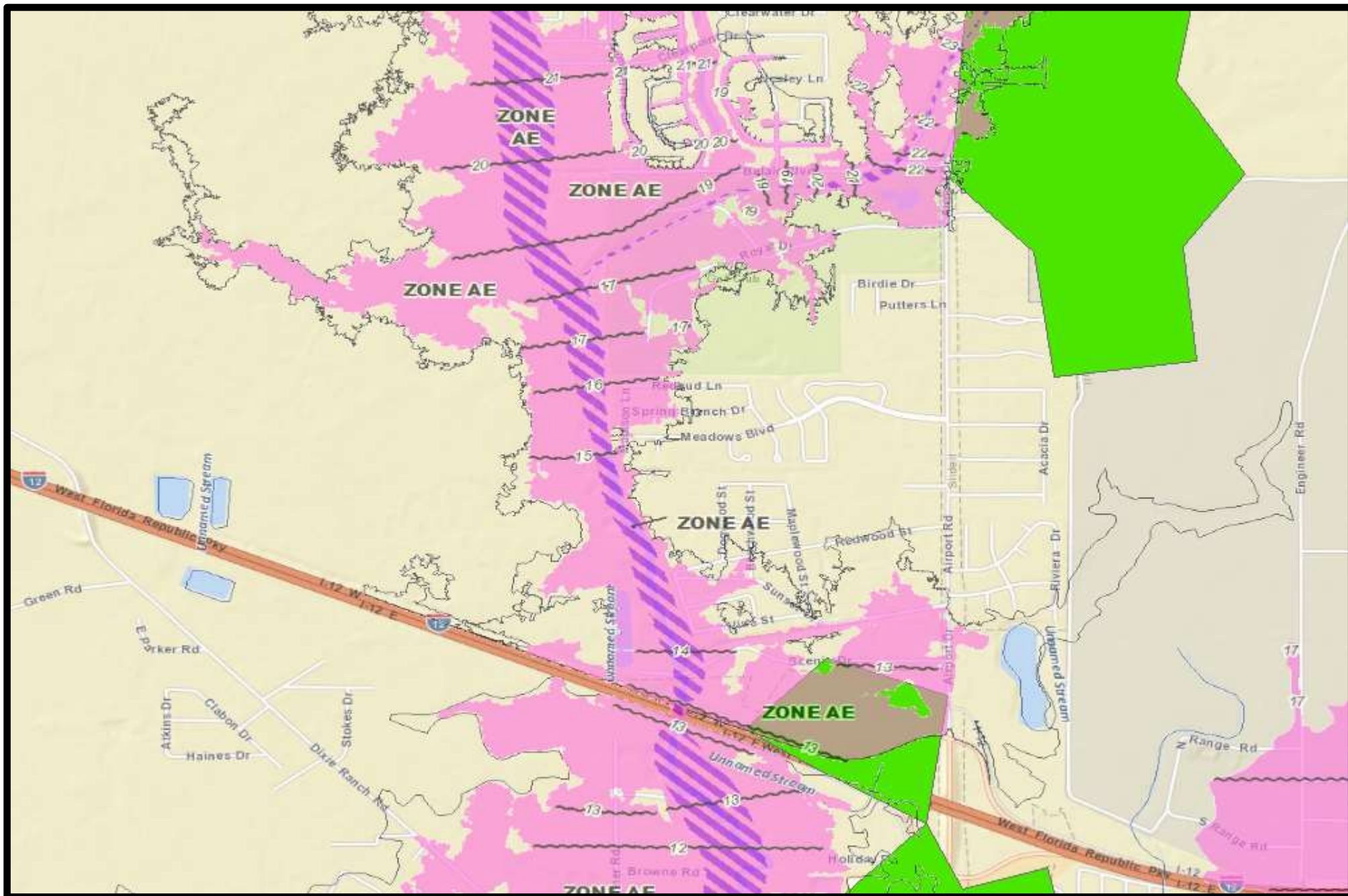
Total Building Exposure	\$16,350,793,179
Total Economic Loss	\$737,700,243
Total Damaged Buildings	3,596
Building Loss	\$377,762,643
Short Term Shelter Needs	14,321
Essential Facilities Damaged (Fire & Police Stations; Schools)	8

Flooding



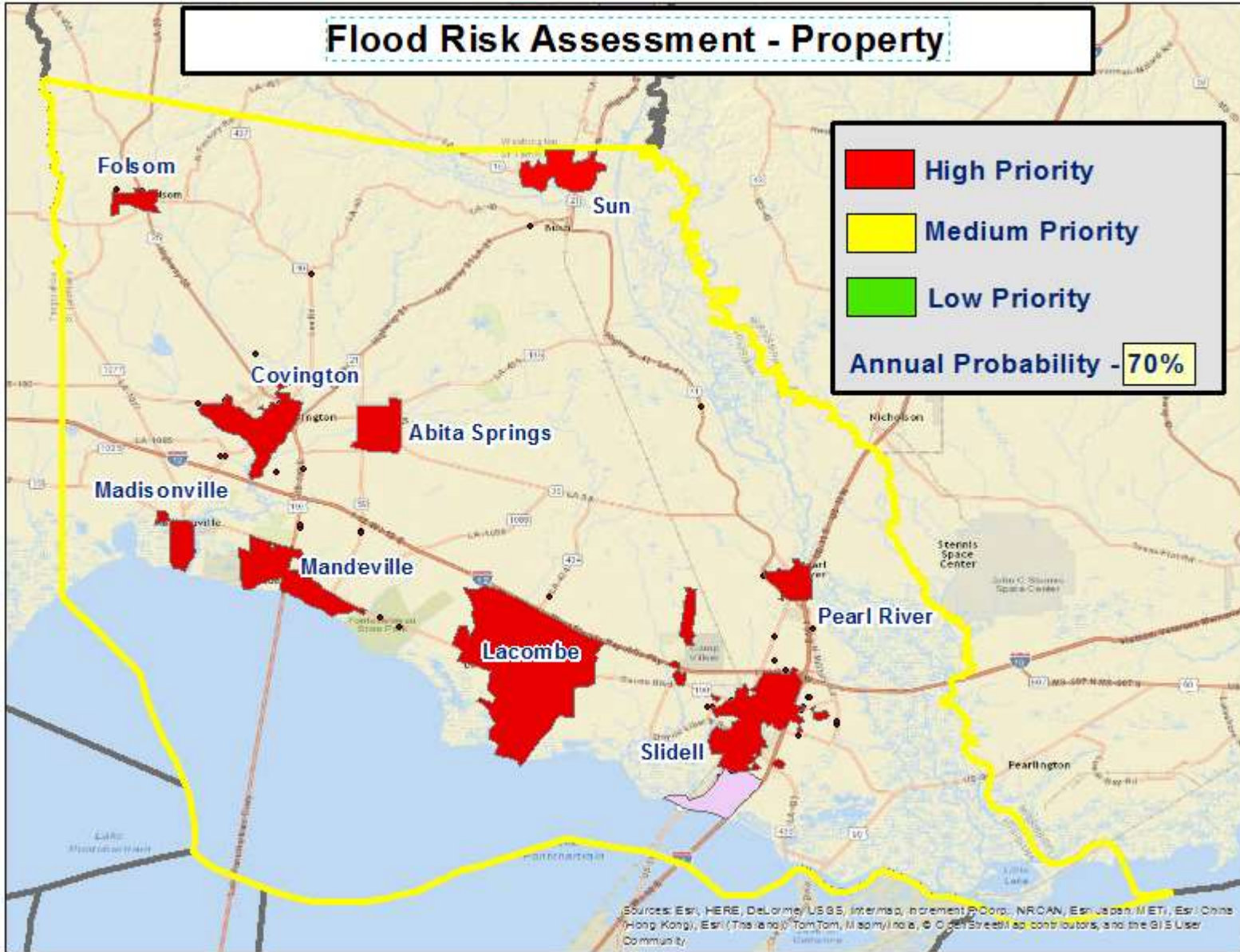
Flood Risks and Vulnerabilities



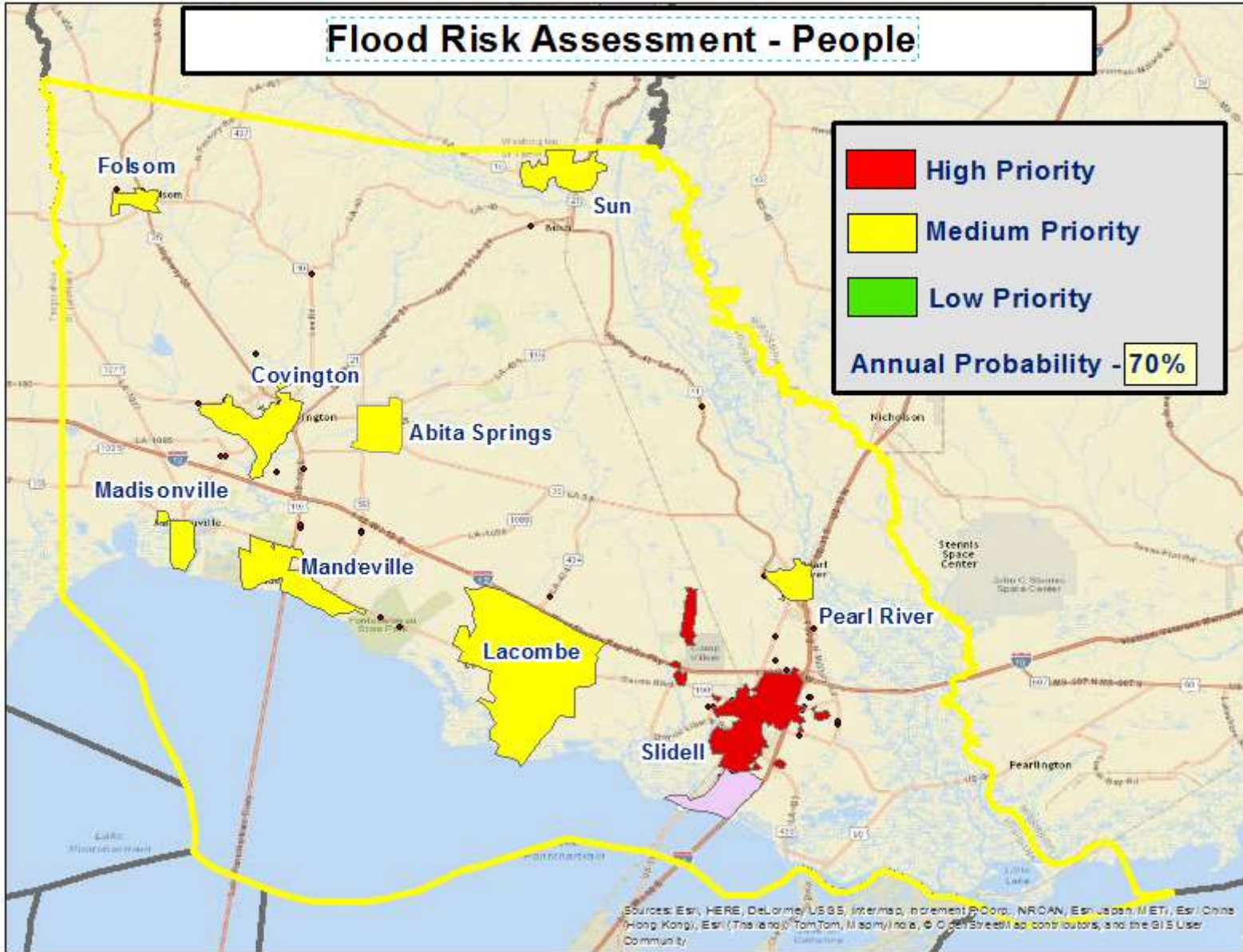




Flood



Flood



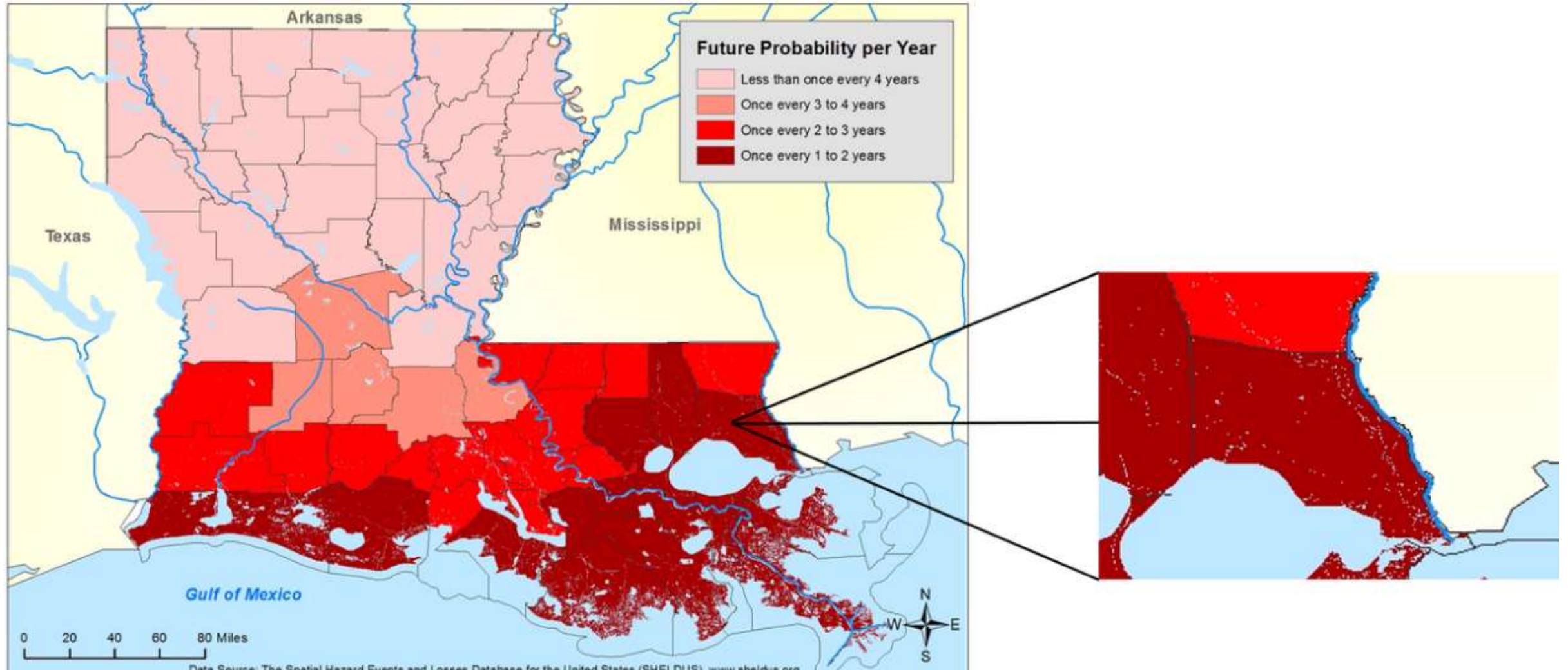
Tropical Storm/Hurricane

- 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

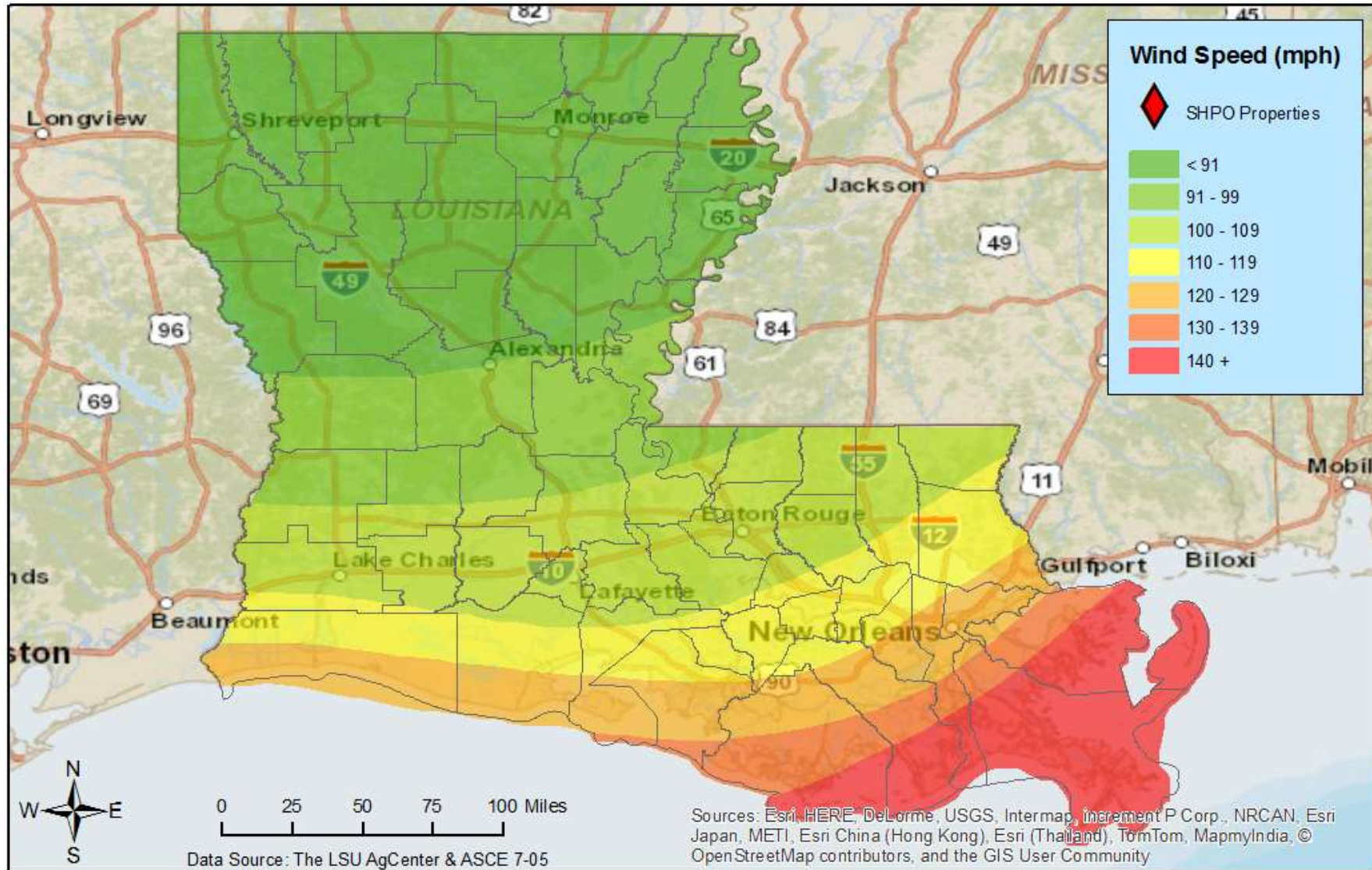
Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major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



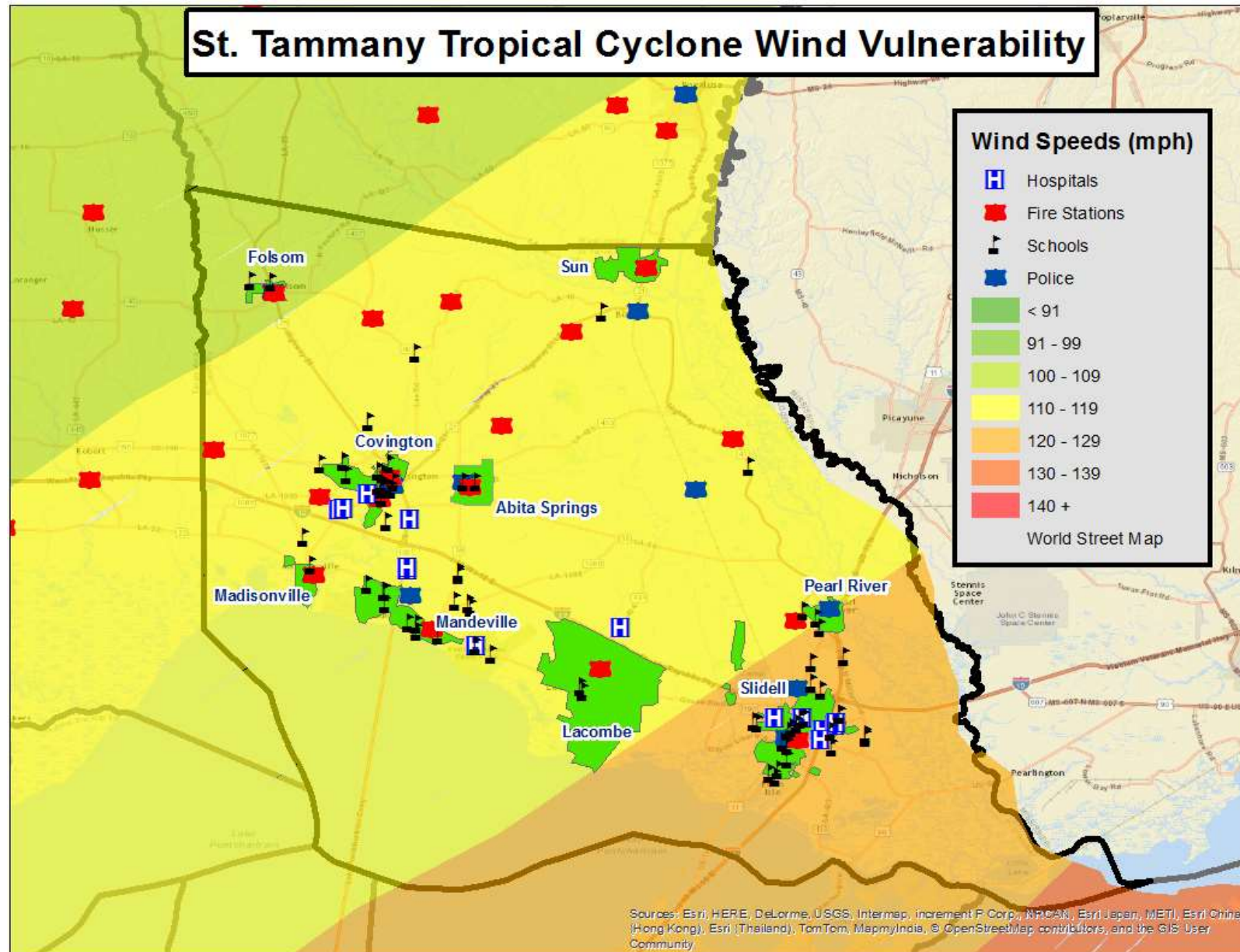
Tropical Storm/Hurricane



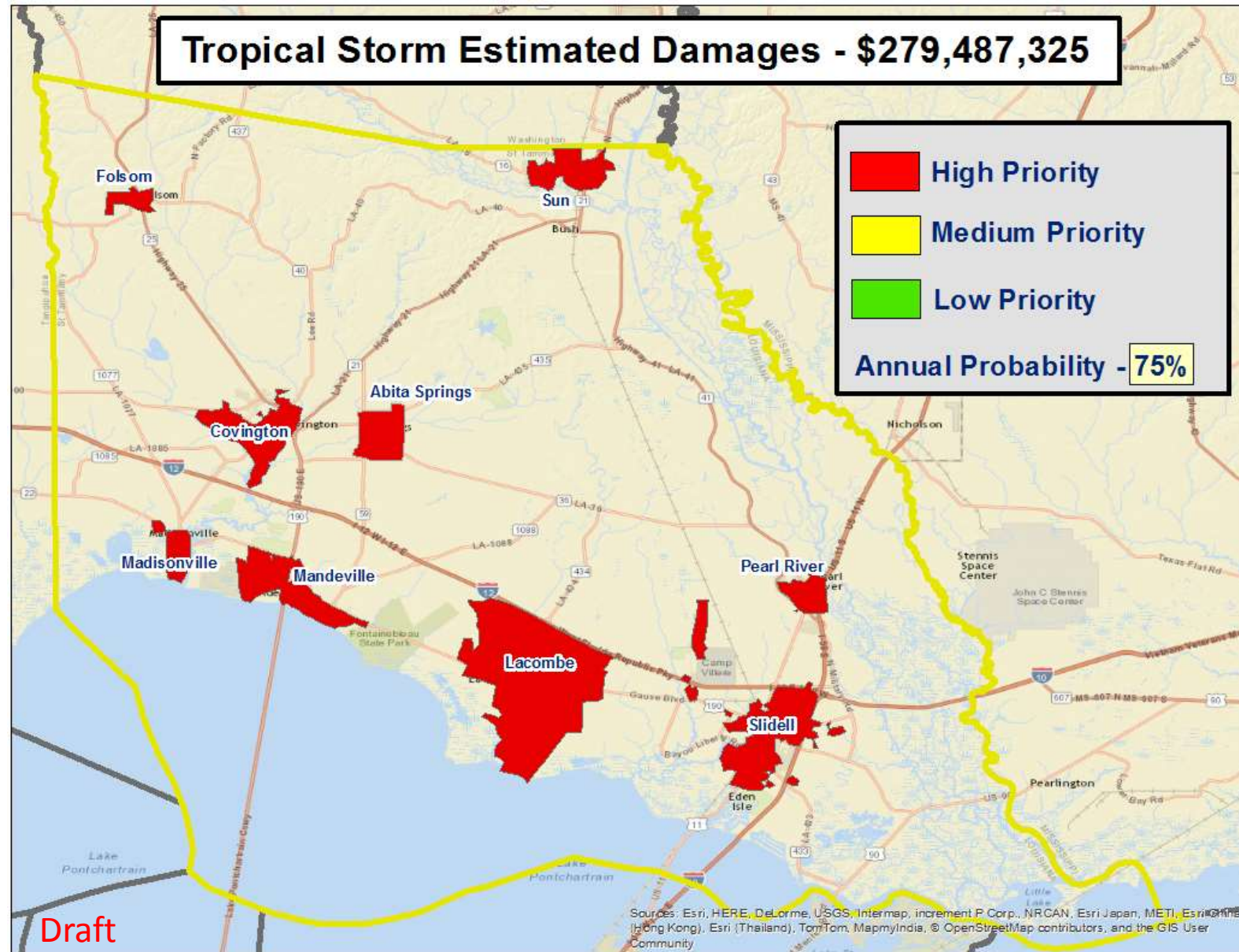
Tropical Storm/Hurricane



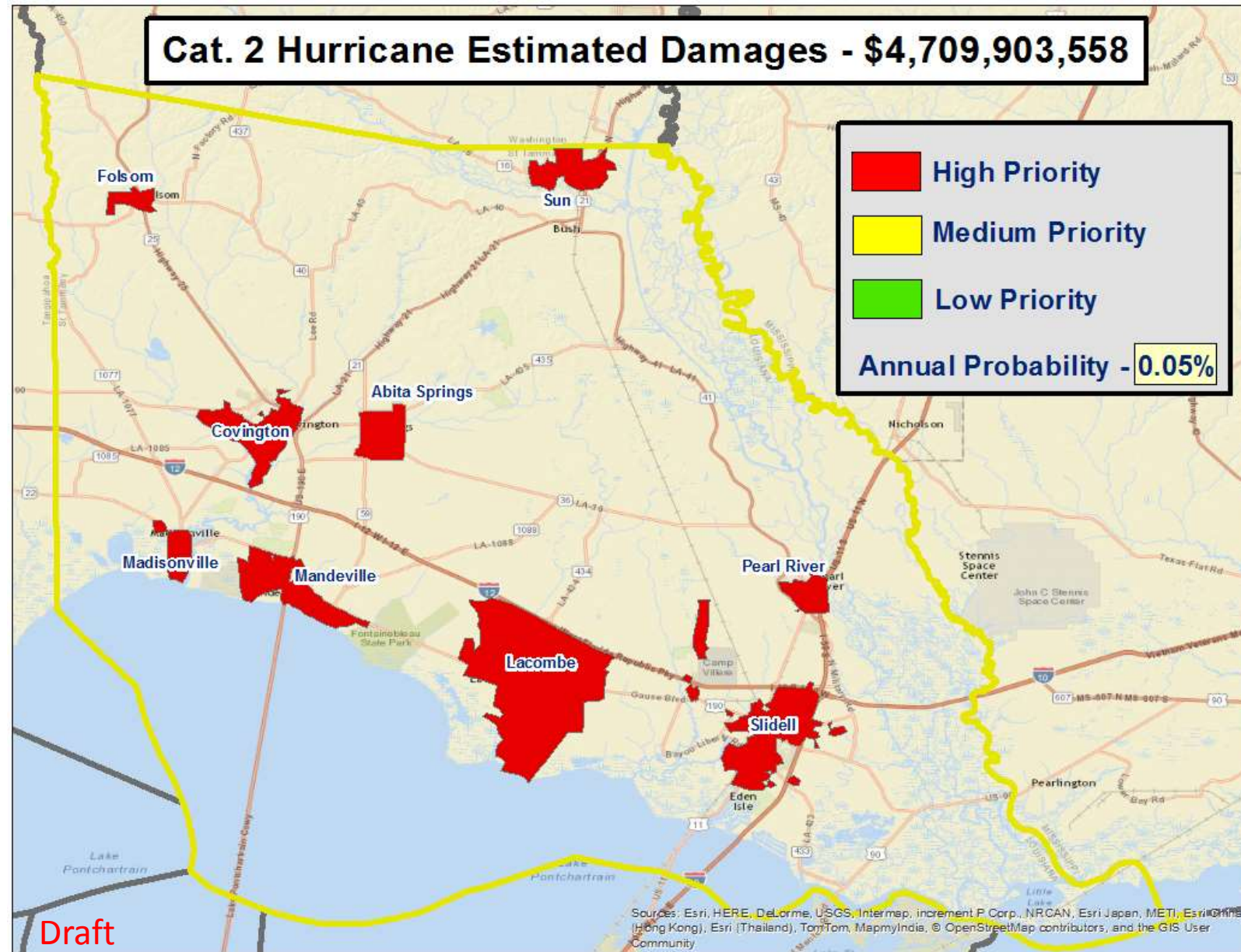
Tropical Storm/Hurricane



Tropical Storm



Hurricane



Tornadoes

- Tornadoes (also called twisters and cyclones) 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

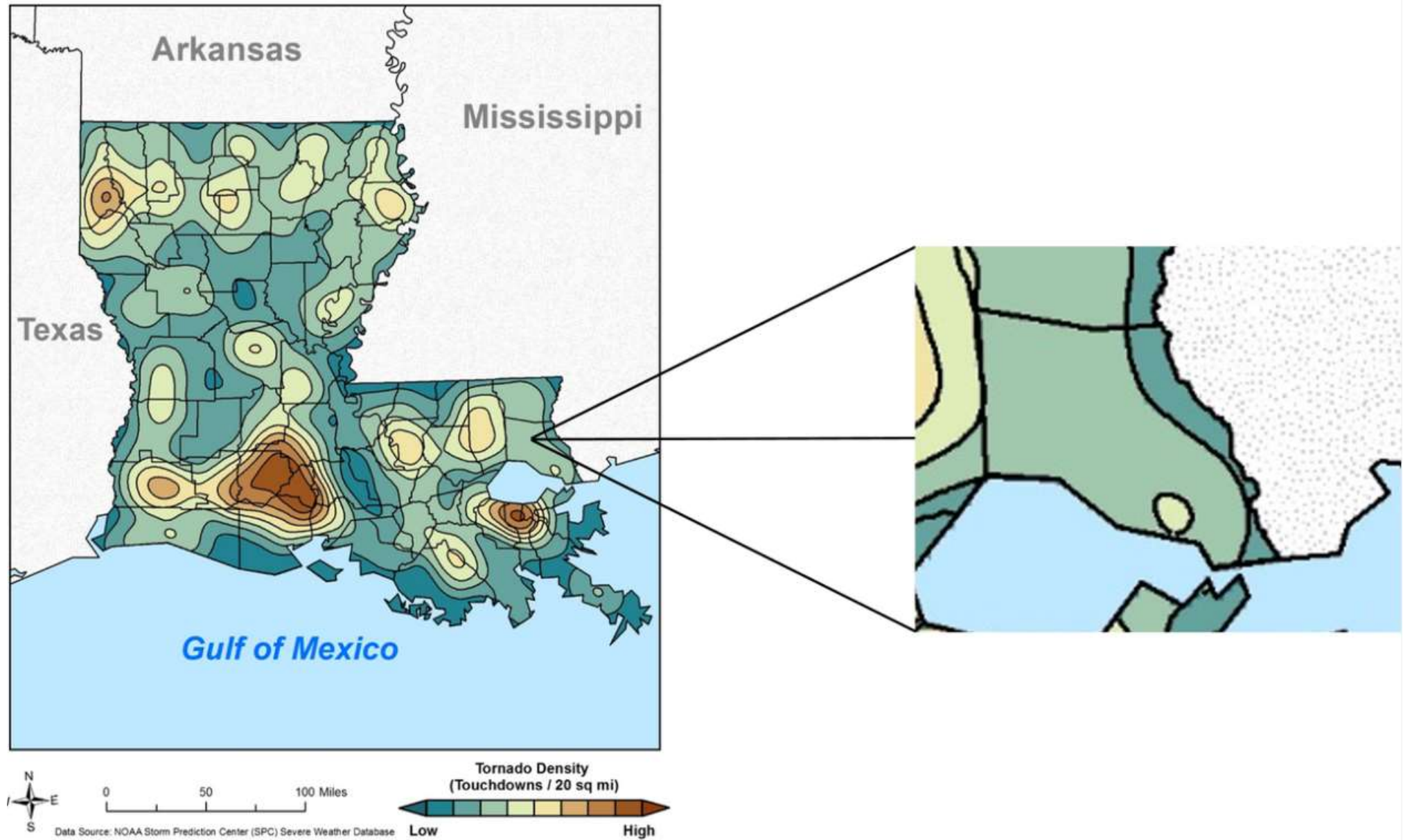


ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph

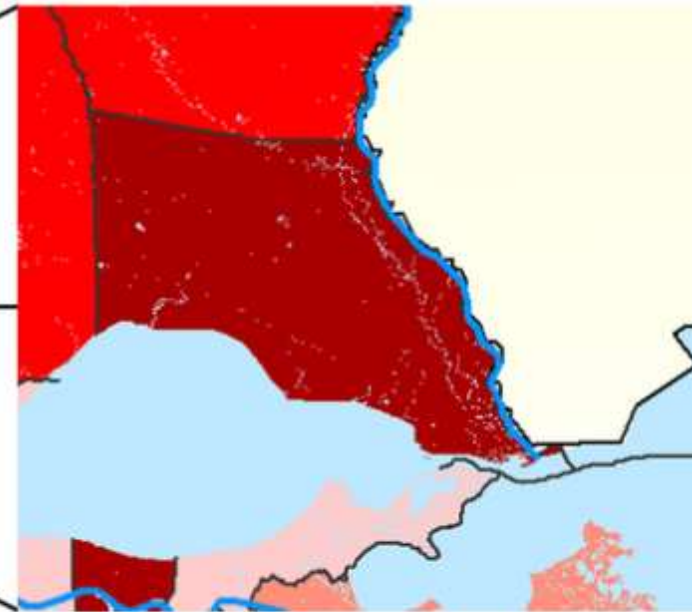
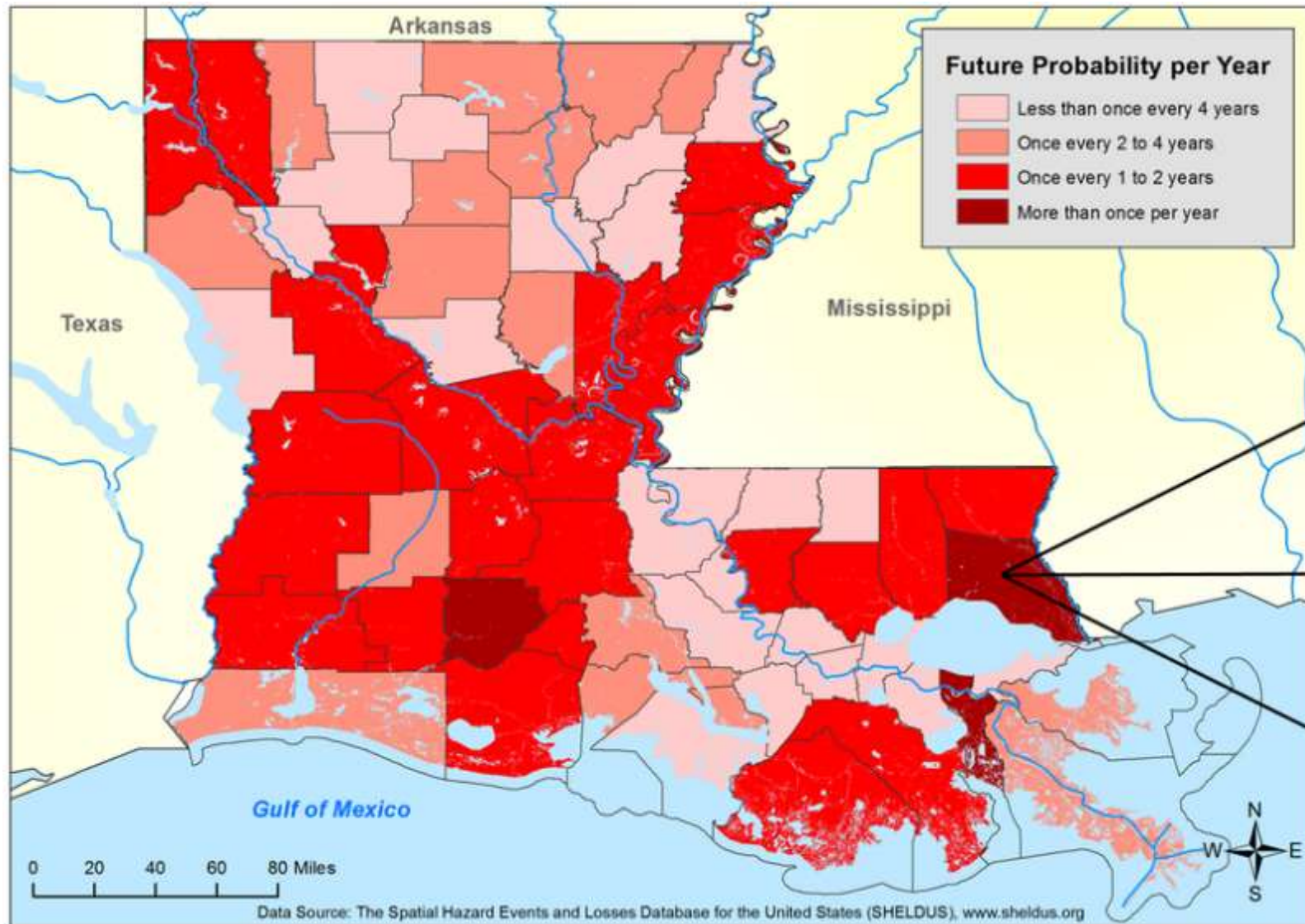


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Tornado



Tornado



Tornado Risk Assessment - \$441,892

Legend:

- High Priority (Red)
- Medium Priority (Yellow)
- Low Priority (Green)

Annual Probability - 95%

Locations: Folsom, Sun, Covington, Abita Springs, Madisonville, Mandeville, Lacombe, Slidell, Pearl River.

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Fog

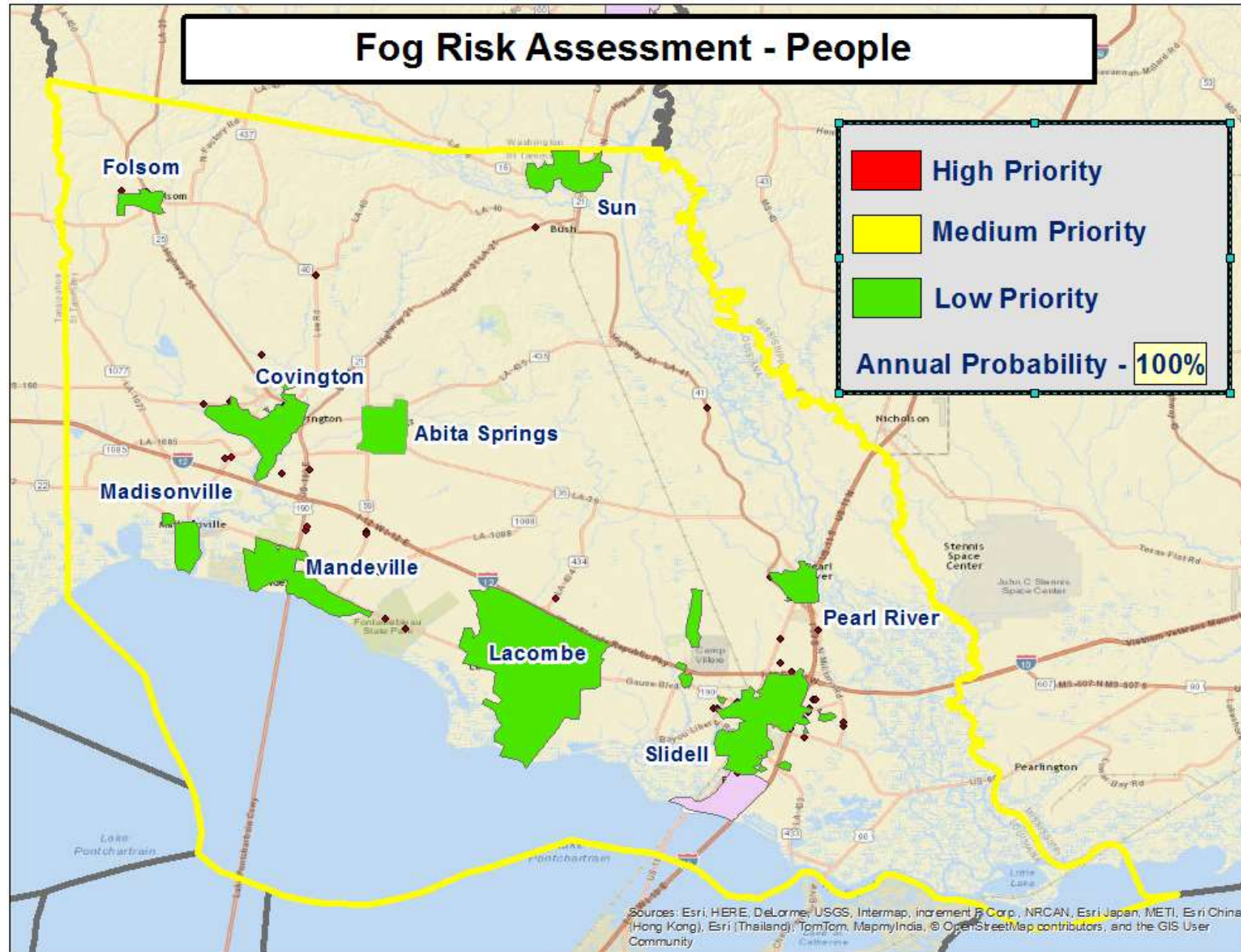
- Fog is a cloud that is on the ground. Fog forms once evaporation into the air results in super saturation, usually because the ground surface is very wet and the air is cooler
- Fog is common in situations over water or where a daytime shower saturates the soil, vegetation and boundary layer and then skies clear in the evening into the night hours.
- Fog has historically been and continues to be a major problem on the causeway leading to closures year round, typically during the colder months.



Fog - Estimated Annual Property Losses - \$530,271



Fog



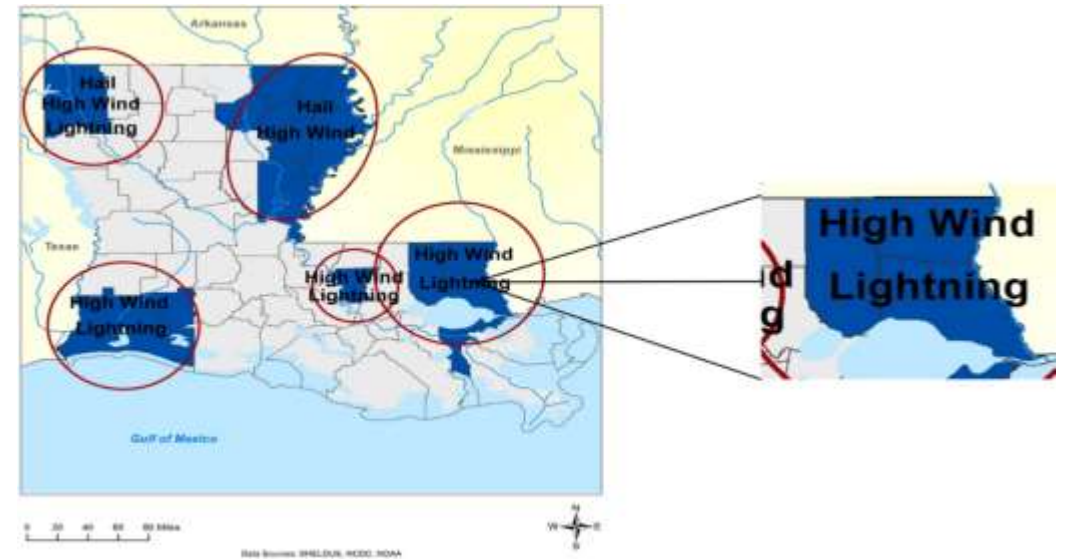
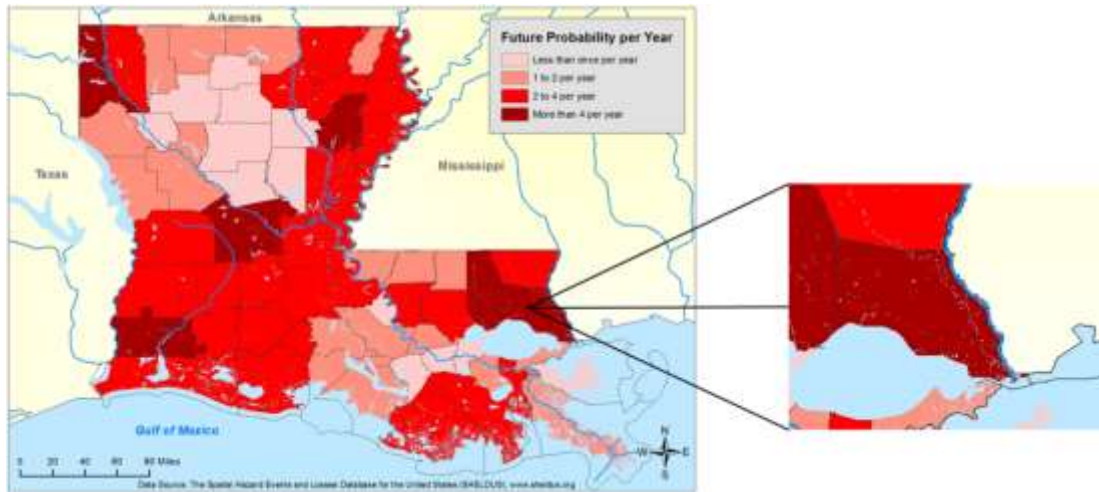
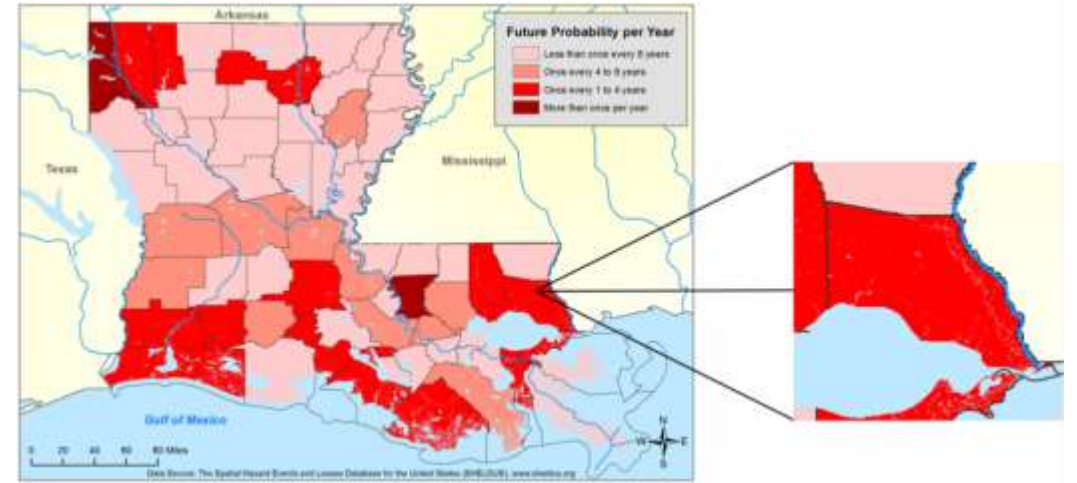
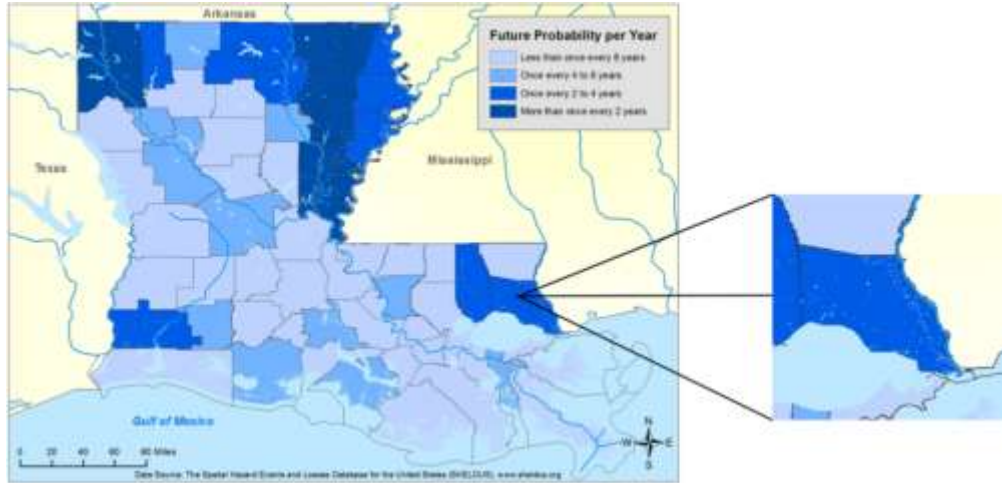
Hailstorm

- Hailstones are products of thunderstorms and are developed by downdrafts and updrafts that develop inside cumulonimbus clouds of a thunderstorm, where super cooled water droplets exist.
- Hailstorms occur most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

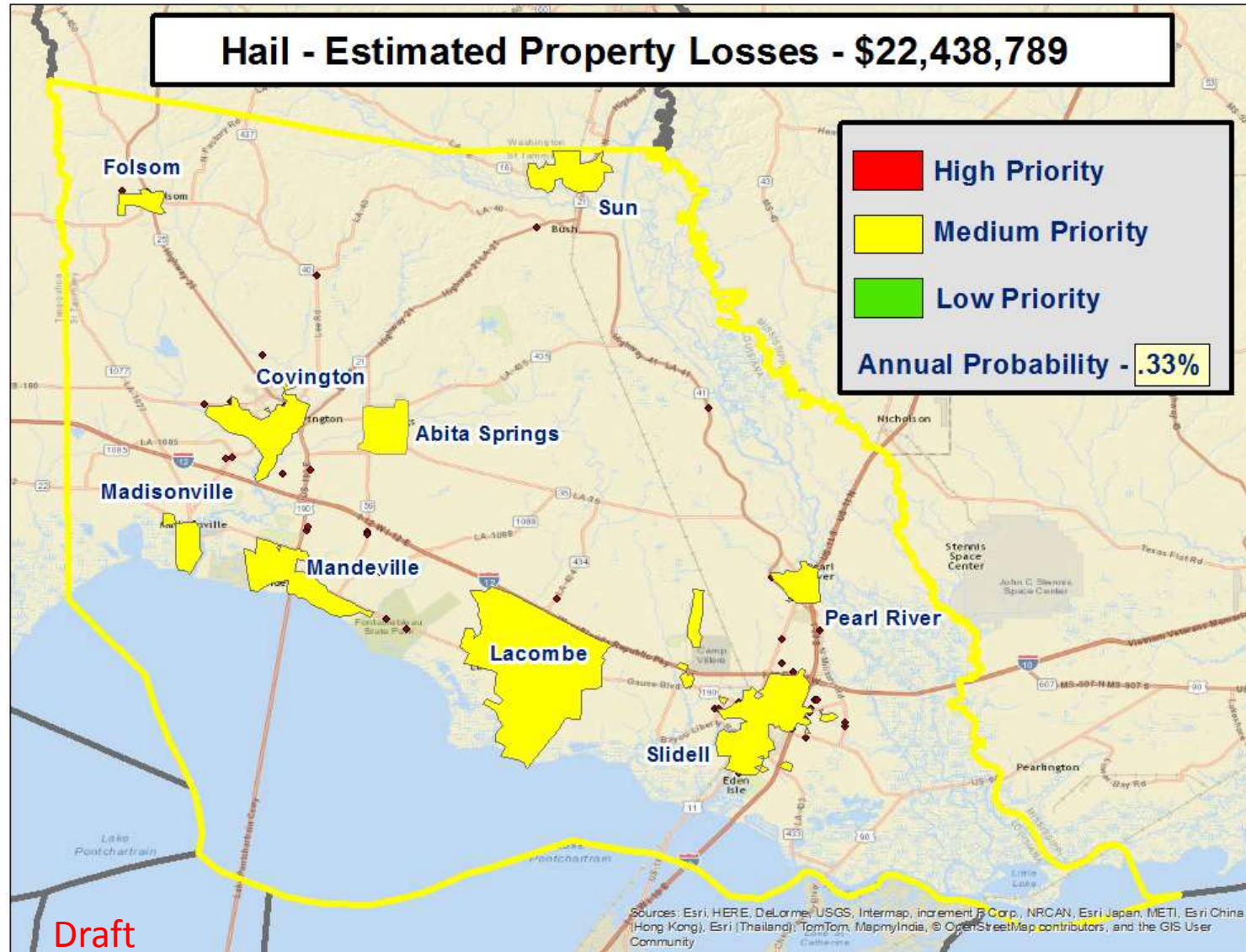


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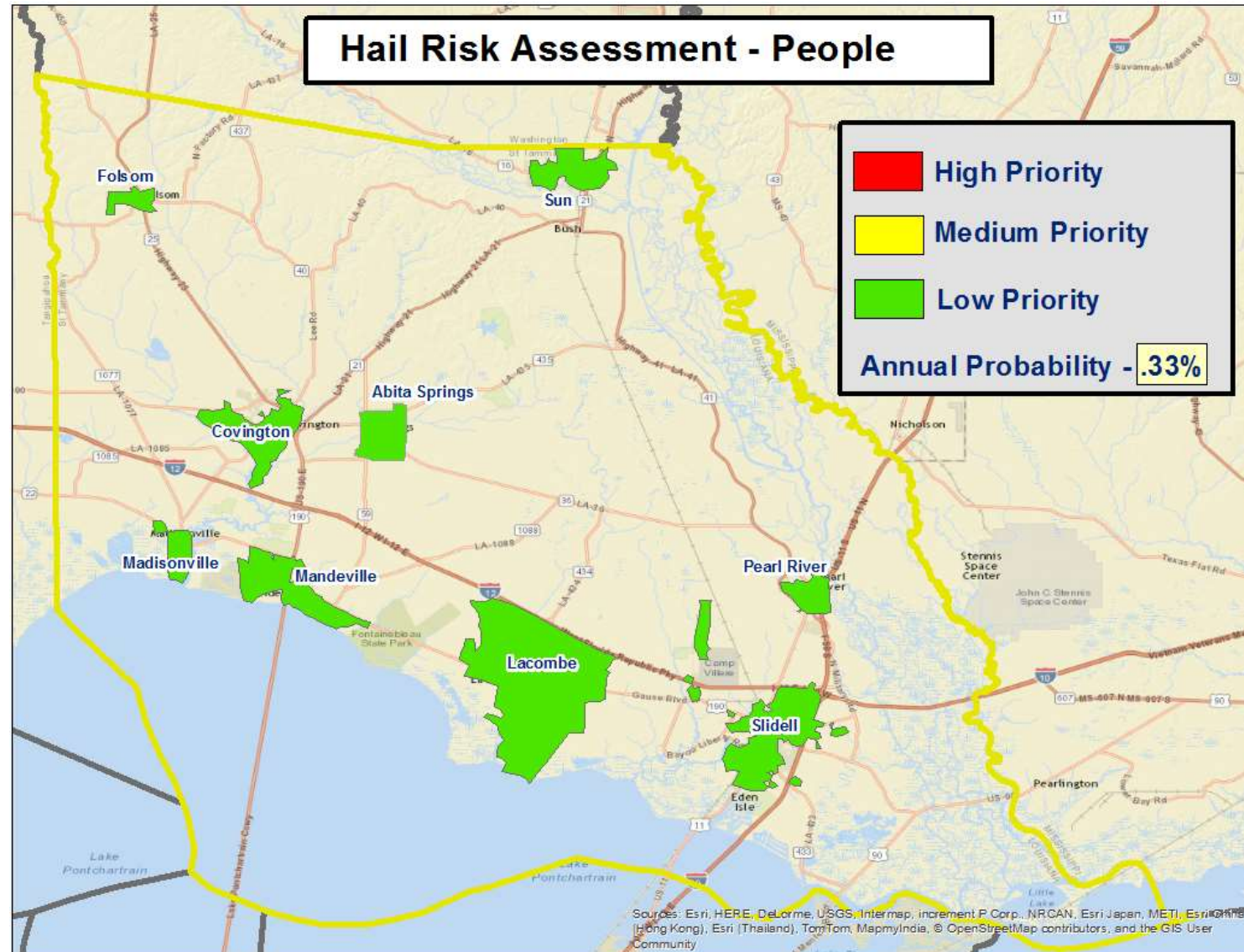
Thunderstorms



Hailstorm



Hailstorm

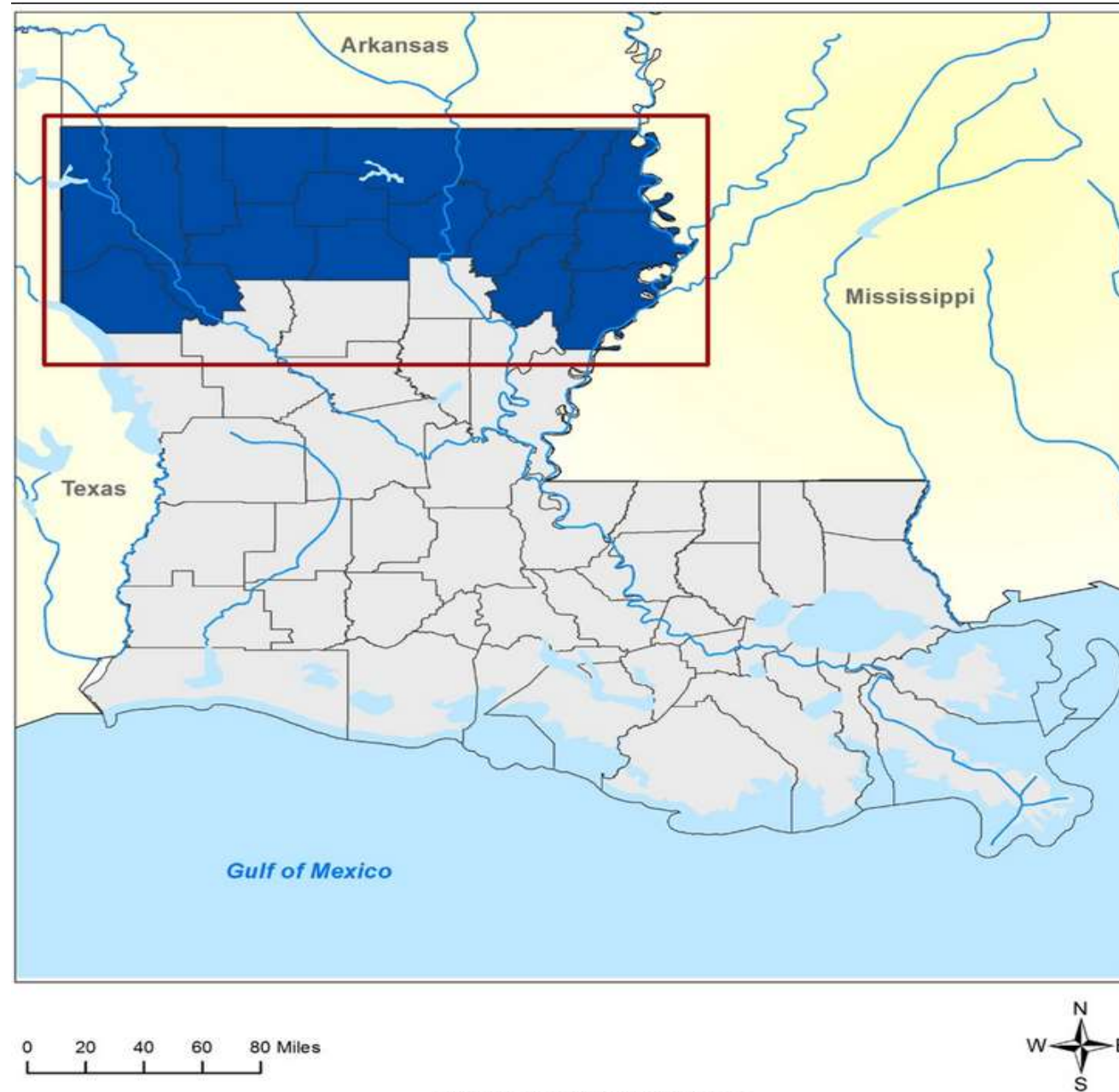


Severe Winter

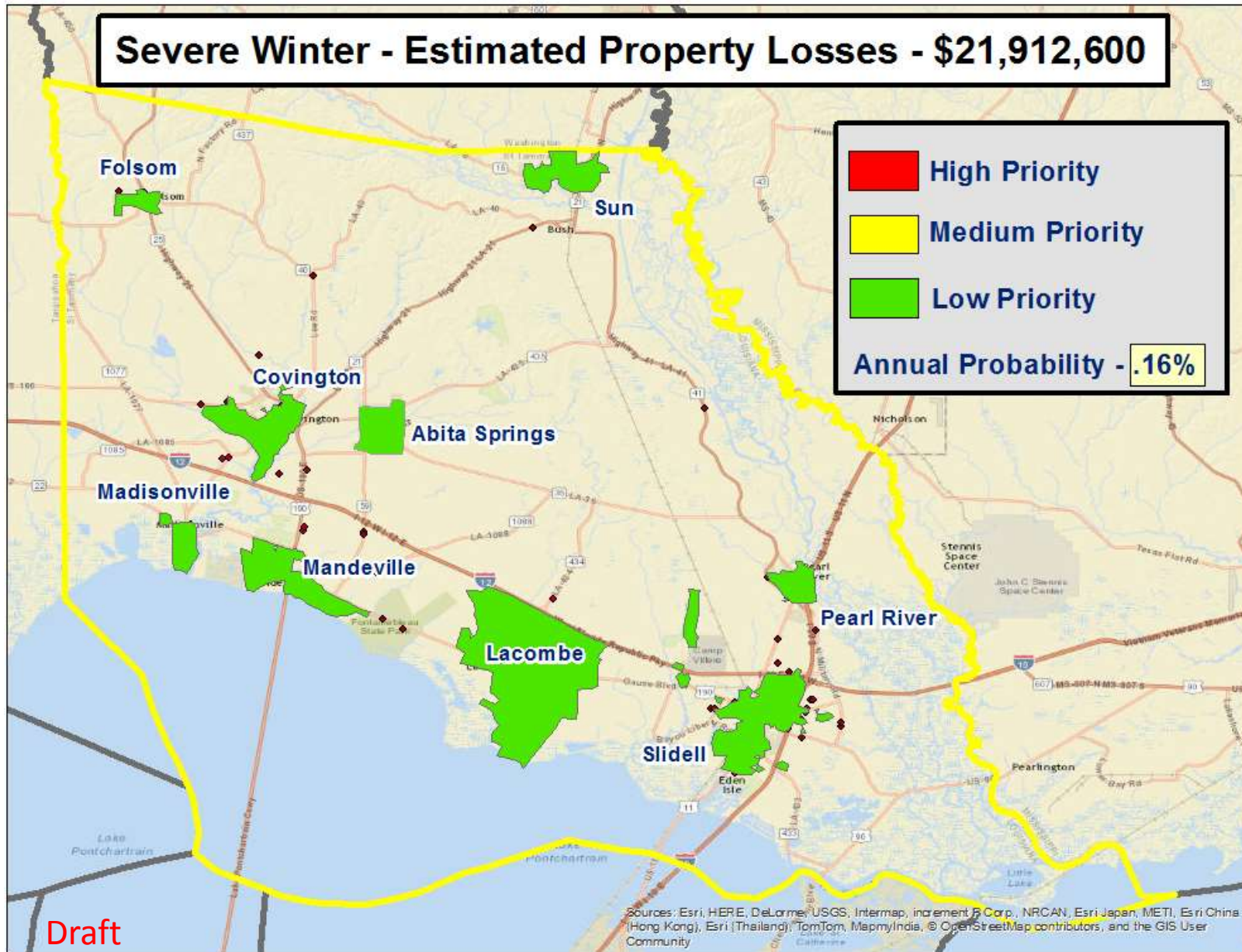
- For Louisiana and other parts of the southeastern U.S., a severe winter storm occurs when humid air from the Gulf of Mexico meets a cold air mass from the north.
- As the temperature falls once the cold air mass crosses Louisiana, precipitation may fall in the form of snow or sleet.
- If the ground temperature is cold enough but air temperature is above freezing, rain can freeze instantly on contact with the surface, causing massive ice storms.



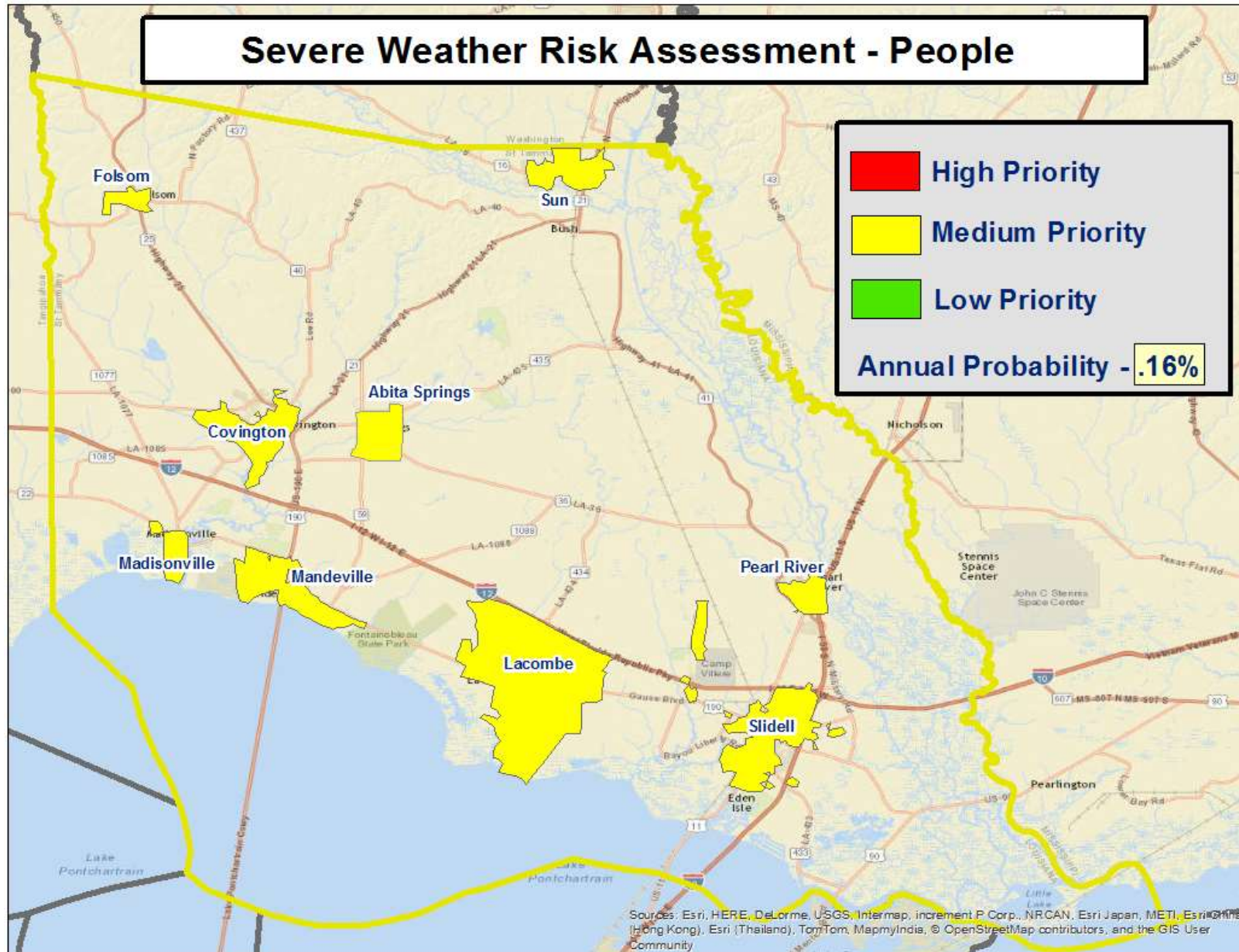
Severe Weather



Severe Winter



Severe Winter

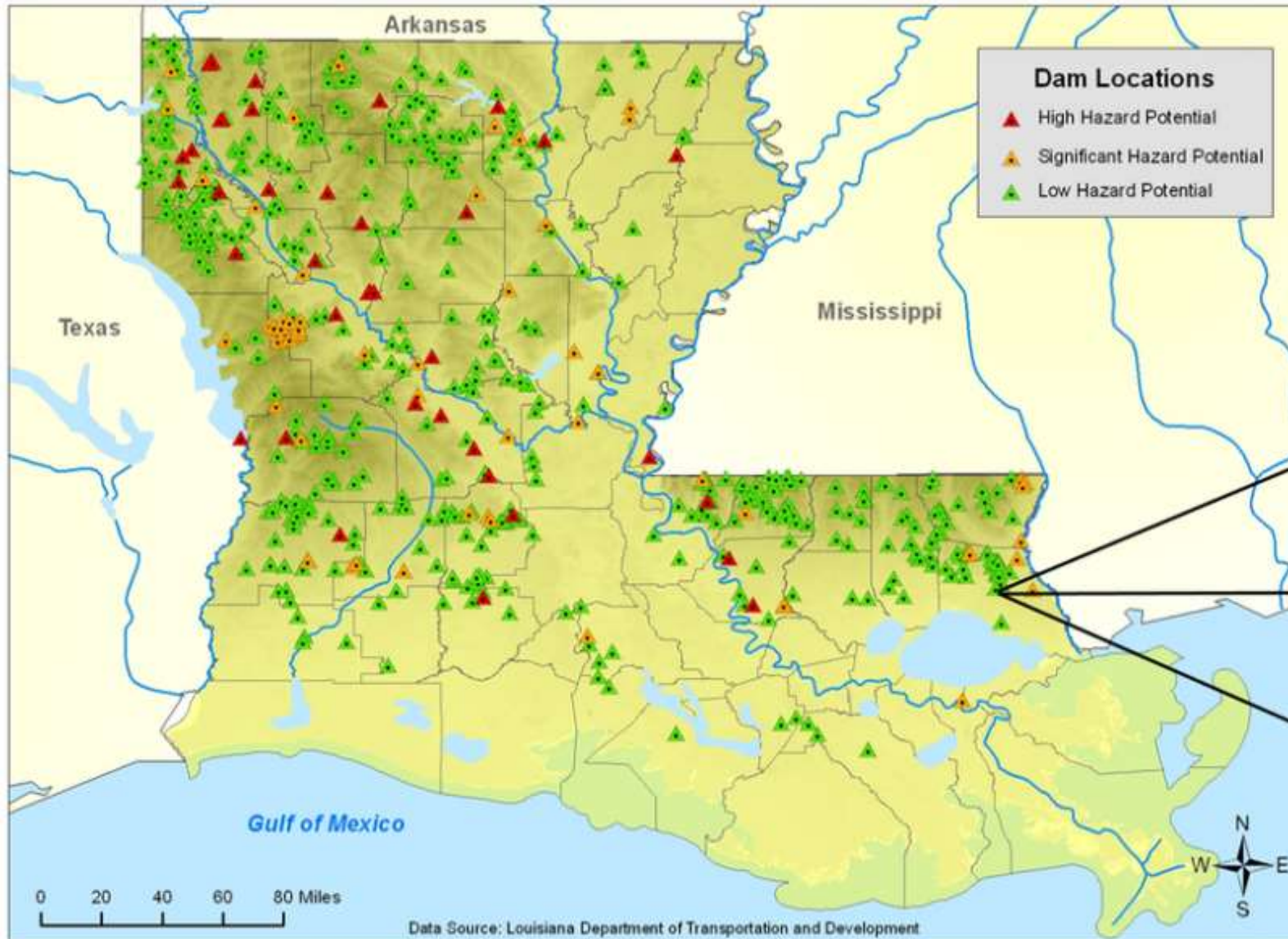


Dam Failure

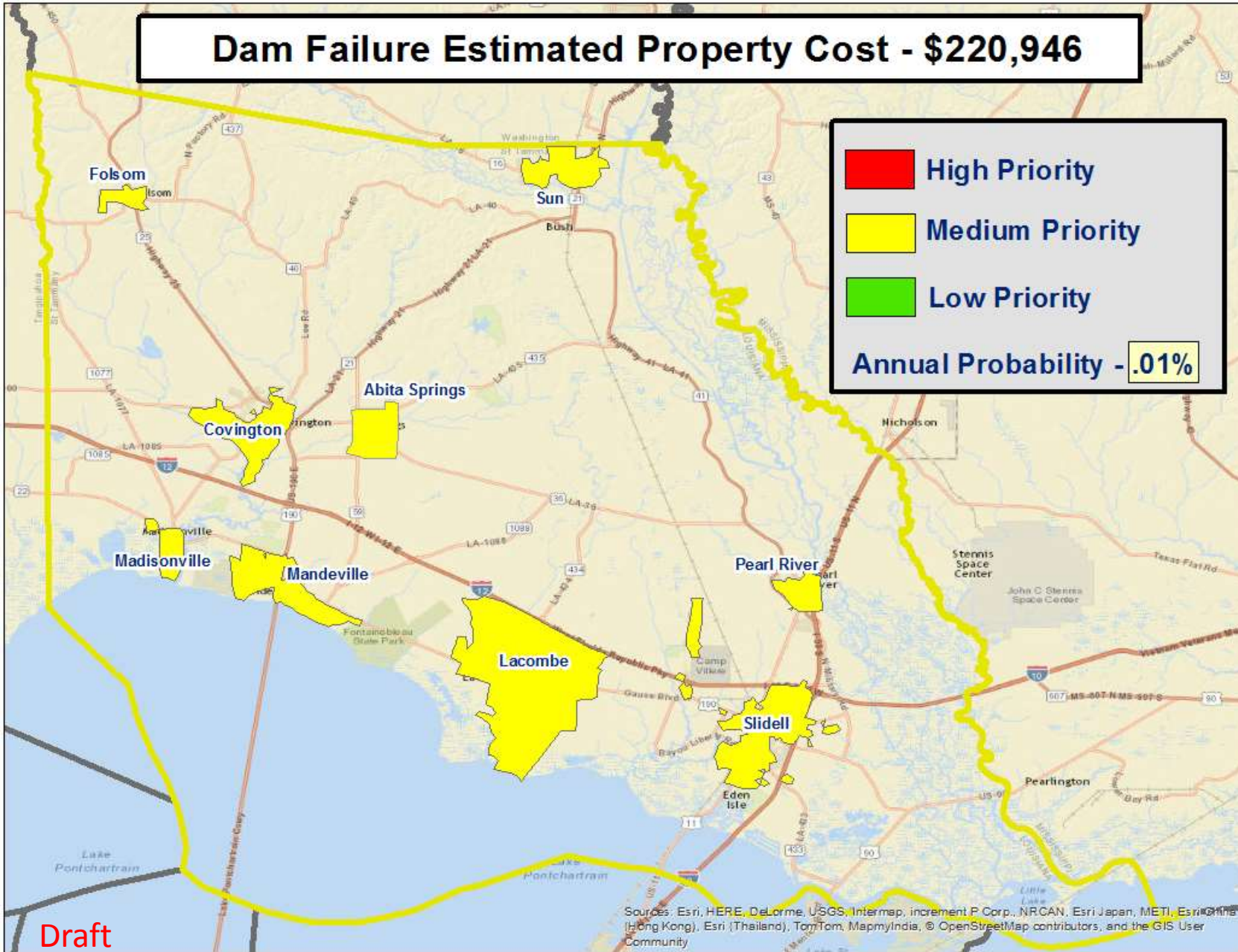
- Dams are water storage, control, or diversion barriers that impound water upstream in reservoirs. Dams are a vital part of our nation's infrastructure, providing drinking water, flood protection, renewable hydroelectric power, navigation, irrigation, and recreation.
- These critical daily benefits are also inextricably linked to the potential harmful consequences of a dam failure.
- Dam failure is a collapse or breach in the structure. A dam failure can result in severe loss of life, economic disaster, and extensive environmental damage.



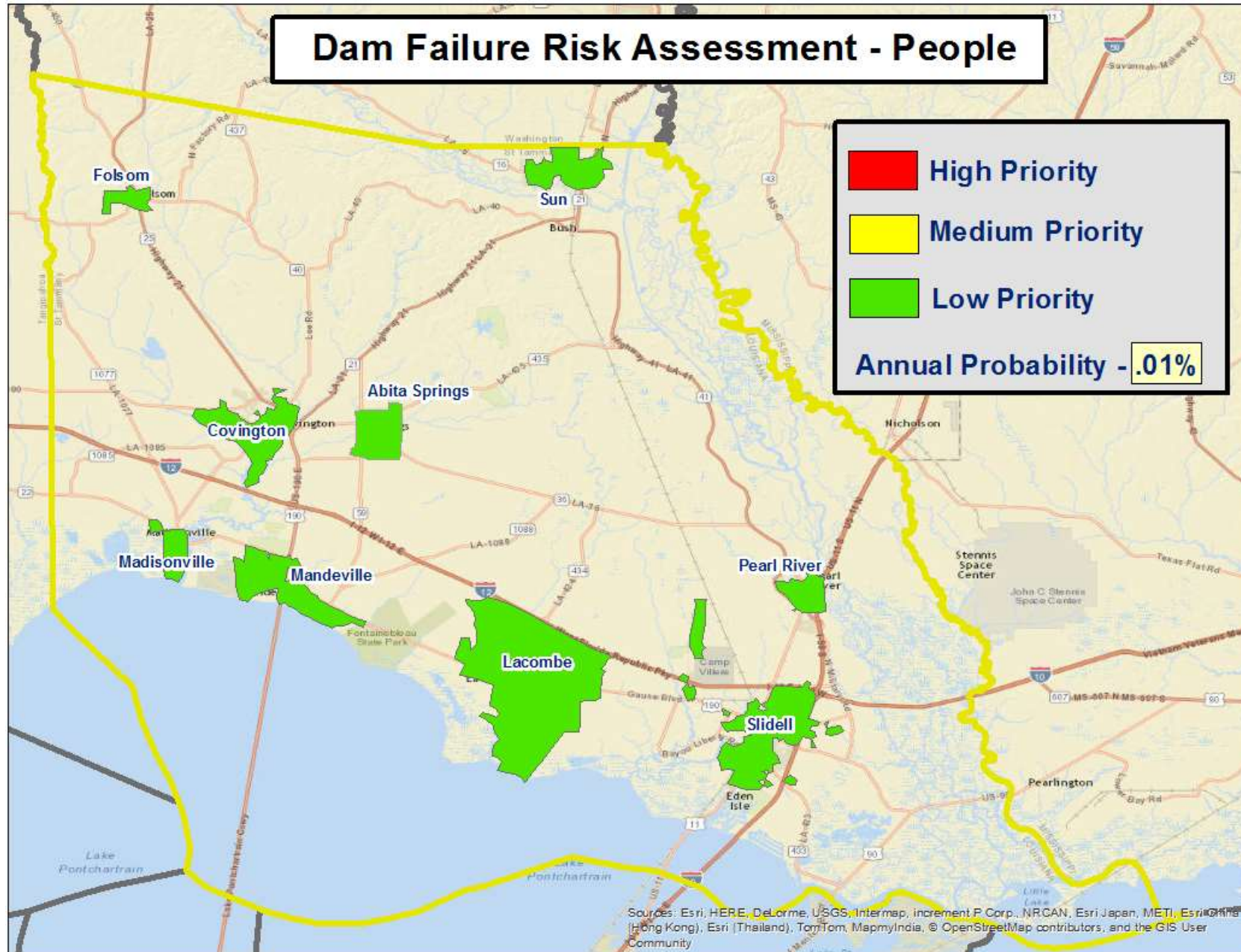
Dam Failure



Dam Failure



Dam Failure

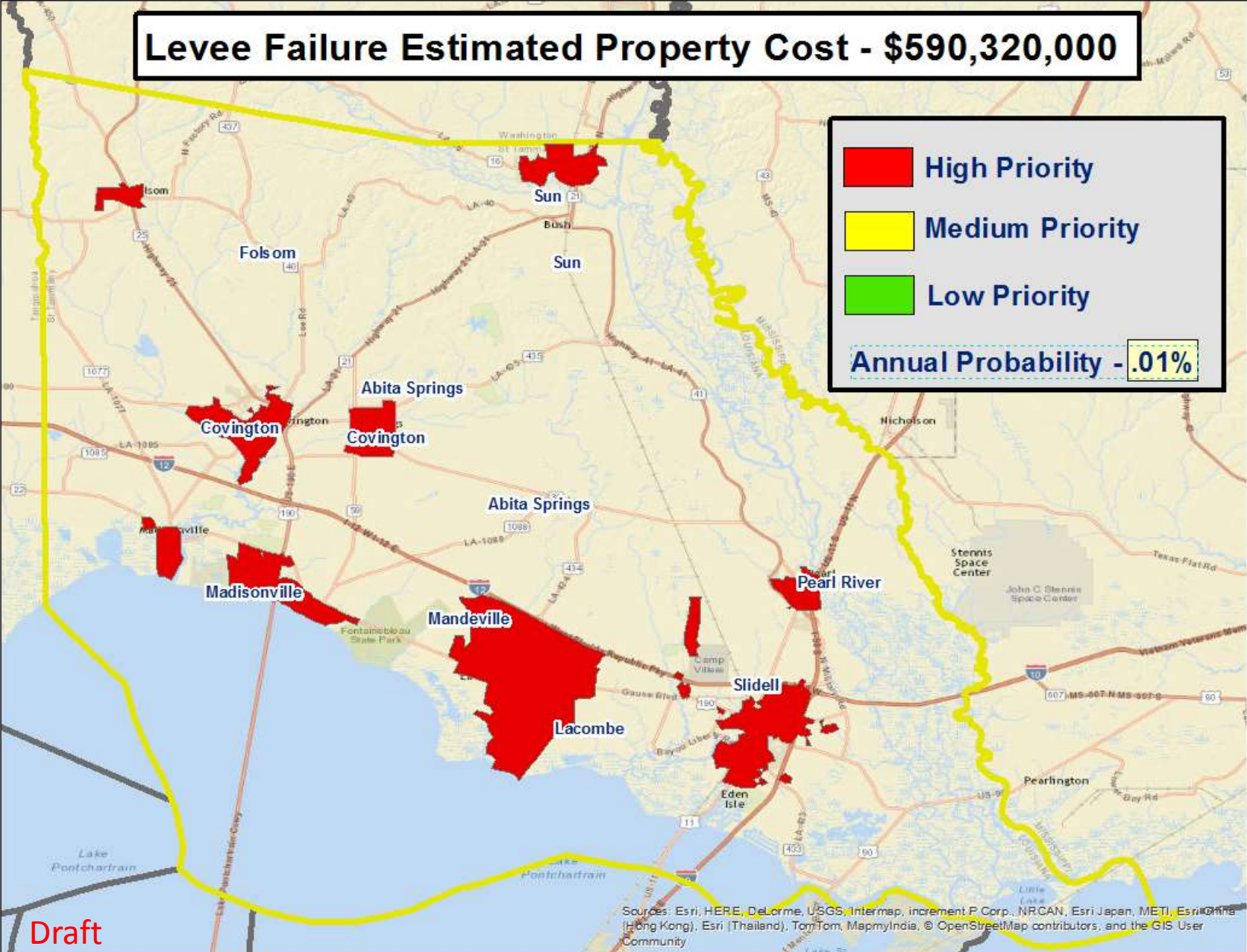


Levee Failure

- Levees and floodwalls are flood control barriers constructed of earth, concrete, or other materials. For the purposes of this plan, levees are distinguished from smaller flood barriers (such as berms) by their size and extent.
- Levees and floodwalls are barriers that protect significant areas of residential, commercial, or industrial development; at a minimum, they protect a neighborhood or small community.
- Levee failure involves the overtopping, breach, or collapse of the levee. Levee failure is especially destructive to nearby development during flood and hurricane events.

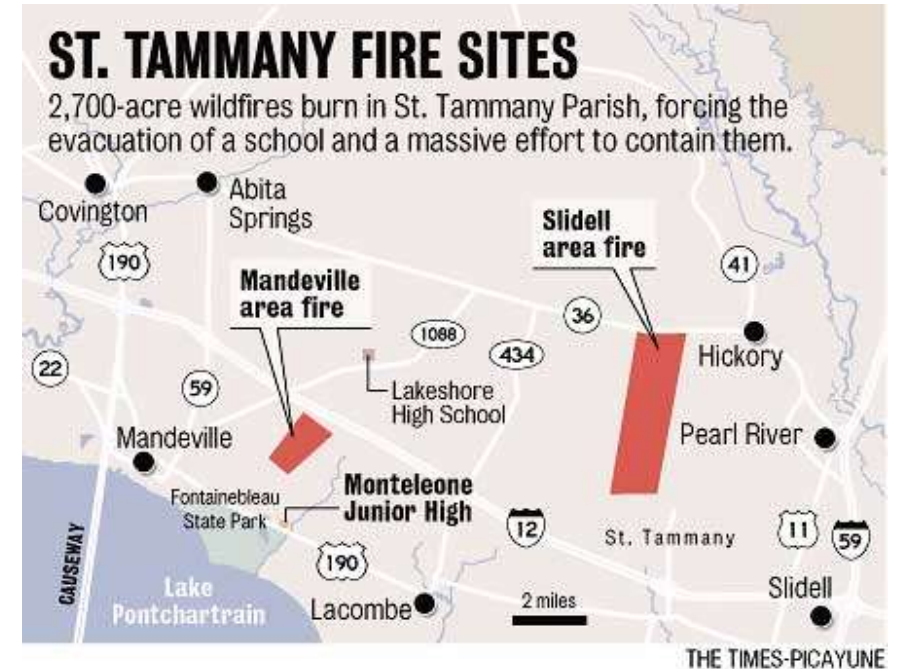


Levee Failure

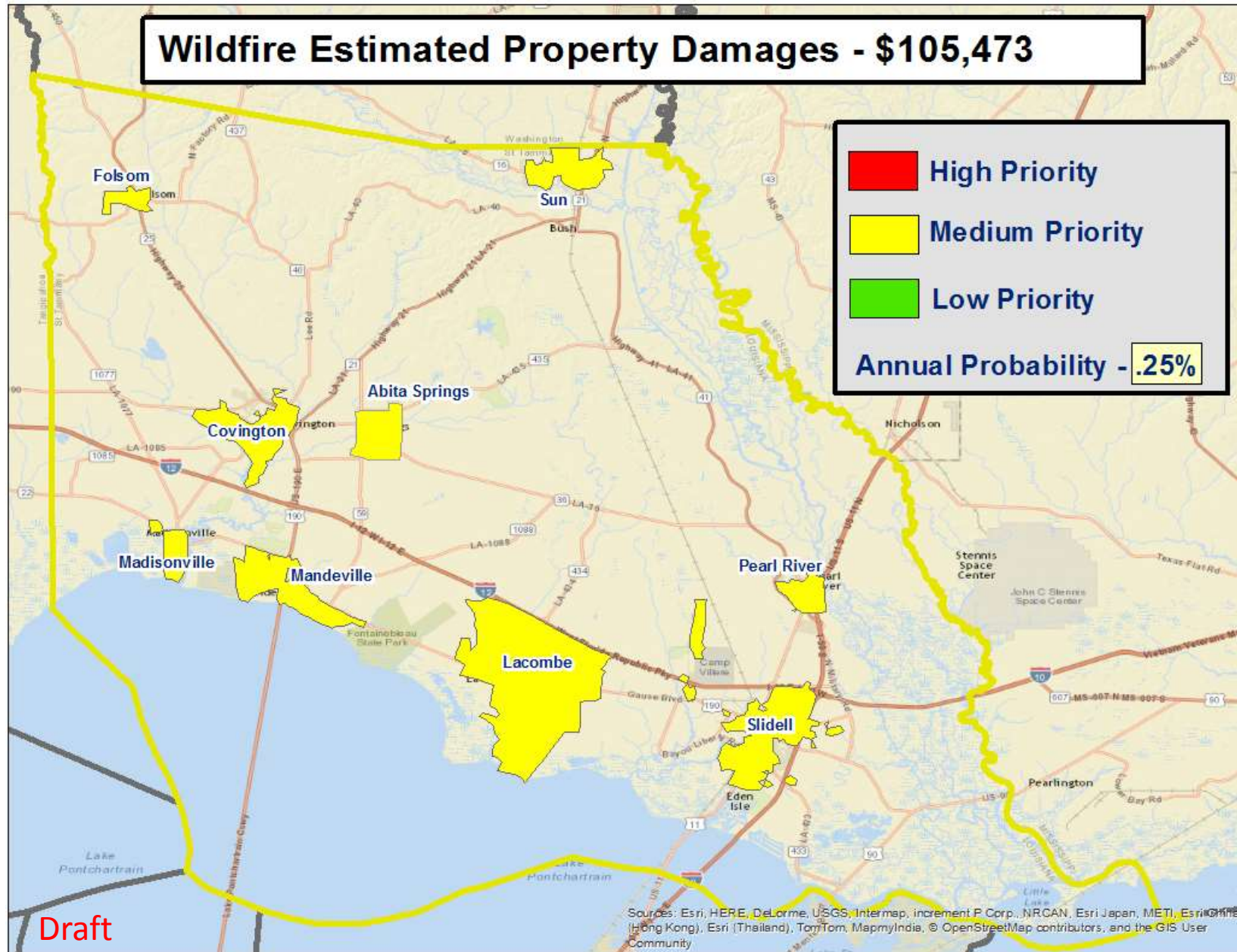


Wildfire

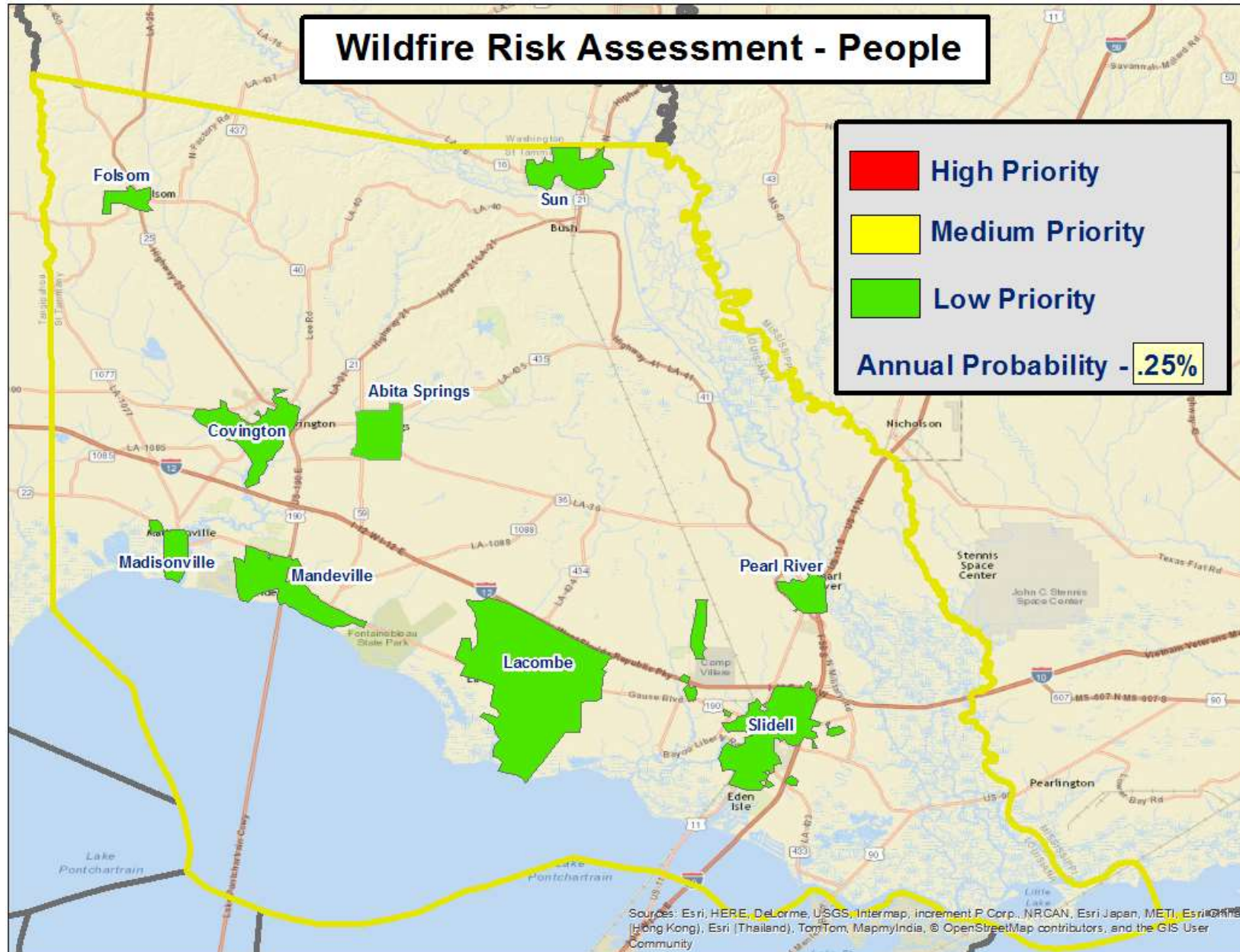
- A wildfire is combustion in a natural setting, marked by flames or intense heat.
- Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns
- The primary areas affected by wildfires are the forests. Sixty-five percent of St. Tammany Parish is covered in timber.
- 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.



Wildfire



Wildfire



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, based upon what is impacted by the shortage of water:

Meteorological Drought

Hydrologic Drought

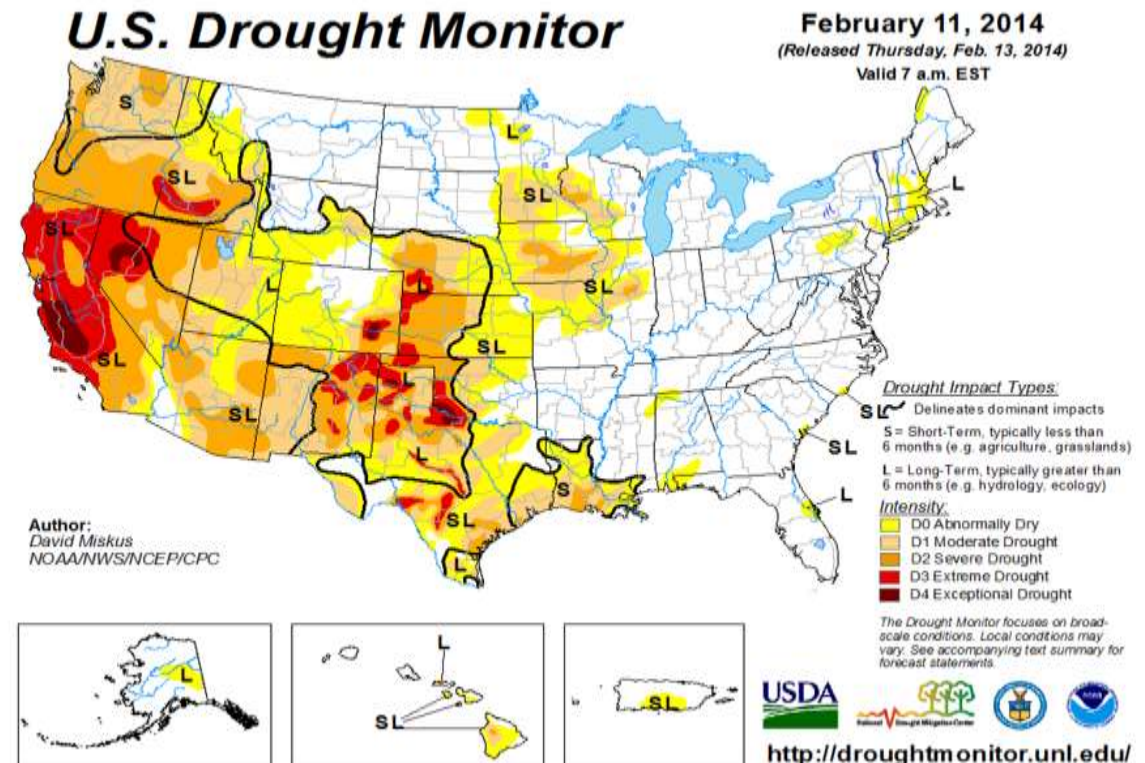
Agricultural Drought

Socioeconomic Drought

- The entire parish can be affected by drought



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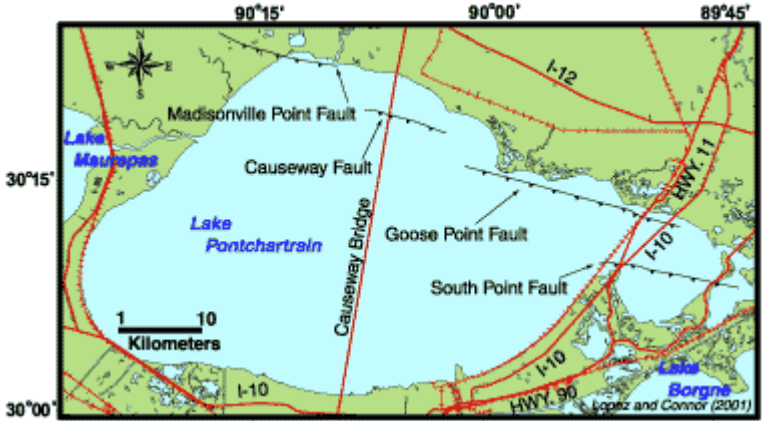


Drought - Estimated Annual Loses: \$67,247



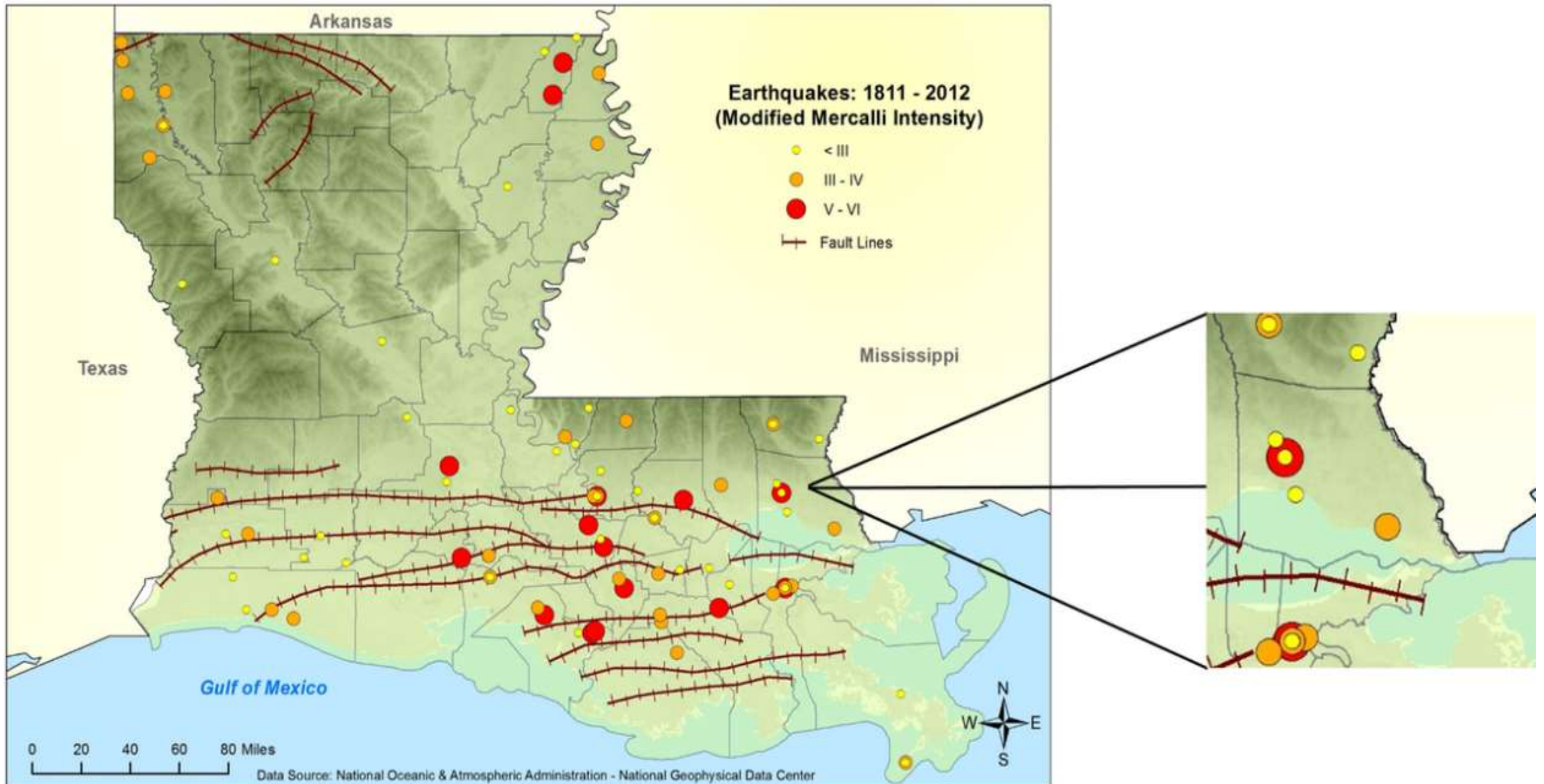
Earthquake

- 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.



COMPARISON OF EARTHQUAKE METRICS			
PGA (%g)	Magnitude (Richter)	Intensity (MMI)	Description (MMI)
<0.17	1.0 - 3.0	I	I. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	II. Felt only by a few persons at rest, especially on upper floors of buildings.
			III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rock noticeably.
			V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	VI. Felt by all. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
			VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned.
			IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	VIII or higher	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
			XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
			XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Earthquake

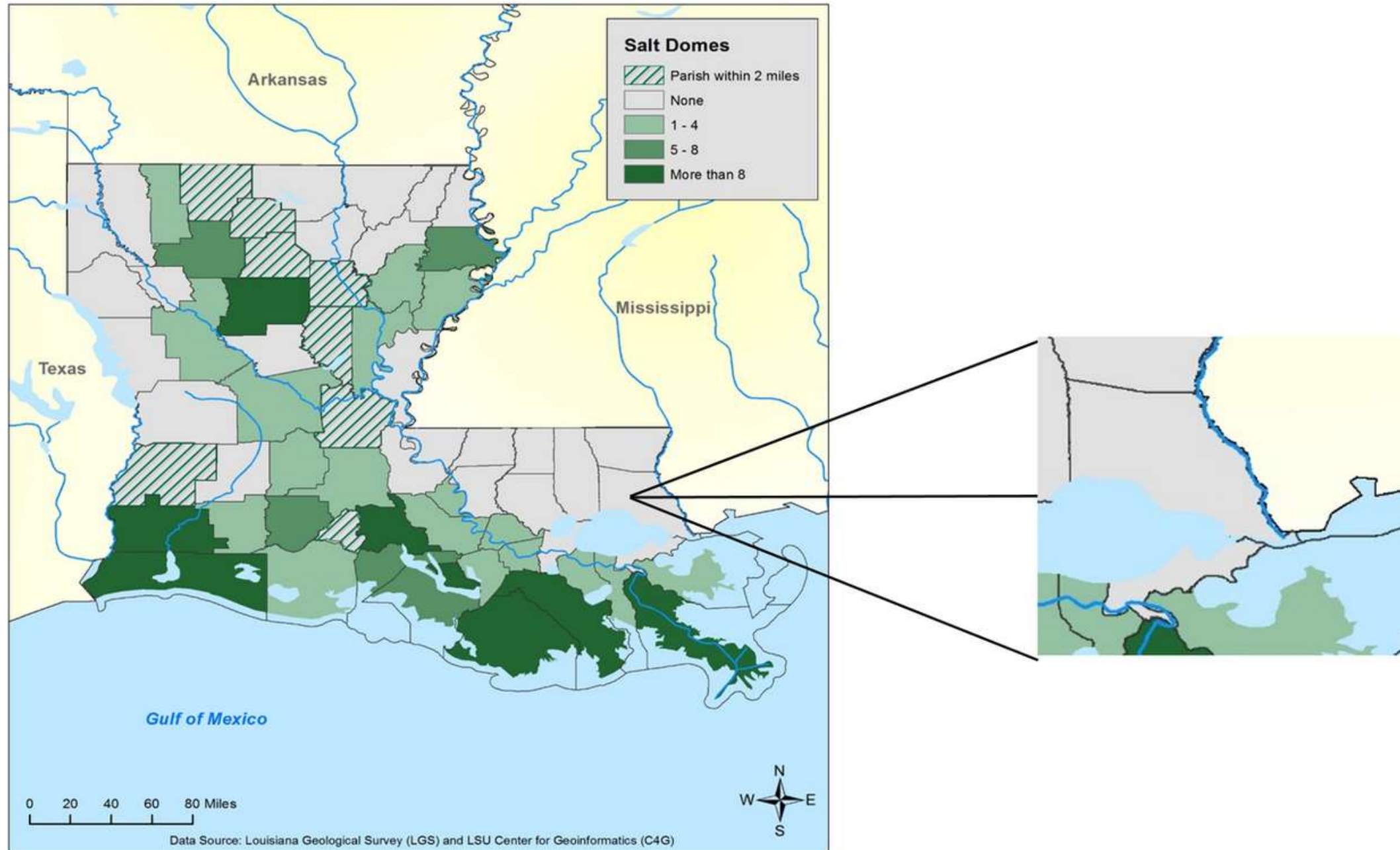


Land Failure

- Land failure is a term that describes the combined effects of sealevel rise and land subsidence. Both of these geologic processes impact Louisiana in a similar manner, making it difficult to separate the effects of one from the other.
- Sea-level rise and land subsidence have not been identified as significant contributors to direct disaster damages in Louisiana.
- There are three subsidence faults in the St. Tammany Parish area, known as the Goose Point, Causeway and Madisonville Faults. They are mostly under Lake Pontchartrain and generally parallel the lakeshore.



Land Failure

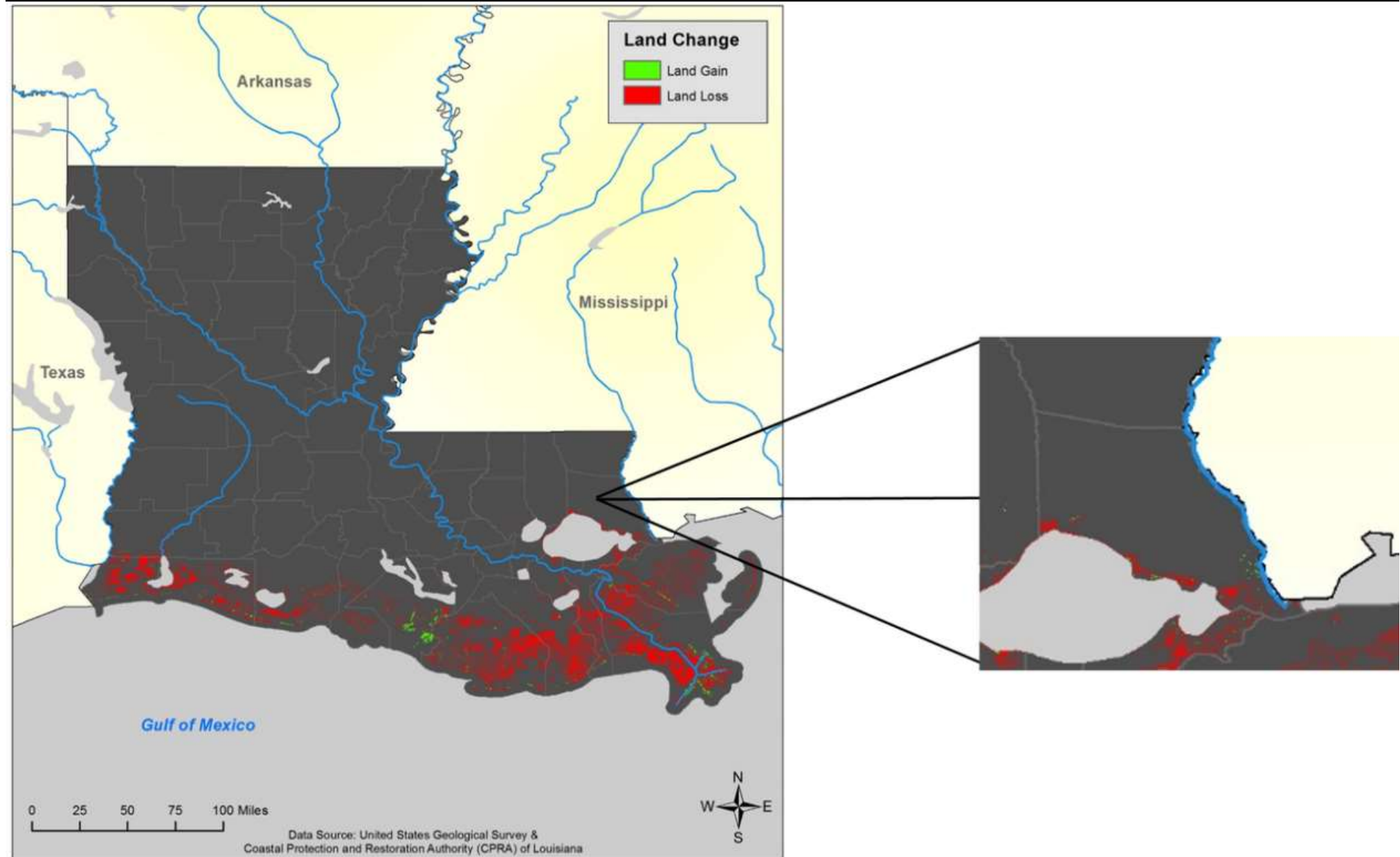


Termites

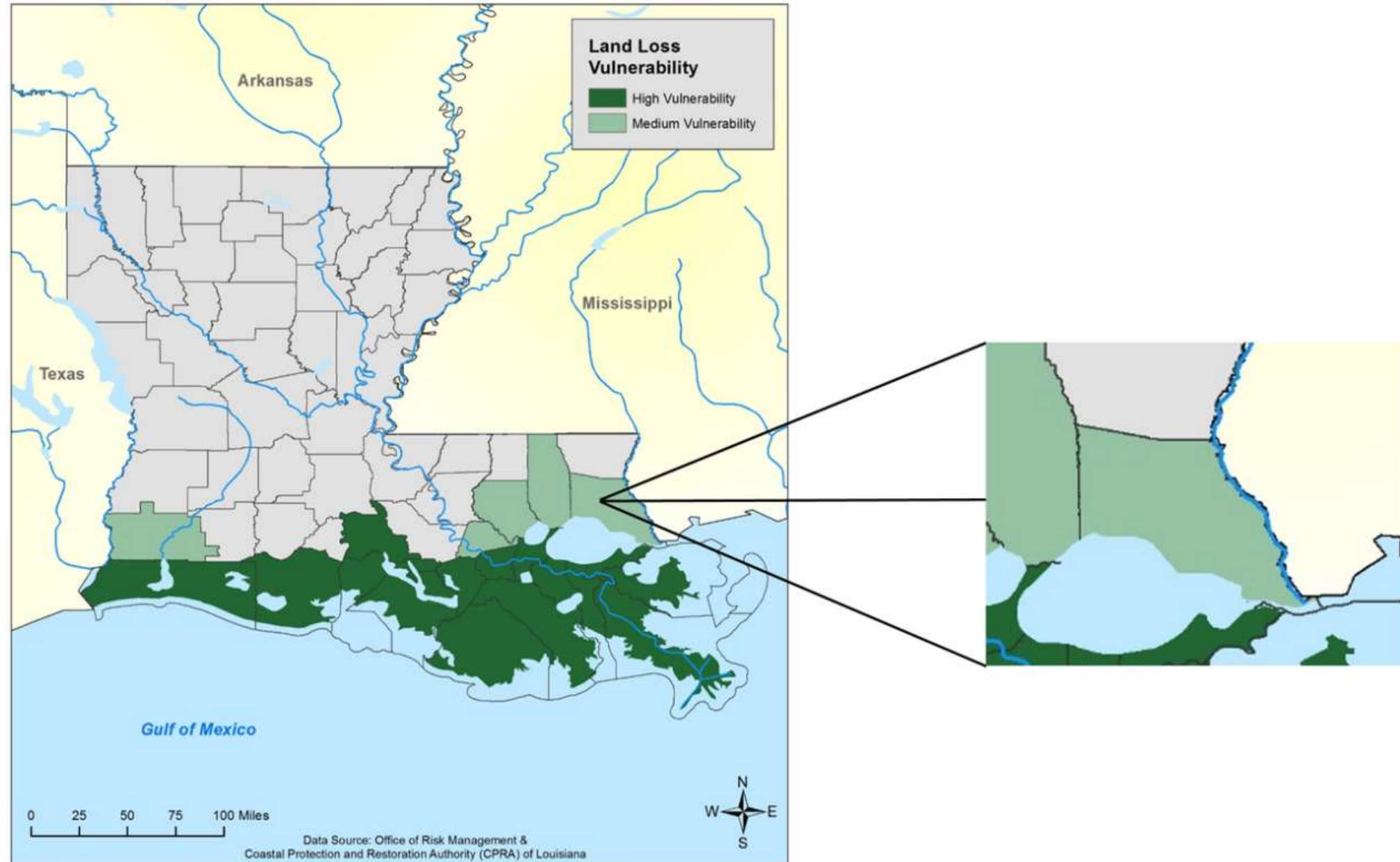
- Termites are small pale colored insects that live off of wood and wooden structures at or near the ground.
- There are two types of termites that live in southeastern Louisiana: drywood termites and subterranean termites.
- The main concentration of termites occurs in southeastern Louisiana, specifically, those areas south of Interstates 10 and 12. Most of St. Tammany Parish is affected



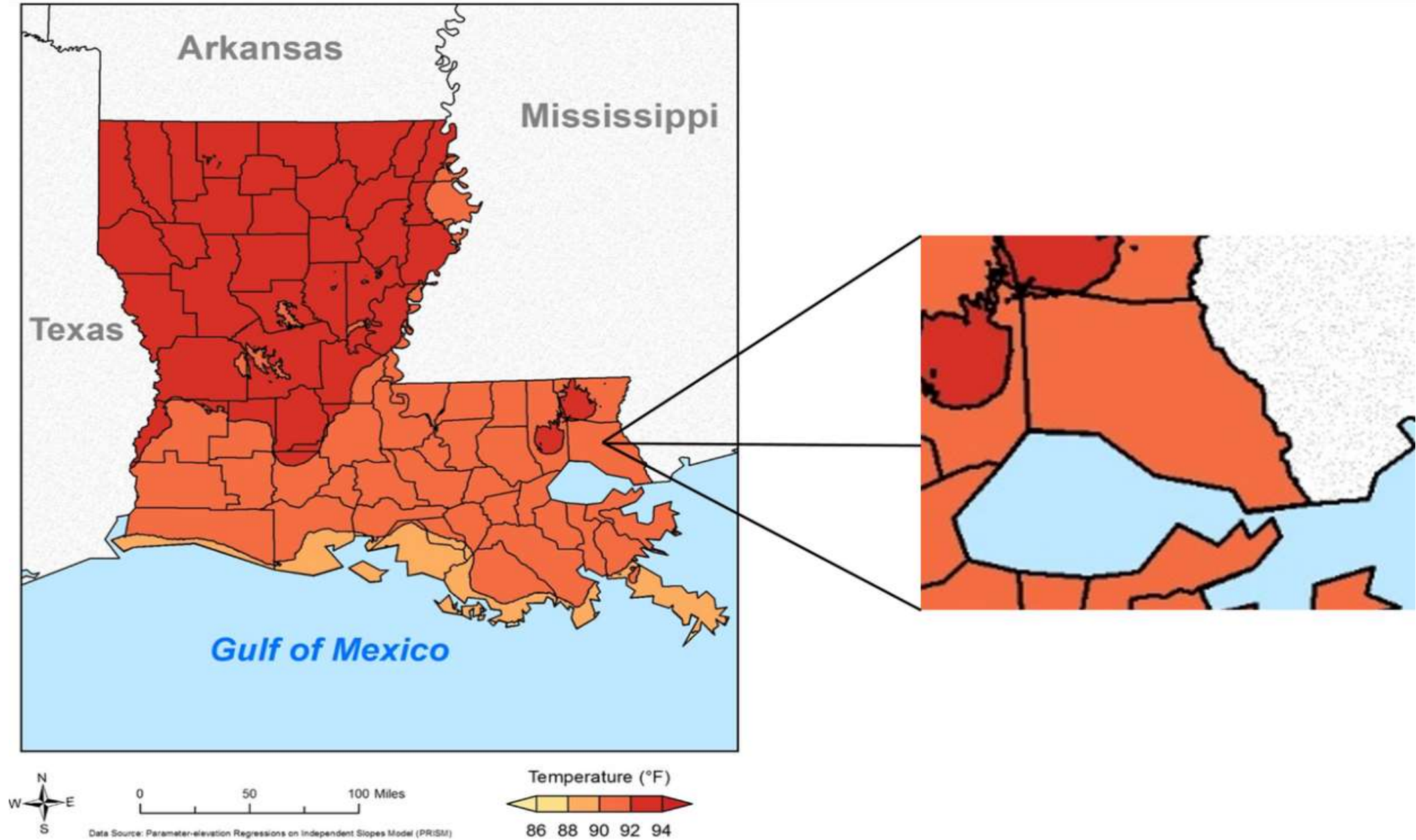
Coastal Erosion



Coastal Erosion



Extreme Heat



Risk Assessment: Public Input

- Through breakout activities the community may provide input
 - Maps, project manager specialists, risk analysis activity



Mitigation Strategy



Mitigation Strategy-Hazard Mitigation Goals

Goal One: *Protect the lives and health of the Parish's residents from the dangers of natural hazards.*

Goal Two: *Ensure that public services and critical facilities operate during and after a disaster.*

Goal Three: *Ensure that adequate evacuation routes, streets, utilities and public and emergency communications are maintained and available during and after a disaster.*

Goal Four: *Protect homes and businesses from damage.*

Goal Five: *Use new infrastructure and development planning to reduce the impact of natural hazards.*

Goal Six: *Give special attention to repetitively flooded areas.*



Proposed Mitigation Projects for Plan Update

Dexter Accardo, St Tammany Parish OHSEP: Project Update Report

Projects include:

- *Elevation of Severe Repetitive Loss and Repetitive Loss Structures*
- *St. Tammany Parish Coastal Master Plan*
- *Watershed Management*
- *South Slidell Levee Project*
- *CDM Lift Stations*
- *Safe Drinking Water*



Public Forum Breakout Sessions

- Project Manager Specialists
- Risk Analysis Activity (Hazard Occurrences)
- Problem Area Identification (Jurisdiction and Parish Maps)
- Survey



Contact Us

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