



Plaquemines Parish Hazard Mitigation Plan Update Public Meeting

March 11, 2025

Belle Chasse, LA



Agenda



Introductions



**Hazard Mitigation
Overview**



**Planning
Process**



**Risk Assessment
Maps**



**Public Outreach
Activities**



Introductions

- **Plaquemines Parish OHSEP Director**
 - Patrick Harvey – Director
- **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**
 - Christopher Olvey – HM Technical Services Section Chief
 - Lennie LaFleur – HM Planning Program Coordinator



Who is SDMI?

- Stephenson Disaster Management Institute (SDMI) at Louisiana State University
- Non-Academic, Applied Research Unit on campus
- Specialize in providing programmatic support and decision making tools for state and local emergency managers
 - Hazard Mitigation Plans
 - Emergency Operations Plans
 - Geographic Information Systems
 - Application Development
 - Data Visualization
 - Aerial Imagery Collection/Processing



Why We're Here

MITIGATION

Public Education
Hazard & Vulnerability Assessment
Improved Infrastructure

PREPAREDNESS

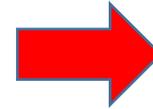
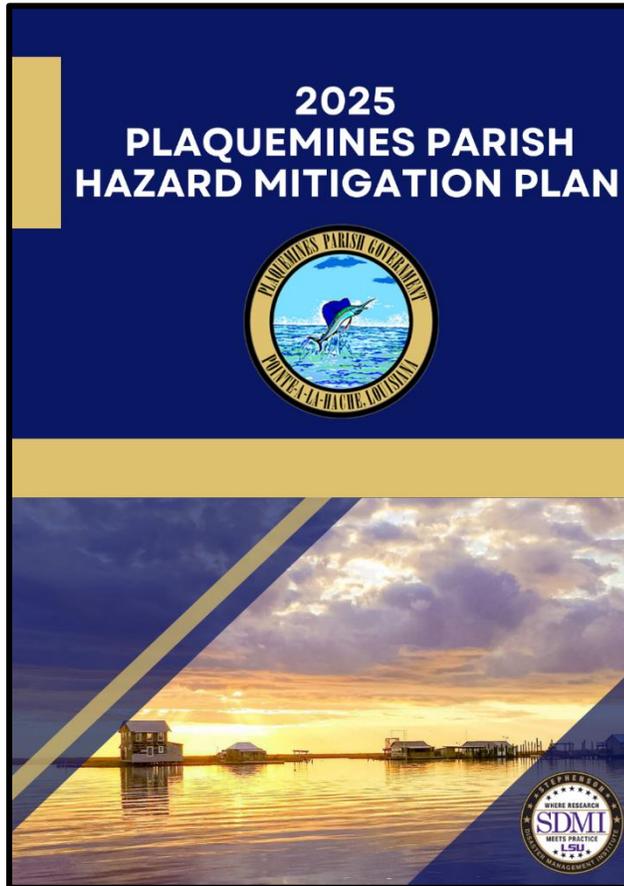
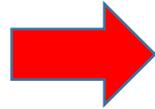
Emergency Response Plans
Training & Exercises
Sirens

RECOVERY

Economic Recovery
Debris Management
Housing
Health & Social Services

RESPONSE

Life Safety
Incident Stabilization
Property Preservation
Evacuation & Shelters
Mass Care



THIS DOCUMENT WAS PREPARED BY:

**State of Louisiana Governor's Office
of Homeland Security and Emergency
Preparedness 7667 Independence
Blvd. Baton Rouge, LA 70806**

<https://gohsep.la.gov/>



WITH SUPPORT FROM:

Louisiana State University Agricultural Center (LSU AgCenter)
LaHouse Research & Education Center
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www.lsuagcenter.com/LaHouse

Louisiana State University (LSU)
College of the Coast & Environment
2135 Energy, Coast, & Environment Building
Baton Rouge, LA 70803
lsu.edu

University of New Orleans (UNO)
Center for Hazards Assessment, Response & Technology (UNO-CHART)
2000 Lakeshore Drive, New Orleans, LA 70148
www.uno.edu/chart



LOUISIANA STATE HAZARD MITIGATION PLAN UPDATE 2024



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.



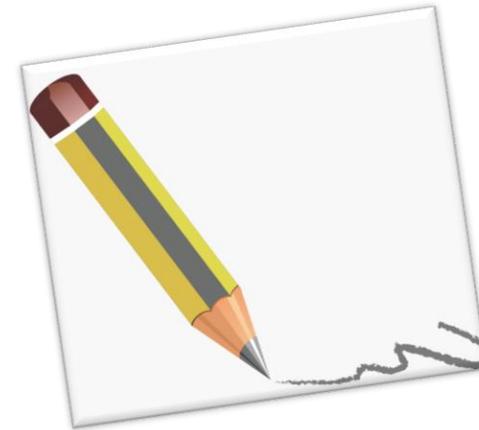
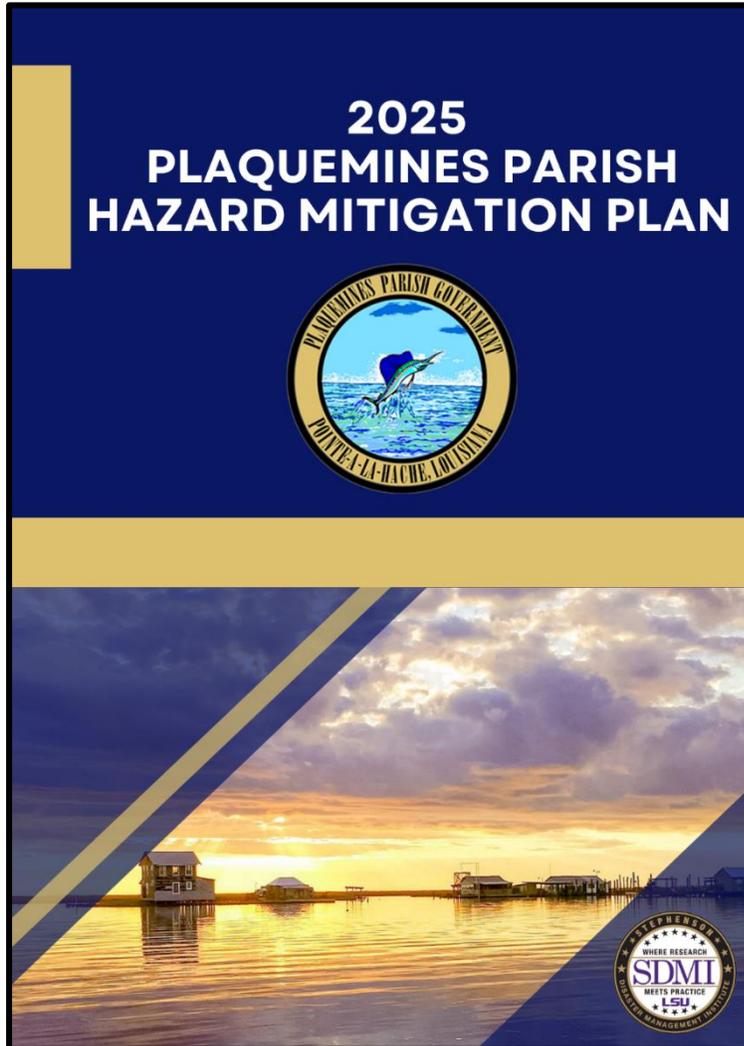
- The approved Plaquemines Parish Hazard Mitigation Plan will allow for distribution of HM funding following future disasters.



Planning Process to Date



Hazard Mitigation Plan Development



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 parish planning area.
- The hazards identification includes the following:
 - *locations affected*
 - *extent or strength*
 - *previous occurrences*
 - *probability of future events*



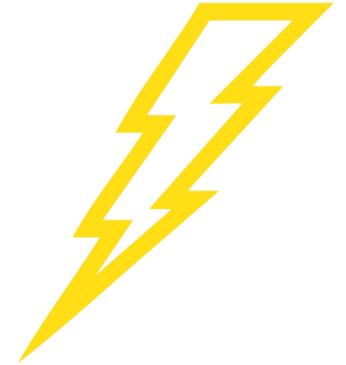
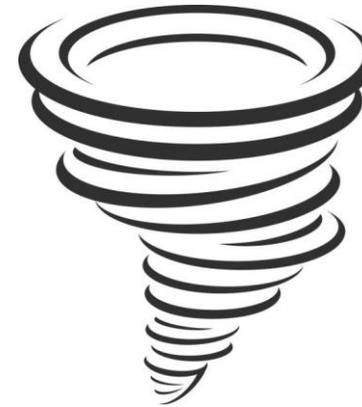
Hazard Identification And Risk Assessment

- 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

- Coastal Hazards
- Flooding
- Levee Failure
- Saltwater Intrusion
- Sinkholes
- Thunderstorms
- Tornadoes
- Tropical Cyclones



Risk Matrix for Plaquemines Parish

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Coastal Hazards	4	2	4	2	3	3.05
Flooding	3	4	3	4	3	3.4
Levee Failure	1	3	4	1	3	2.4
Saltwater Intrusion	4	3	2	1	4	2.9
Sinkholes	1	2	2	1	4	1.9
Thunderstorm Hail	3	2	3	3	1	2.45
Thunderstorm Lightning	2	2	2	3	1	2
Thunderstorm Winds	4	2	3	3	1	2.7
Tornadoes	3	3	2	4	3	2.95
Tropical Cyclones	4	4	4	1	4	3.55

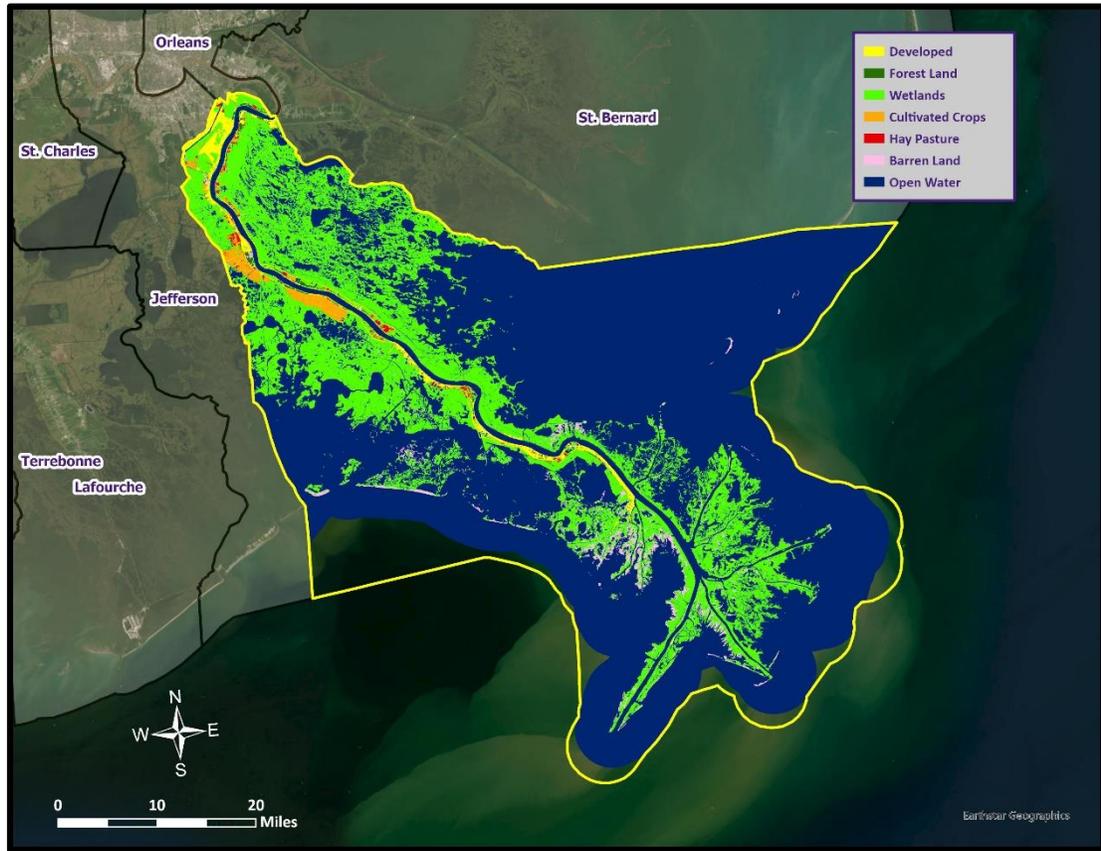
Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9





Risk Assessment Maps

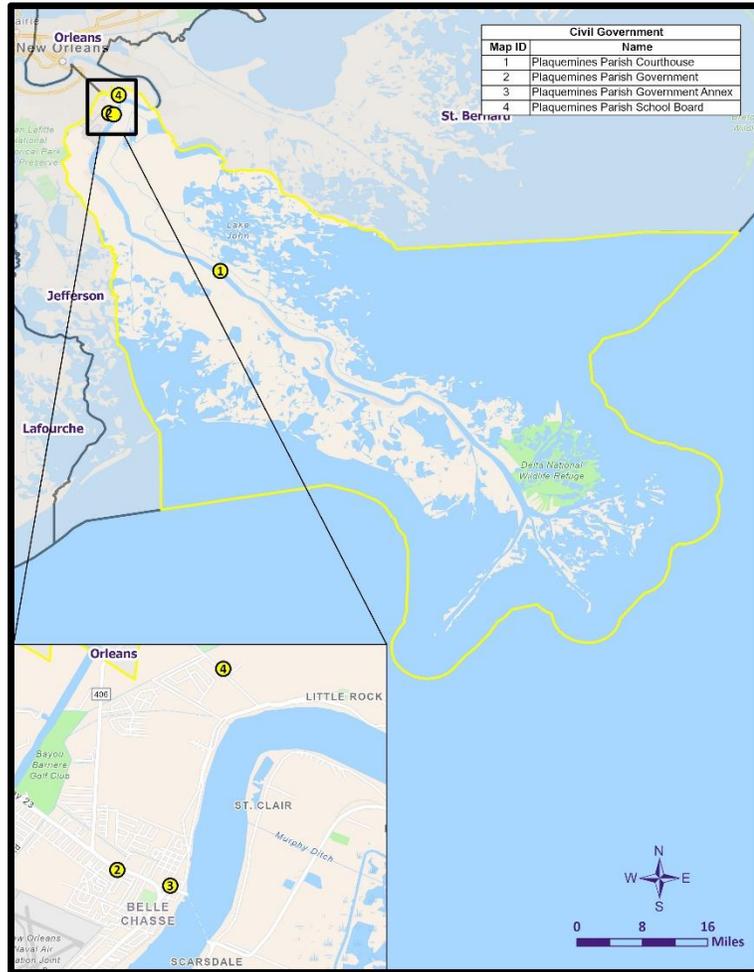
Plaquemines Parish Land Use



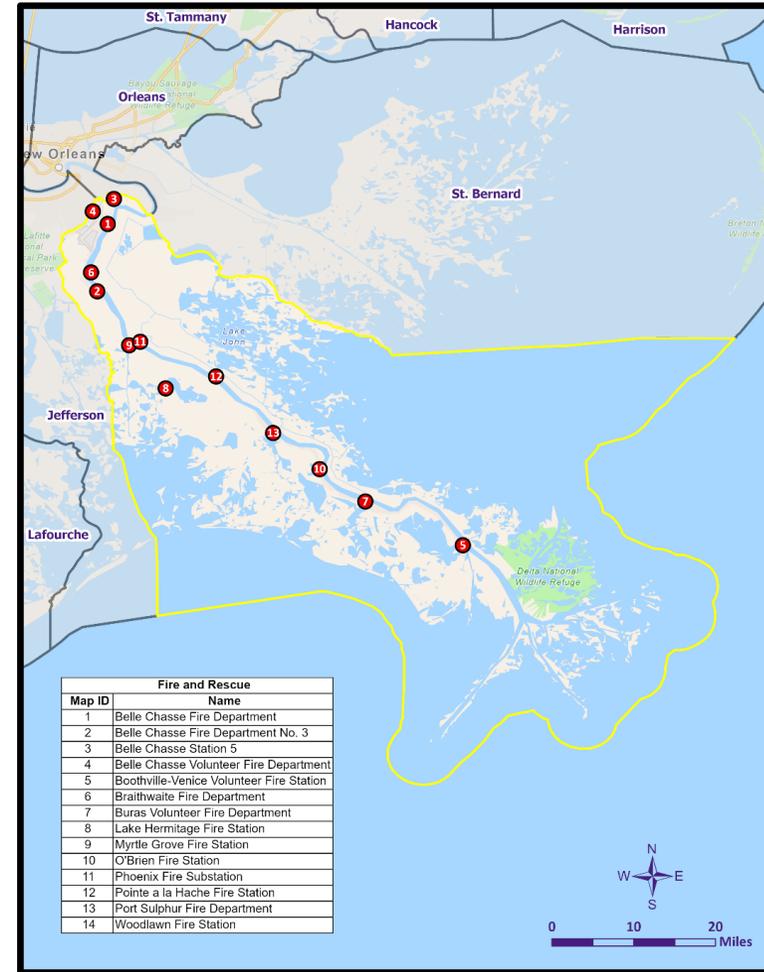
Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	141,514	9%
Wetlands	368,276	22%
Forest Land (Not including forested wetlands)	3,553	< 1%
Urban/Development	19,527	1%
Water	1,110,107	68%



Plaquemines Parish Critical Facilities

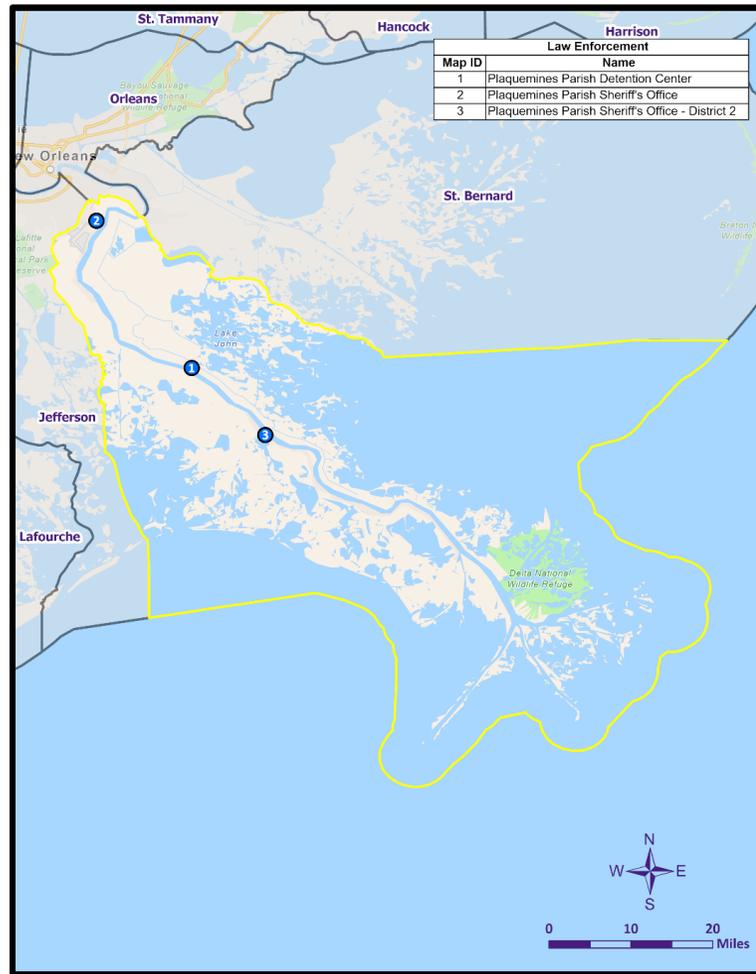


Civil Government



Fire & SAR

Plaquemines Parish Critical Facilities

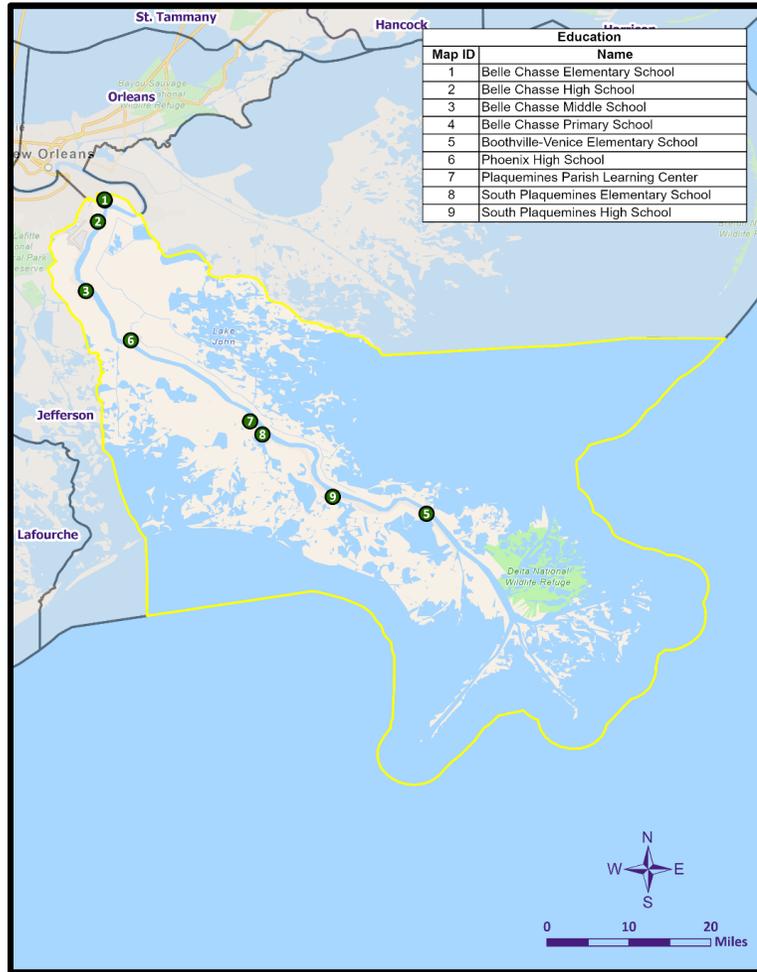


Law Enforcement

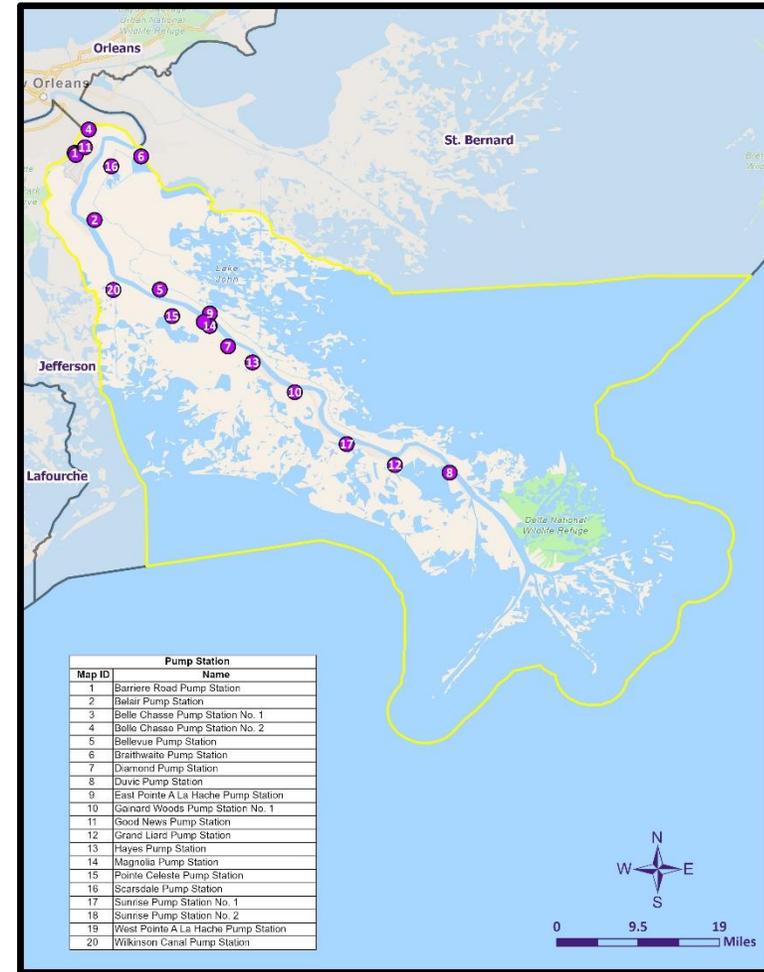


Public Health

Plaquemines Parish Critical Facilities



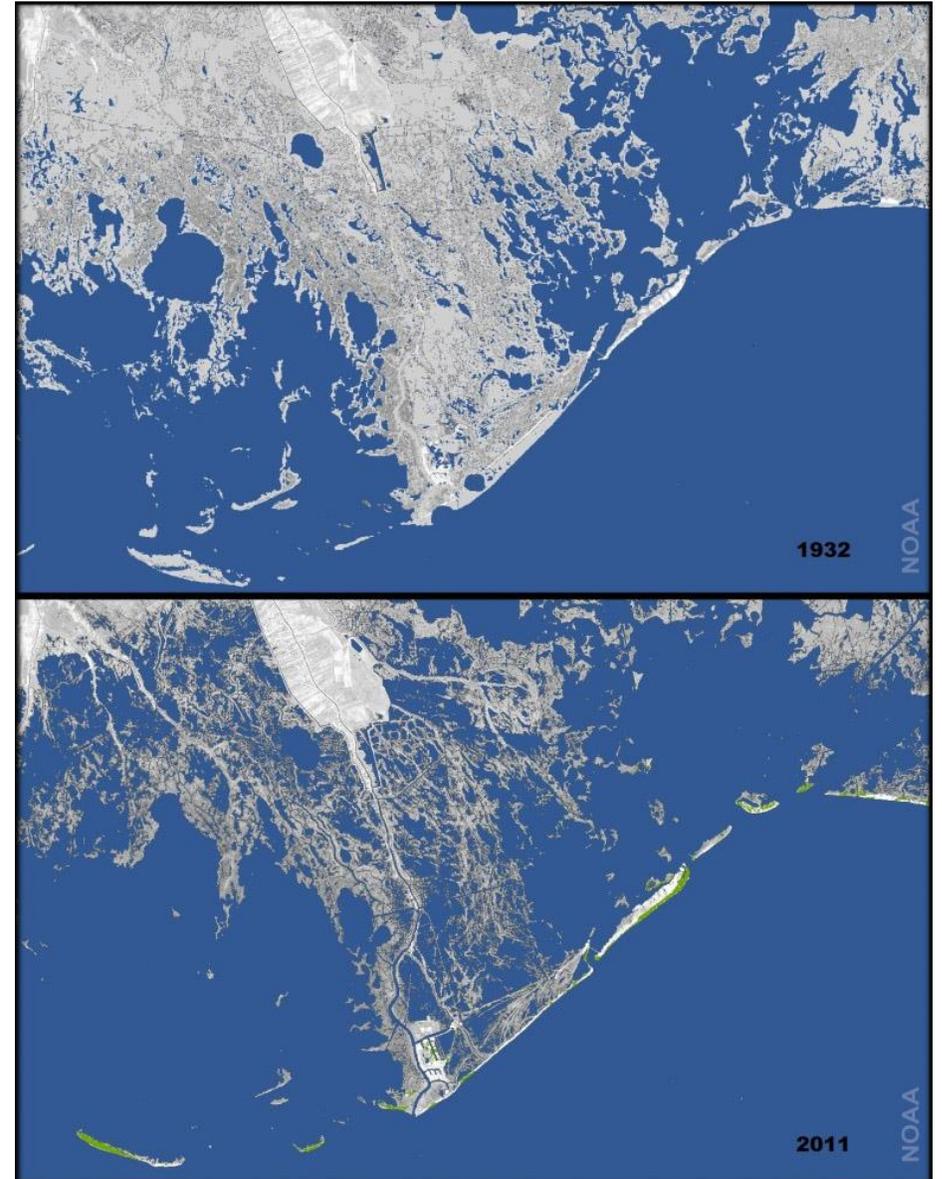
Public Education



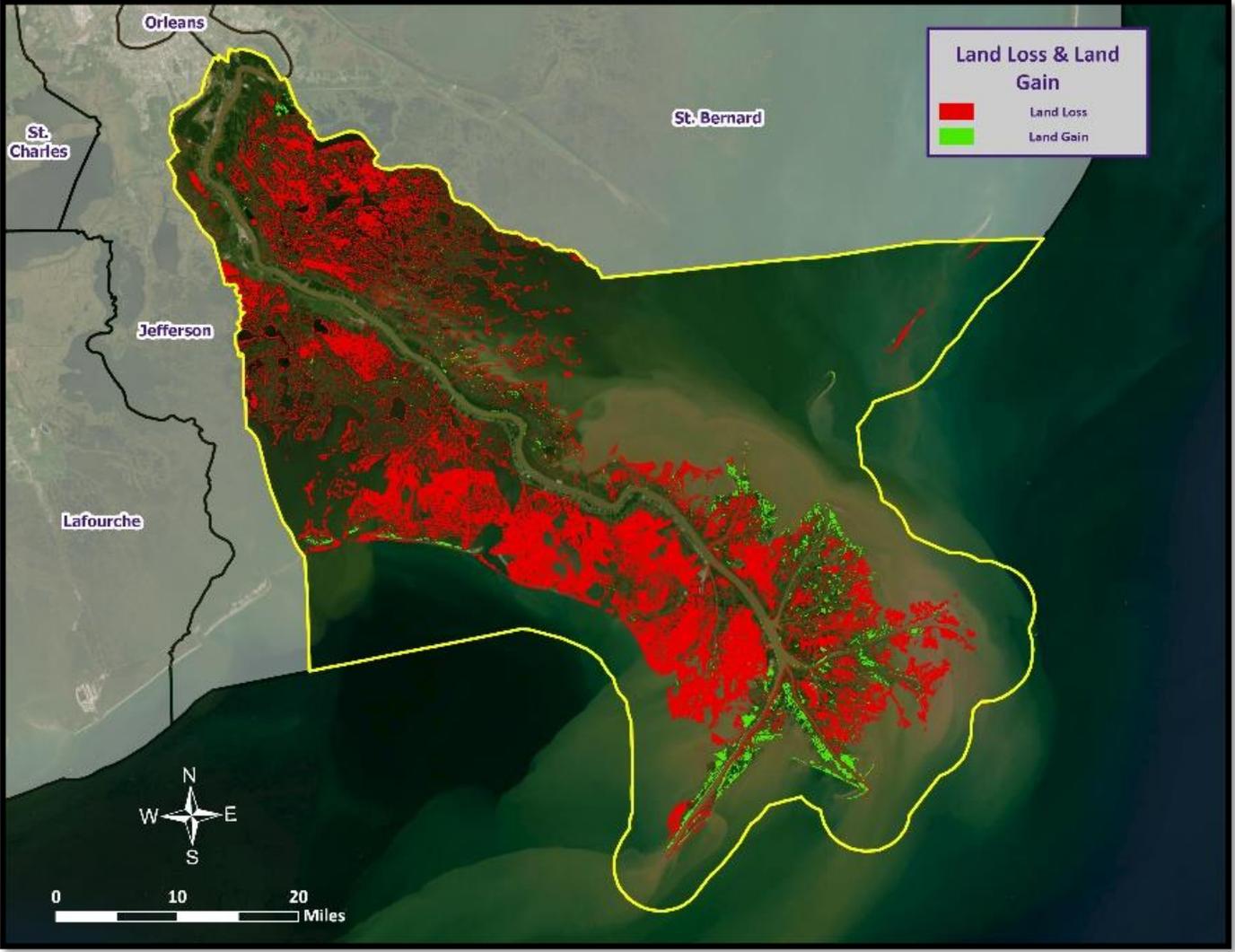
Public Utilities

Coastal Hazards

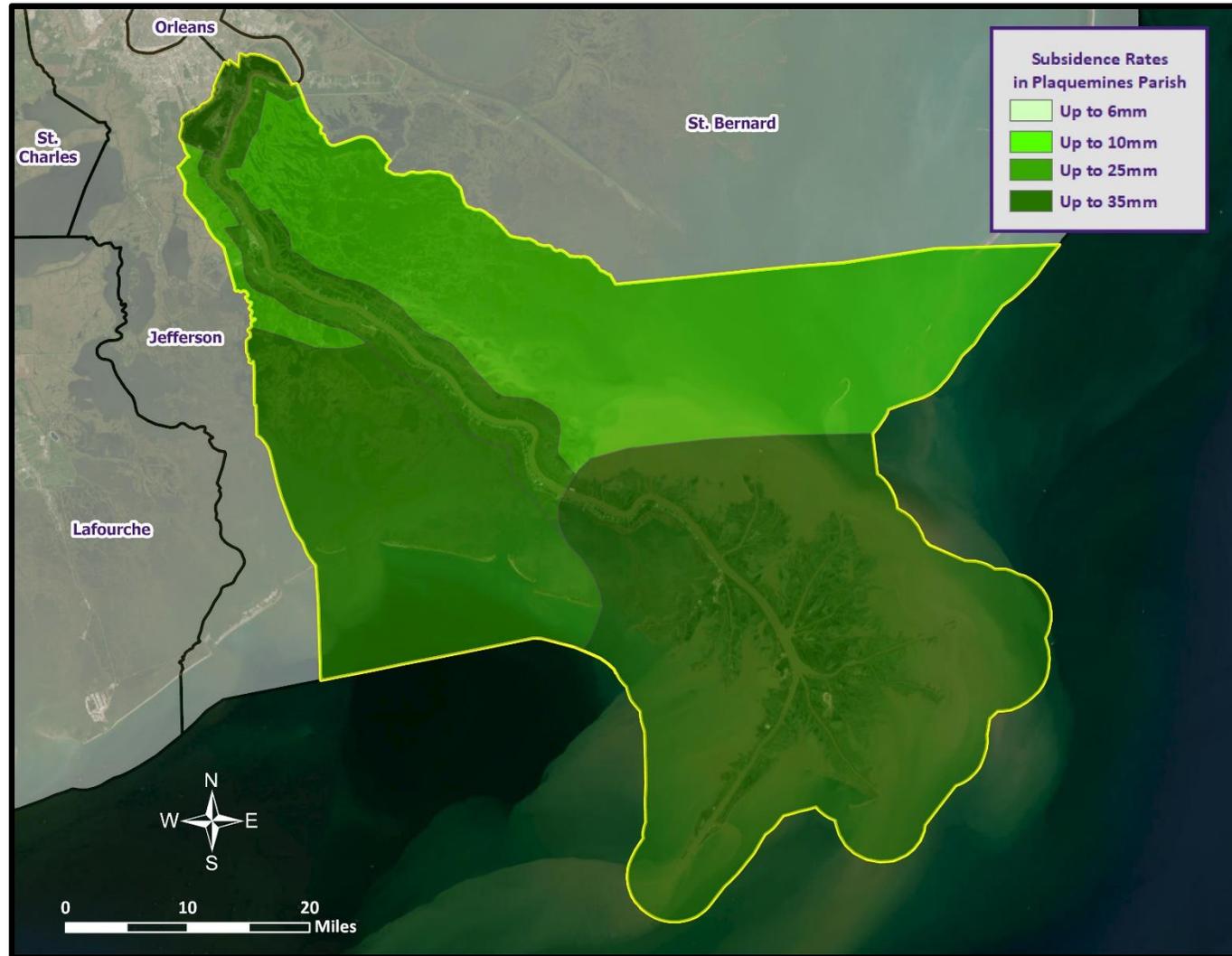
- Since 1932, the average annual land loss in Louisiana is 35 square miles, while the average annual land gained is 3 square miles.
- Subsidence and sea level rise are the main culprits for land loss but other “discrete hazards” i.e. hurricanes, also contribute.
- Subsidence rates are highest in Plaquemines Parish with 35mm of land loss annually near southern portions of the parish.



Land Gain and Land Loss



Subsidence Rates



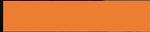
Subsidence Impacts



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.”



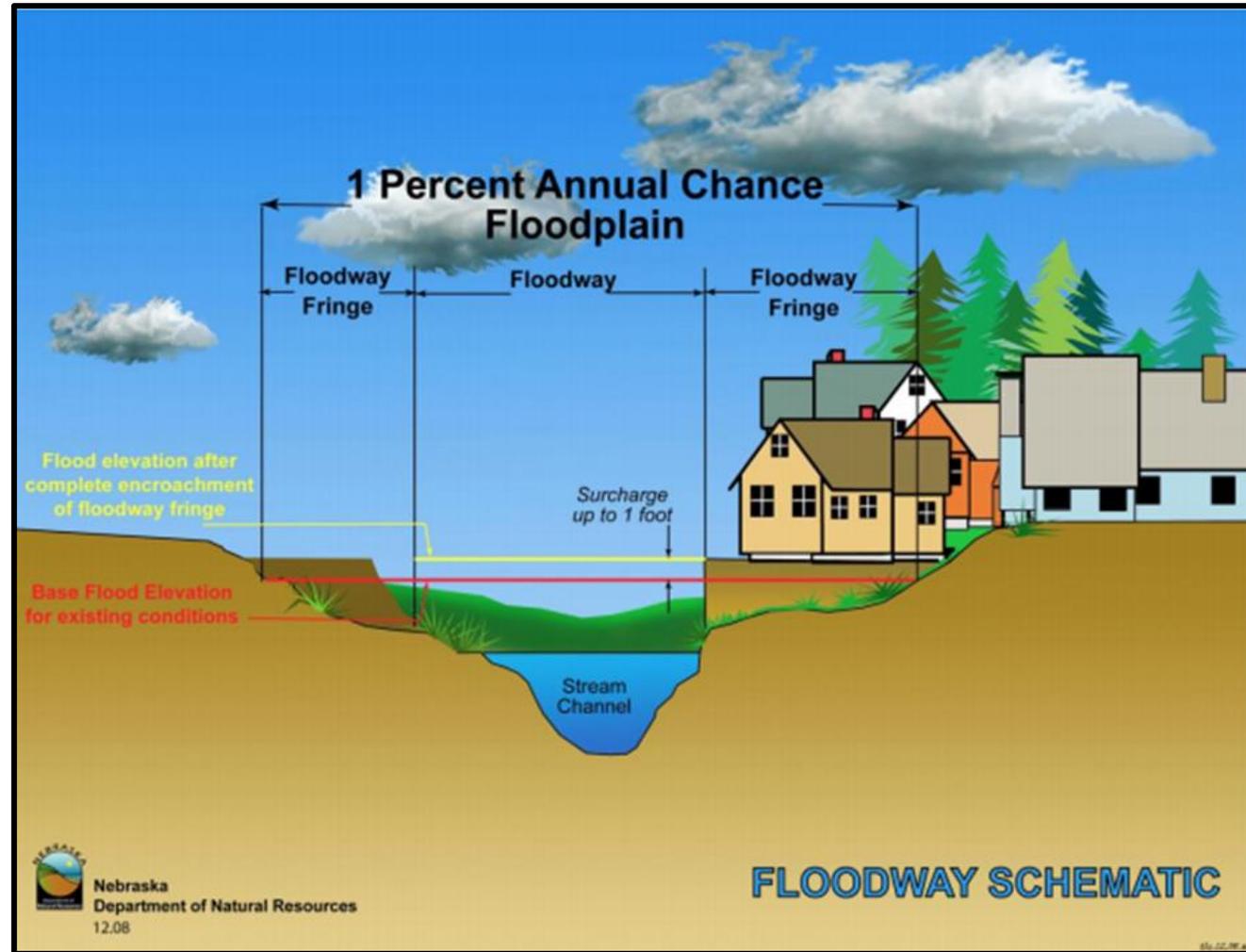


Flooding

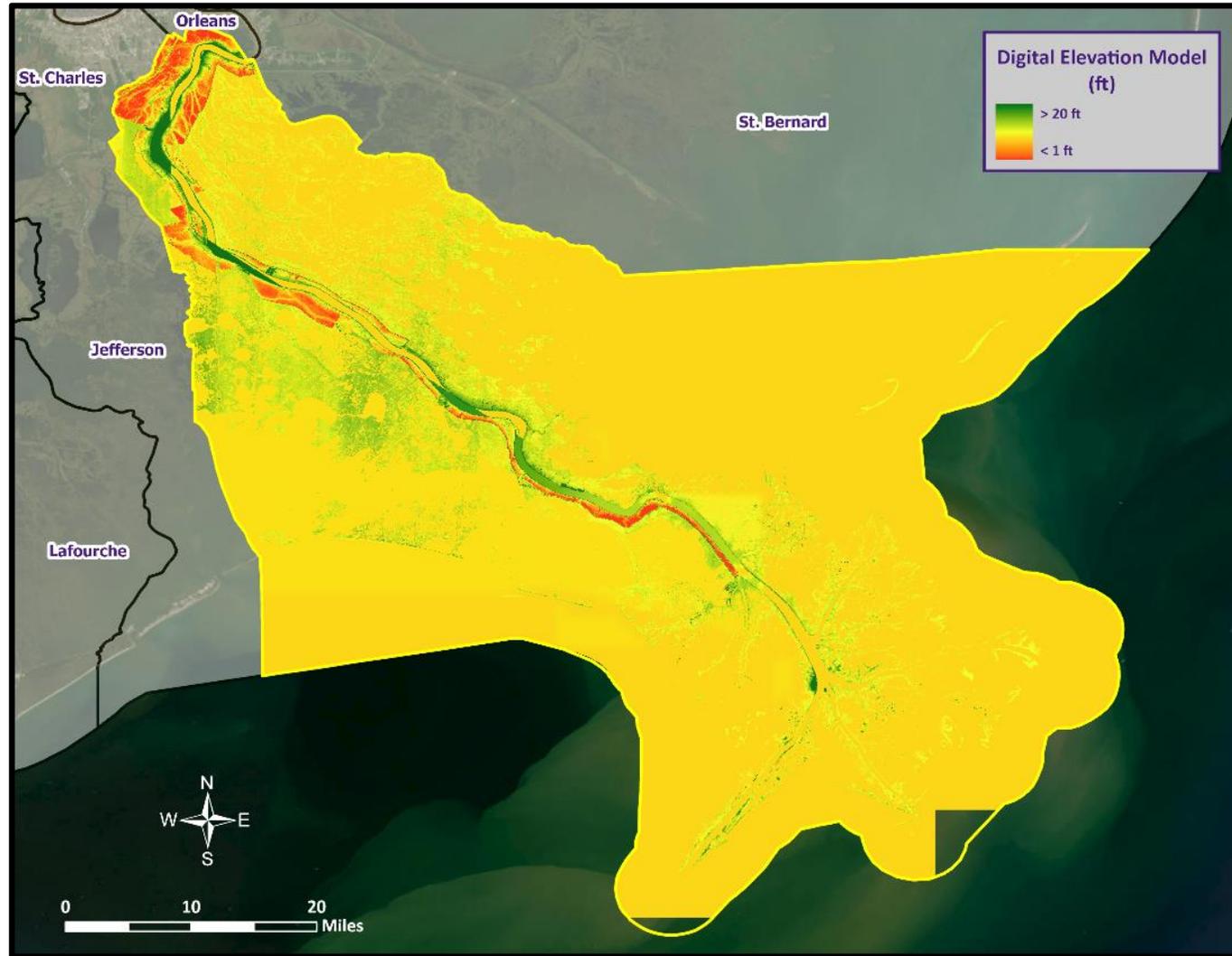
- In Louisiana, six specific types of flooding are of main concern:
 - Riverine
 - Flash
 - Ponding
 - Backwater
 - Urban
 - Coastal



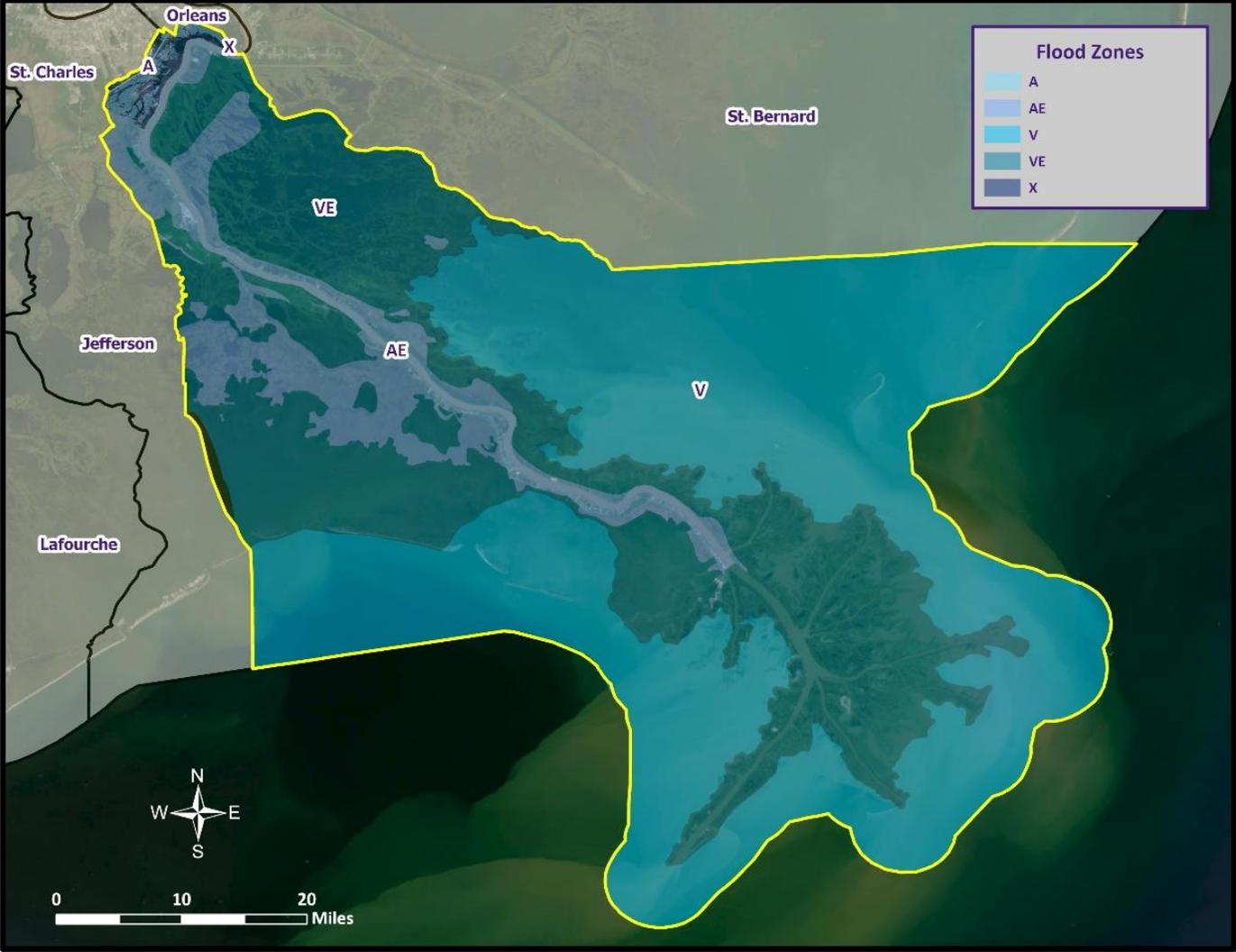
Floodway Diagram



Digital Elevation Model



Plaquemines Parish Flood Map





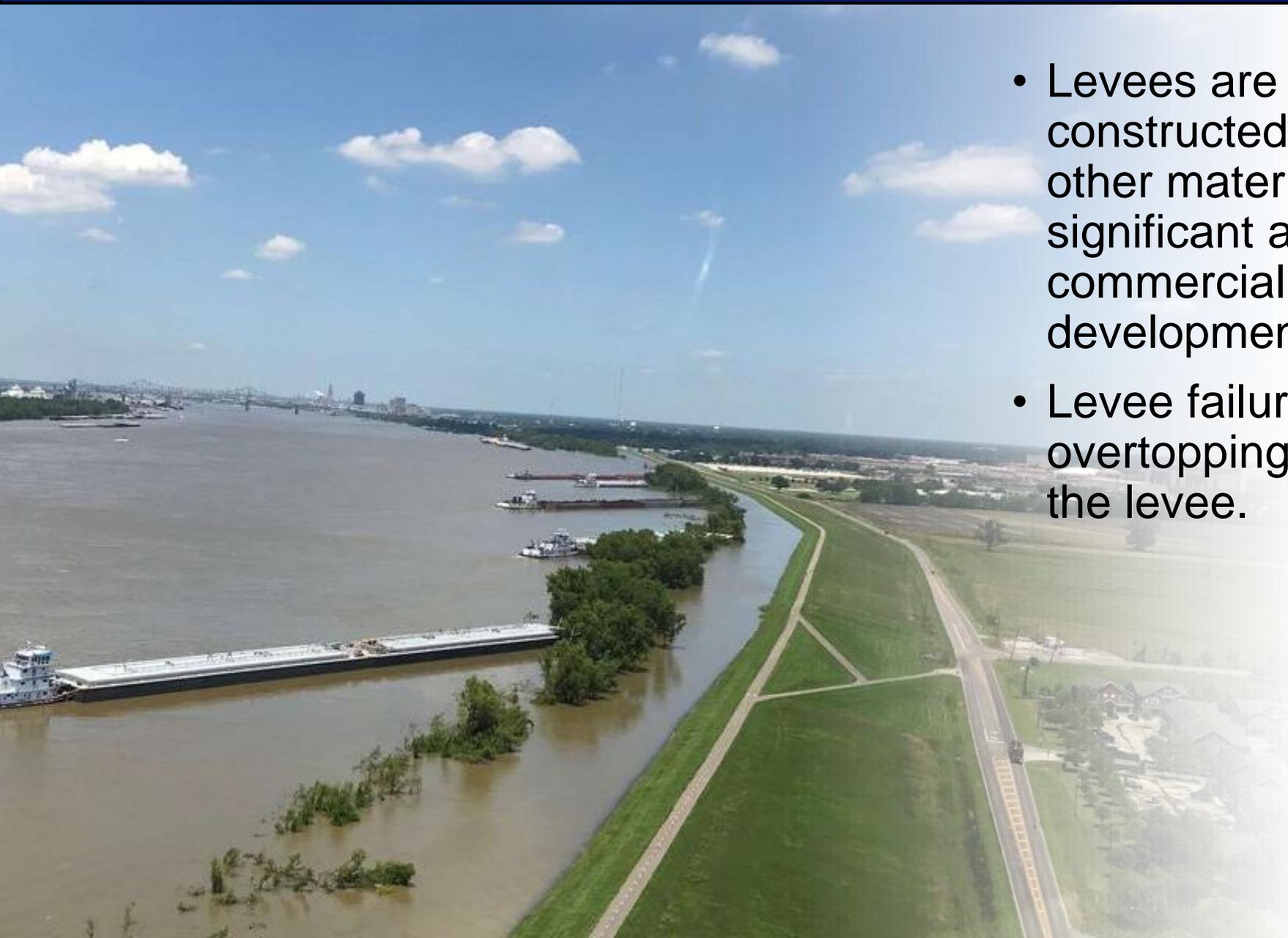
Flooding

- 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 over 250,000 repetitive loss properties in the U.S.
 - ~43,000 in Louisiana alone
- These properties comprise 1.3% of the NFIP policy base, but they account for approximately 25-30% of the country’s flood insurance claim payments.

Repetitive Loss Properties

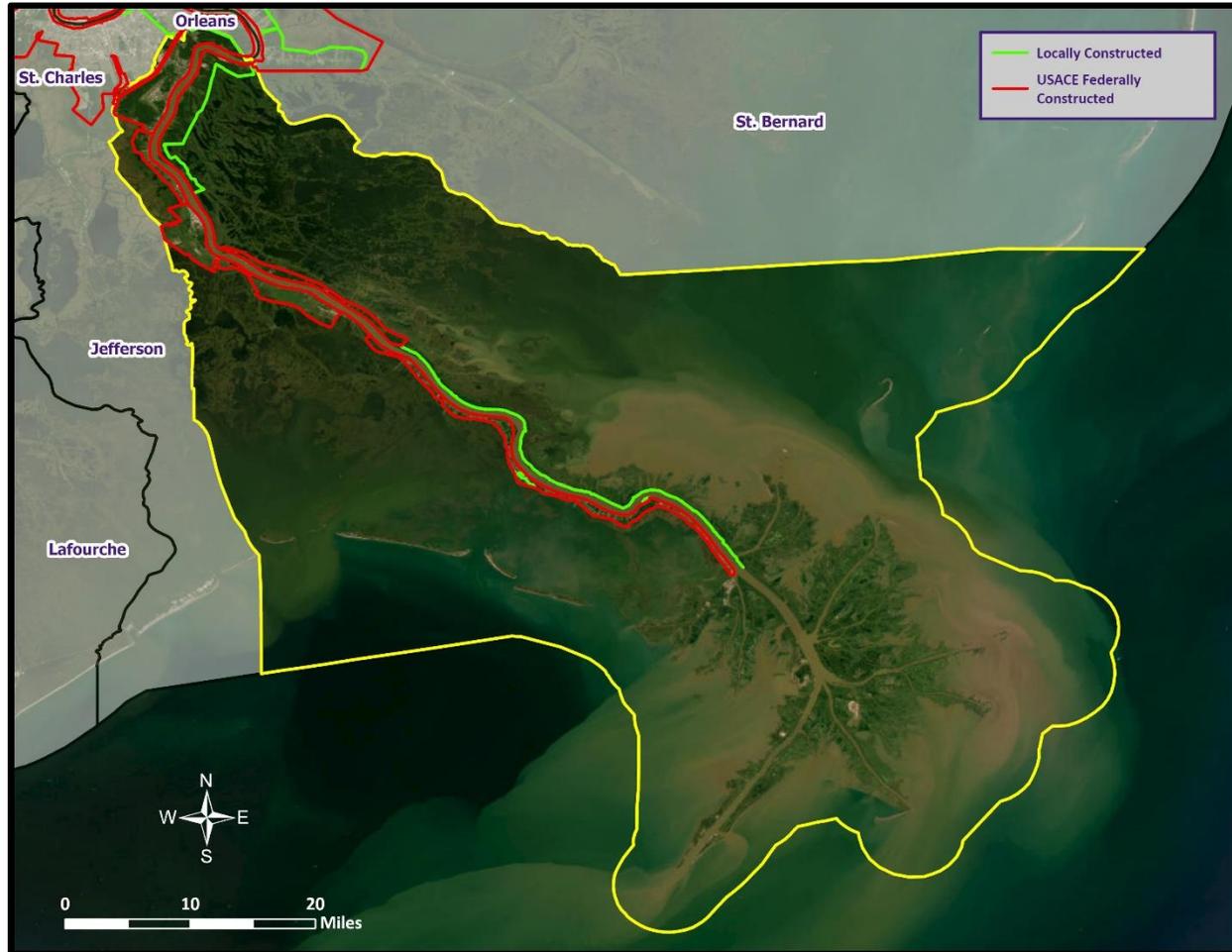


Levee Failure



- 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.

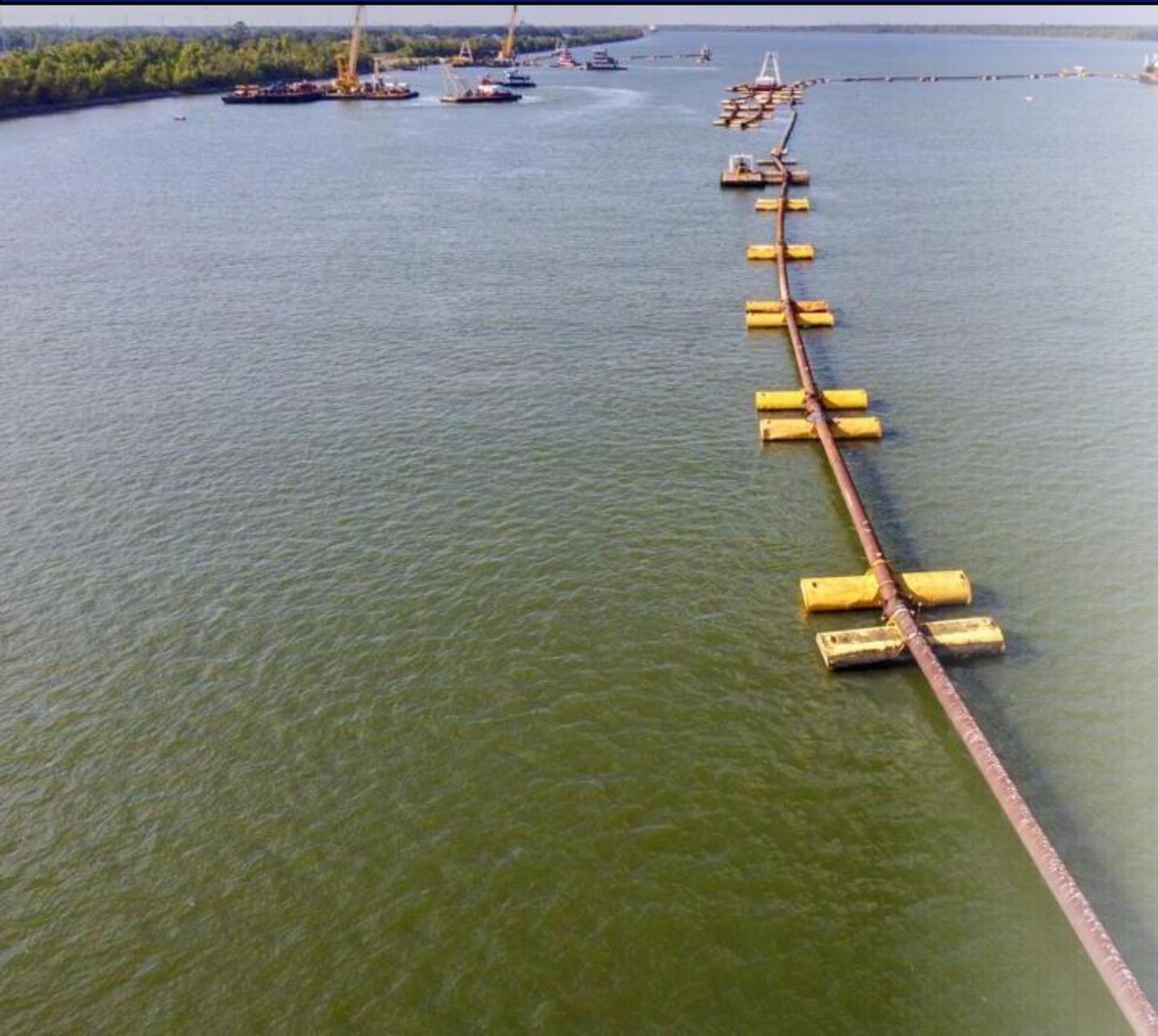
Levee Locations in Plaquemines Parish



System	Length (miles)	Height (ft)
Caernarvon to Phoenix Polder	21.615	20
Donner Canal West Bank Sub System	4.416	N/A
Fort Jackson Protection System	0.761	N/A
Lower Donner Canal	5.119	N/A
Mississippi River (Plaquemines-1 Left Side)	17.849	N/A
New Orleans East Bank	179.259	22
New Orleans West Bank	110.122	17
Oakville to St. Jude Polder	55.468	17
Phoenix to Bohemia Polder	30.887	16
St. Jude to Venice Polder	73.316	15

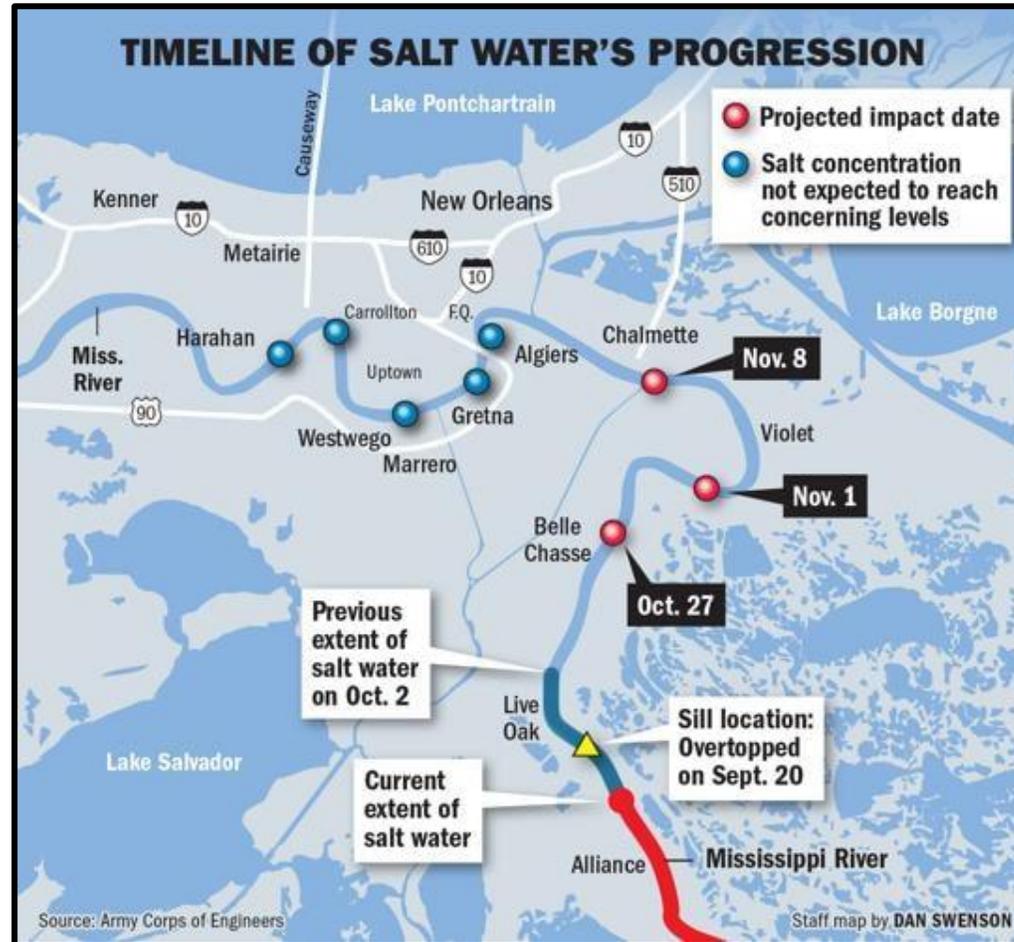
System	Population	Buildings	Property Value
Caernarvon to Phoenix Polder	1,009	487	\$120,000,000
Donner Canal West Bank Sub System	27,067	7,055	\$4,000,000,000
Fort Jackson Protection System	0	0	\$0
Lower Donner Canal	1,055	15	\$90,000,000
Mississippi River (Plaquemines-1 Left Side)	970	377	\$240,000,000
New Orleans East Bank	849,393	323,422	\$74,000,000,000
New Orleans West Bank	248,334	90,436	\$19,000,000,000
Oakville to St. Jude Polder	2,752	1,052	\$330,000,000
Phoenix to Bohemia Polder	890	424	\$85,000,000
St. Jude to Venice Polder	4,895	2,319	\$420,000,000

Saltwater Intrusion



- Occurs when seawater infiltrates freshwater aquifers or surface water bodies
- Can be detrimental to the access of fresh drinking water for coastal communities.
- Compromises agriculture by degrading soil quality
- The state relies heavily on freshwater aquifers. Excessive pumping of groundwater causes a depletion of freshwater, creating a gradient that draws seawater into aquifers.

Saltwater Intrusion



Saltwater Intrusion Wedge in the Mississippi River October 10, 2023.
(Source: NOLA.com)

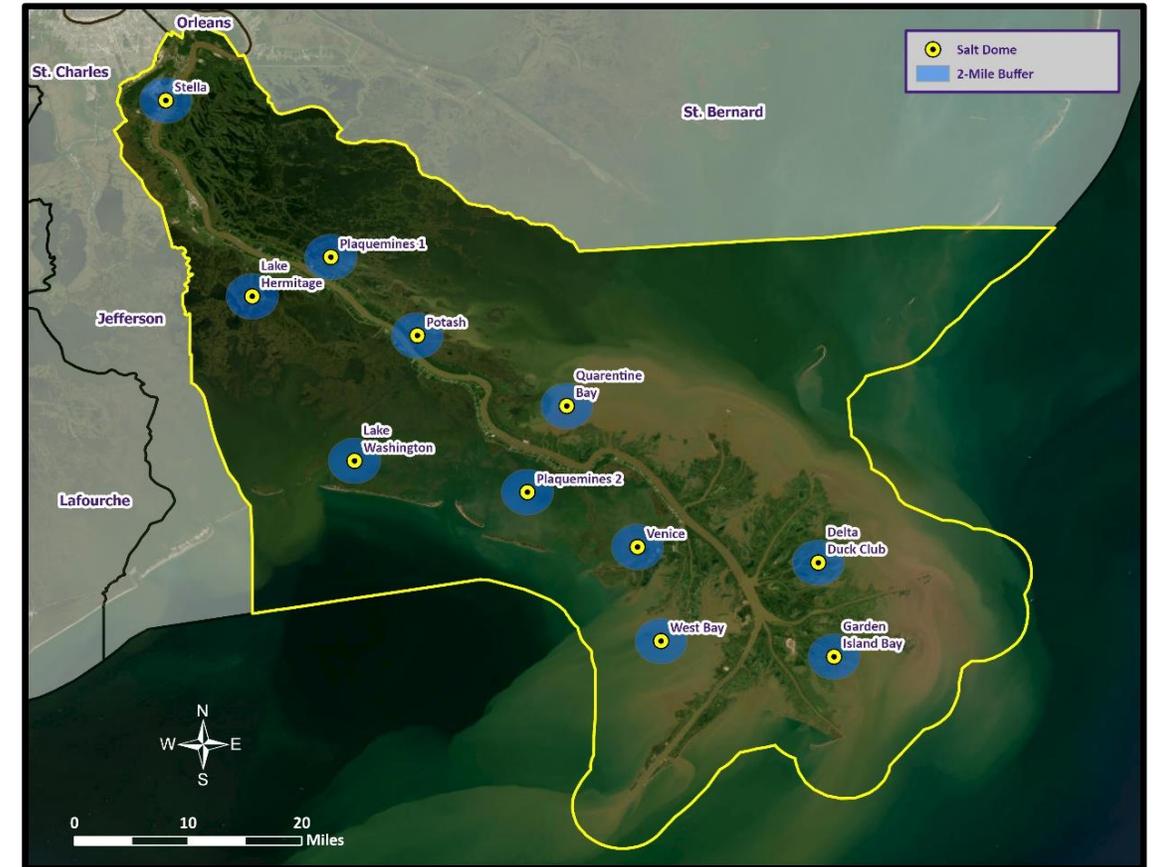
Sinkholes

- A sinkhole is an area of ground that has no natural external surface drainage – when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface.
- Sinkholes form in areas where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them.
- As the rock dissolves, spaces and caverns develop underground. Once the spaces underground become too large, there is not enough support for the land above the spaces which causes a sudden collapse on the land surface.



Salt Dome Locations

Salt Dome Name	Total Building Exposure	Critical Infrastructure Exposure	Number of People Exposed	Number of Houses Exposed
Delta Duck Club	\$135,000	0	0	0
Garden Islands Bay	\$0	0	0	0
Lake Hermitage	\$6,652,000	0	41	7
Lake Washington	\$0	0	0	0
Plaquemines 1	\$0	0	0	0
Plaquemines 2	\$0	0	0	0
Potash	\$42,981,000	0	563	251
Quarantine Bay	\$0	0	0	0
Stella	\$226,182,000	0	4,121	1,219
Venice	\$415,000	0	0	0
West Bay	\$0	0	0	0



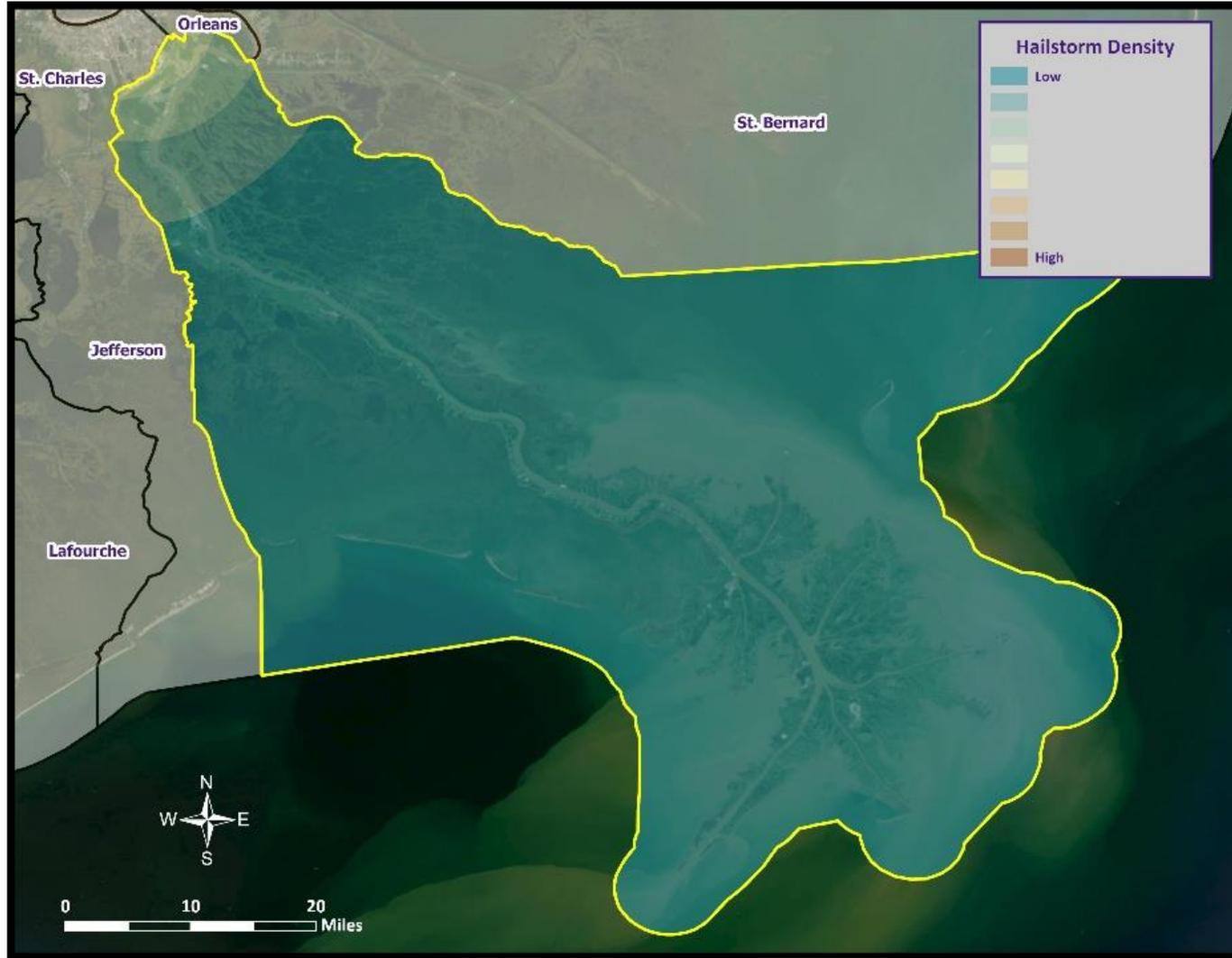
Thunderstorms



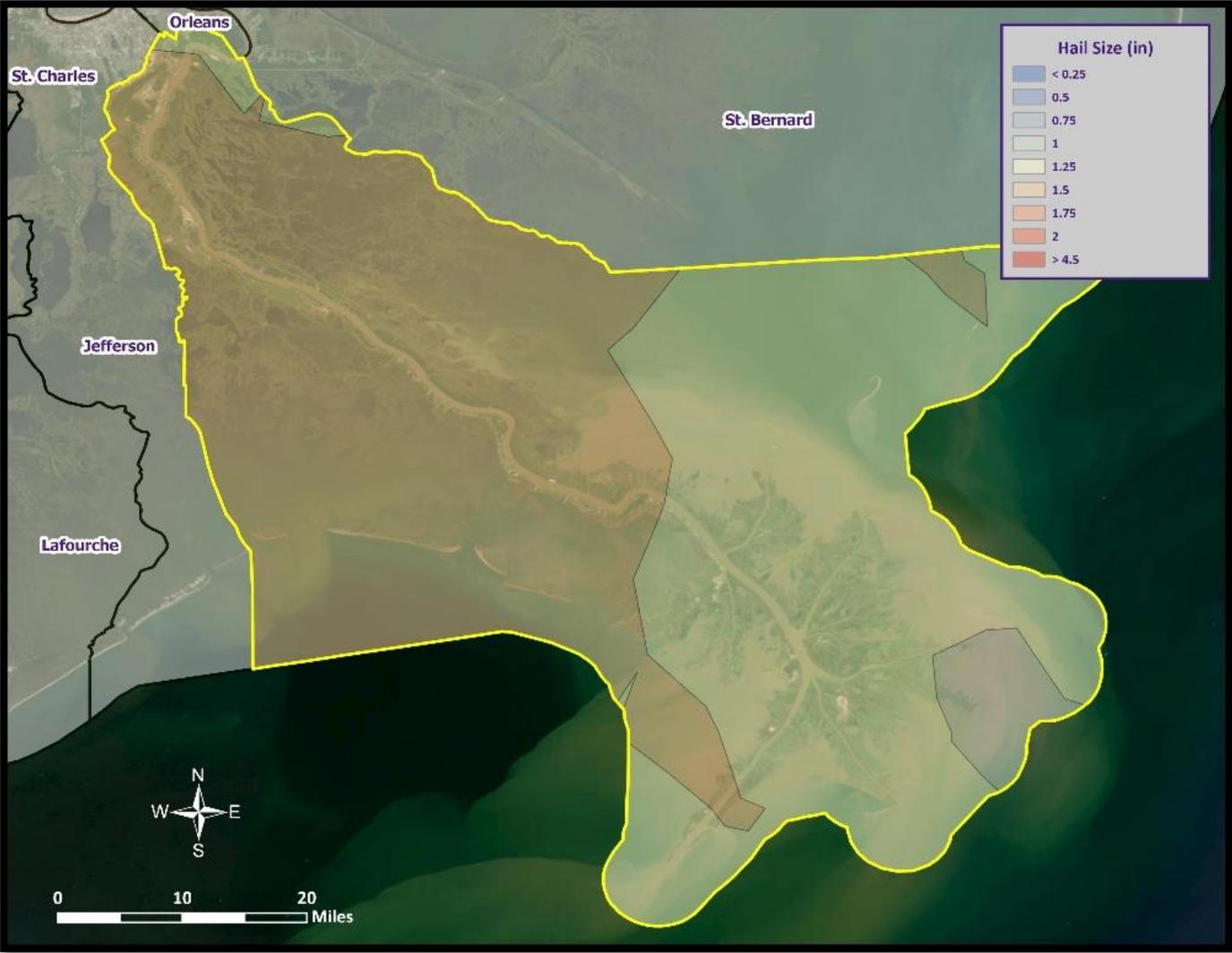
- A **thunderstorm**, also known as an **electrical storm**, a **lightning storm**, or a **thundershower**, is a type of storm characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder.
- They are usually accompanied by strong winds, heavy rain, and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



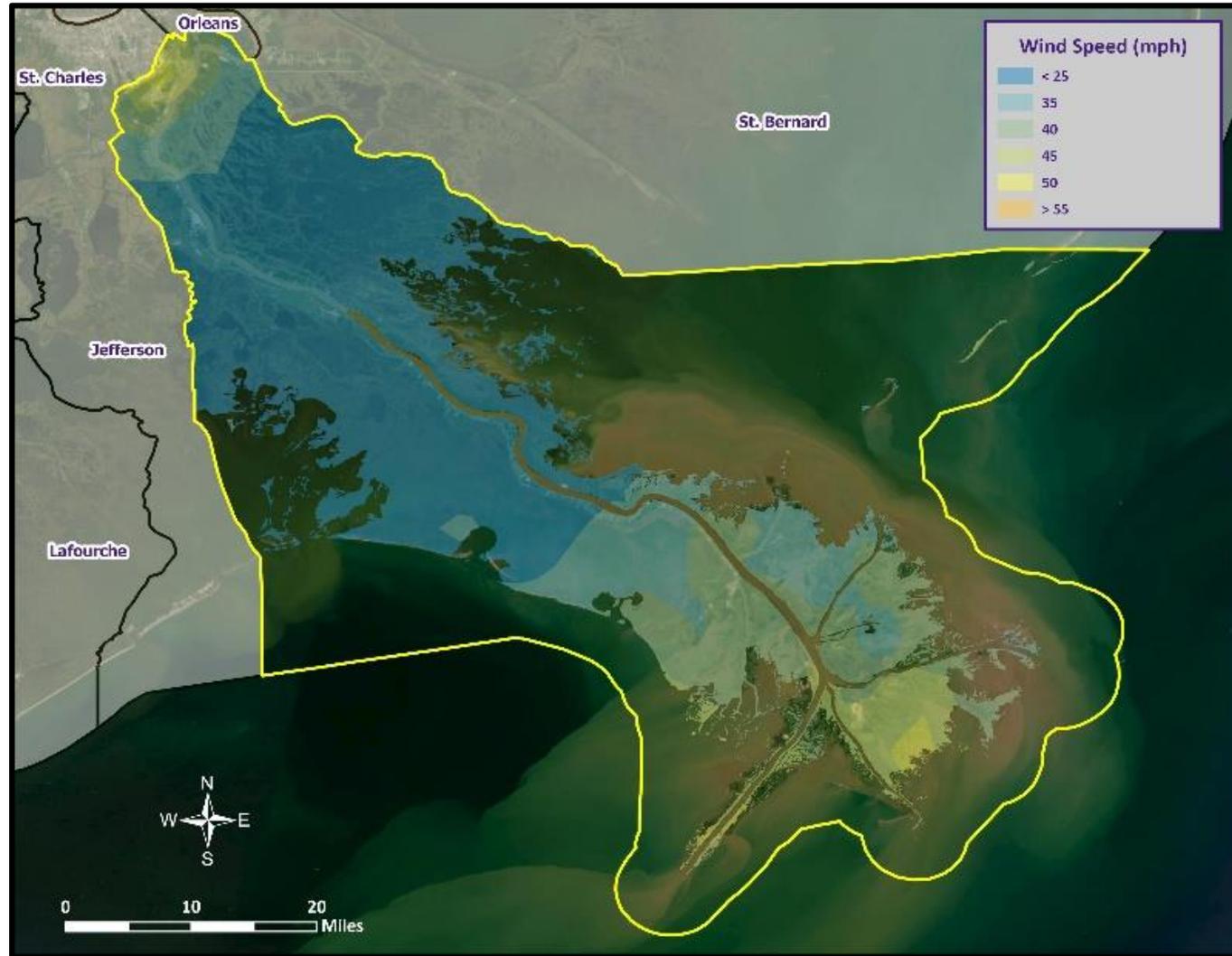
Hailstorm Density in Plaquemines Parish



Maximum Hail Size Probability



Maximum Wind Speed Probability



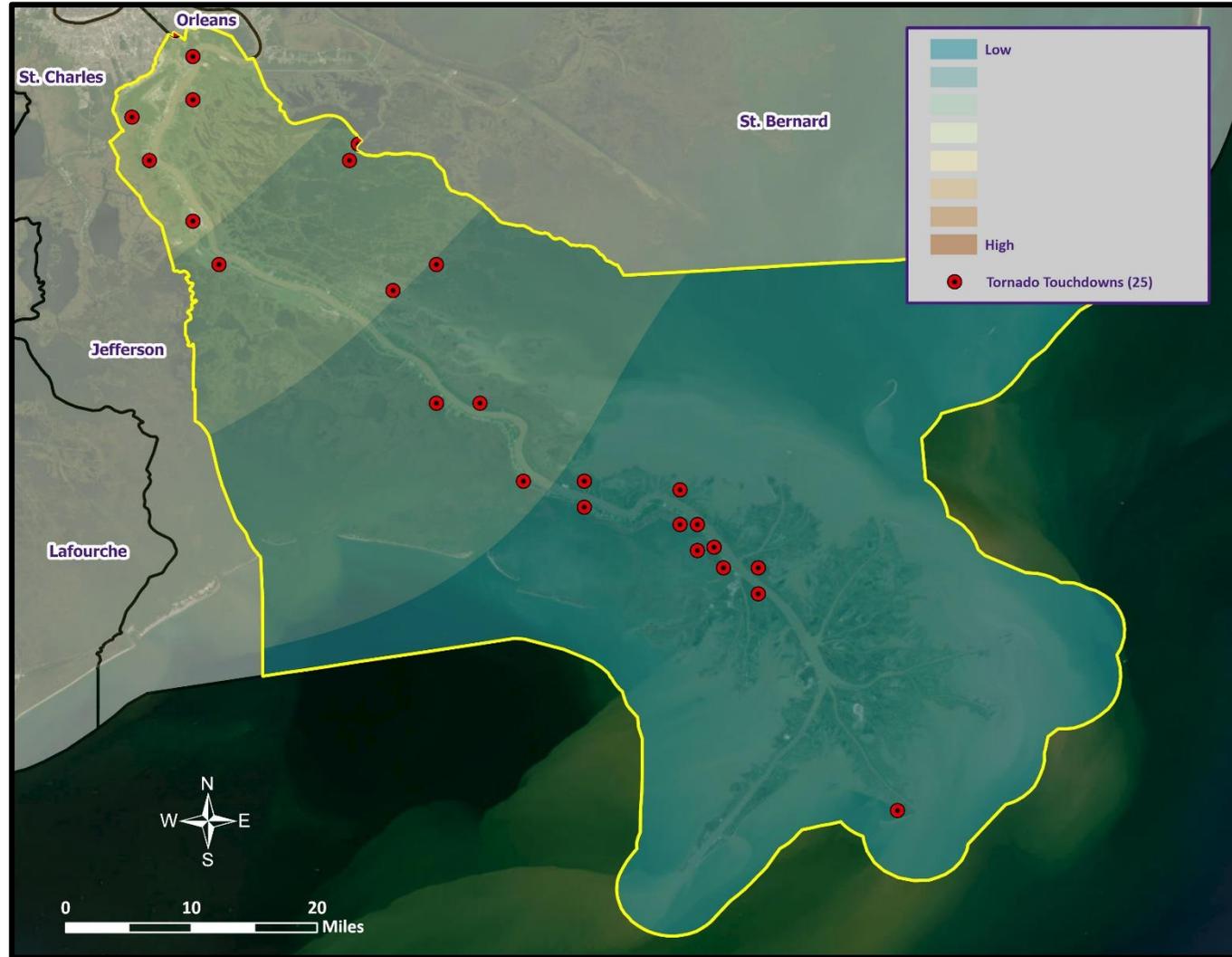
Tornadoes

- 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.

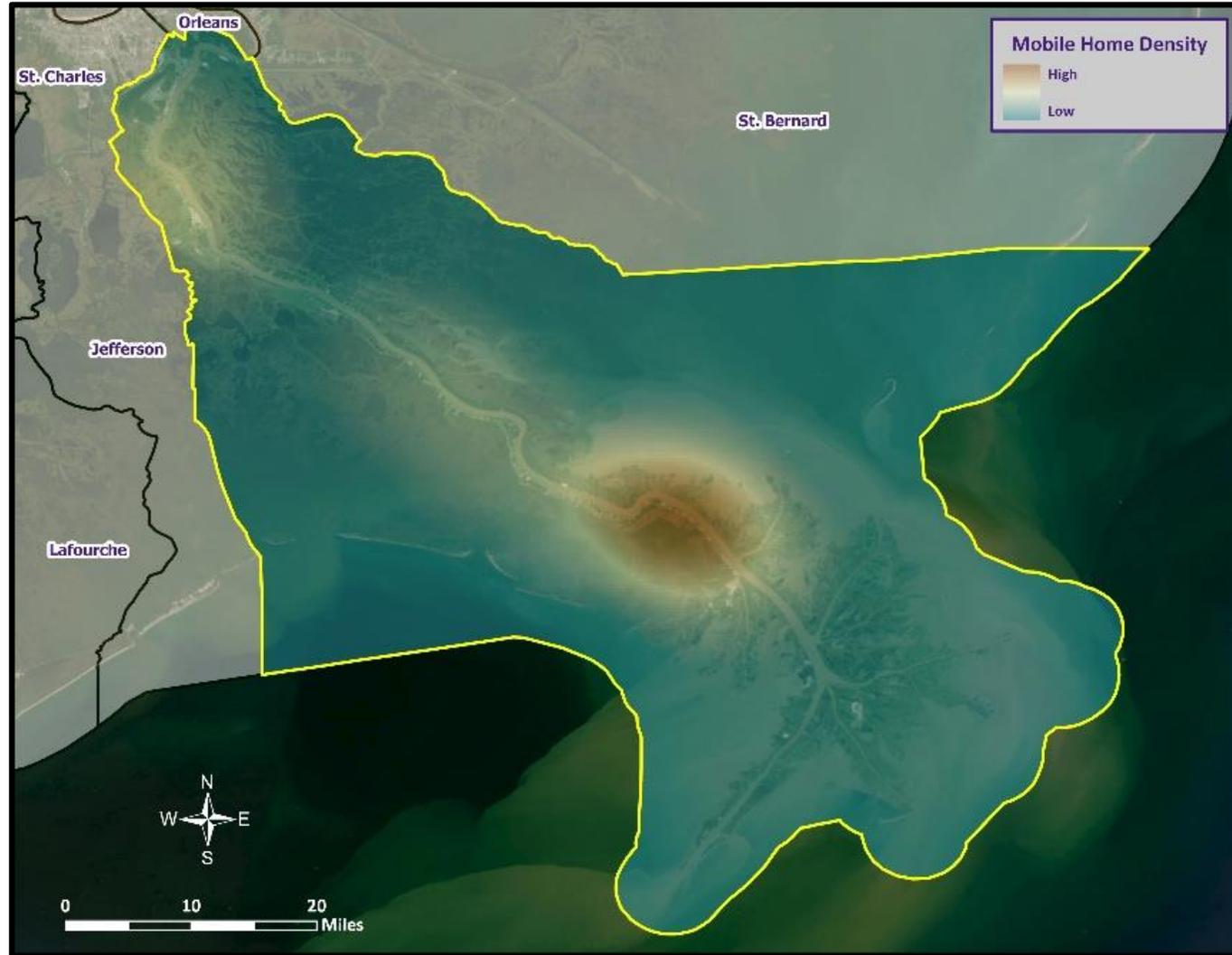
ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph



Tornadoes in Plaquemines Parish



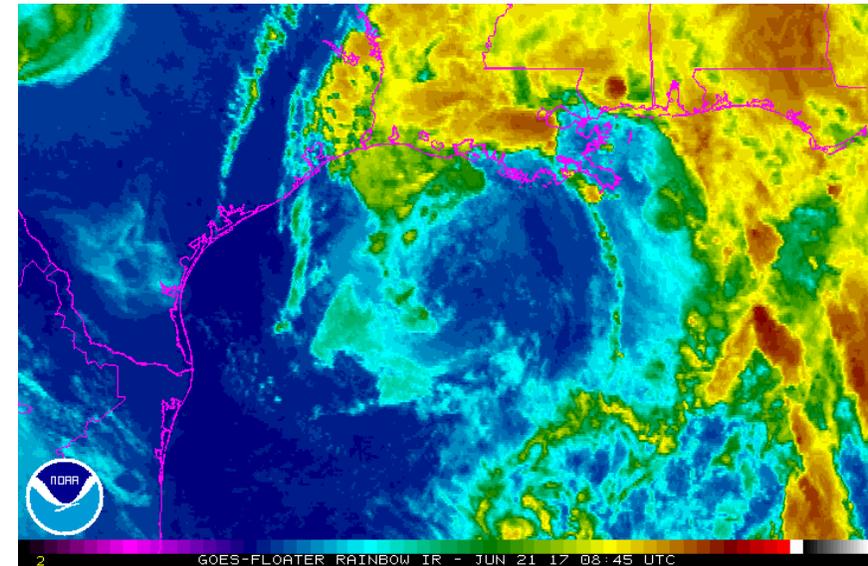
Manufactured Home Density



Tropical Cyclones

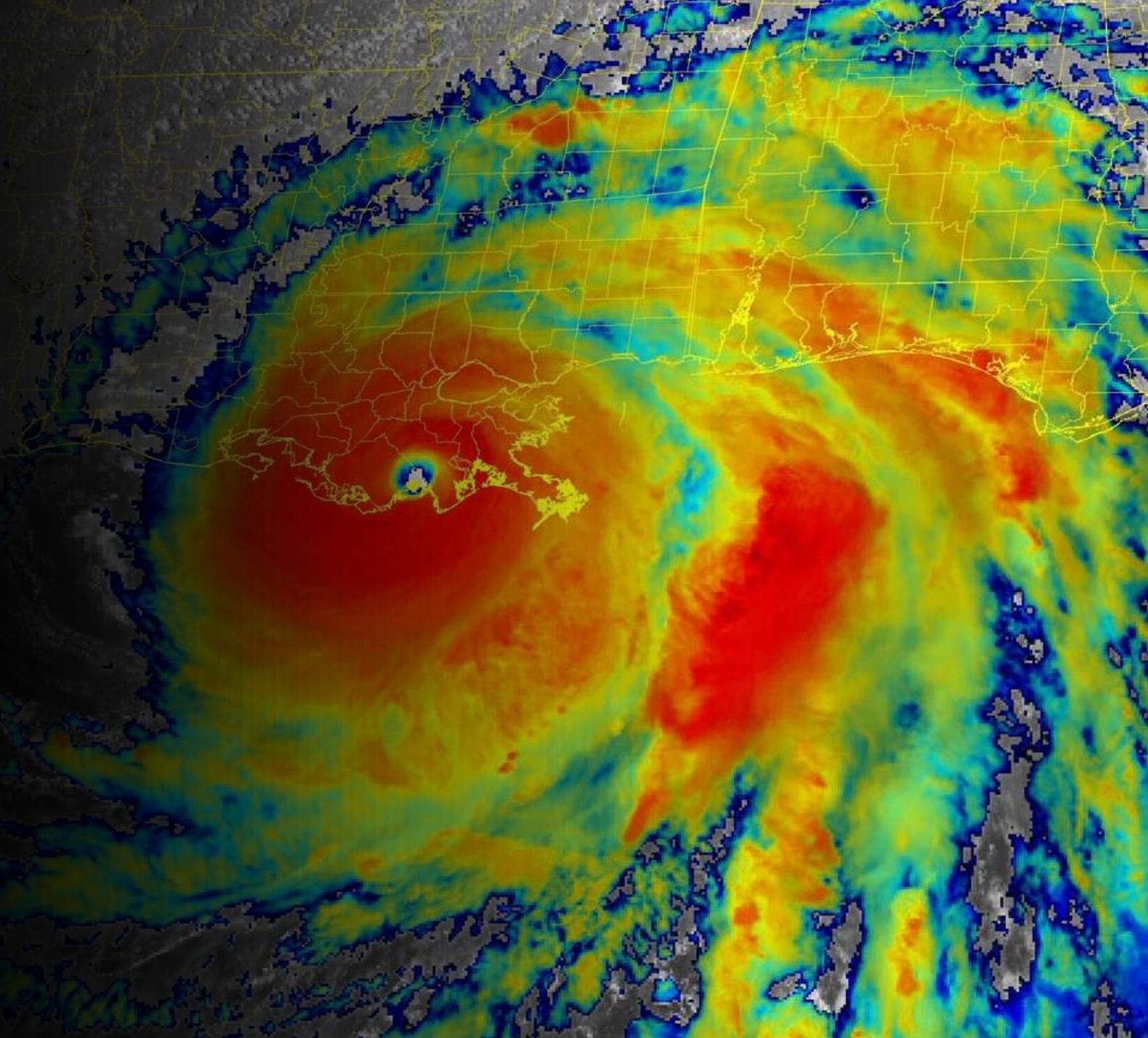
- Tropical cyclones are defined spinning, low-pressure air masses that draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes

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.



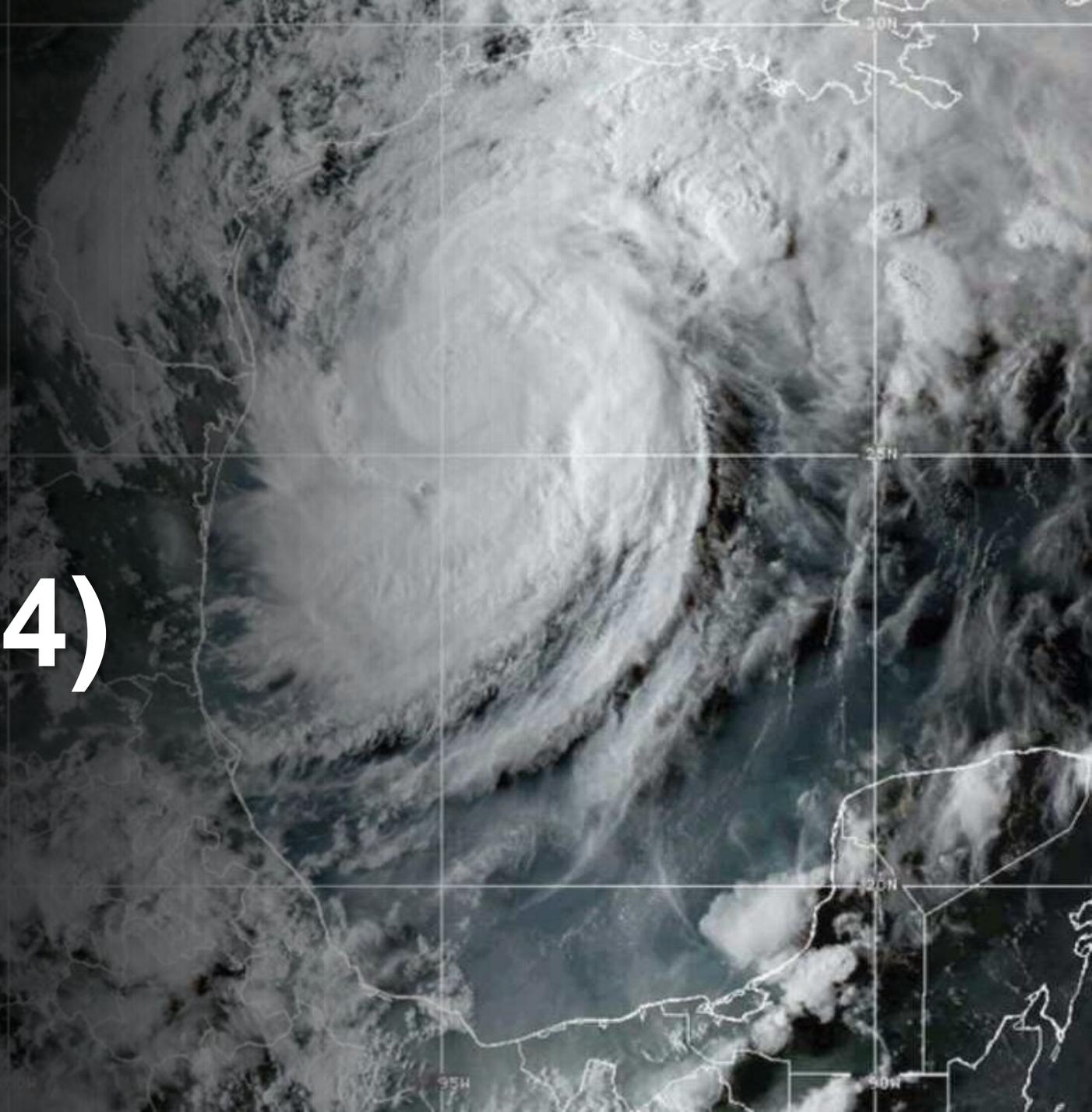


Hurricane Ida (2021)





Hurricane Francine (2024)



Plaquemines Parish Mitigation Goals

Goals & Objectives

1. Reduce losses to existing and future property due to hazards
2. Protect the health and well-being of the people of Plaquemines Parish from negative effects of hazards
3. Ensure the abilities of emergency services providers to continue operating during hazardous events
4. Protect existing public and private infrastructure from damage





Parish Hazard Mitigation Project Update

Plaquemines Parish OHSEP/
Plaquemines Parish Government Discussion

Public Outreach Activity #1

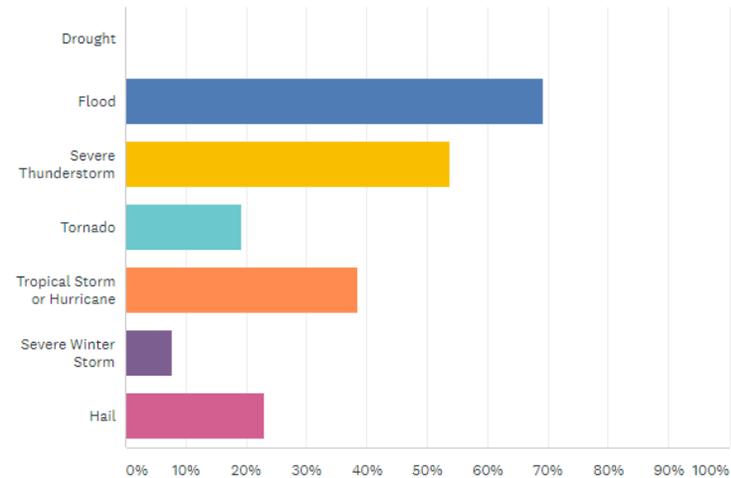
Hazard Mitigation Public Opinion Survey

https://lsu.qualtrics.com/jfe/form/SV_7WWHP1p7wYV6reS



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!



PLAQUEMINES PARISH PUBLIC MEETING

PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

1. HAZARD TYPE(S):

- A. COASTAL HAZARDS
- B. FLOODING
- C. LEVEE FAILURE
- D. SALTWATER INTRUSION
- E. SINKHOLES
- F. THUNDERSTORMS
- G. TORNADOES
- H. TROPICAL CYCLONES

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

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

The screenshot displays the website interface for the Plaquemines Parish Hazard Mitigation Plan. At the top, the LSU Stephenson Disaster Management Institute logo is visible, along with navigation links for 'SDMI HOME', 'f', and 't'. The main header is 'HAZARD MITIGATION', with sub-navigation for 'Intro', 'Events', 'FEMA Resources', 'Parish Plans', and 'Settings'. The page title is 'Plaquemines Parish' with a 'PLAN DUE DATE: AUGUST 30 2025'.

The 'DEVELOPMENT STATUS' section shows a progress bar with four stages: 'PLAN DEVELOPMENT' (yellow), 'PLAN REVIEW' (purple), 'PLAN ADOPTION' (purple), and 'COMPLETED' (purple). Below the bar, the status for each stage is listed: 'INITIAL PLANNING COMMITTEE', 'TBD', 'TBD', and 'TBD'.

The 'PARTICIPATING JURISDICTIONS' section is currently empty.

The 'UPCOMING MEETINGS' section lists three events:

DATE	EVENT	LOCATION	TIME	ACTION
SEP 19	2025 PLAQUEMINES PARISH HMP KICKOFF MEETING	Zoom	10:00 AM - 10:30 AM 9/19/2024	Download
OCT 28	2025 PLAQUEMINES PARISH PLANNING COMMITTEE MEETING	8056 LA-23, Belle Chasse, LA	10:00 AM - 11:00 AM 10/28/2024	Download
FEB 12	2025 PLAQUEMINES PARISH MITIGATION ACTION WORKSHOP	8056 LA-23, Belle Chasse, LA	10:00 AM - 12:00 PM 2/12/2025	Download

The 'PREVIOUS PLANS' section shows three 2020 documents available for download:

- PLAQUEMINES PARISH INITIAL PLANNING COMMITTEE MEETING
- PLAQUEMINES PARISH RISK ASSESSMENT & PUBLIC MEETING
- 2020 PLAQUEMINES PARISH HAZARD MITIGATION PLAN

The 'Survey' section includes an 'Access Survey' button.

The footer features the LSU logo.



Contact Us

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