Mississippi Department of Transportation

RESPONDING TO NATURAL DISASTERS – Lessons Learned

NRITS CONFERENCE & GRITS ANNUAL MEETING

September 16-19, 2012

Bob Chapman

Emergency Services Director

MDOT
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Since 1990 Mississippi has had 32 major Disaster Declarations involving severe storms, hurricanes, flooding, winter storms, tornadoes, drought and/or combinations of these.

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LESSONS LEARNED:

Must be Self-sustaining for 72 hours:

- **Communications**
- **Fuel**
- **Water & Food**
- **Manpower**

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MDOT Mission Statement:

Provide a safe intermodal transportation network that is planned, designed, constructed and maintained in an effective, cost efficient, and environmentally sensitive manner.

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Emergency Mission Statement:

***Prepare for*, *Respond to*, and *Recover from* any loss of personnel, resources or facilities due to an emergency solely within MDOT, or as part of a community, regional or national emergency.**

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Failing to Prepare is Preparing to Fail.

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Comprehensive Emergency Transportation Response Plan

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The “CETRP”

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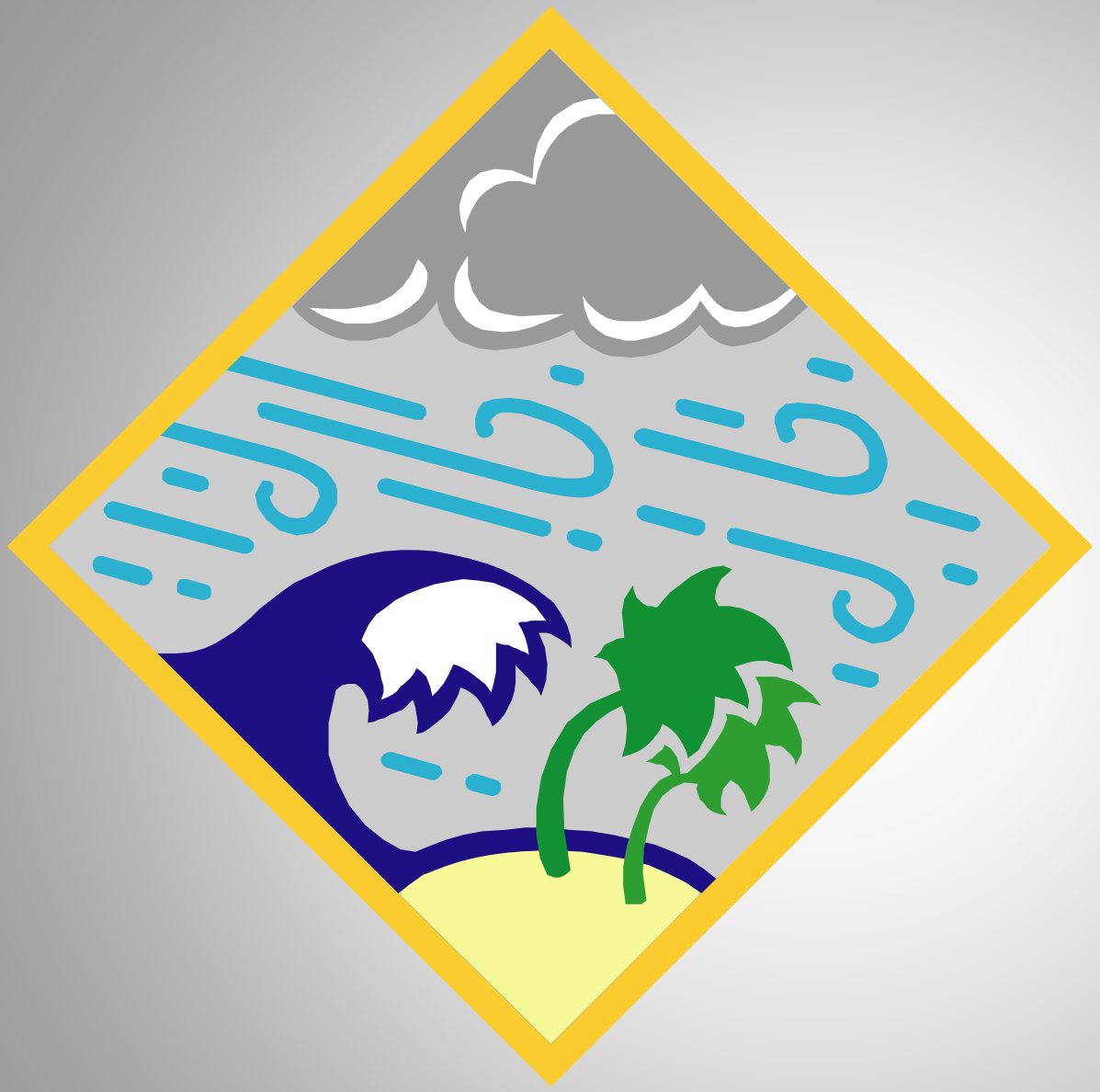

Betsy (cat 3) 1965

Camille (cat 5) 1969

Frederic (cat 3) 1979

Elena (cat 3) 1985

Georges (cat 2) 1998

Ivan (cat 3) 2004

Dennis (cat 3) 2005

KATRINA (cat 3) 2005

Gustav (cat 2) 2008

Isaac (cat 1) 2012

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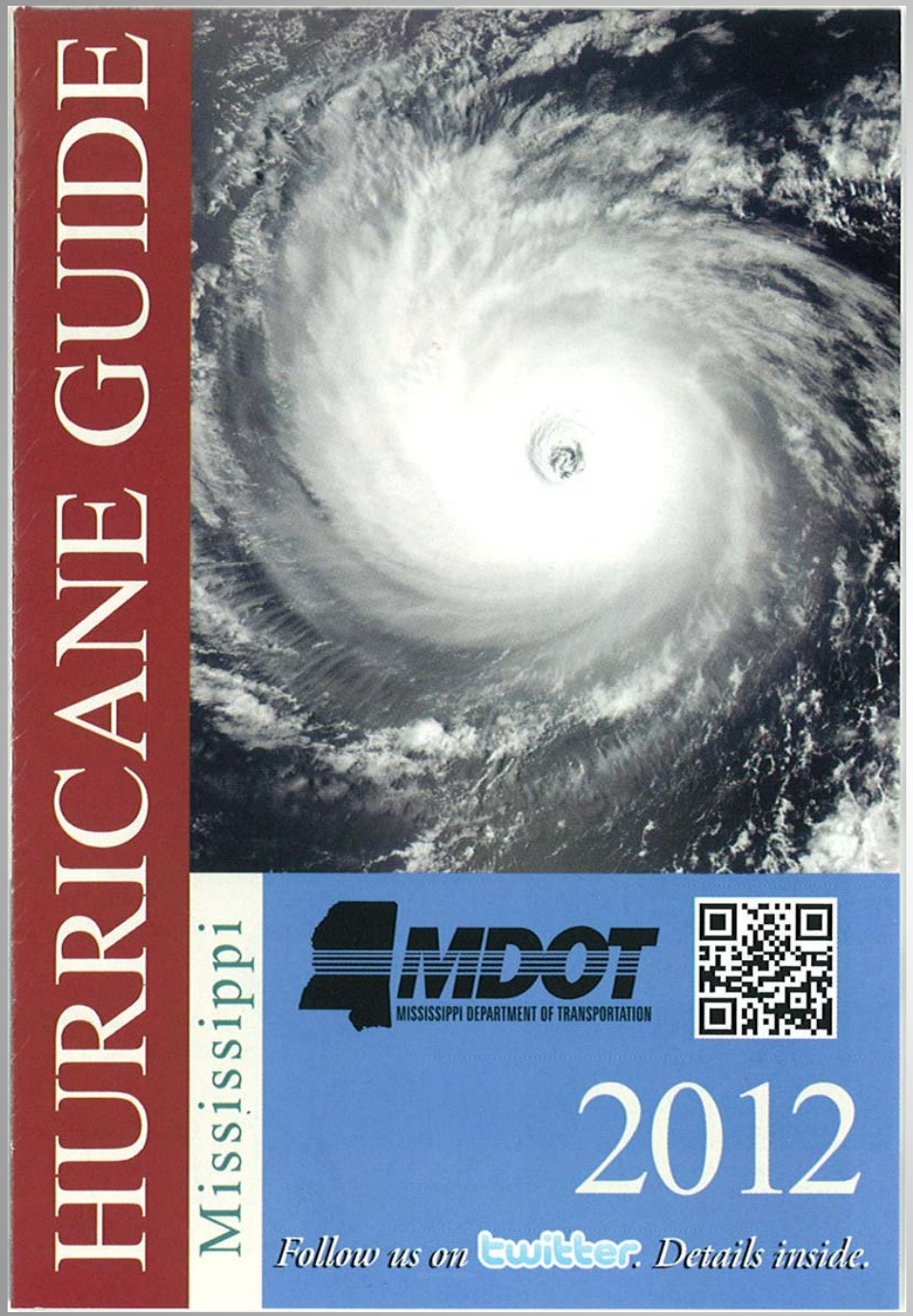

MDOT Hurricane Evacuation Guide

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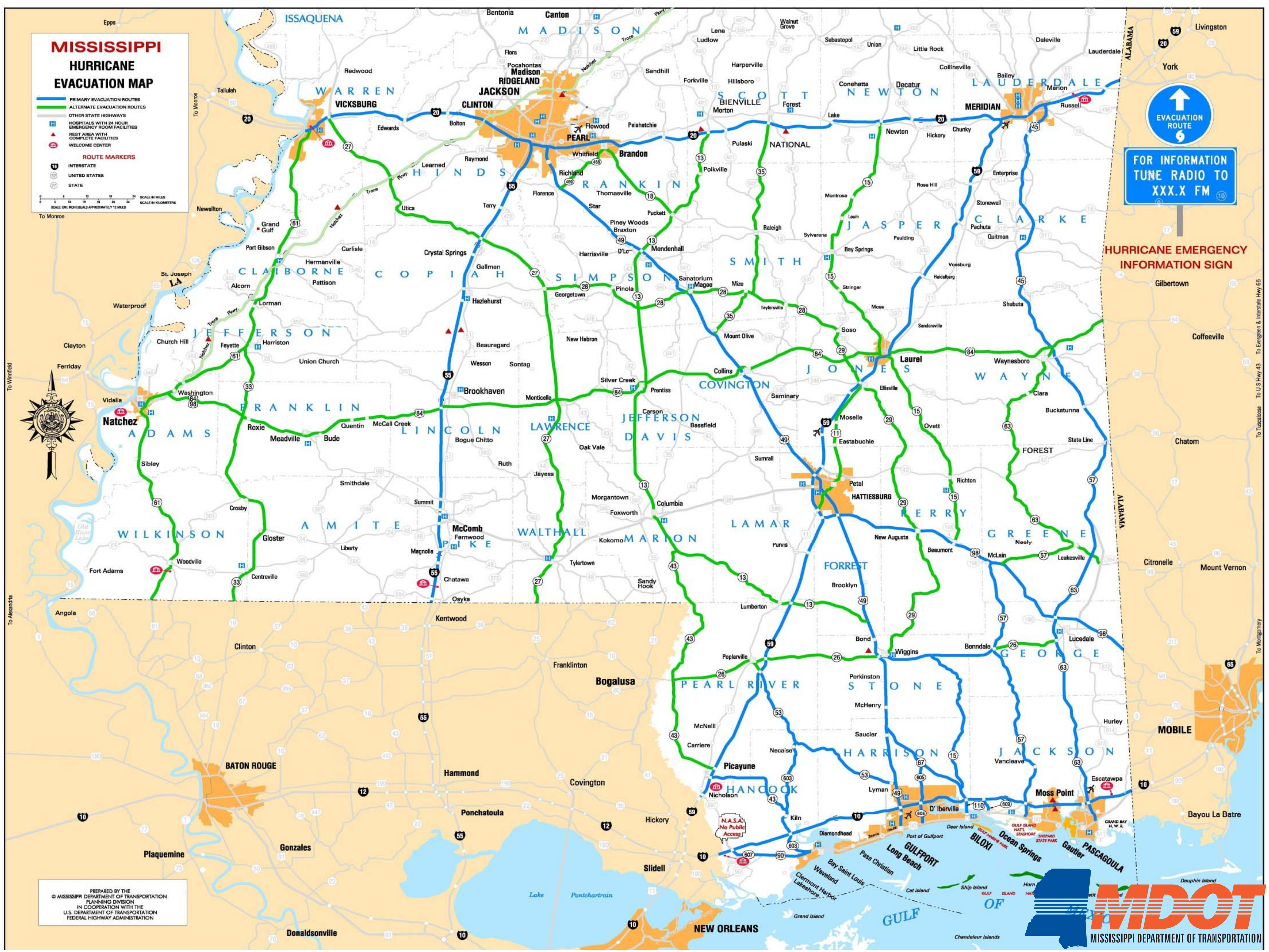
MISSISSIPPI
HURRICANE
EVACUATION MAP
PRIMARY EVACUATION ROUTES
ALTERNATE EVACUATION ROUTES
OTHER STATE HIGHWAYS
HOSPITALS WITH 24 HOUR EMERGENCY ROOM FACILITIES
REST AREA WITH COMPLETE FACILITIES
WELCOME CENTER
ROUTE MARKERS
INTERSTATE
UNITED STATES
STATE
SCALE IN MILES
SCALE IN KILOMETERS
EVACUATION ROUTE
FOR INFORMATION TUNE RADIO TO XXX.X FM
HURRICANE EMERGENCY INFORMATION SIGN
ISSAQUENA
MADISON
WARREN
HINDS
RANKIN
SCOTT
NEWTON
LAUDERDALE
CLAIBORNE
COPIAH
SIMPSON
SMITH
JASPER
CLARKE
JEFFERSON
FRANKLIN
LINCOLN
LAWRENCE
JEFFERSON DAVIS
COVINGTON
JONES
WAYNE
ADAMS
WILKINSON
AMITE
PIKE
WALTHALL
MARION
LAMAR
FORREST
PERRY
GREENE
GEORGE
PEARL RIVER
STONE
HARRISON
JACKSON
HANCOCK
VICKSBURG
CLINTON
JACKSON
RIDGELAND
Madison
PEARL
Brandon
MERIDIAN
Natchez
Brookhaven
McComb
Laurel
HATTIESBURG
Picayune
GULFPORT
BILOXI
PASCAGOULA
Moss Point
Long Beach
Ocean Springs
Gautier
D' Iberville
Pass Christian
Bay Saint Louis
Waveland
BATON ROUGE
NEW ORLEANS
MOBILE
Bogalusa
Hammond
Slidell
Lake Pontchartrain
GULF OF MEXICO
ALABAMA
LA
N.A.S.A. No Public Access
PREPARED BY THE © MISSISSIPPI DEPARTMENT OF TRANSPORTATION PLANNING DIVISION IN COOPERATION WITH THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
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CONTRAFLOW

- **Implemented only on request from Louisiana for evacuation assistance**
- **Involves MDOT District's 6 & 7, 21 miles of I-59 & 31 miles of I-55, respectfully**
- **Expected duration – 24 hours**
- **Notification from Louisiana between 72 & 60 hours prior to landfall**
- **Implement around 48 hours (for Katrina it was closer to 36 hours)**

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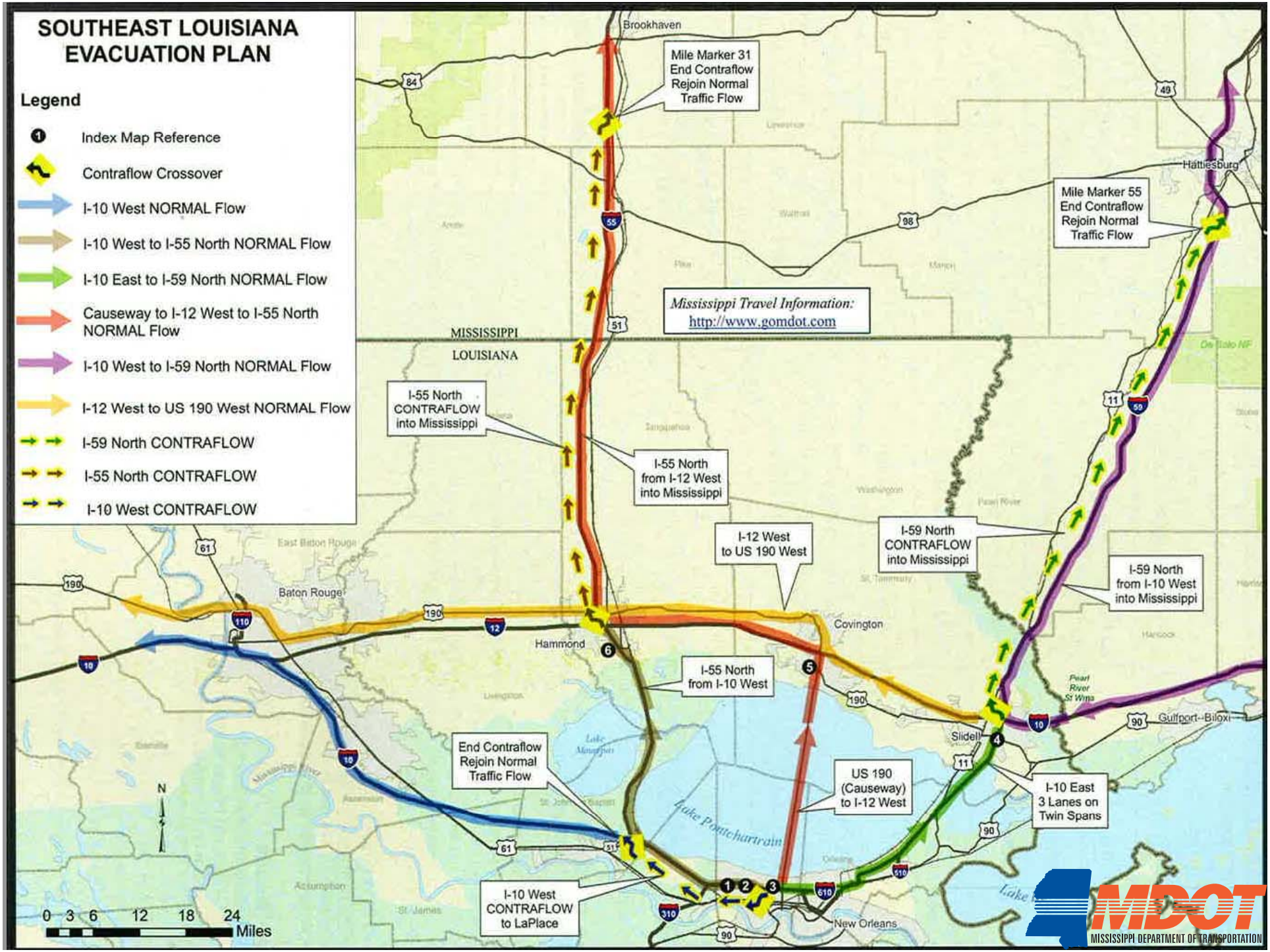
SOUTHEAST LOUISIANA
EVACUATION PLAN
Legend
Index Map Reference
Contraflow Crossover
I-10 West NORMAL Flow
I-10 West to I-55 North NORMAL Flow
I-10 East to I-59 North NORMAL Flow
Causeway to I-12 West to I-55 North NORMAL Flow
I-10 West to I-59 North NORMAL Flow
I-12 West to US 190 West NORMAL Flow
I-59 North CONTRAFLOW
I-55 North CONTRAFLOW
I-10 West CONTRAFLOW
Brookhaven
Mile Marker 31
End Contraflow
Rejoin Normal
Traffic Flow
Hattiesburg
Mile Marker 55
End Contraflow
Rejoin Normal
Traffic Flow
Mississippi Travel Information:
http://www.gomdot.com
MISSISSIPPI
LOUISIANA
I-55 North
CONTRAFLOW
into Mississippi
I-55 North
from I-12 West
into Mississippi
I-12 West
to US 190 West
I-59 North
CONTRAFLOW
into Mississippi
I-59 North
from I-10 West
into Mississippi
Baton Rouge
Hammond
Covington
I-55 North
from I-10 West
End Contraflow
Rejoin Normal
Traffic Flow
US 190
(Causeway)
to I-12 West
I-10 East
3 Lanes on
Twin Spans
Slidell
Gulfport-Biloxi
New Orleans
I-10 West
CONTRAFLOW
to LaPlace
Lake Pontchartrain
N
0 3 6 12 18 24
Miles
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Katrina Contraflow

I-59

I-55

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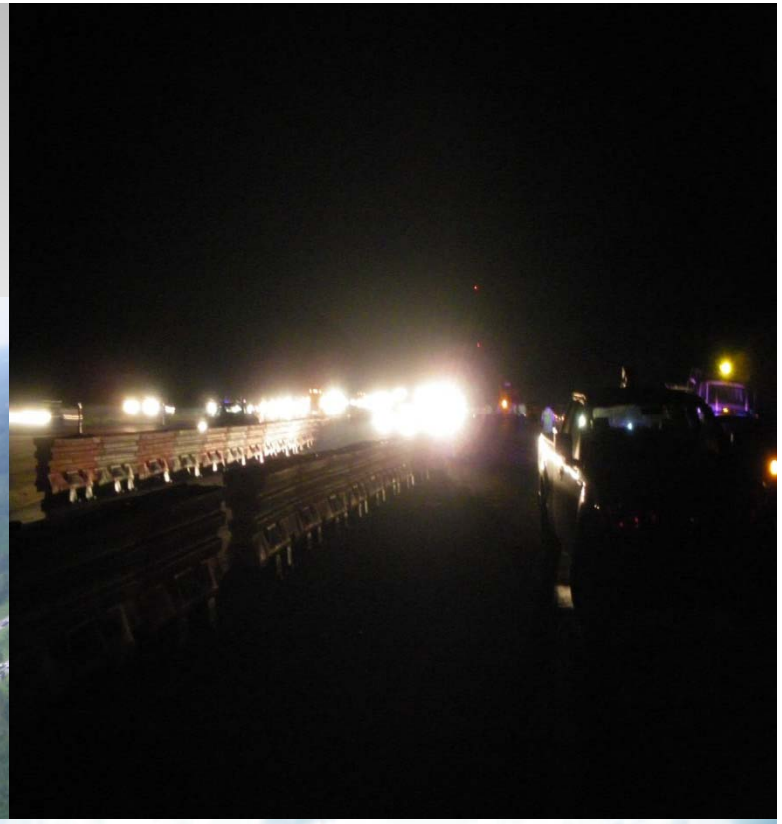
Gustav Contraflow

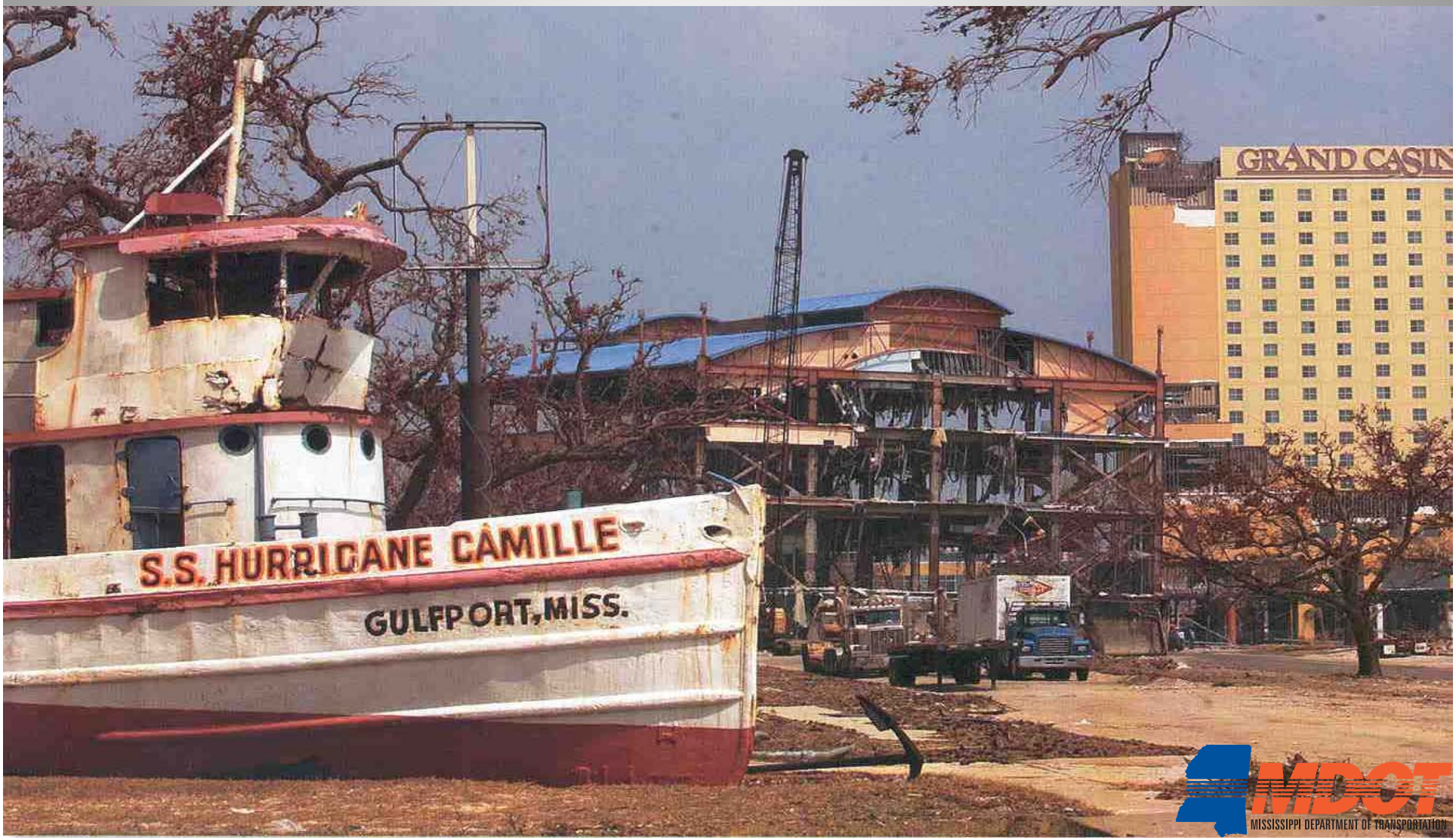
I-55

Gustav Contraflow

I-59



CAMILLE in 1969 was then the storm of the century. **KATRINA** in 2005 is now the storm all future storms will be measured against.



Hurricane categories

	Tropical storm	Category 1	Category 2	Category 3	Category 4	Category 5
Wind speed	39-74 mph (63-119 kph)	74-95 mph (119-153 kph)	96-110 mph (154-177 kph)	111-130 mph (178-209 kph)	131-155 mph (210-249 kph)	155+ mph (250+ kph)
Storm surge	Less than 5 ft. (1.5 m)	4-5 ft. (1.2-1.5 m)	6-8 ft. (1.8-2.4 m)	9-12 ft. (2.7-3.7 m)	13-18 ft. (4-5.5 m)	More than 18 ft. (5.5 m)

Source: National Hurricane Center Graphic: Helen Lee McComas, Lee Hulteng, Pal

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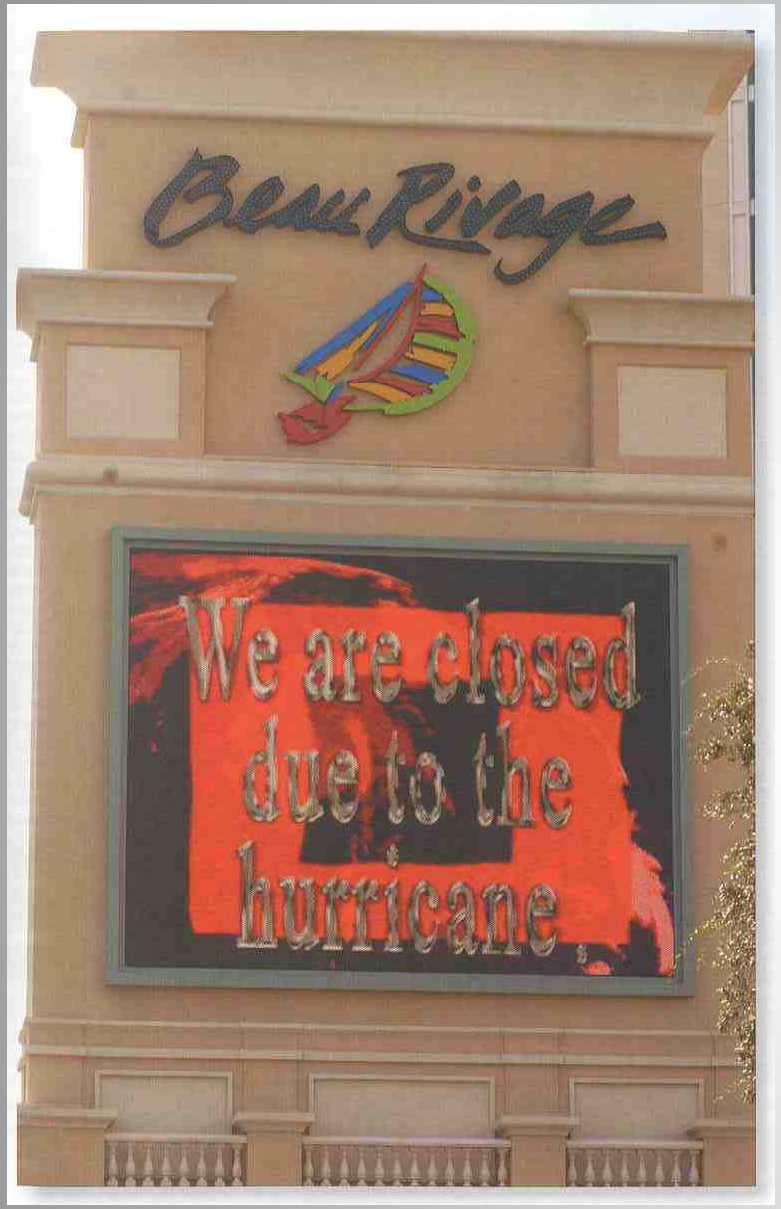

Time To Leave

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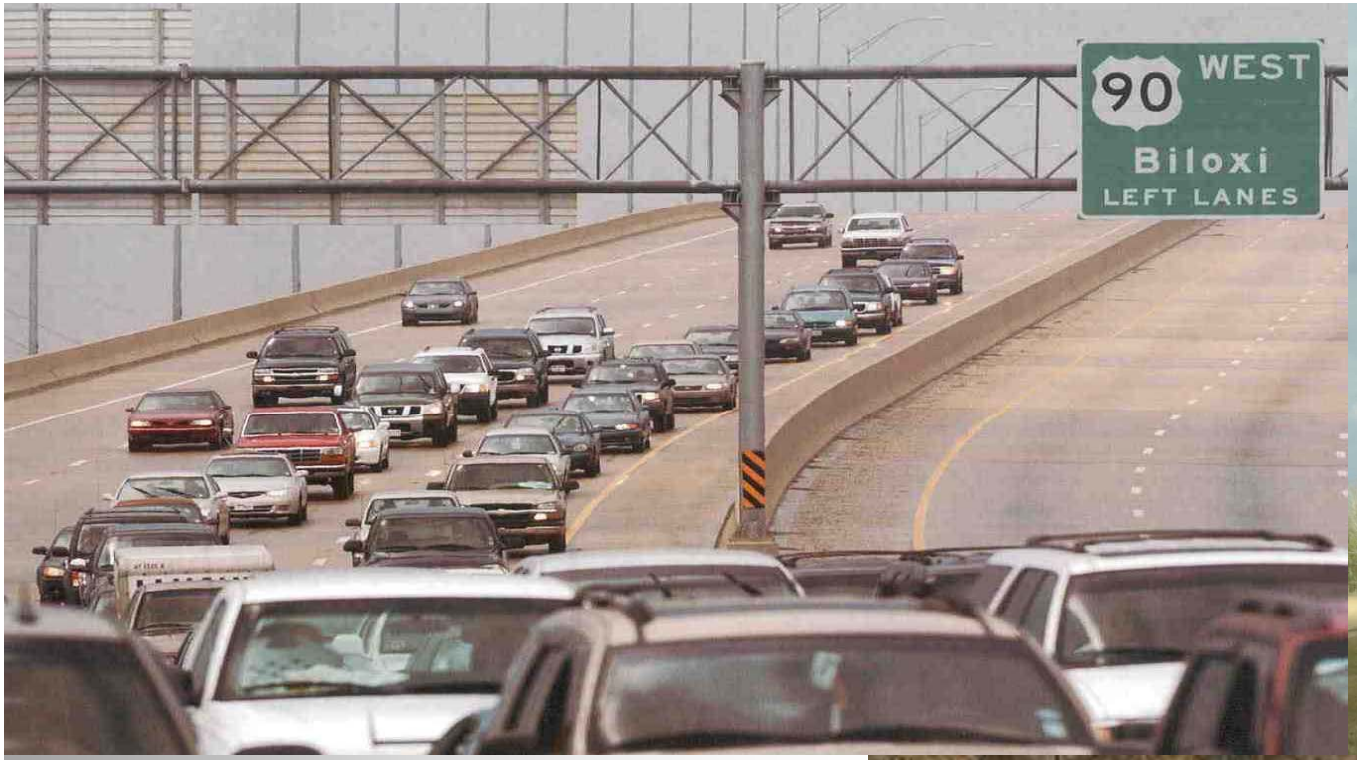
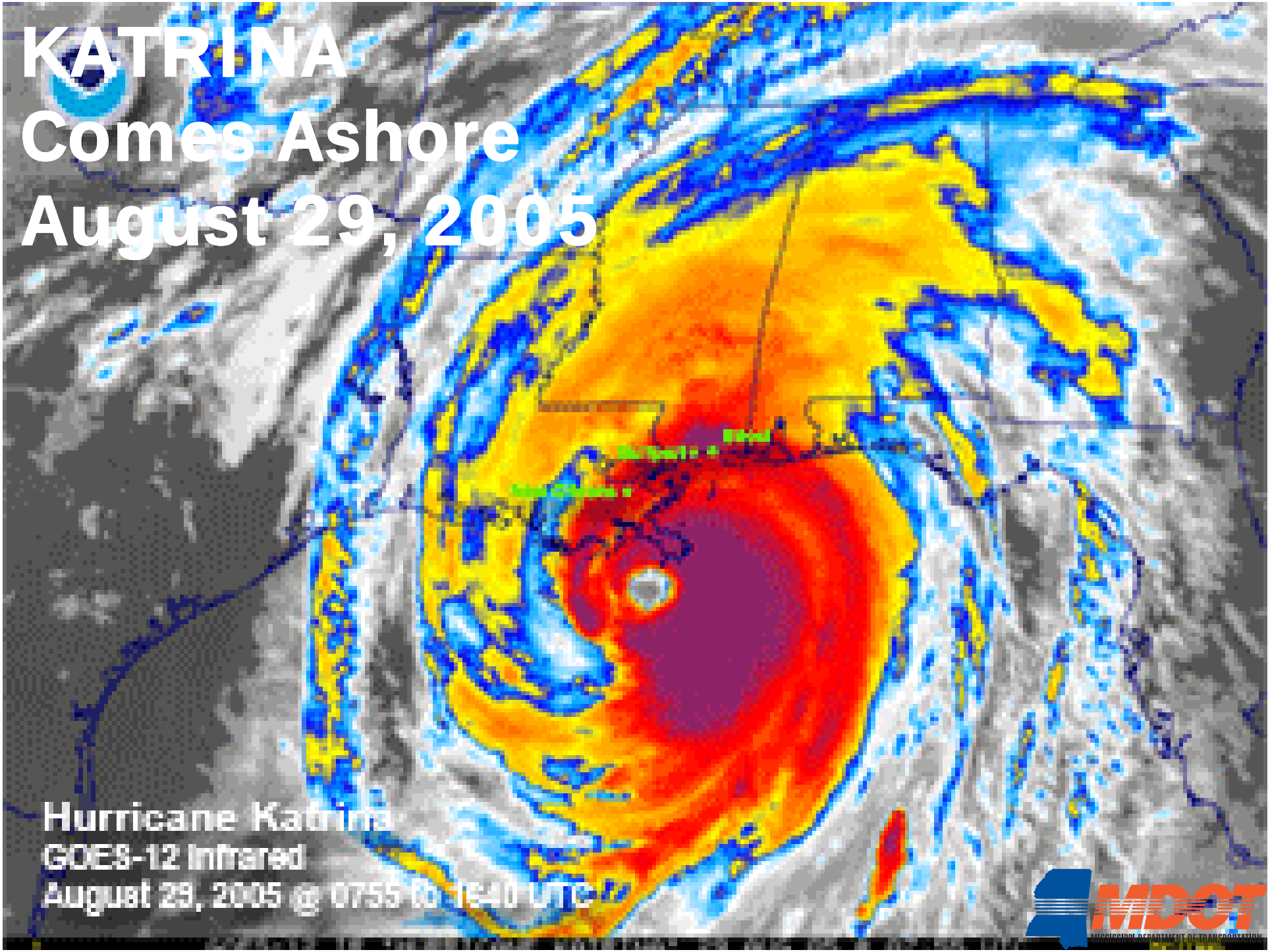


Evacuation

Hide from the Wind,
Run from the Water.


KATRINA
Comes Ashore
August 29, 2005
Hurricane Katrina
GOES-12 Infrared
August 29, 2005 @ 0755 to 1640 UTC
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BEFORE & AFTER
Before
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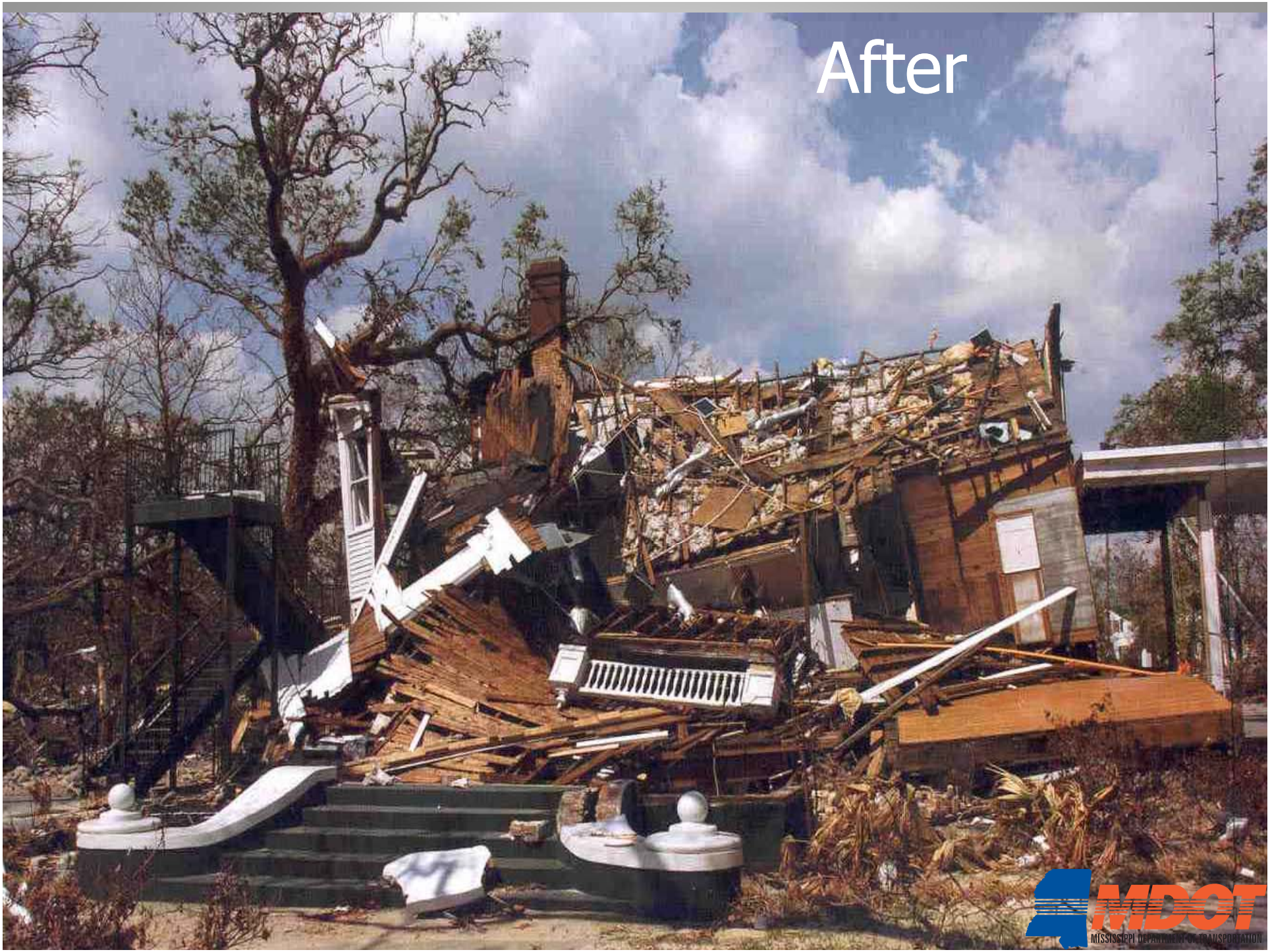
After
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WAFFLE
HOUSE
RUBY TUESDAY
AUTO TITLE & LOANS
PAYDAY LOANS
Before
MDOT


After
WAFFLE
HOUSE
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Before


After
Casino Magic
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Before
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After
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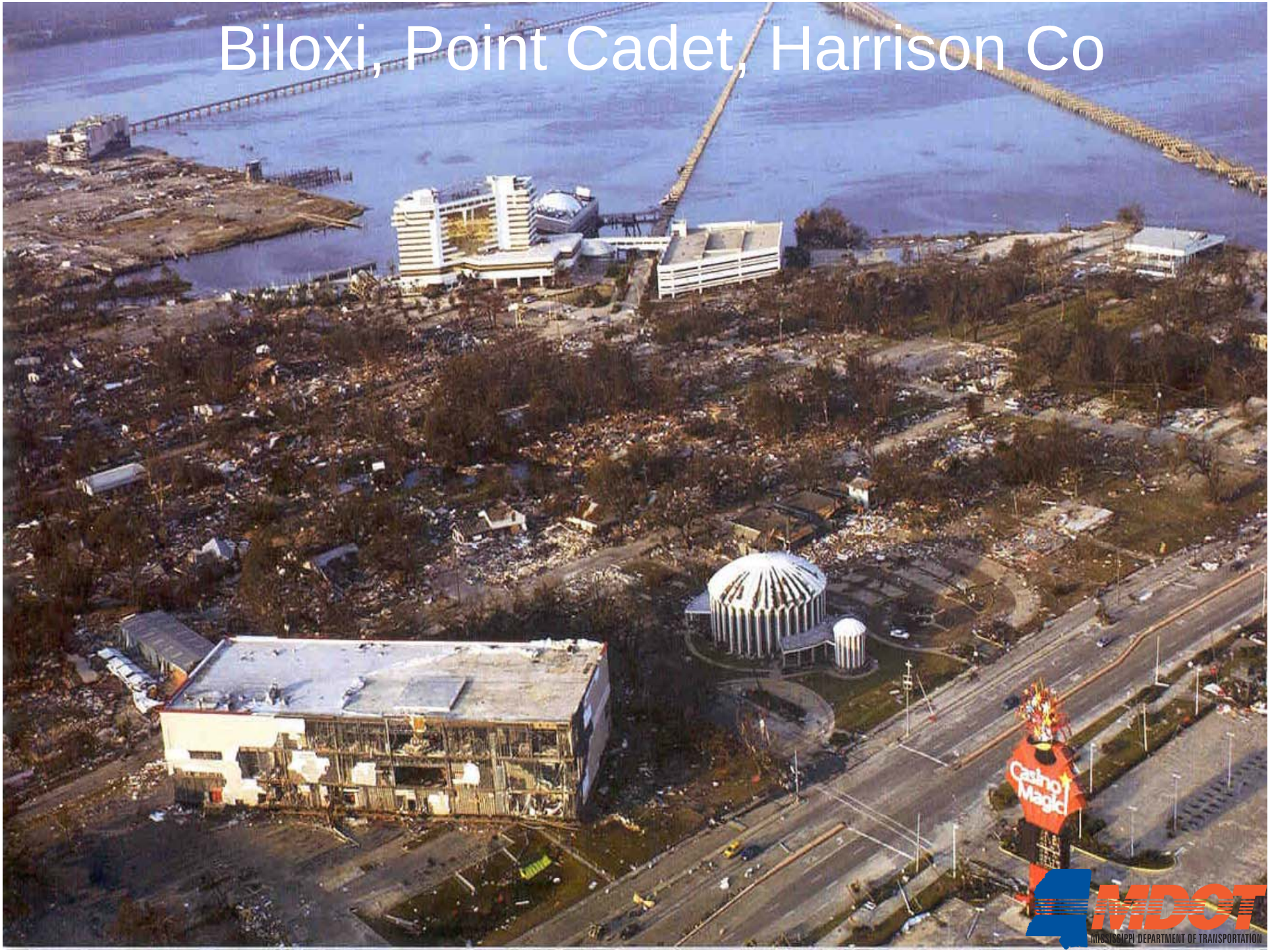
Ocean Springs, Jackson County

Biloxi, Point Cadet, Harrison Co

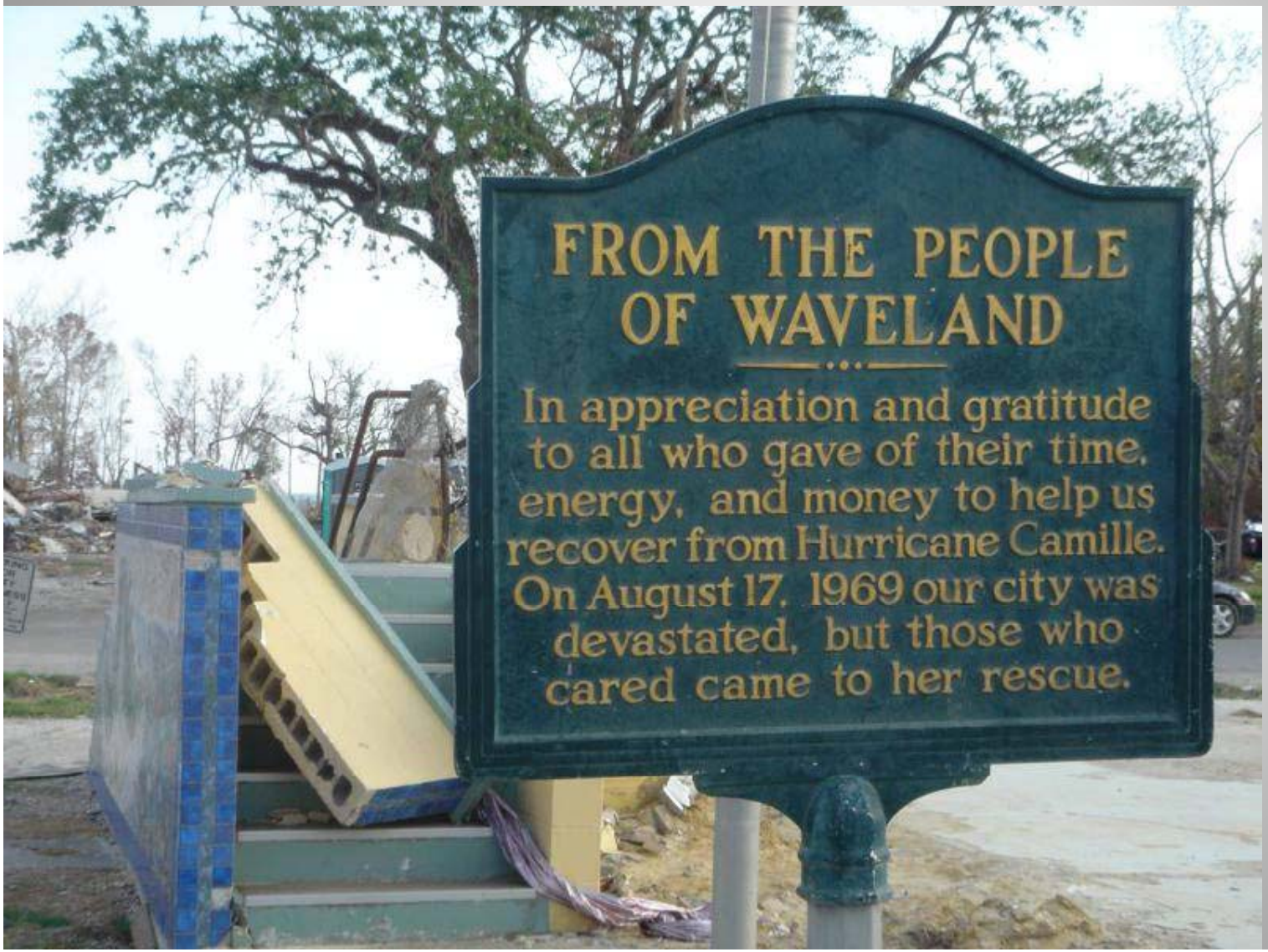


St. Charles Condos, Biloxi

Gulfport, Harrison County

Bay St. Louis, Hancock County

90% of Waveland Destroyed



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Colotex
SEP 8 2005
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AFTERMATH

- Record setting storm surge of over 30 ft
- 3rd strongest landfall in U.S. history
- 6th strongest storm ever in Atlantic Basin
- 90,000 square mile disaster area
- Over 1 million people displaced
- 48 of Mississippi's 82 counties declared disaster areas

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FINANCIAL COSTS TO MDOT

- FHWA ER $ 1 Billion, 13 Million

  (includes FAS Infrastructure and 1st Pass Debris, ~ 5.5 million cubic yds)

- FEMA PA $ 25 Million

  (includes non-FAS Infrastructure and 2nd Pass Debris, an estimated 850 K cubic yds)

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MDOT EMPLOYEES DIRECTLY AFFECTED BY THE STORM

- MDOT employs 3,200 statewide
- 1,500 MDOT employees participated in the emergency response
- 63 employee families applied for relief with varying degrees of damage
- 16 families reported a total loss
- No life lost in the MDOT family

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LESSONS LEARNED:

Must be Self-sustaining for 72 hours: *(to include)*

- **Communications**
- **Fuel**
- **Water & Food**
- **Manpower**

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Communications

- New 700 mHz Motorola System on the Coast now provides a statewide interoperability platform. Currently operational in three quarters of the state
- 800 MHz radios thru Southern Link provided communications for MDOT District 6, including coastal counties
- Satellite radio/phone backup (90 units)

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FUEL

- **Combined MDOT fuel storage capacity increased pre-Katrina from 108,000 gallons (57,000 unleaded/51,000 diesel) to 344,000 gallons today**
- **Current statewide MDOT fuel reserves are:**
  - **166,500 gallons unleaded**
  - **177,500 gallons Diesel**
- **Available fuel delivery resources:**
  - **Two 9,200 gallon tanker**
  - **Four 2,200+ gallon bob-trucks**

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Water & Food

- **Bottled water and MRE's are stockpiled in Jackson, ready for immediate release to MDOT work areas**
- **Distribution plans in place to transport needed supplies to affected work locations**

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Manpower

Soon after landfall, as roads are cleared, travel trailers will be positioned at MDOT's forward operations area to accomadate MDOT emergency workers. These trailers have the capacity to accommodate upwards to 80 workers with feeding, sleeping and shower facilities. Trailers are equipped with electrical, water and sewer connections with an onsite generator providing a backup power supply.

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TMC Emergency Operations

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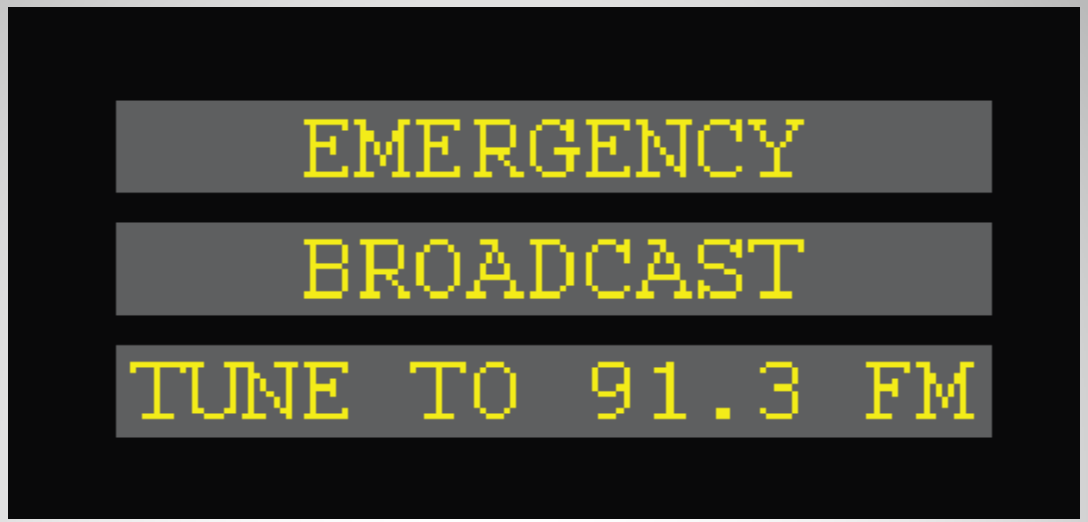
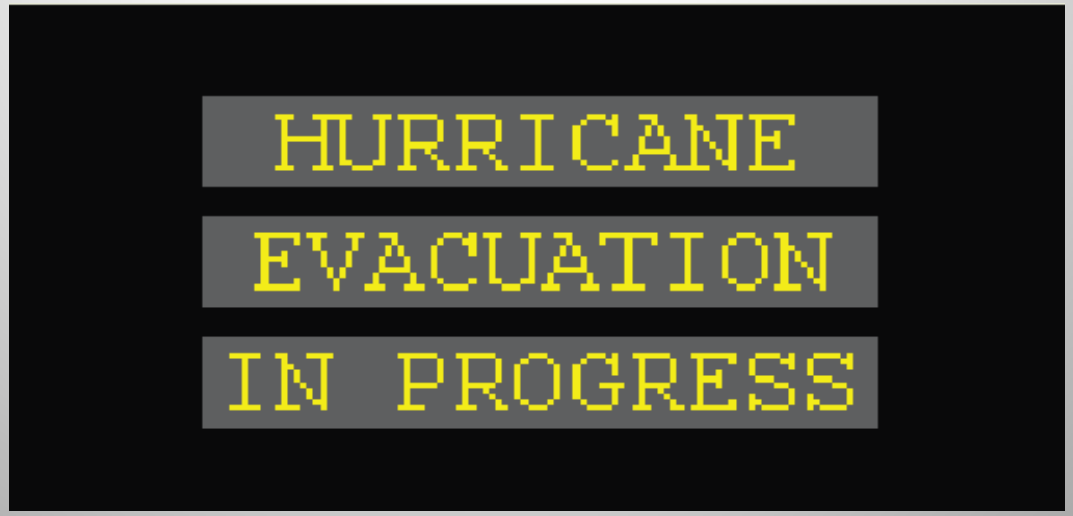
DYNAMIC MESSAGE SIGNS (DMS)

Before



During



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DYNAMIC MESSAGE SIGNS (DMS)

After

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ELECTRONIC BILLBOARD INFORMATION

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Jones Co 1987

Lauderdale, Rankin
Covington Co's 1992

Newton 2002

Columbus 2002

Simpson Co 2009

Yazoo City 2010

Choctaw, Webster,
Clay Co's 2011

Smithville 2011

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Tornadoes

Tornadoes can be a big problem anytime in Mississippi. MDOT response:

- **roadway clearance**
- **debris removal**
- **infrastructure damage**
- **traffic control**

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Newton Tornado
Dec 2002

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Columbus Tornado
Nov 2002

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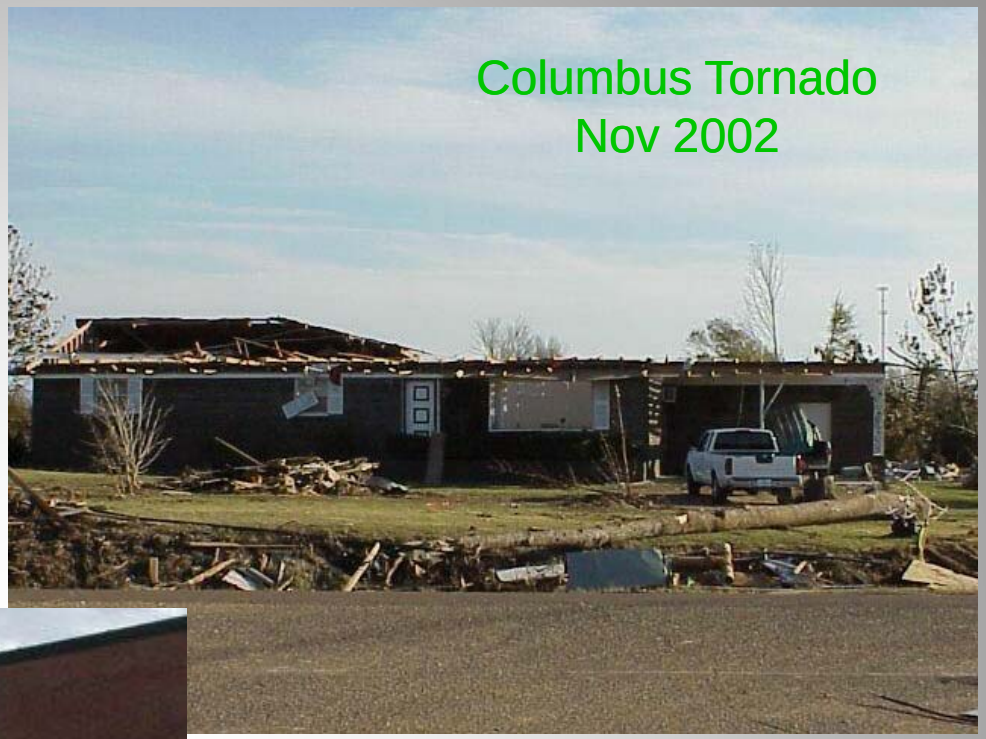

Columbus Tornado
Nov 2002

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Yazoo City Tornado
April 2010

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Yazoo City Tornado
April 2010


Yazoo City Tornado
April 2010
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Yazoo City Tornado
April 2010
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Yazoo City Tornado
April 2010
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Clinton Tornado
April 2011
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Clinton Tornado
April 2011

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Smithville Tornado
April 27, 2011

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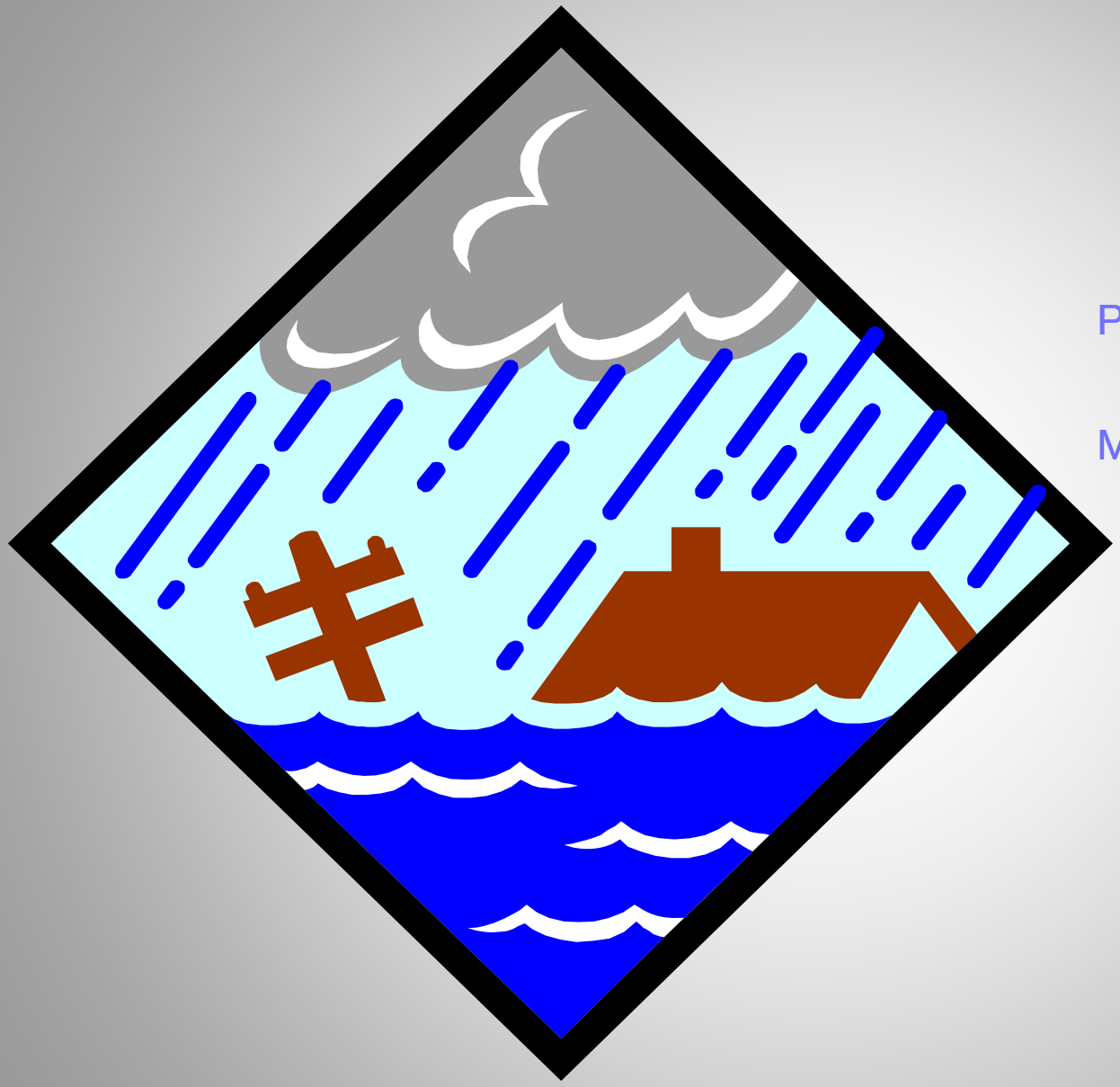

Pearl River, Easter 1979

MS River/Backwater 2011

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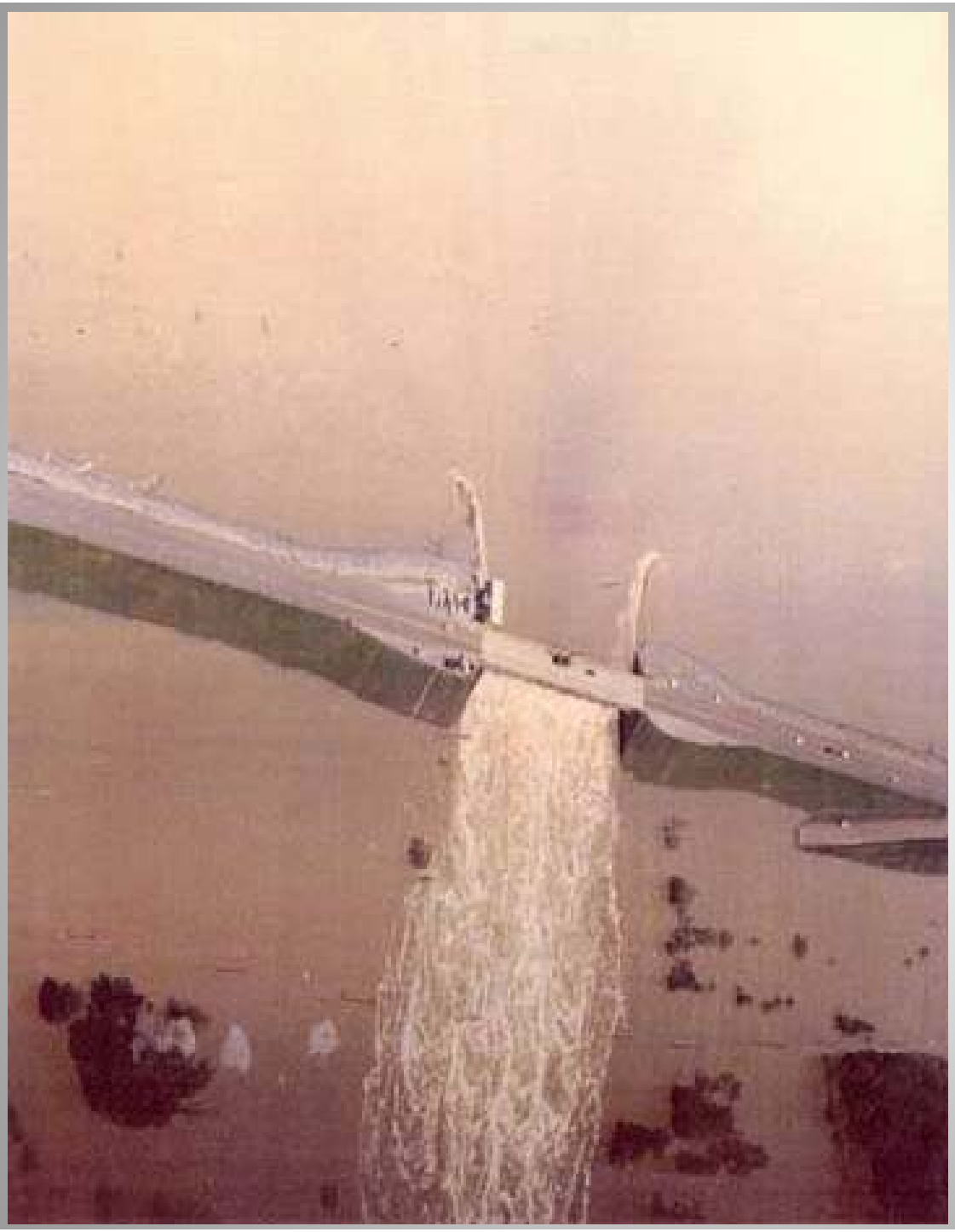

Easter Flood
April 1979

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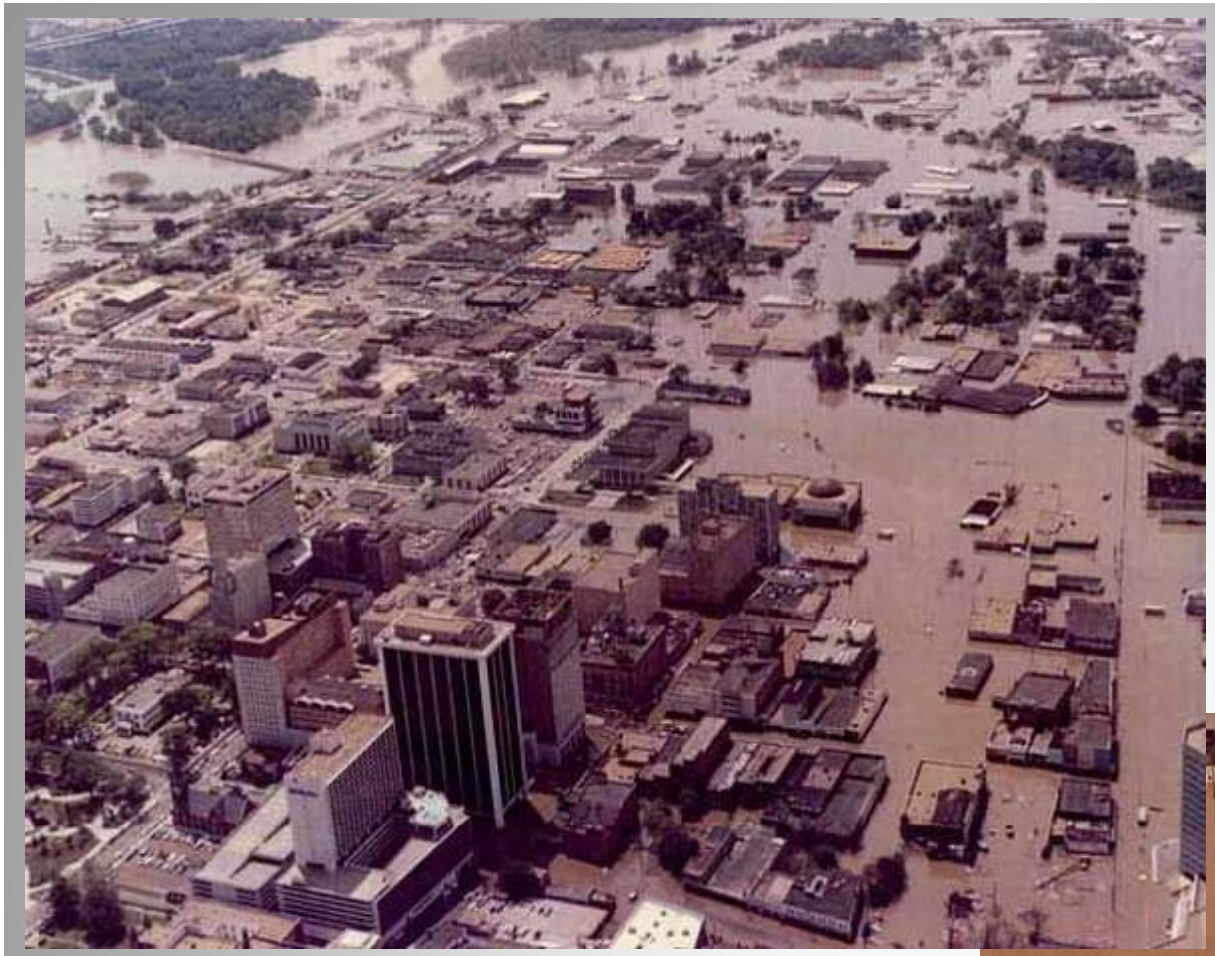

Easter Flood
April 1979

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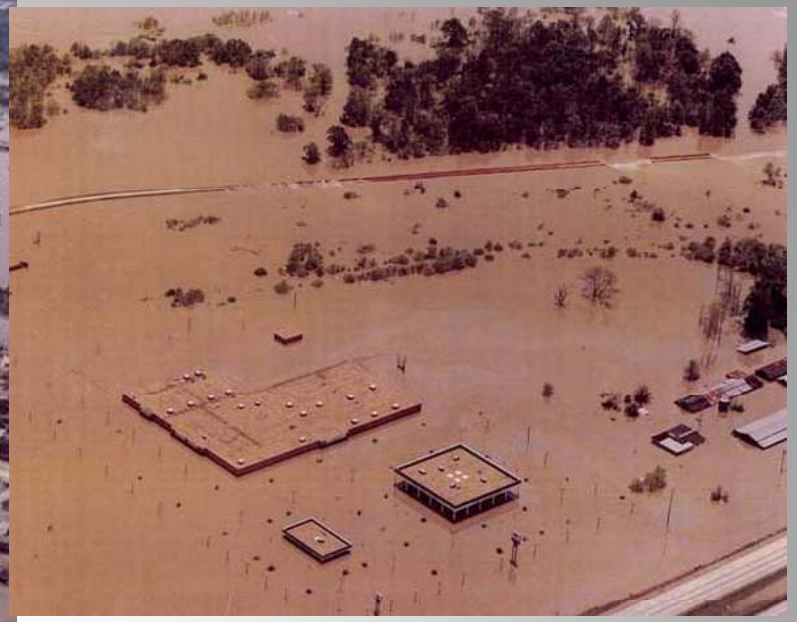
Easter Flood
April 1979



Easter Flood
April 1979

MS River Flood
May 2011

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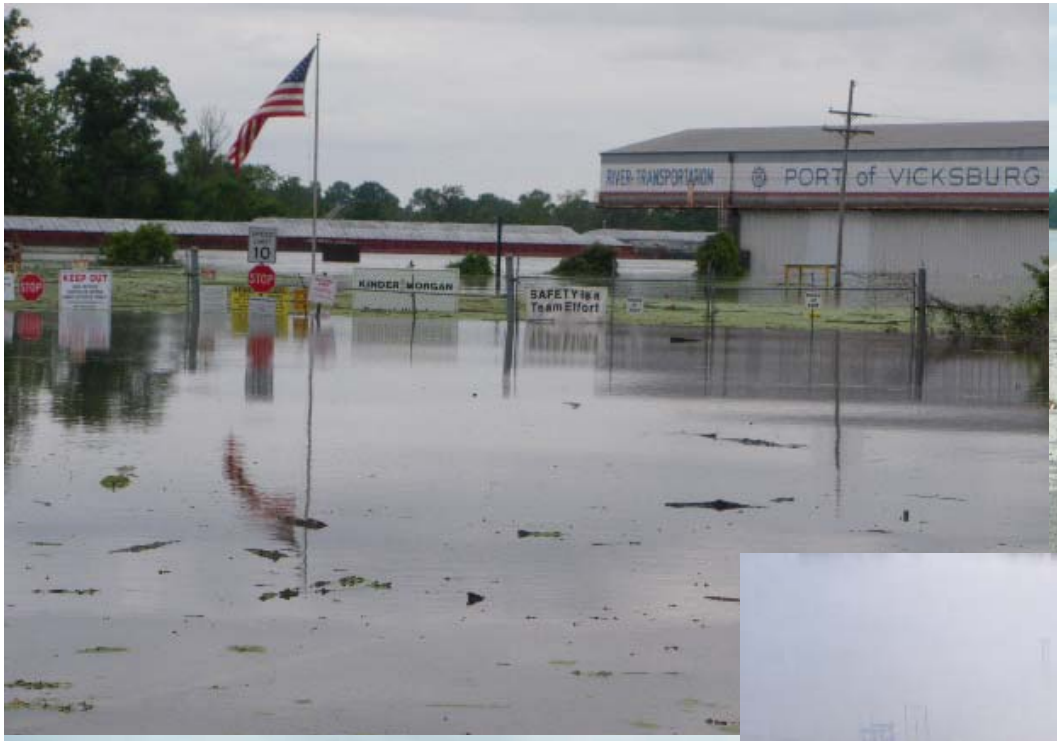
MS River Flood
May 2011



Backwater Flooding
May 2011

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Backwater Flooding,
Satartia, MS
May 2011


Backwater Flooding,
Wolf Lake
May 2011
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Flooding distresses Everything
MS River, May 2011
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Ice Storm 1994

Ice Storm 1997

Ice Storm 1998

Ice Storm 1999

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New Madrid 1811-12
M7.7 - killed ?

Northridge, CA 1994
M6.8 - killed 72

Haiti, Jan 2010
M7 - killed 230,000

Chile, Feb 2010
M8.8 - killed 500

New Zealand, Sept 2010
M7 - killed 0

New Zealand, Feb 2011
M6.3 - killed 161

Japan, Mar 2011
M9 - killed 21,000

?

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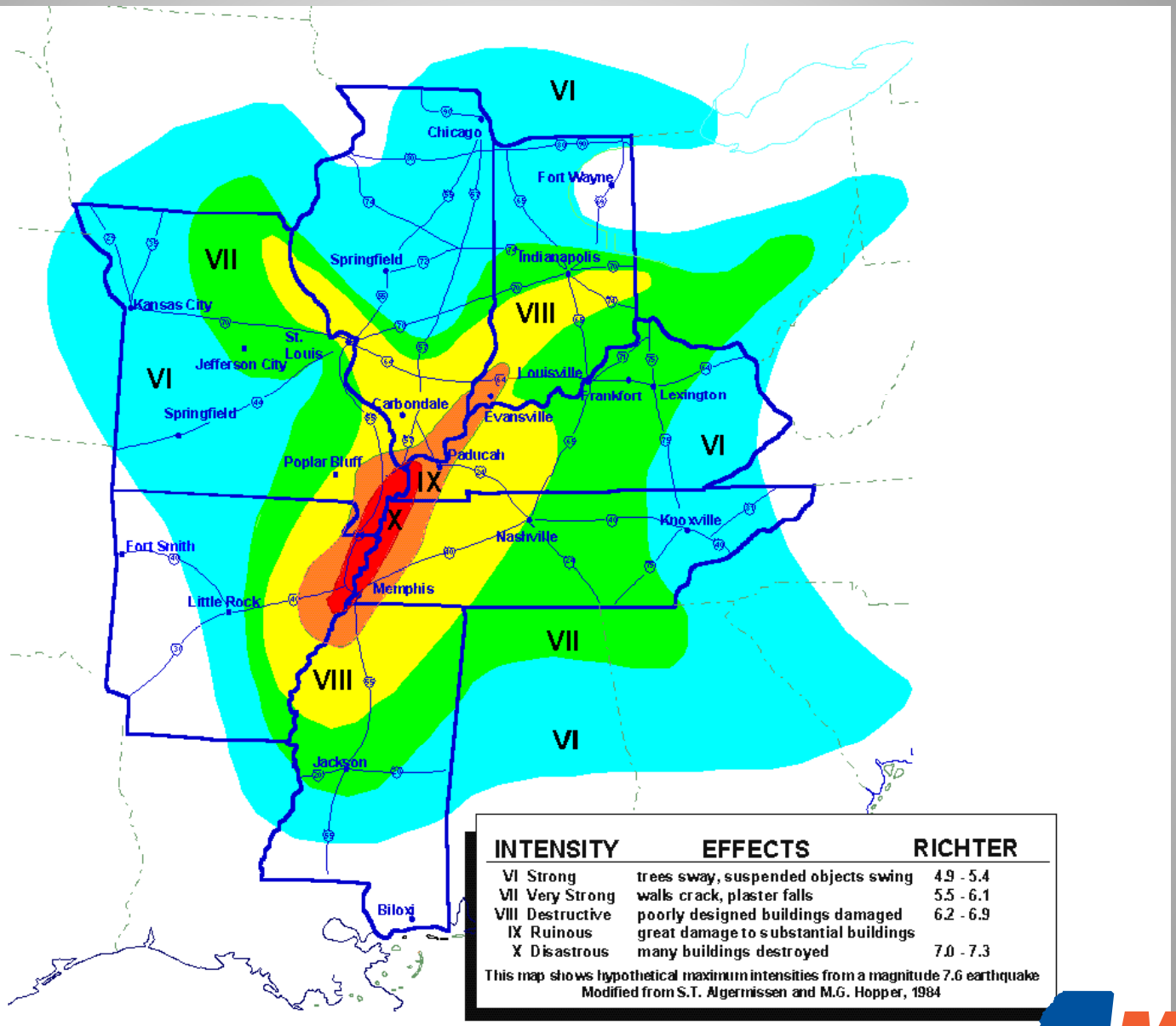
New Madrid Sesmic Zone



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How would a major earthquake affect the central US today?

It could be more devastating than you can imagine…

Events like those of 1811-12 will devastate larger area and affect more people than Hurricane Katrina or a California earthquake

- *There will be large earthquakes and many aftershocks*
- *Many would be homeless, hungry, sick, injured, stressed*
- *Tremendous impact on 8 affected states* ***and the nation***
- *Will require* ***monumental*** *local/regional/national response*
- *Multi-state* ***advance*** *planning and exercises are essential*
- ***Could literally cripple the U.S. economy***

Response and Recovery will require cooperation and teamwork among affected states and the Federal Government

- *Recovery will take* ***years***

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Mississippi Assessment Overview

- **Approximately 205,000 will seek shelter**
- **Estimated 340 25-ton truckloads of commodities (water, ice, MREs) will be required to support the at risk population**
- **Over 80,000 households are without potable water**
- **Nearly 230,000 households are without electric power**
- **Approximately 6,056 injuries and 183 deaths**
- **Approximately 57,400 buildings are damaged**
- **200+ bridges are damaged**

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MDOT Earthquake Emergency Response

- **Provide rapid response**
- **Provide quick assessment of roadway <u>accessibility</u>**
- **Return roadway to normal as soon as possible**

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Responsibilities

- **Clear & restore transportation routes**
- **Establish priorities for transportation**
- **Coordinate all transportation related requests from disaster areas**
- **Coordinate ESF-1 activities at SEOC**
- **Coordinate resources and prioritized needs for debris removal, damage assessment and clearing roadways**

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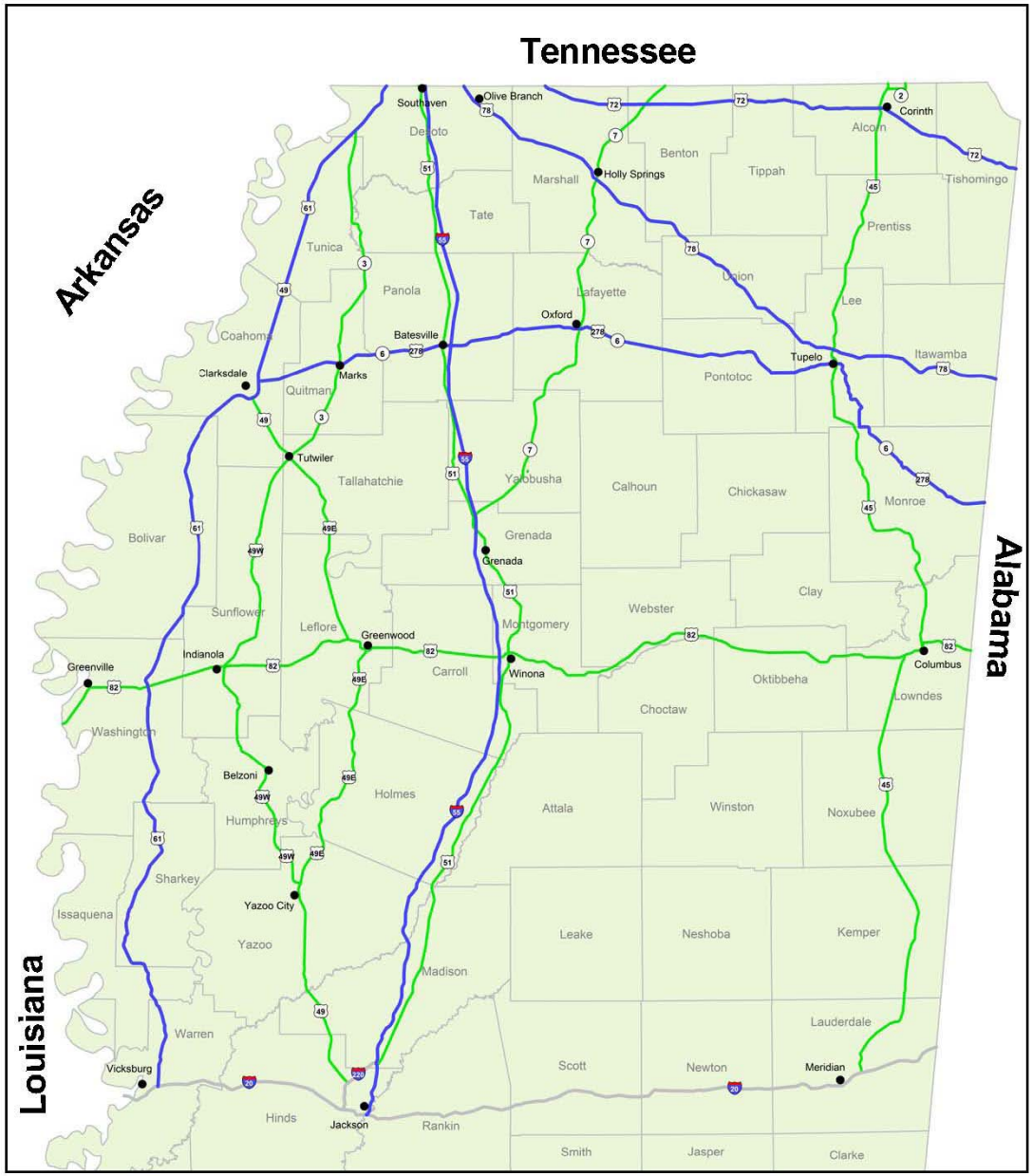

PRIMARY AND SECONDARY EMERGENCY RESPONSE ROUTES

Primary Response Route

Secondary Response Route

Department of Transportation Information, 2011

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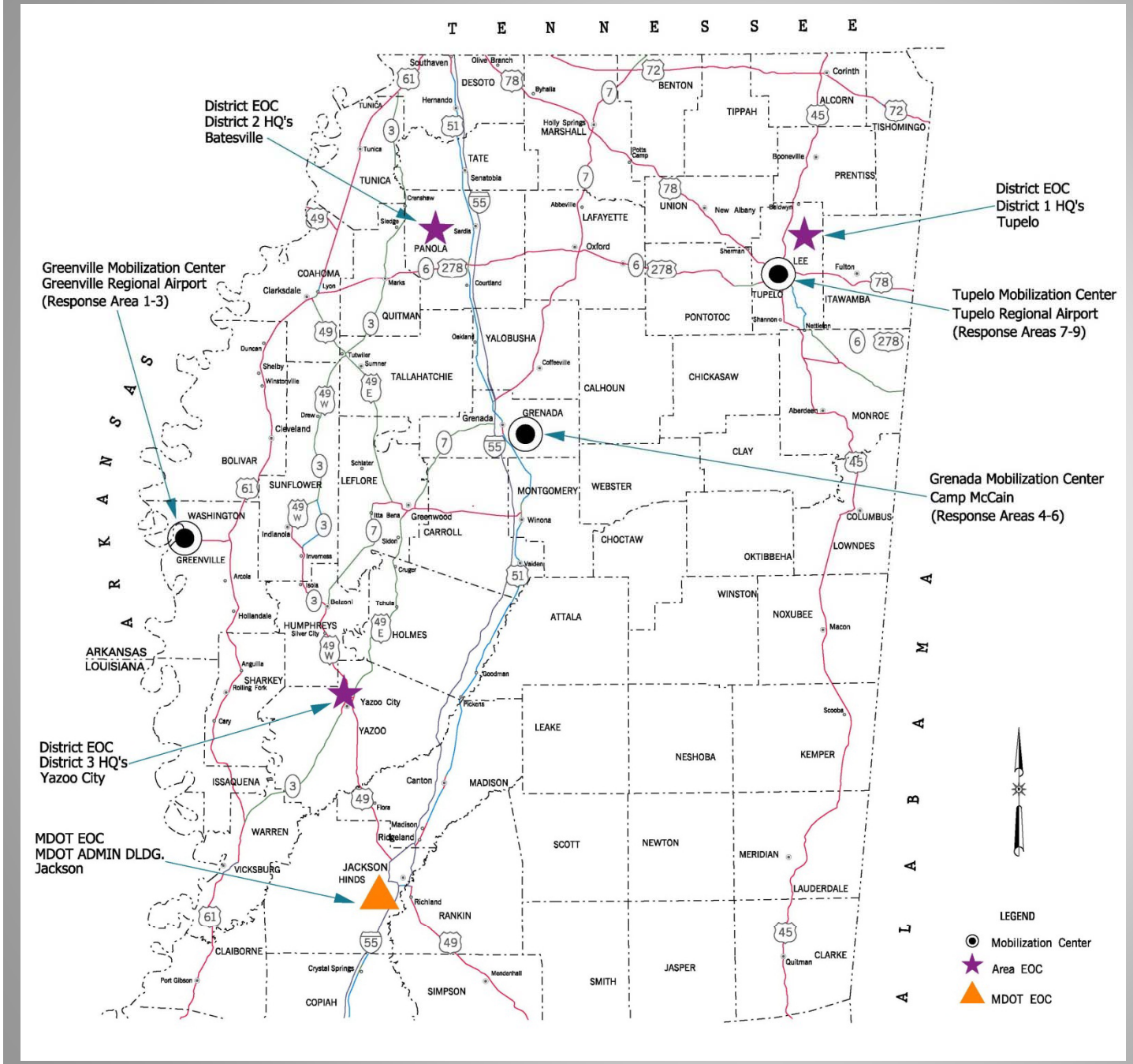
Earthquake Mobilization Center Sites



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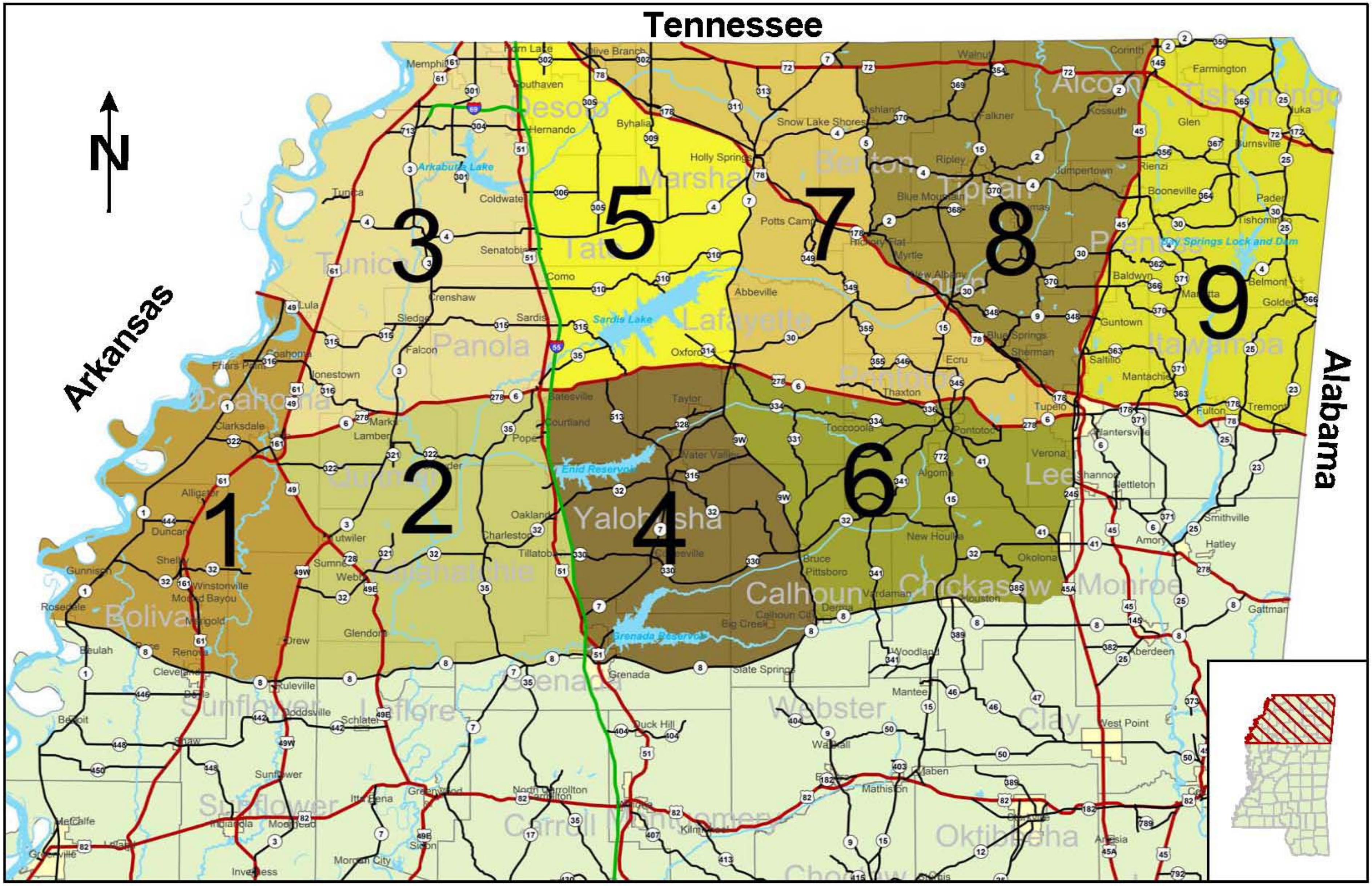

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Miles

Earthquake Response Areas

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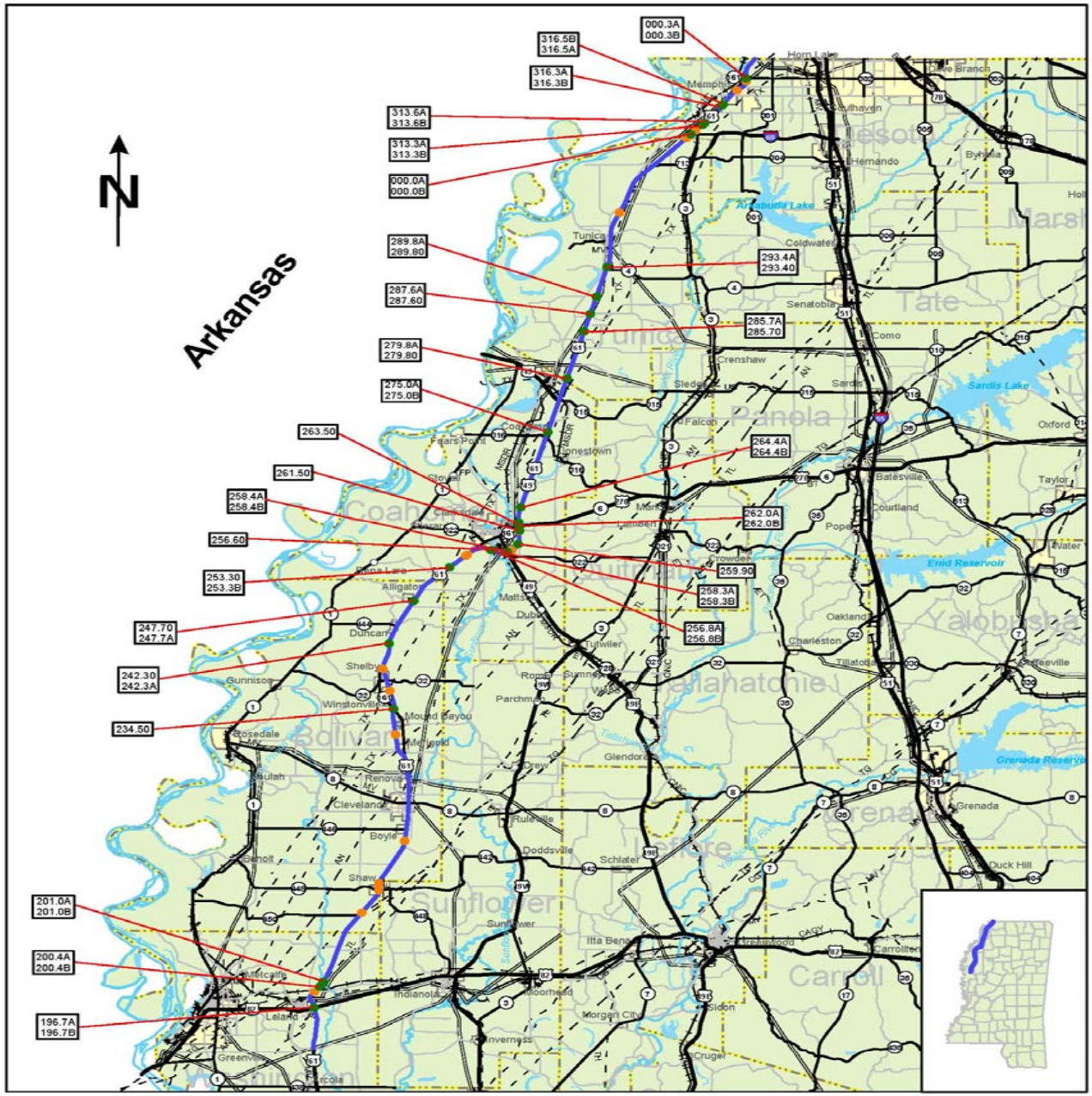
Department of Transportation Information, 2011



CREW 1
US 61
GREENVILLE TO TN STATE LINE
PRIMARY ROUTE

MDOT
Department of Transportation Information, 2011

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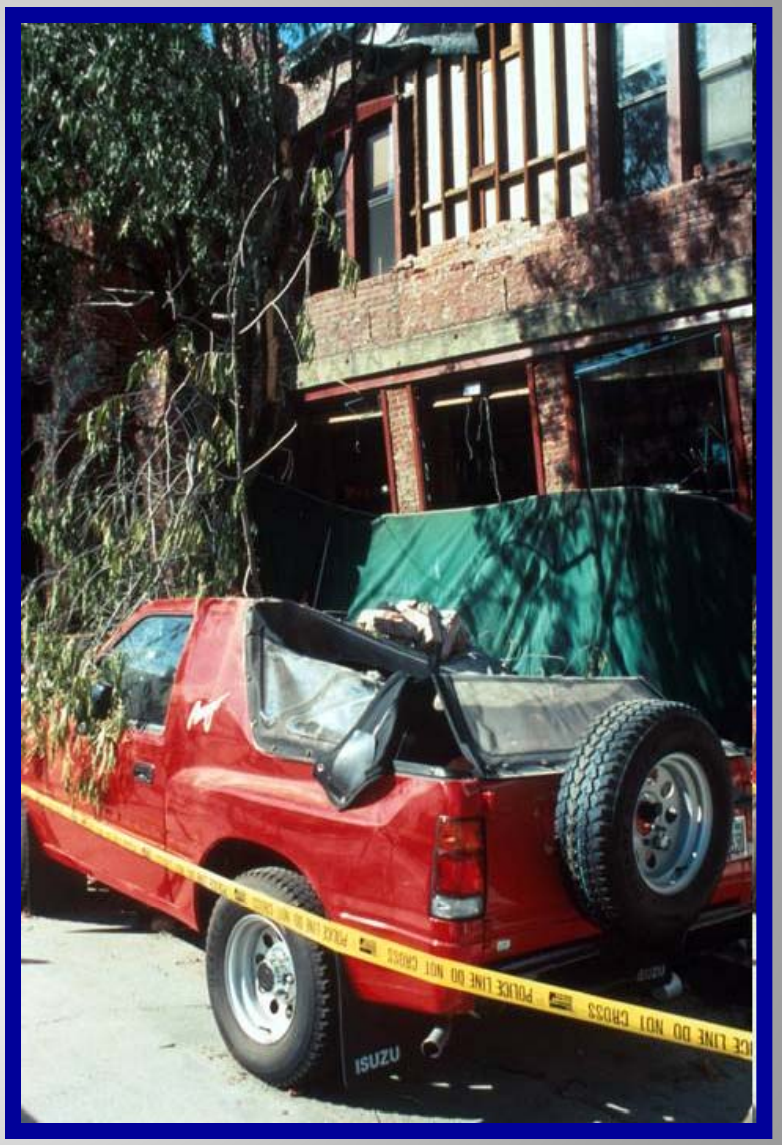

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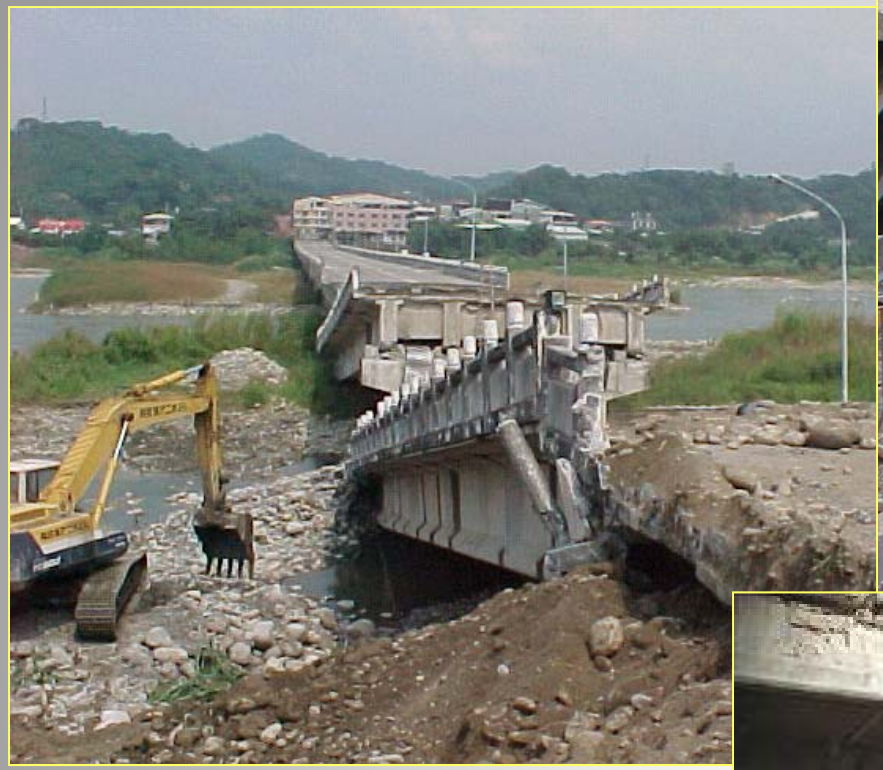

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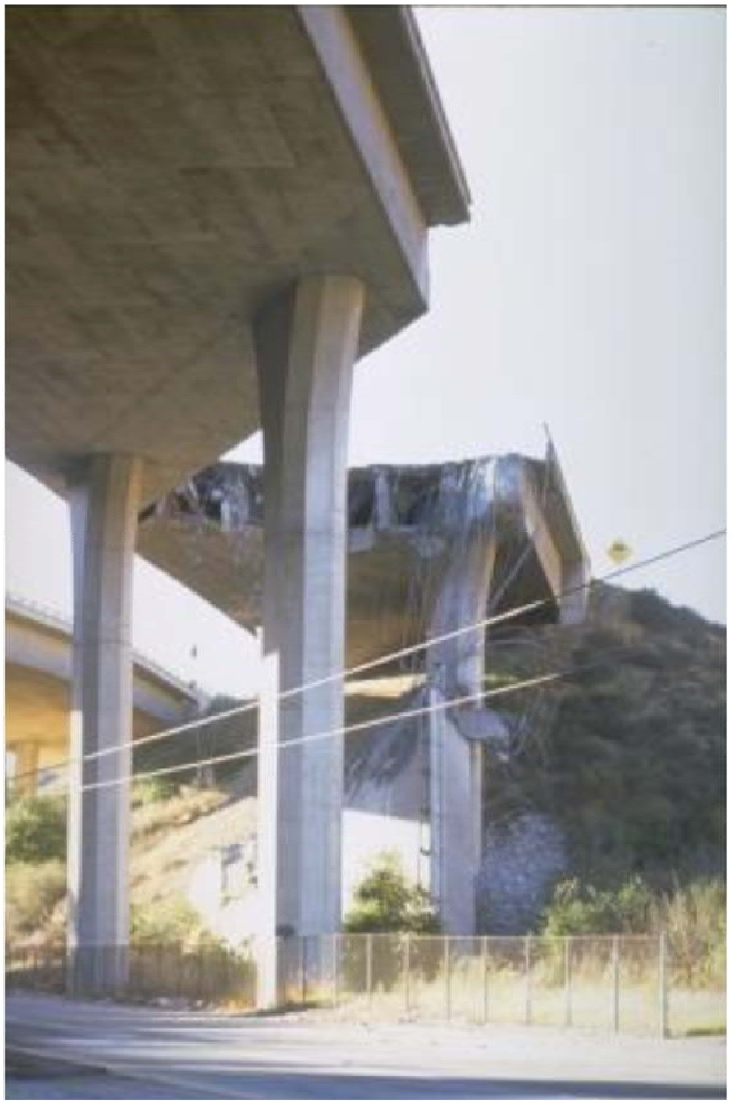

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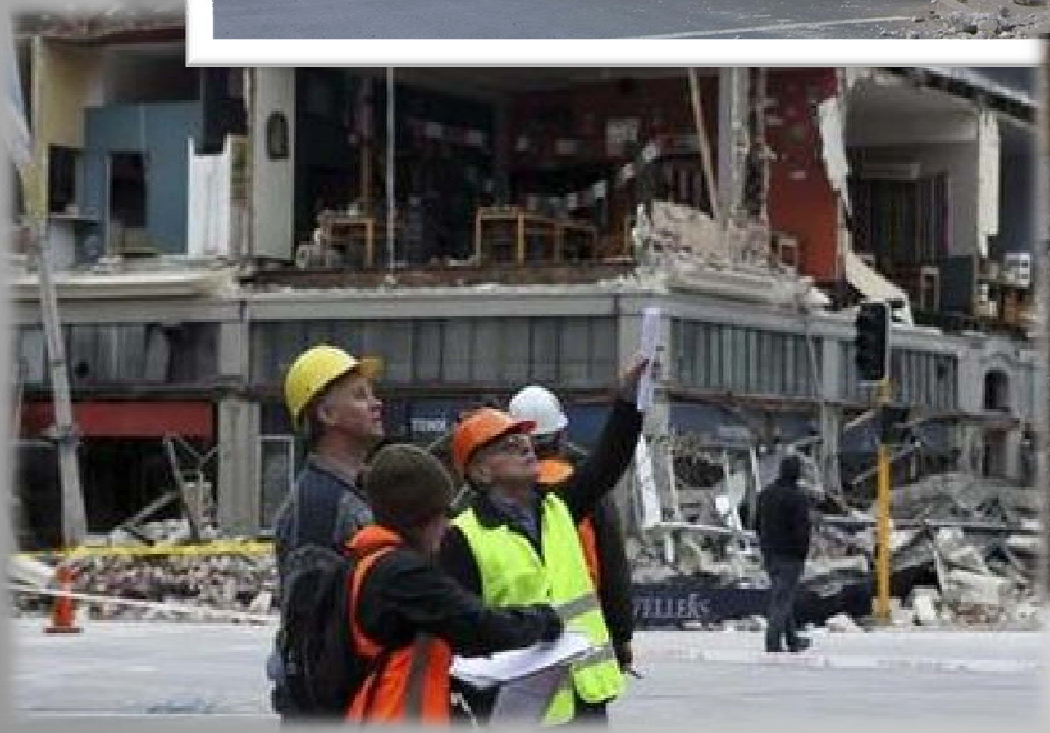

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PUBLIC INFORMATION PRIOR TO AND DURING AN EMERGENCY IS CRITICAL

MDOT EMERGENCY COMMUNICATIONS AND USE OF THE WORLD-WIDE WEB

- www.GoMDOT.com
  - MDOT Emergency Plans & Maps
  - MSTraffic
  - Traveling Information
    - ***Current conditions***
    - ***Evacuation routes***
    - ***Roadway status***

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Are You READY?

1. **Know the risks in your area.**
2. **Develop a Plan.**
3. **Build a family emergency kit to supply your family for a least 72 hours.**
4. **Have a communication and evacuation plan.**

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EMERGENCY PREPAREDNESS

It's best to have a PLAN
and not need it, than to
need it and NOT have it!

Failing to Prepare
is Preparing to Fail.

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For Additional Information please feel free to contact:

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Email: bchapman@mdot.ms.gov

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