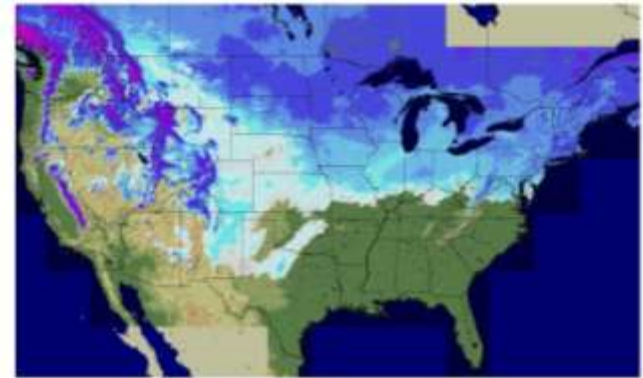


Southern Illinois and Alexander County

Flood of 2011

Flood of 2011

- Snowpack in the northern midwestern states in the winter and spring of 2011 was high. Snowpack was also high in the upper reaches of the Ohio River and Missouri River basins.
- Precipitation of nearly 300 percent above normal occurred in the spring
- Heavy rainfall across southern Illinois in the last half of April 2011 caused widespread flooding of most southern Illinois streams



Flood of 2011

- The resulting flows and flood stages along the Mississippi River was a significant but not a record setting flood
- Wabash River and Ohio River flows and flood stages set records
 - Cairo 61.73 ft
 - Thebes 44.74 ft

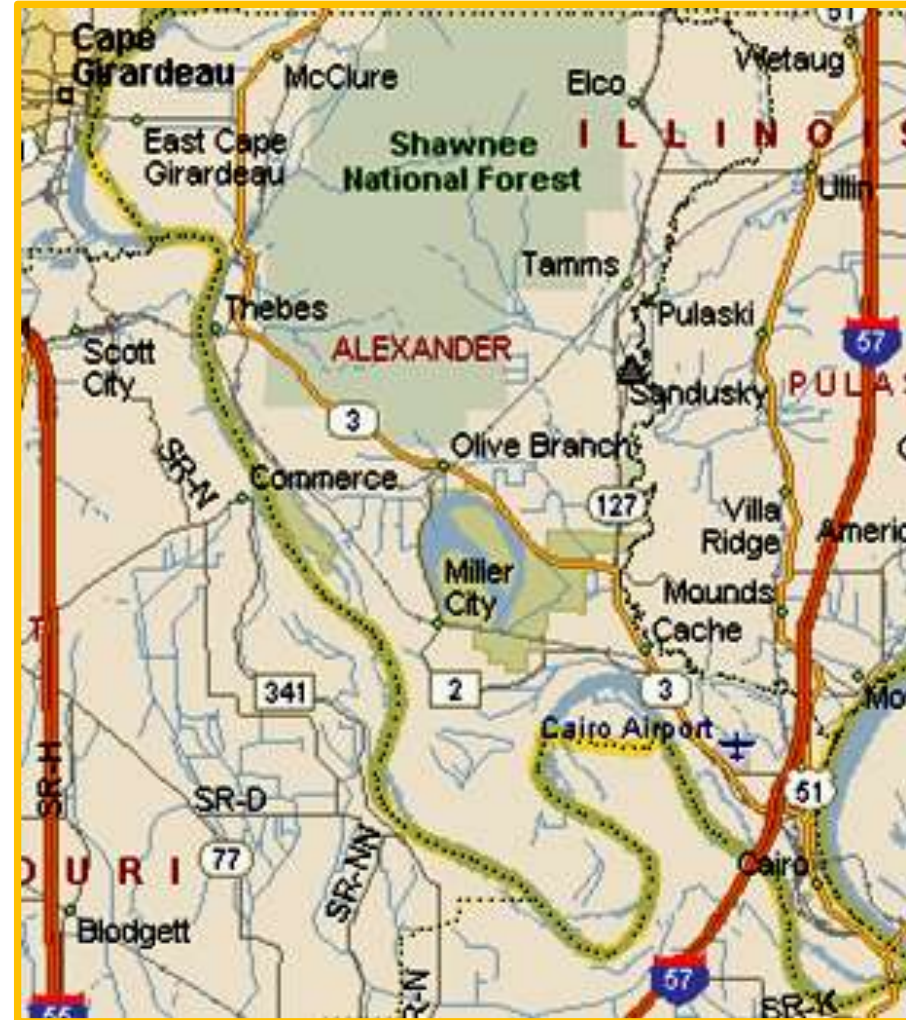


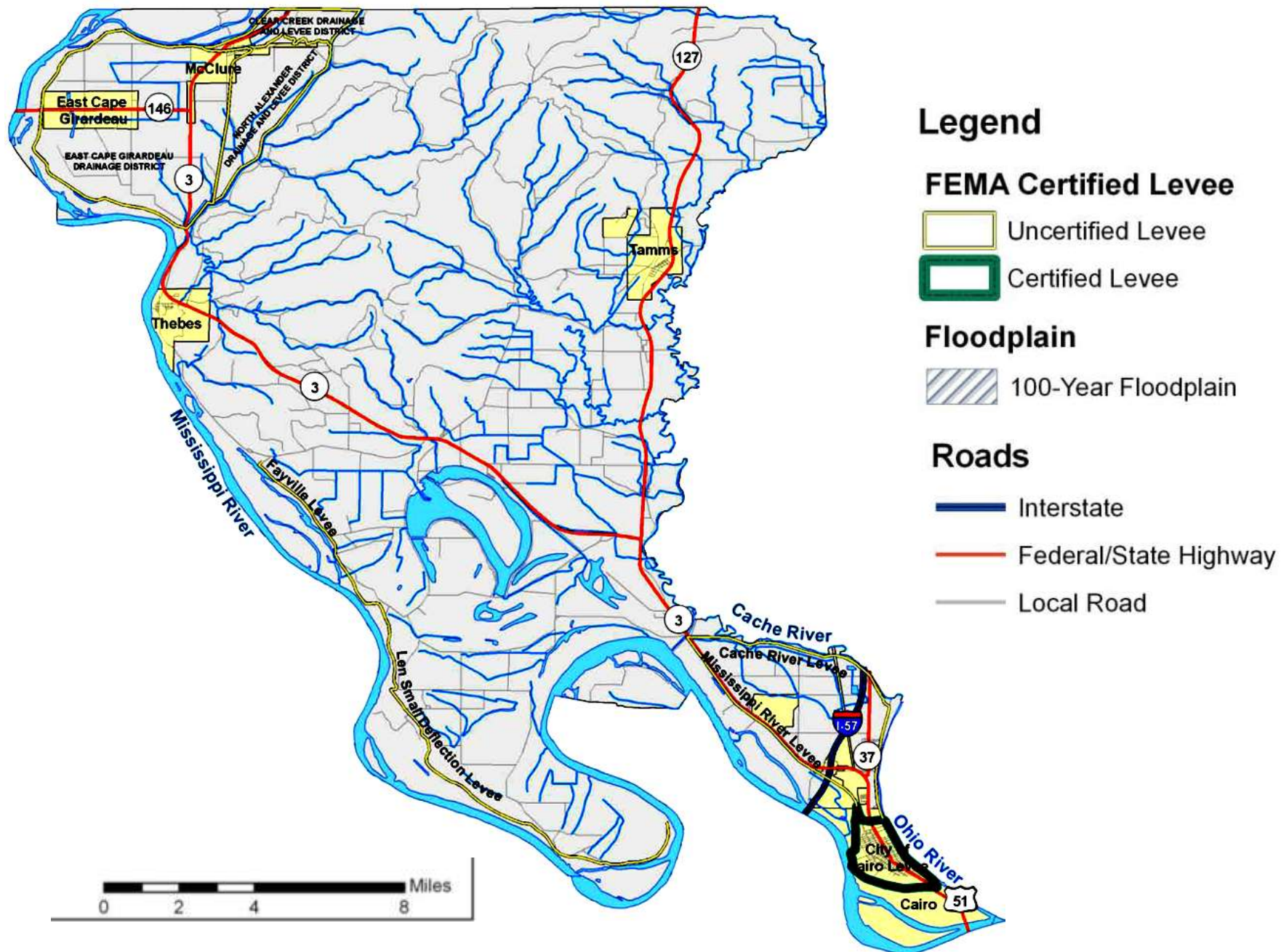
May 3, 2011

April 29, 2011

Flood of 2011

- Alexander Co sits at the Juncture of the Mississippi & Ohio Rivers
- The Cache River enters Alexander Co from the northeast and flows south along the counties eastern border
- Urban areas of the county are located in Cairo, Olive Branch, Tamms, Cache, Willard, and Miller City





Flood Protection

- The Len small Levee is an open ended levee running from Fayville (RM 39) to River Mile 22 on the Mississippi River
- The North Cairo Levee District runs along the Mississippi River from R.M. 13 to R.M. 8
- The City of Cairo Levee runs from R.M. 8 to R.M. 1 along the Mississippi River, and along the Ohio River from R.M. 980 to R.M. 974



Flood Protection

- The 1937 flood caused the Ohio River to flow through southern Illinois along the Cache River Basin, causing much destruction. The corps and the Big Creek Drainage District constructed the Karnak Levee in 1950 to prevent this from occurring in the future. In 2002, the Karnak Levee failed due to lack of maintenance, and has not been repaired.

Alexander County Floods

- Southern Alexander Co is exposed to the backwaters of the Mississippi and Ohio Rivers
- Eastern Alexander Co is exposed to the Cache River floodplain
- Western Alexander Co is protected by the Len Small Levee with a level of protection at approximately 20 year
- Cairo and North Cairo Levee District are protected by 100 year levees



Flood of 2011

- Heavy rainfall over the Cache River in late April created significant flood flows along the Upper Cache which poured through the Karnak breach into the lower Cache River and into Alexander Co
- High backwater stages on the Mississippi River were already creating flooding across southern Alexander Co
- The Ohio River was at near record flood stages across southern Illinois
- Early on May 2, the Len Small Levee overtopped near R.M. 26, failed, and sent additional floodwaters across southern Alexander County

Birds Point to New Madrid Floodway

- The 1927 Flood on the Mississippi River resulted in a Corps plan known as the Jadwin Plan which included the Birds Point to New Madrid Floodway
- In 1937 that floodway was activated when the Cairo gage reached a stage of 58 feet
- In 2011, the Cairo gage reached 61.72 as the floodway was activated

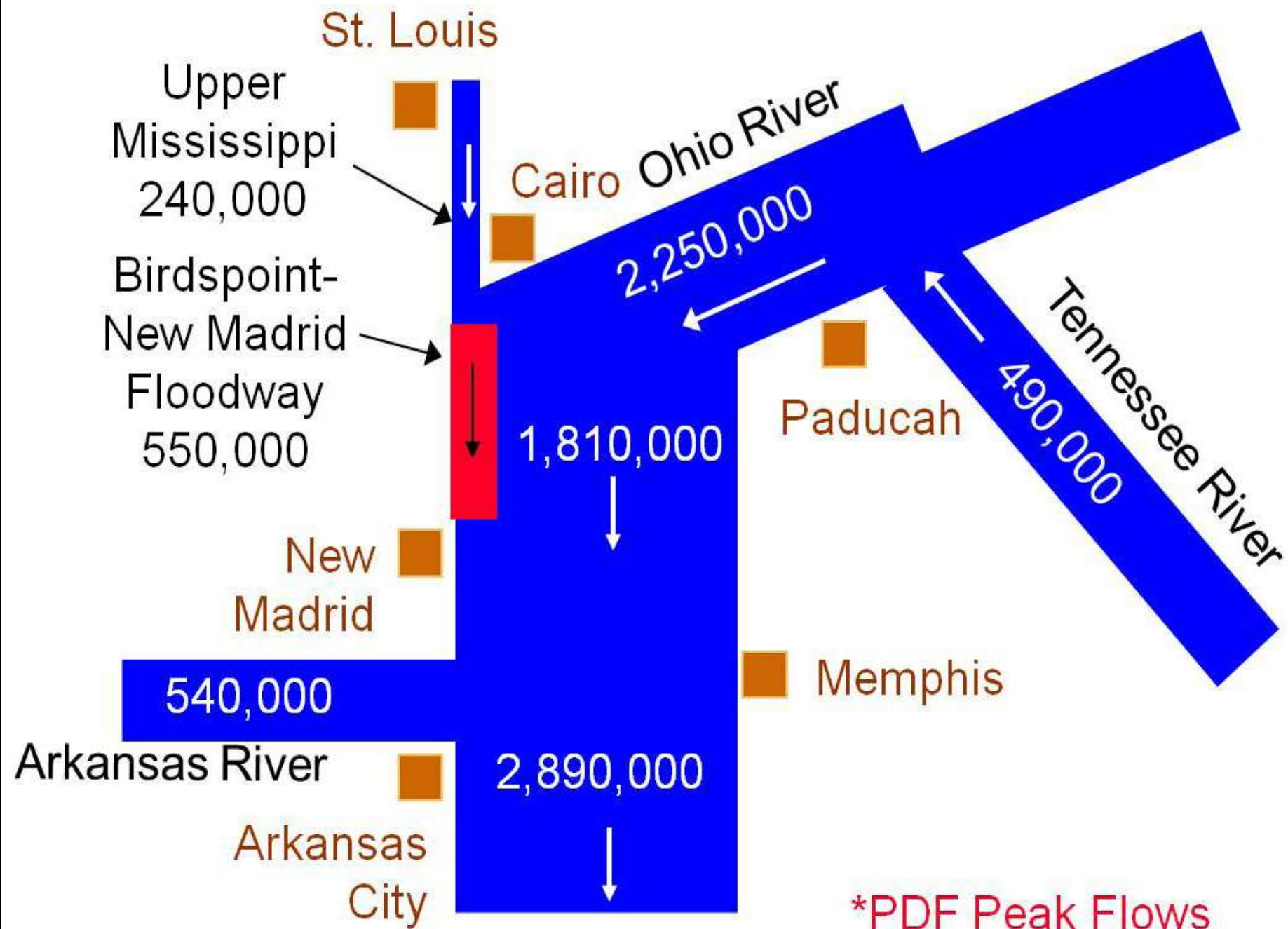
The Flood Fight

- Alexander County received assistance in sand bagging hundreds of structures
- Significant sandboils formed within Cairo, and many streets experienced subsidence
- The Mississippi Valley Division of the Corps was directing regional efforts to hold floodwaters in Barkley and Kentucky Lakes, several reservoirs on the Wabash system in Indiana, and was managing the decision process for activation of the Birds Point to New Madrid floodway

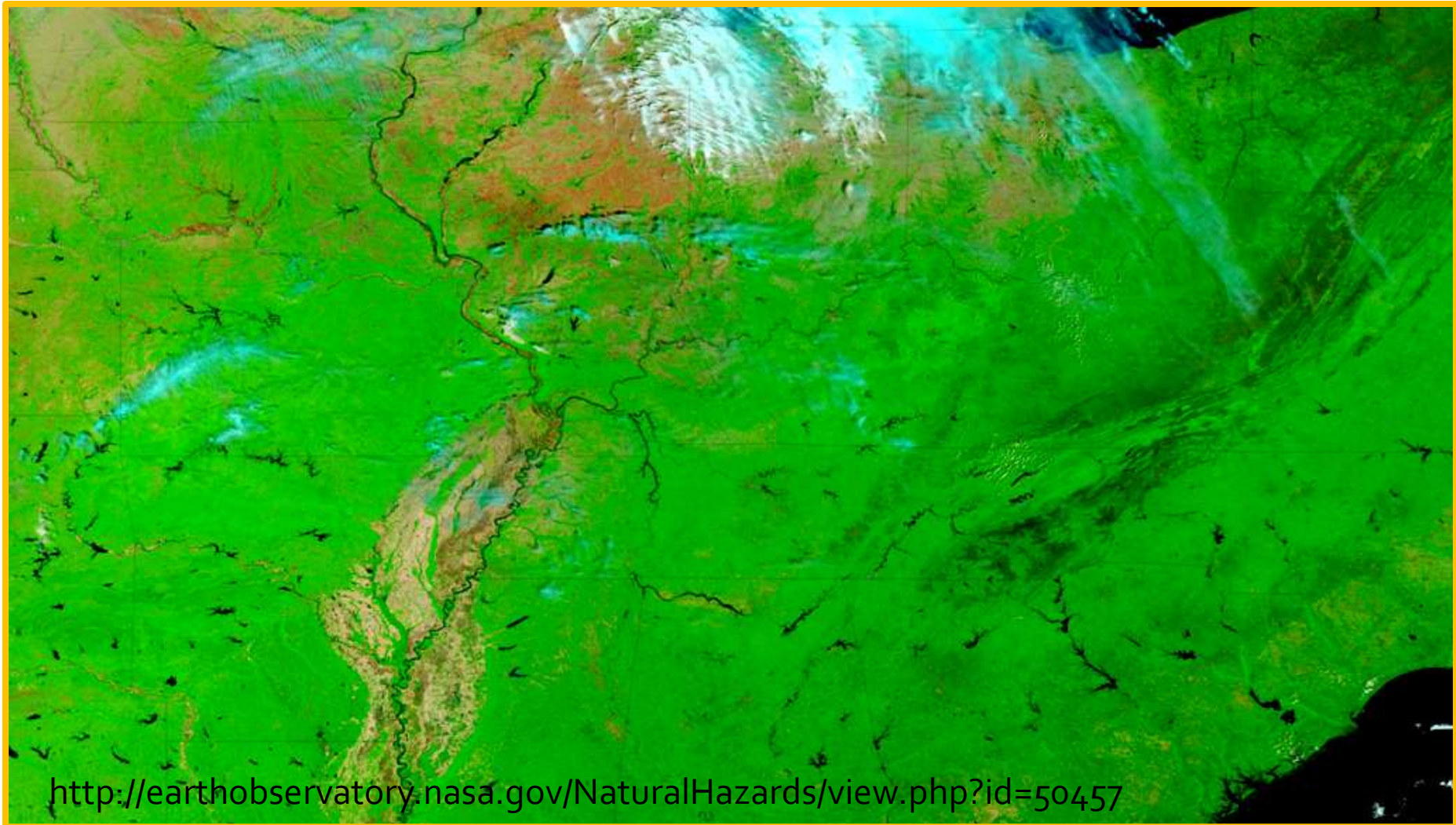


Note Regarding Birds Point to New Madrid Floodway

- The Birds Point to New Madrid Floodway is designed to convey approximately 550,000 cubic feet per second when the flood stages reach a threshold which could threaten the Cairo Levee system. The MVD of the Corps prepared to make operational plans for the floodway, while the State of Missouri expressed great concern for the inundation of thousands of acres of floodplain farmland and farmsteads. Missouri filed a court challenge in federal court, seeking an injunction to prevent the Corps operation of the floodway.

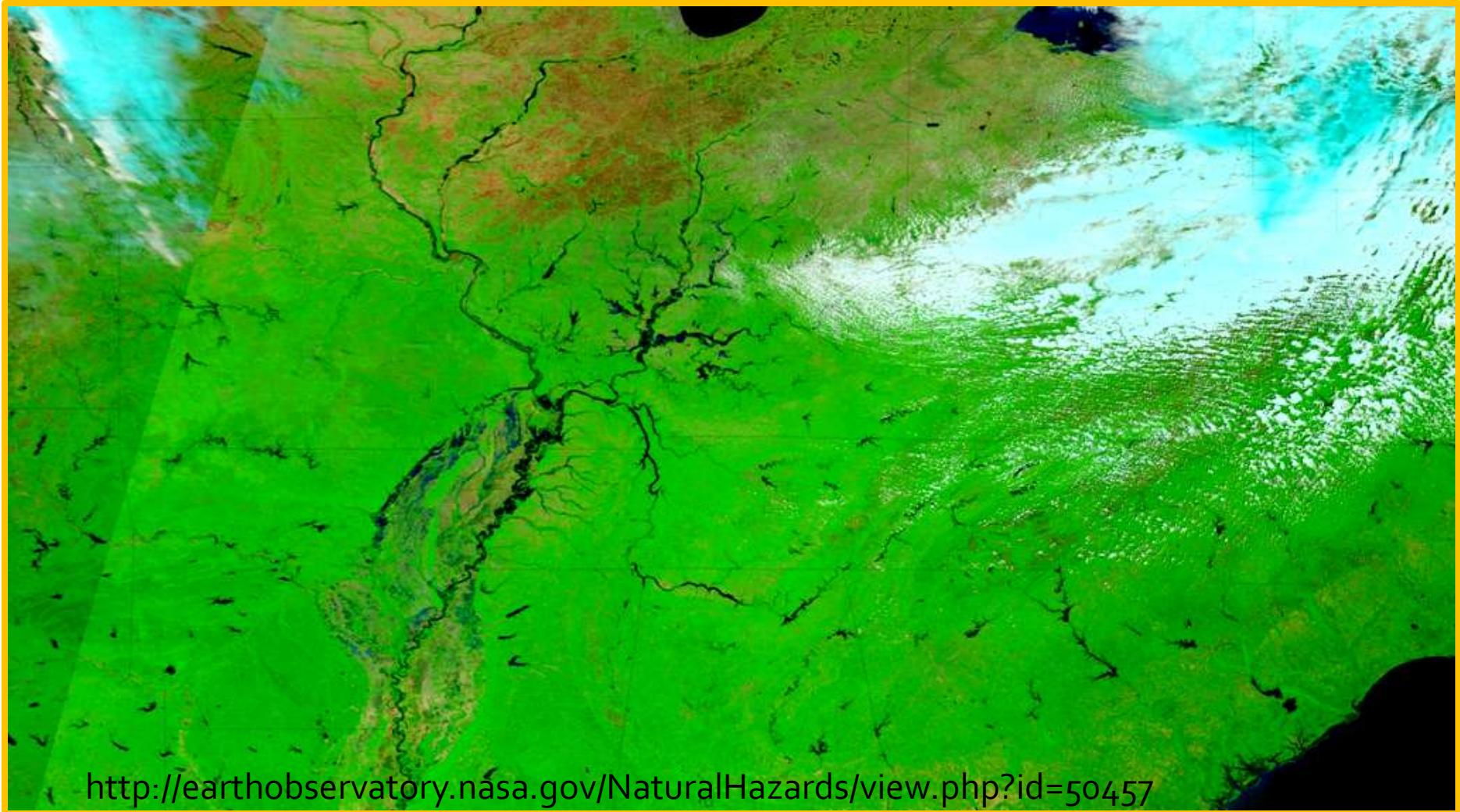


Mississippi and Ohio River Valleys



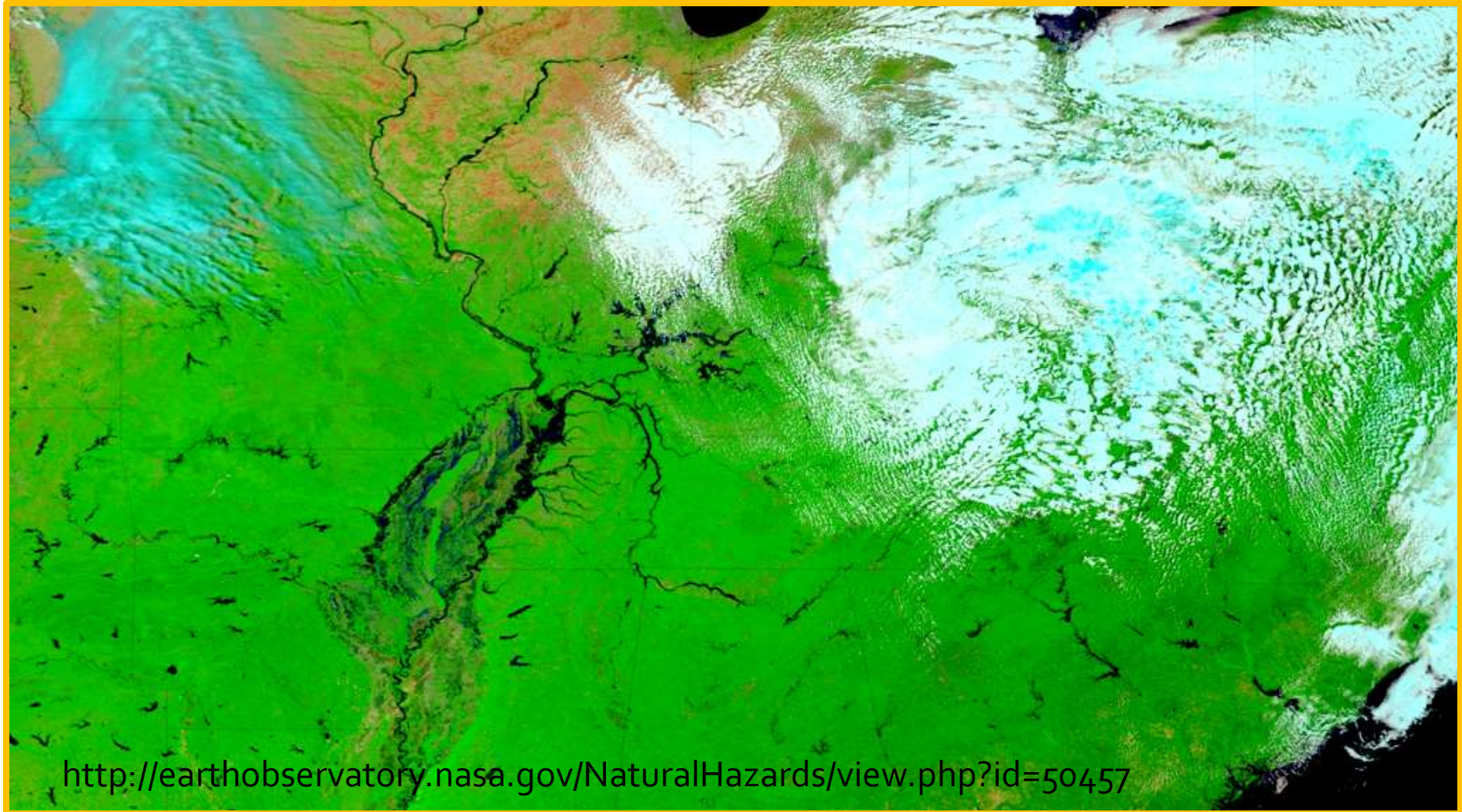
<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50457>

Mississippi and Ohio Rivers during flood, before breach of Birds Point Levee



<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50457>

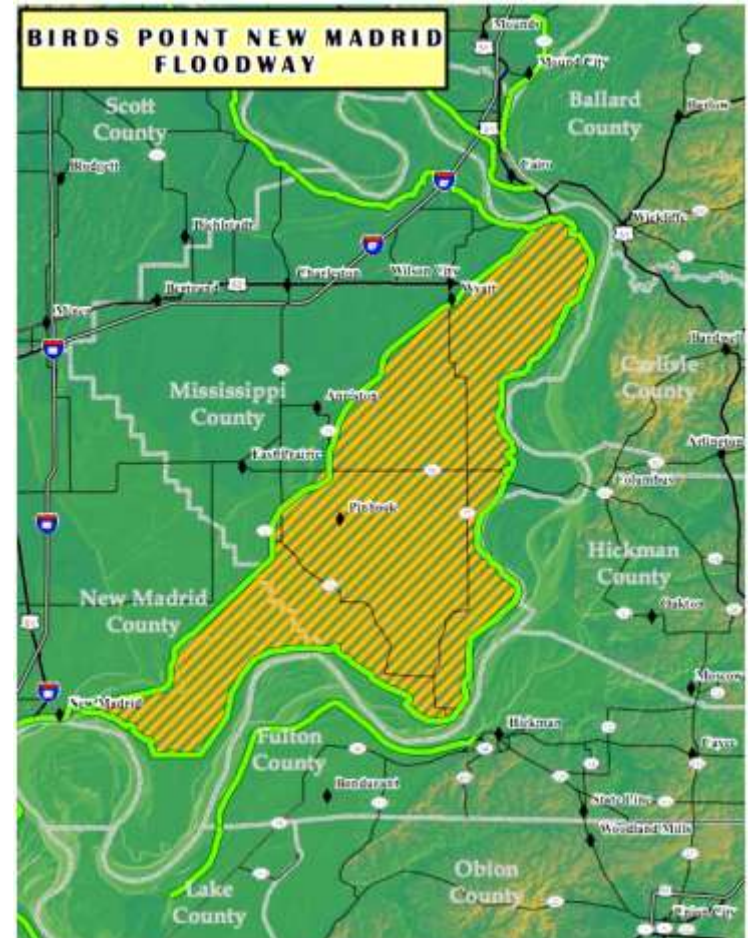
Mississippi and Ohio River Flooding after Breach of Birds Point Levee



<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50457>

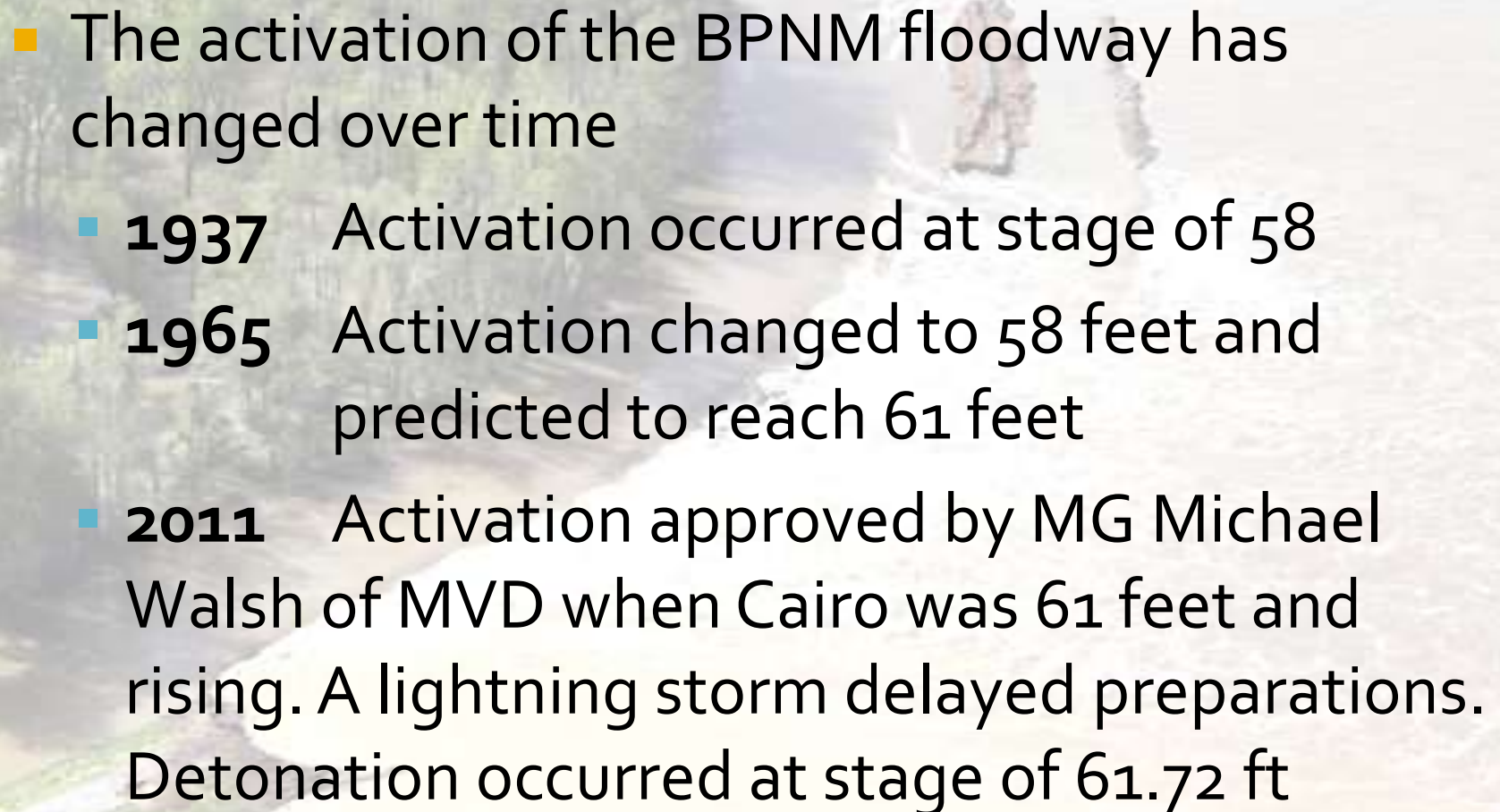
The Legal Fight

- The District Court ruled in favor of the Corps
- The State of Missouri appealed to the U.S. Supreme Court
- The U.S. Supreme Court ruled in favor of the Corps
- On May 2, 2011 at 10:00 pm, the Birds Point Levee was detonated to activate the floodway



(Source: Army Corps of Engineers)

The Problems

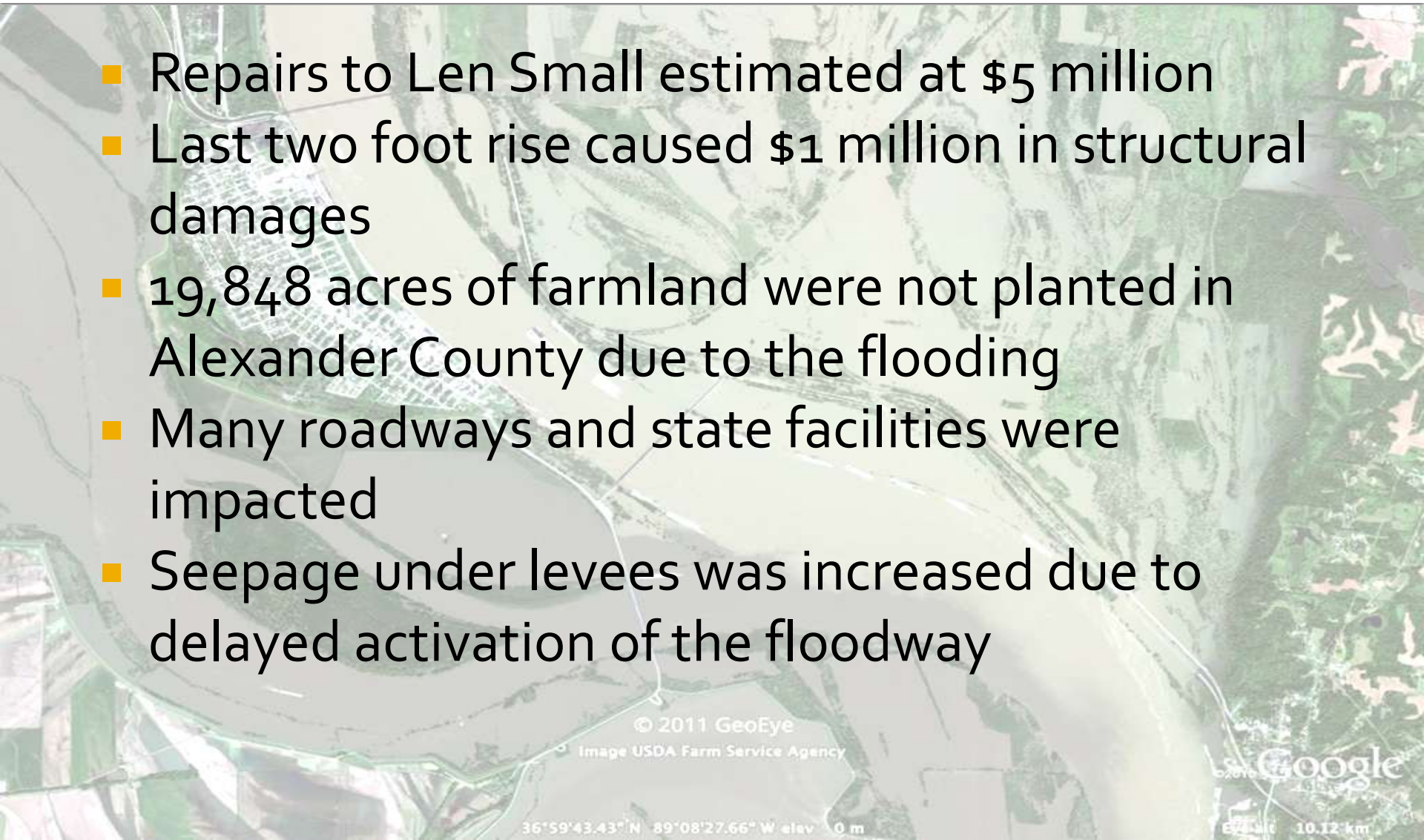
- 
- The activation of the BPNM floodway has changed over time
 - **1937** Activation occurred at stage of 58
 - **1965** Activation changed to 58 feet and predicted to reach 61 feet
 - **2011** Activation approved by MG Michael Walsh of MVD when Cairo was 61 feet and rising. A lightning storm delayed preparations. Detonation occurred at stage of 61.72 ft

The Problems

- The Len Small levee overtopped when Cairo was near 61 feet
- Delays in the operation of the BPNM Floodway contributed to the failure of the Len Small Levee and the \$5 million to repair the levee
- Southern Alexander County was experiencing flood damage to residential structures in the unprotected areas as decision makers were discussing when to operate the floodway
- Additional flood flows were flowing through the Karnak Levee as the decision makers talked

Damages

- Repairs to Len Small estimated at \$5 million
- Last two foot rise caused \$1 million in structural damages
- 19,848 acres of farmland were not planted in Alexander County due to the flooding
- Many roadways and state facilities were impacted
- Seepage under levees was increased due to delayed activation of the floodway



The Legal Fight

- The Birds Point to New Madrid Floodway is occupied by many farms, farmsteads, and homes in Missouri
- The Corps had secured flowage easements across these properties to allow the activation of the floodway to carry 350,000 cfs



The Legal Fight

- The State of MO filed suit in Federal District Court in Cape Girardeau, MO seeking an injunction to prevent the MVD Corps from operating the floodway
- Illinois joined the suit as a friend of the Corps and testified to the necessity of the Corps having the authority to activate the floodway.



The Future

- Illinois has made the case with MG John Peabody of MVD and Col Vince Reichling of the Memphis District
- Both have agreed that these issues need to be better managed in the future
- DNR is still evaluating future actions regarding the operation of the BPNM floodway

The Rest of the Story

The next chapter of this story is yet to be written.

