MISSISSIPPI FLOODING

History

In 1928 Congress put the US Army Corps of Engineers in charge of the Mississippi River to prevent another 1927 flood disaster. So the Corps built and raised levees to contain floods, reservoirs to catch and gradually release floods, cutoffs to shorten and straighten the river and speed floods downriver, and two emergency spillways to protect New Orleans.

But it did not build an additional outlet to the Gulf to discharge the faster flow or increase the discharge of the existing outlets at New Orleans and Morgan City. Meantime the flow has increased even more due to faster runoff as the result of years of development along the river and its tributaries. The discharge has not increased because the Corps limits the outflow at Morgan City to 30% of the total discharge. (The authority for this seems ambiguous.) The water can't get out to the Gulf as fast as it flows downstream.

So the river is rising. The trend line today is 10 feet higher than in 1950. It is backing up and flooding Mississippi. The reach or stretch between Natchez and Old River is ground zero for flooding. It's the lowest point on the river that gets its maximum flow before it splits downstream at Old River. It has flooded every year for the last 5 years. The flooding is moving up river. Vicksburg has flooded 4 out of 5 years, and Greenville has flooded 3 out of the last 5 years.

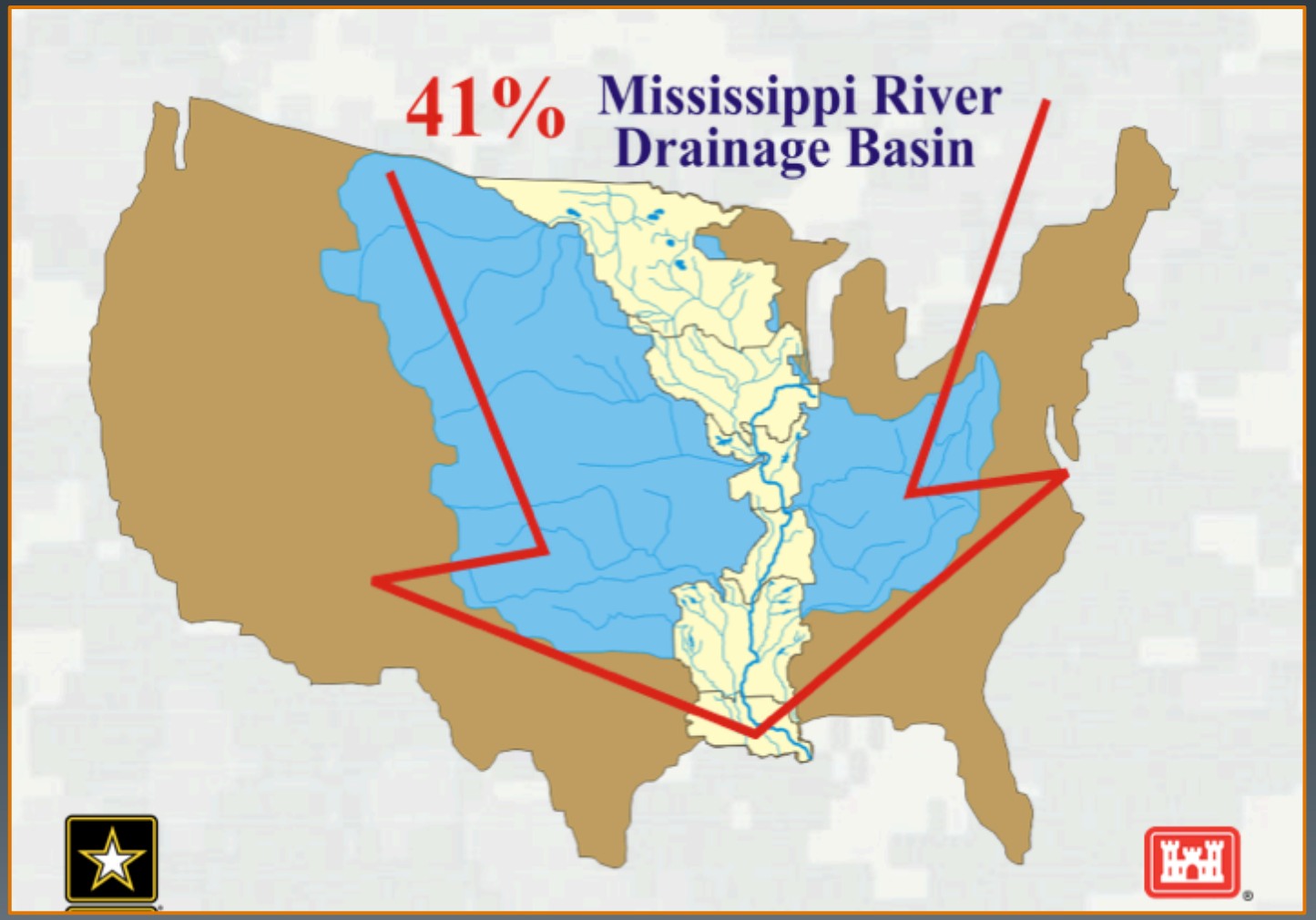
And major floods are more frequent. There have been two 100-year floods during this time. The odds of this happening by chance are less than one in a thousand. The 2011 crest at Natchez was 5 feet higher than the 1927 flood. We think these unusual events are the result of the almost 90 year-old Corps plan. It worked for years. But the river has changed. The plan is not working now. It needs to change. Congress needs to authorize the change.

MISSISSIPPI FLOODING

- Flooding along the Mississippi River is a big problem.
- Hundreds of thousands of acres flood every year & thousands of properties are damaged every year.
- Mississippi's flood cost 2011-2016 is over $3 billion.
- We expect it to flood when it rains a lot.
- We expect levees and the Corps of Engineers to protect us from floods.
- The Corps flood plan is not working for Mississippi.
- Mississippi is flooding – even when it doesn't rain a lot.
- Congress decides who floods.
- The Corps does what Congress says.

Here's the evidence and a suggested change to give Mississippi some relief and to reduce the risk of a catastrophic levee failure at Baton Rouge or New Orleans or somewhere else.

The Mississippi, Missouri & Ohio Rivers drain 41% of US surface area which ends up in the Mississippi River



BOTTOM OF THE FUNNEL
Lowest Point on MS River that Receives Full Flow.
The Flow Splits at Old River.

Ground Zero For Flooding

- The water gets here faster than it can get out to the Gulf.
- It backs up and floods the batture and the backwaters along the Mississippi's tributaries.
- 1.2 million acres flooded in 2011 and almost as much in 2016.
- Thousands of acres flood for months every year even when the river is below flood stage.

The 300,000 acre batture south of Vicksburg is framed by natural hills-not levees.
The batture at Lake Mary is 4-6 miles wide.

Lake Mary is a recreational destination
with hundreds of camps and homes.
It is a major source of tax revenue for Wilkinson County, MS.

60,000 Acre Batture
From
Lake Mary – Fort Adams

Flooded Every Year For
The Last 5 Years

Flooded For 7 Months
Dec 2015 – Jun 2016

- No hunting last year
- No farming 3 out of 5 years
- No oil/gas operations 4-6 months/yr
- No road access for months
- Timber dying
- Houses flooded
- Roads & ditches damaged
- Property value down
- Jobs lost
- Taxes down
- Business down
- Costs up
- IRREVERSIBLE ENVIRONMENTAL DAMAGE

TYPICAL LAKE MARY CAMP HOUSE

Built in 1976 above the 100-year flood plain

House is 13’ above ground

SAME LAKE MARY HOUSE IN 2011 FLOOD

The water is 19’ deep and the current is strong even though it’s 3 miles from the MS River.

Same House Repaired 4 Times After Flooding

Raised 8’ After 2011 Flood

Insurance Up 50%

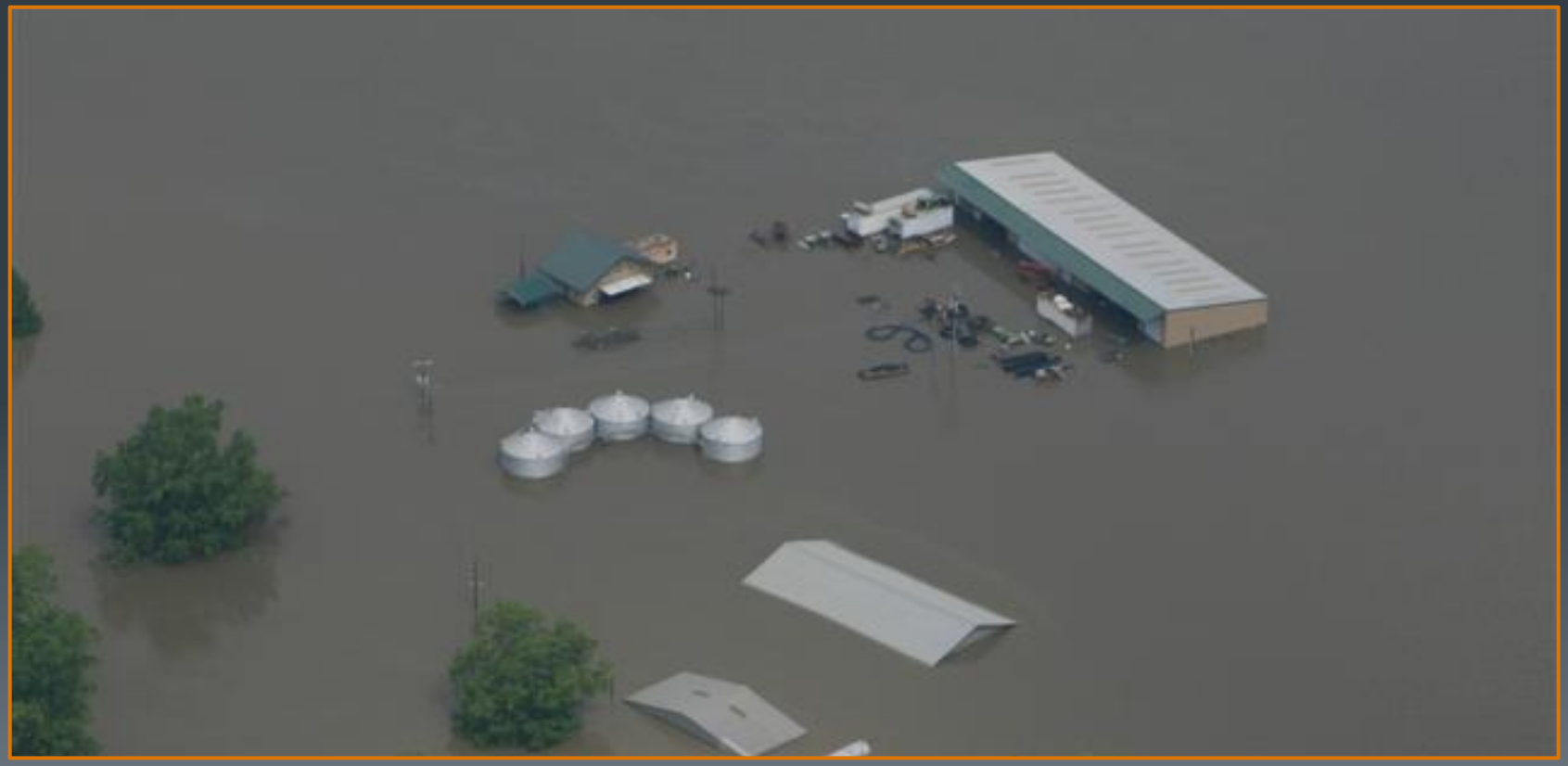
Property flood damages can be repaired.
It just takes time & money -
and the will to to it over & over again.

A Typical Pump Jack 15’ Above Ground

Accessible Only 4-6 Months Per Year

Day Tanks Accessible 4-6 Months Per Year

This is not a backwater flood scene. The river is flowing around these headquarters' buildings about 3 mph. It's 19' deep and over 3 miles wide. Long floods and strong current flows cause permanent environmental damage.



2011

Irreversible Loss of Bottomland Hardwood Habitat

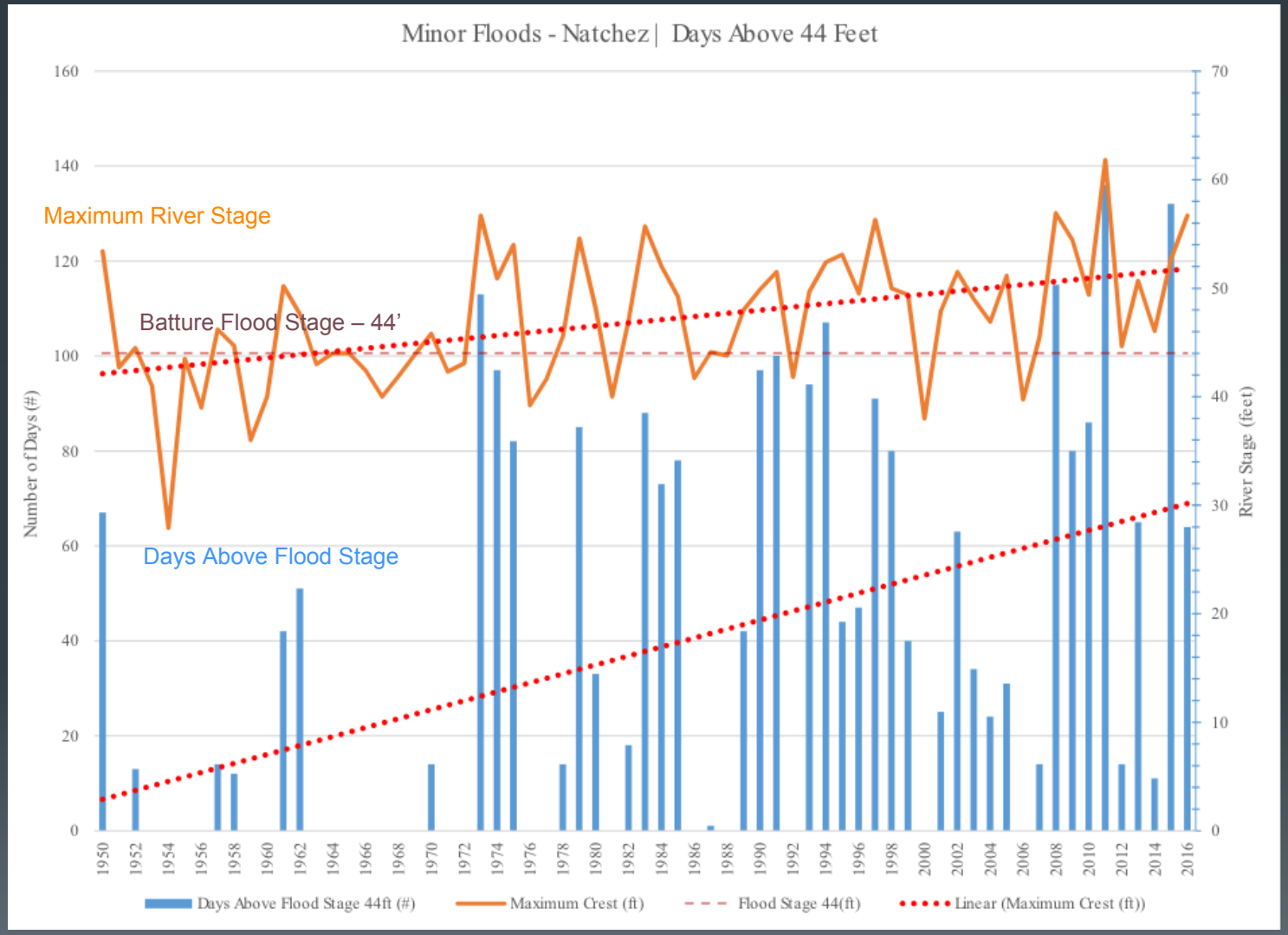
Sand deposits change the site index and will eventually become sterile willow flats, leaving little food for wildlife.

The next series of slides show river stages from 1950 through 2016. The 2011 and 2016 stages correspond with the previous flood pictures. Stage data begins in 1950 after the completion of 16 cutoffs below Memphis. They changed the river.

The data shows:

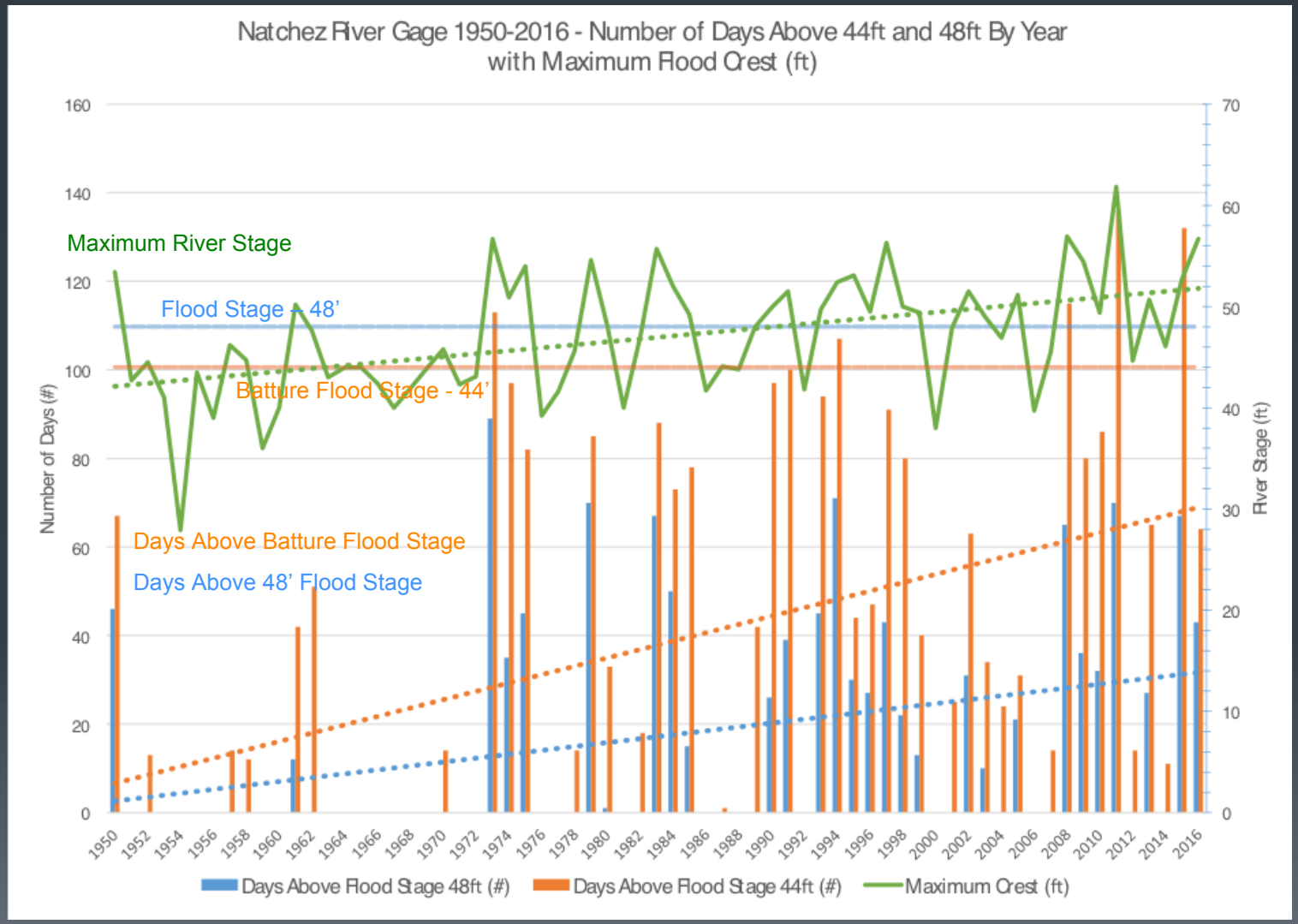
- The MS River is rising above Old River.
- The rise is moving upriver.
- Floods are more frequent, higher, and longer.
- Ominous trend lines.

Natchez Gage



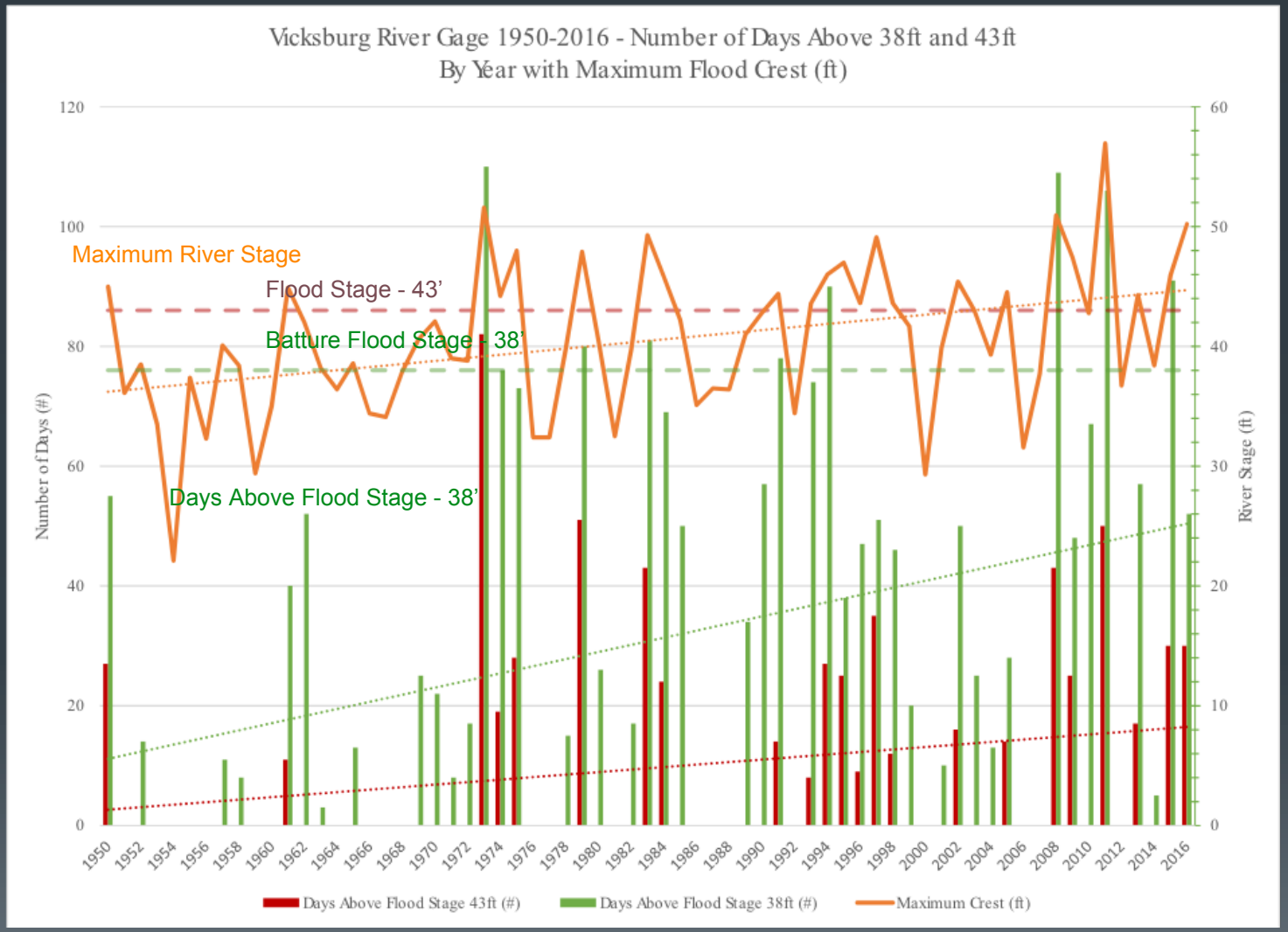
Max river stage rising (orange line).
Batture floods rising faster (blue lines).
More frequent – every year for 10 years. Longer – over 3 to 4 months.

Natchez Gage



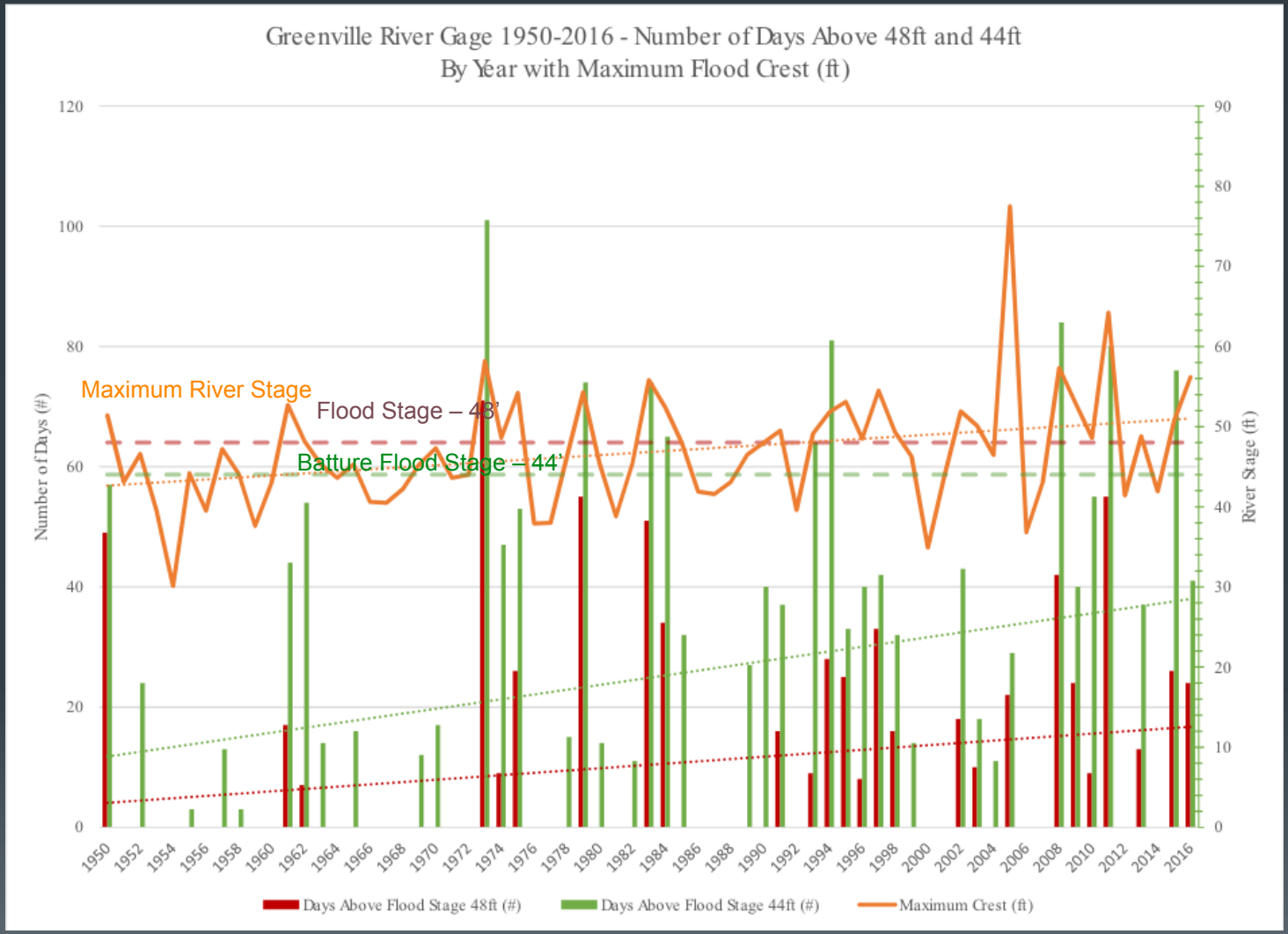
More frequent and longer floods above flood stage

Vicksburg Gage



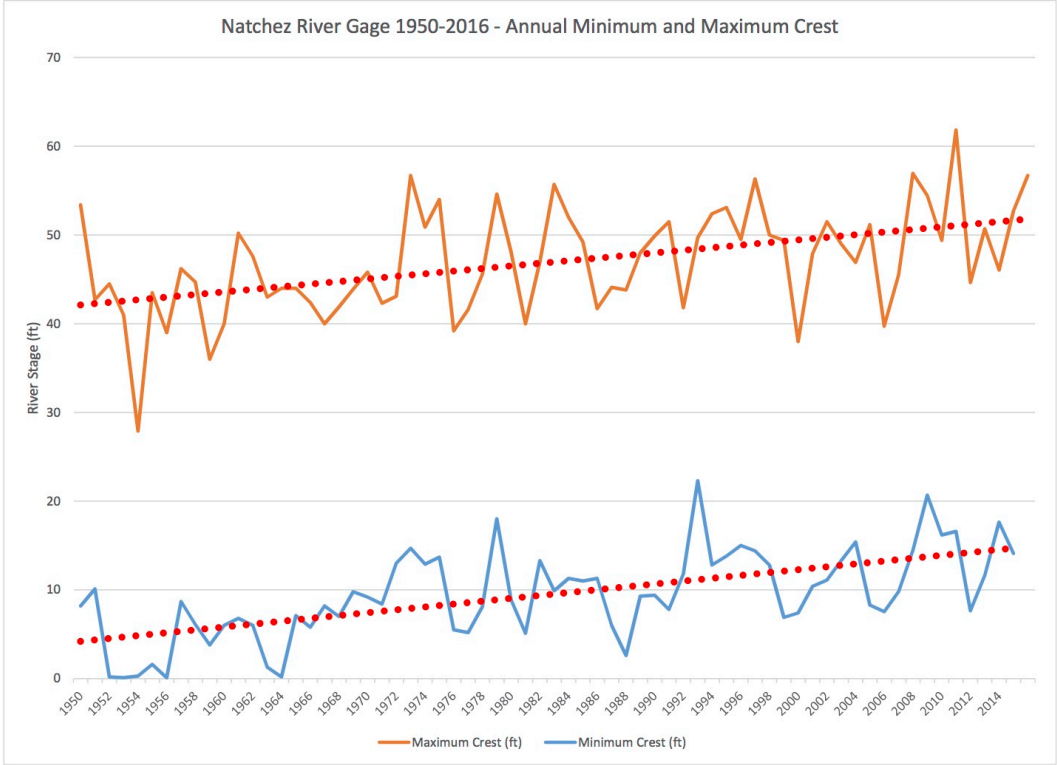
Flood patterns similar to Natchez but not as bad – yet.
Batture flooded 4 out of 5 years.

Greenville Gage



Flood patterns similar to Vicksburg but not as bad – yet.
Batture flooded 3 out of 5 years.

Natchez Gage Max & Min Annual Stages
River Is Rising & Silting Up – Min Stage Trend Line is 10' Higher Than 1950

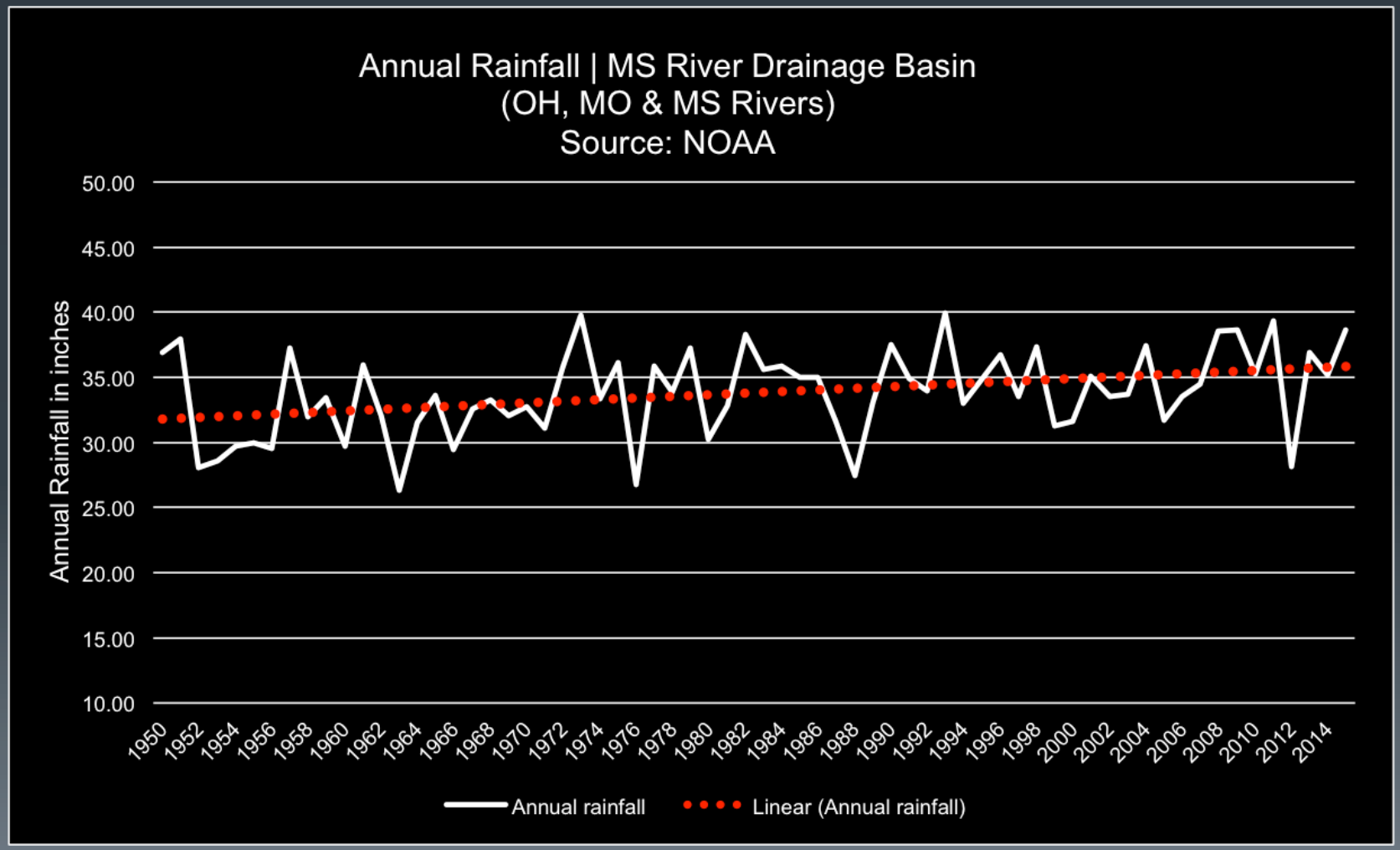


Floods have a 10' head start. This explains batture floods and more frequent major floods.

Is More Rain Causing The Flooding? Probably Not.

Annual rainfall trend line is up only 4" in 65 years.

The trend is essentially flat for the last 40 years.



Why Is It Flooding More?
Why Is The River Rising?

- Two 100-year floods in less than 5 years
- In 2011, the Natchez crest was 5 feet higher than the 1927 flood.
- Highest January crest ever in 2016
- The odds of two independent 1/100 year events happening in 5 years are less than 1/1000.
- Just chance? Maybe.
- But it's probably because the water can't get out to the Gulf fast enough.

Corps Plan Does Not Address The Problem

- Water gets downriver faster due to cutoffs, more and higher levees, and development upriver.
- The Corps plan does not address the problem. Higher levees mean higher floods.
- It's still focused on levees.
- Should focus on outflow to Gulf. Faster outflow means lower, shorter floods.

The Corps Plan:
3,500 miles of levees and 13 billion spent

The Corps claims $353 billion saved in prevented damages. Were actual damages from higher, longer floods and increased batture flooding considered?

Mississippi River & Tributaries Project (MR&T)

Reduces Risk for *approximately 4 million people*

Miles of levee:

- 3,727 miles authorized
- 3,486 miles in place
- Main stem levee system is 95.5% complete

Flood Protection

- $12.9 billion invested for planning, construction, operation and maintenance, since 1928
- $353.6 billion in flood damages prevented, since 1928
- 27 to 1 return on each dollar invested

Estimated Flood Damage in Mississippi 2011 - 2016

- $3 Billion
- Over 1.2 million acres flooded in 2011

Corps flood plan is not working and needs to change. Levees aren't breaking, but high levees are causing higher and longer floods.

What To Do?
Divert More Flow at Old River – It's the Bottleneck.

- Natchez receives the river's full flow.
- The flow splits just south of the Natchez reach at Old River.
- 70% is discharged at New Orleans down the main channel. 30% is diverted down the Atchafalaya River.
- The Atchafalaya River can take more flow.

Effects of Less Flow at Old River

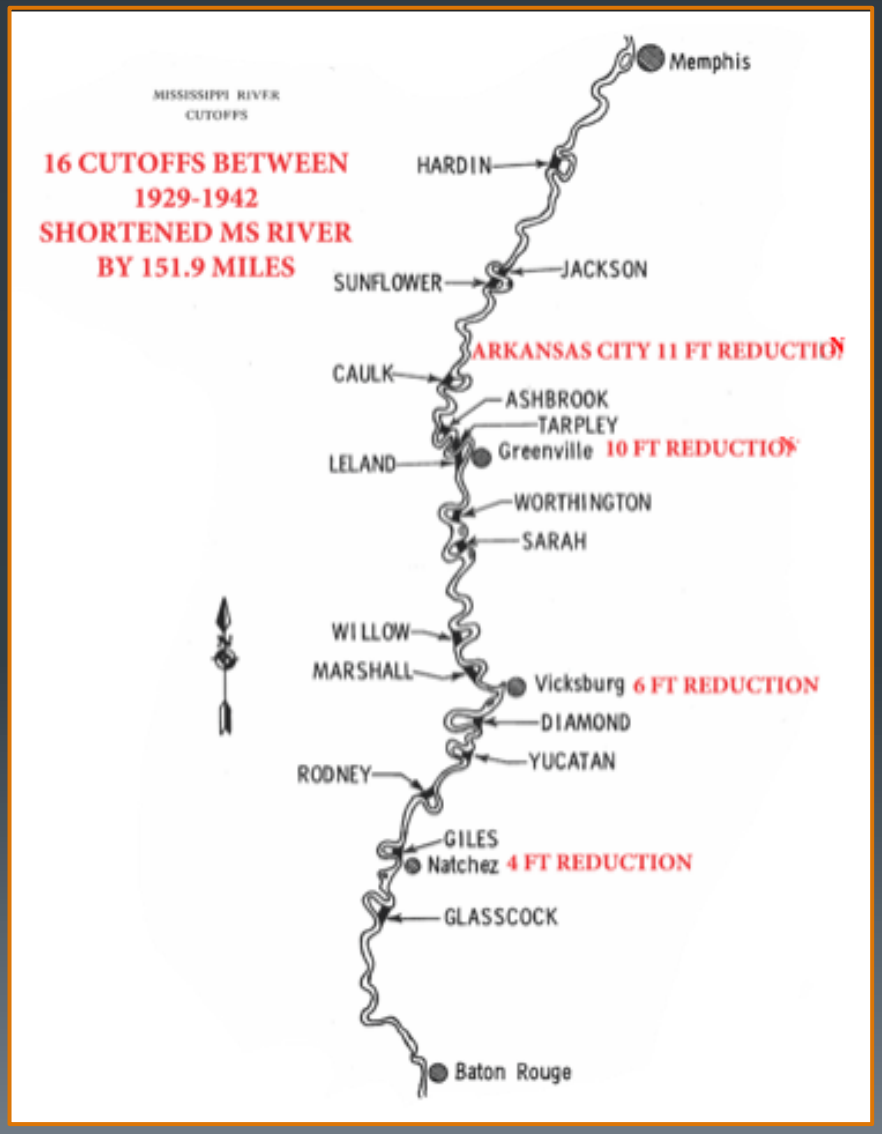
- Lower total flow and discharge
- Higher stages in main channel
- Slower flow and more silting above Old River
- Faster flow and more scouring in main channel below Old River
- Higher, longer floods in main channel
- Greater risk of levee failure at Baton Rouge and New Orleans
- More batture flooding
- Lower flow and stages in the Atchafalaya River
- Fewer sediments and greater wetlands loss in Atchafalaya basin

Work on the Old River control structure began in 1954 and has continued intermittently. It was modified following near failure in the flood of 1973 when the river almost took the shortcut to the Gulf.

The Atchafalaya Shortcut – 193 miles nearer the Gulf

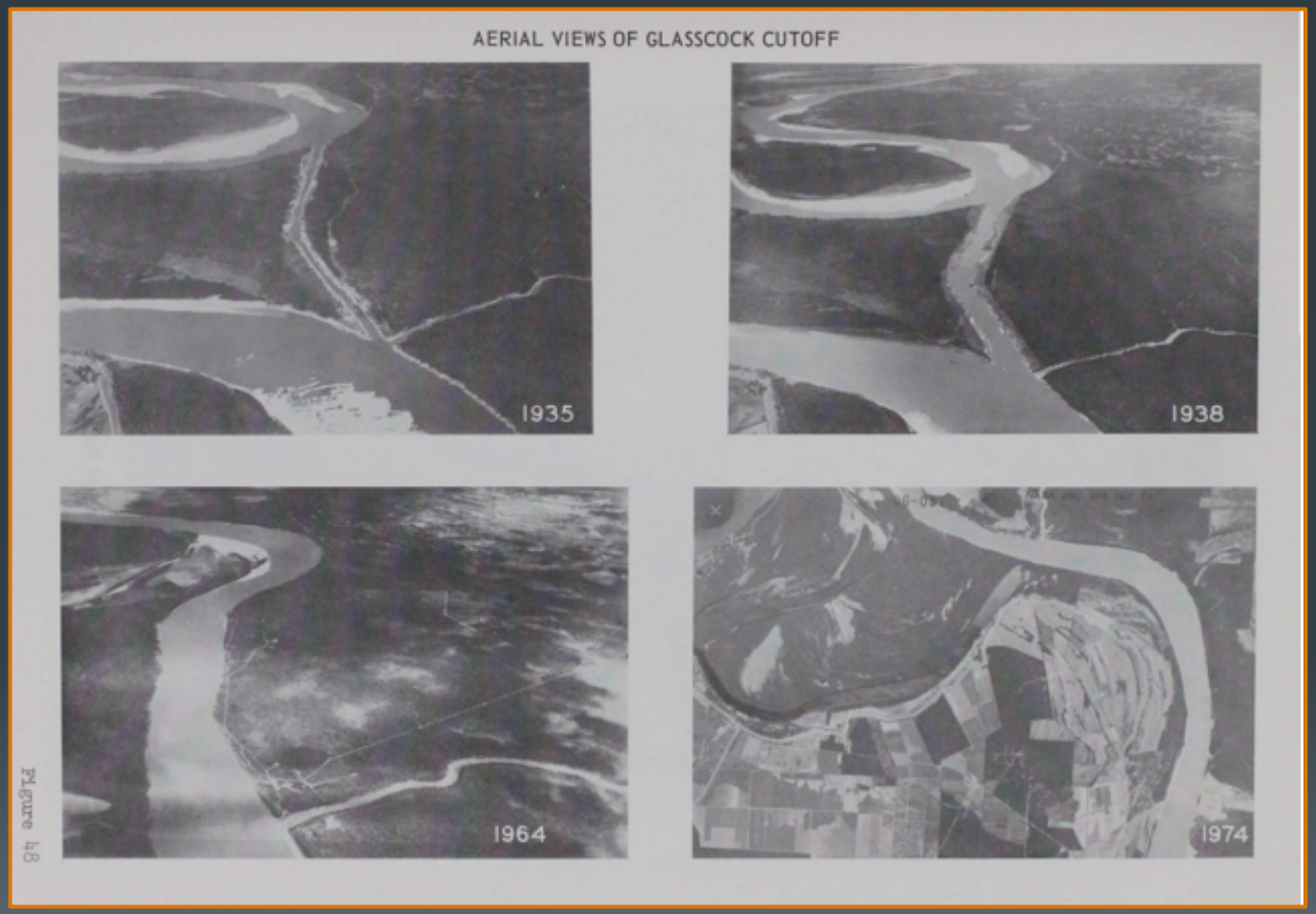
- Lower, steeper, faster.
- Why not use it?
- Why limit the flow to 30%?
- That was the natural flow in 1950.
- But the river has changed in 65 years – as predicted.

Cutoffs Changed the River



- The Corps plan included 16 cutoffs between Memphis and Natchez.
- These cutoffs shortened and straightened the river.
- Stages dropped and flow increased above the cutoffs.
- But the flow slowed below the last cutoff.

The Last Cutoff Is Just Above Lake Mary



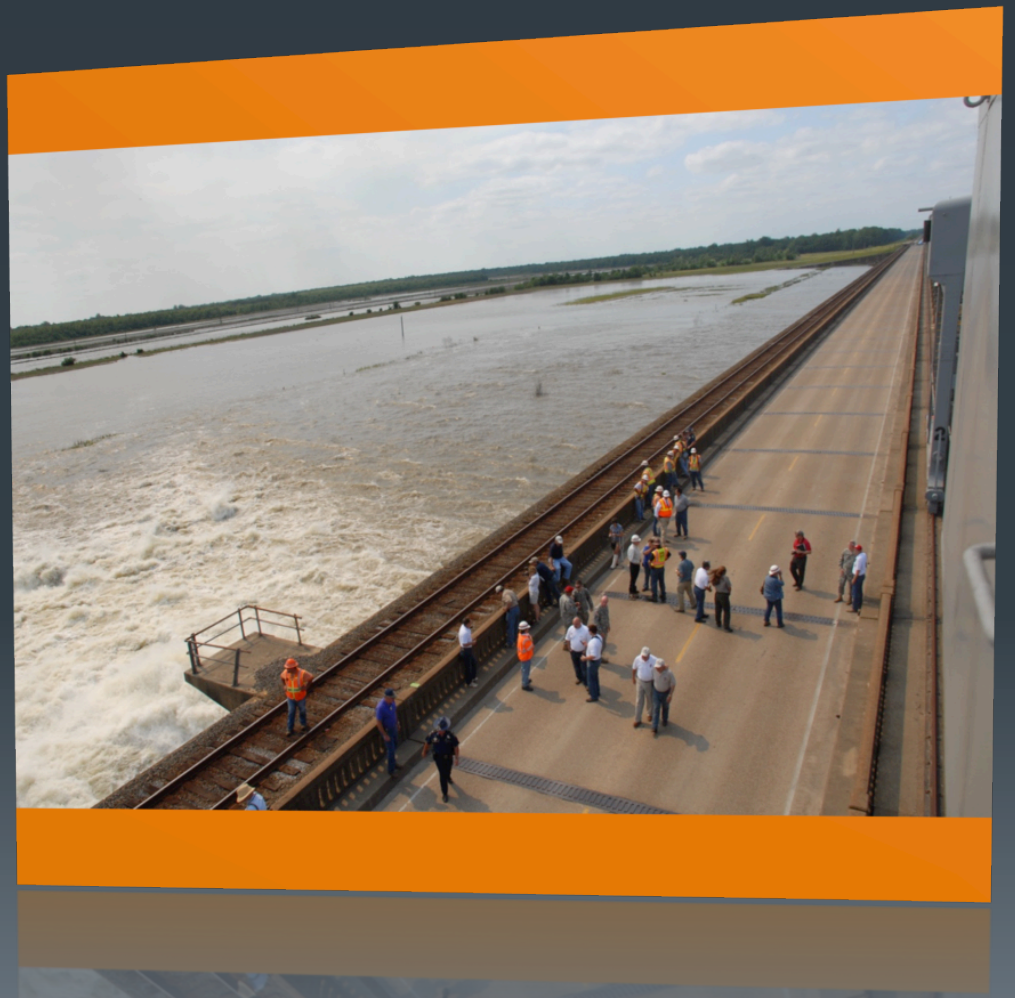
Over time, the slower flow caused silting. Silting causes the river to rise.

Cutoff Effects Predicted by W. E. Elam, Chief Engineer – Mississippi Levee Board

- Elam was recognized as the daddy of cutoffs.
- In his 1946 book, *Speeding Floods to the Sea*, he noted there was no place for more cutoffs below Old River.
- He said a new passage to the Atchafalaya was needed to speed the faster flow to the Gulf.
- It wasn't built.
- It's the critical missing piece in the Corps plan.

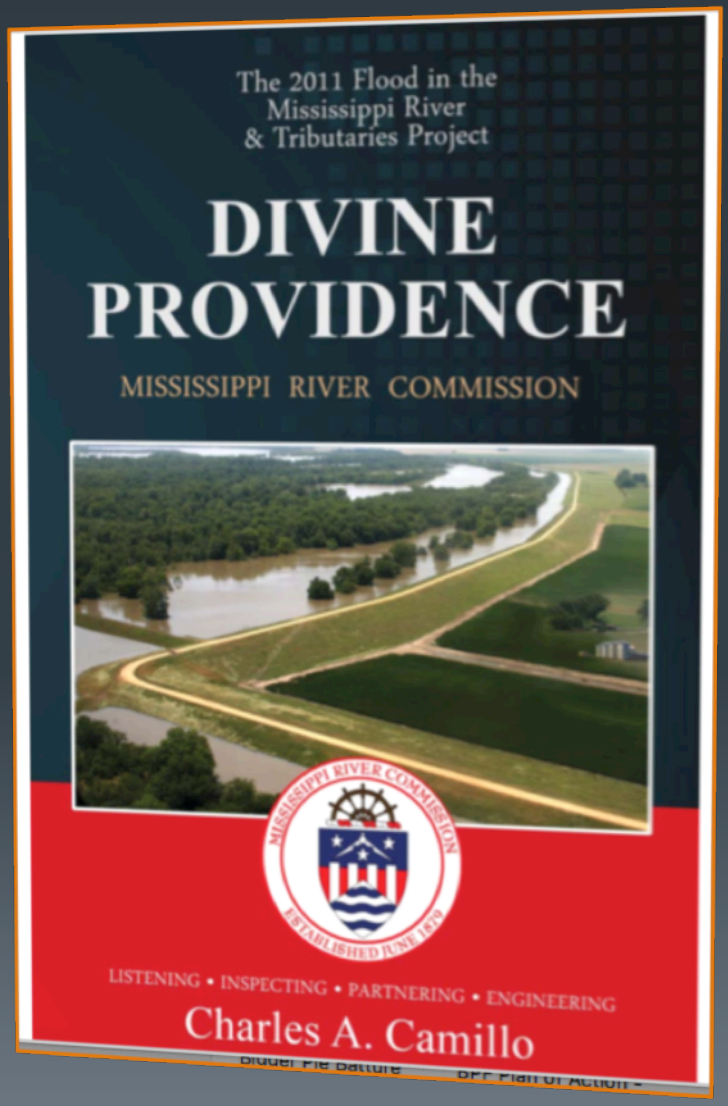
Morganza Spillway

- But an emergency spillway was built at Morganza to protect Baton Rouge.
- It has been used twice in 60 years.
  - In 1973 to keep Old River from failing
  - In 2011 to keep Baton Rouge and New Orleans from flooding
- Not designed to divert flow on a continuous basis or to moderate floods upriver
- Only opened to protect Baton Rouge and New Orleans
- Only opened when river reaches predetermined stages and flows



Divine Providence

- These predetermined stages were set based on old flow-line data.
- They are out of date and don't work anymore because the river has changed.
- The Corps almost waited too long to open the Morganza in 2011 according to the after action report – Divine Providence.
- It was a close call. Baton Rouge and New Orleans almost flooded.



THE RIVER HAS CHANGED

- Elam was right. The river has become shallower below the last cutoff.
- It's backing up.
- Low stage is 10' higher at Natchez.
- The Corps had a near miss in 2011. They may not be so lucky next flood.
- The Corps is doing a new flow line study to reset triggers.
- The 70-30 split was the natural split in 1950. But not now.
- It should be changed.

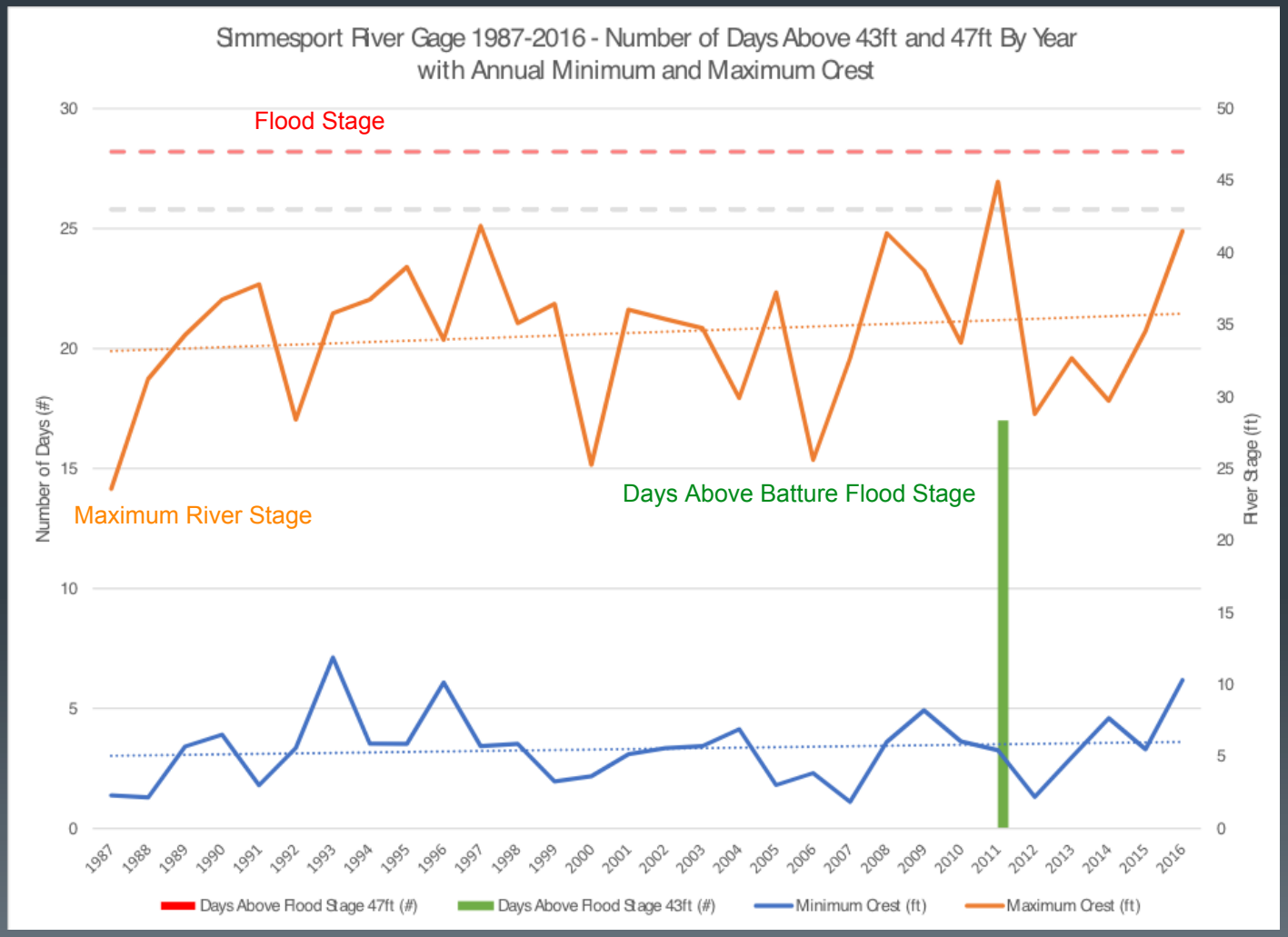
Did Congress authorize the Corps to maintain the 70-30 split?

- Many articles and the Corps say Congress did – but give no specific reference.
- The Corps relies on this language in its Water Control Manual (presumably from some legislative source):
  - ***"…the distribution of flow and sediments in the Mississippi and Atchafalaya Rivers is now (1950) in desirable proportions and should be so maintained."***
- This seems to say that the desirable proportions of flow and sediment should be maintained, not the 70-30 split.
- Are the flow and sediment proportions with the 70-30-split desirable today?
- Not for Mississippi and much of Louisiana.

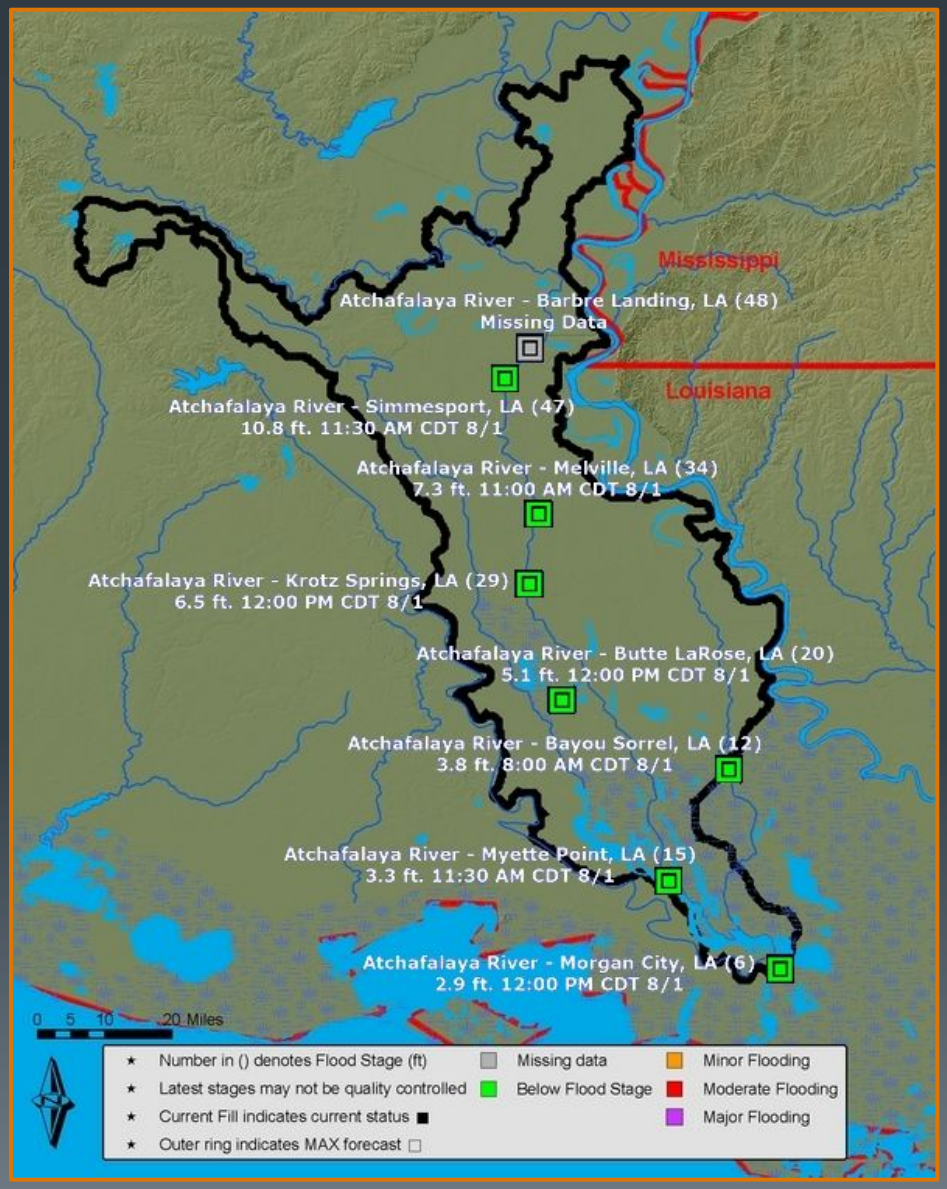
Can The Atchafalaya Take More Flow?

- Yes, the Atchafalaya just below Old River at Simmesport has never reached its 50 foot flood stage.
- Its low stage trend line is flat. It's not rising.
- Its batture has flooded only once since 1984.
- Simmesport can handle a lot more flow all the time.

Atchafalaya River Stages at Simmesport

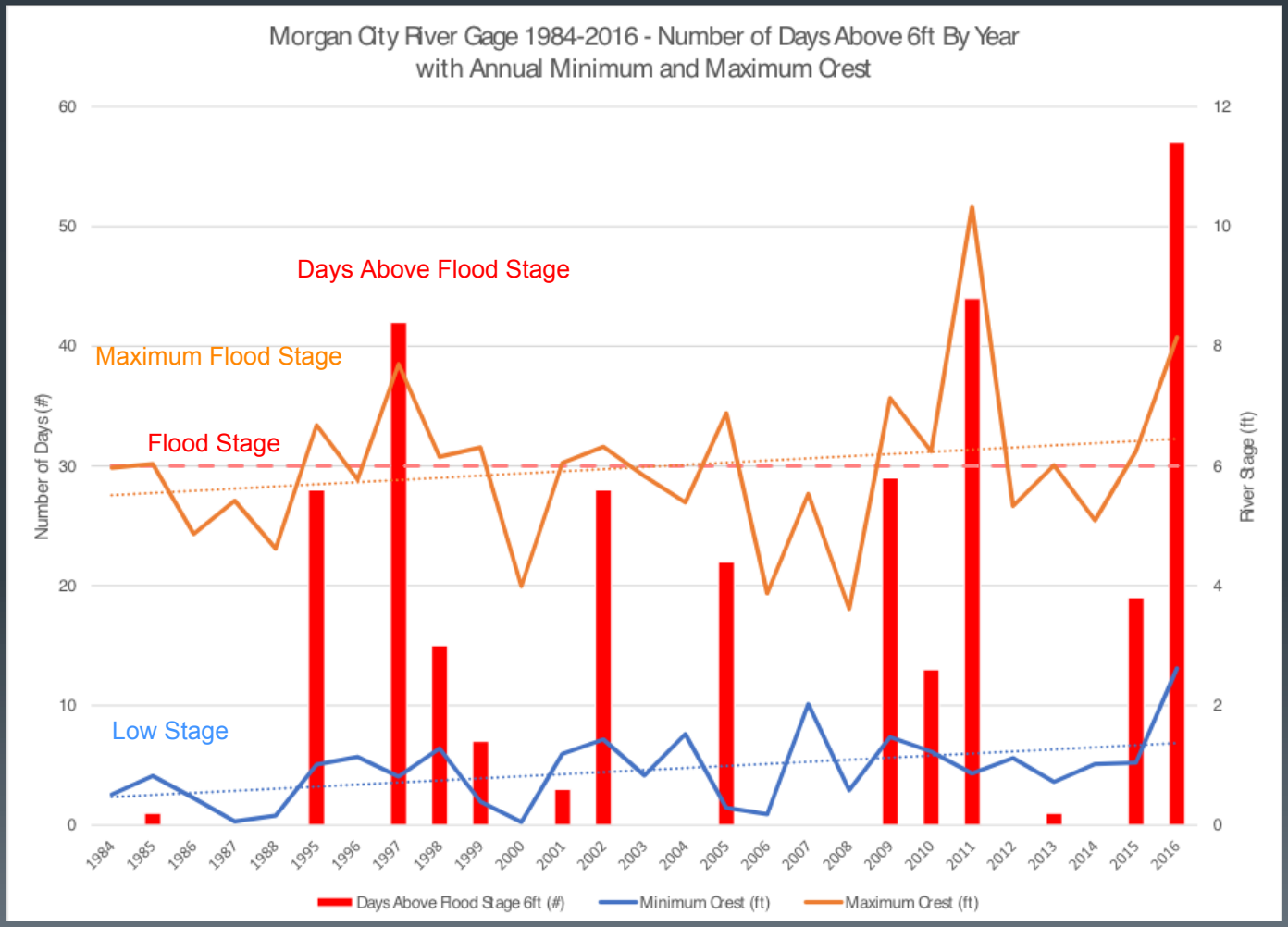


Atchafalaya River Gages



- There are five gages below Simmesport.
- Elevation and flood stages are lower down river.
- Morgan City below flood stage 98.5% of the time in the last 5 years
- The Atchafalaya can handle more flow.

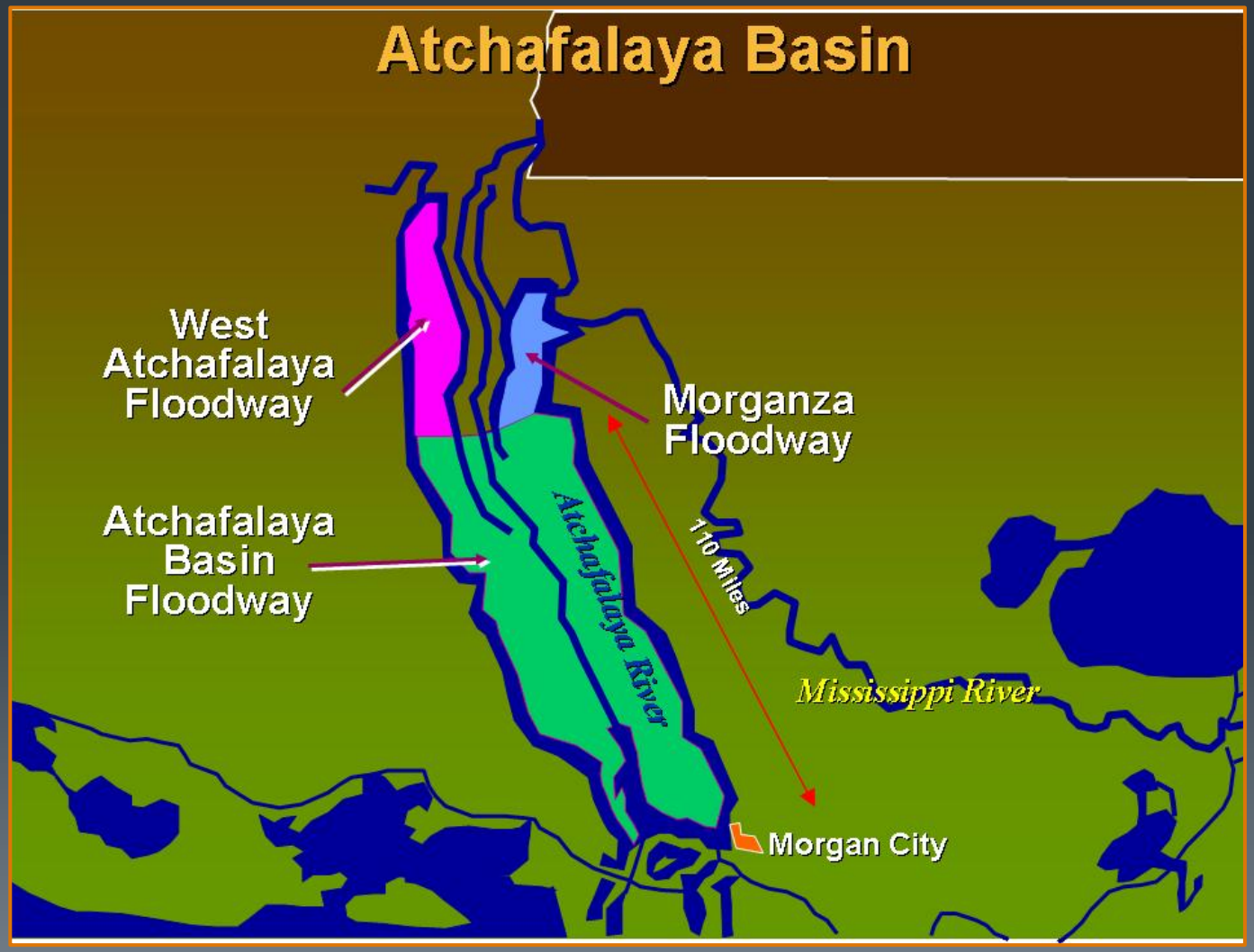
Morgan City Gage – Above flood stage less than 2% of the time in the last 5 years.



THE ATCHAFALAYA FLOODWAY

The natural floodway for the Mississippi River.

The Corps holds flooding easements here.

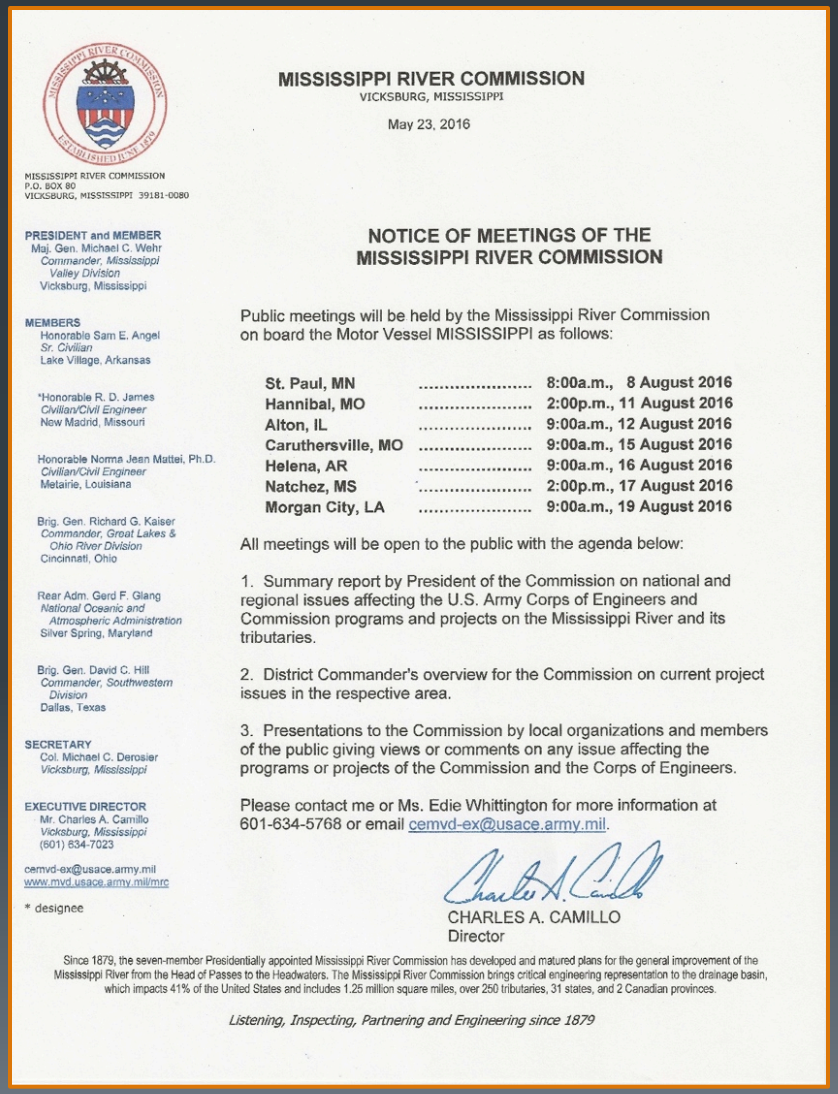


More Flow Down the Atchafalaya River

- Fewer, shorter, lower major floods in main channel
- Less batture and backwater flooding
- Less silting above Old River
- Lower river stages
- Less bottomland hardwood and environmental damage in Mississippi
- Less loss of wetlands in Louisiana
- Less risk of levee failure to Baton Rouge and New Orleans

Where To Tell Your Flood Story

- MS River Commission 2016 Low Water Public Meeting Notice
  - August 17th – Natchez, MS (More meetings will be scheduled for 2017 if you missed this year.)
- Go to biggerpieforum.org to see other flood stories.
- Post your story on biggerpieforum.org or mail us your story.



MISSISSIPPI RIVER COMMISSION
VICKSBURG, MISSISSIPPI

May 23, 2016

MISSISSIPPI RIVER COMMISSION
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

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NOTICE OF MEETINGS OF THE MISSISSIPPI RIVER COMMISSION

Public meetings will be held by the Mississippi River Commission on board the Motor Vessel MISSISSIPPI as follows:

St. Paul, MN	**8:00a.m., 8 August 2016**
Hannibal, MO	**2:00p.m., 11 August 2016**
Alton, IL	**9:00a.m., 12 August 2016**
Caruthersville, MO	**9:00a.m., 15 August 2016**
Helena, AR	**9:00a.m., 16 August 2016**
Natchez, MS	**2:00p.m., 17 August 2016**
Morgan City, LA	**9:00a.m., 19 August 2016**

All meetings will be open to the public with the agenda below:

1. Summary report by President of the Commission on national and regional issues affecting the U.S. Army Corps of Engineers and Commission programs and projects on the Mississippi River and its tributaries.

2. District Commander's overview for the Commission on current project issues in the respective area.

3. Presentations to the Commission by local organizations and members of the public giving views or comments on any issue affecting the programs or projects of the Commission and the Corps of Engineers.

Please contact me or Ms. Edie Whittington for more information at 601-634-5768 or email cemvd-ex@usace.army.mil.

CHARLES A. CAMILLO
Director

Since 1879, the seven-member Presidentially appointed Mississippi River Commission has developed and matured plans for the general improvement of the Mississippi River from the Head of Passes to the Headwaters. The Mississippi River Commission brings critical engineering representation to the drainage basin, which impacts 41% of the United States and includes 1.25 million square miles, over 250 tributaries, 31 states, and 2 Canadian provinces.

Listening, Inspecting, Partnering and Engineering since 1879

Contact Information for Congressional Delegation & State Officials

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  (601) 359-3150
  www.governorbryant.com

- Lt. Governor Tate Reeves
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  Jackson, MS 39215
  (601) 359-3200
  www.ltgovreeves.ms.gov

- Speaker of the House
  Philip Gunn
  Room 306
  P.O. Box 1018
  Jackson, MS 39215
  (601) 359-3300
  www.philipgunn.org

- Secretary of State
  Delbert Hosemann
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  (601) 359-1633
  www.sos.ms.gov

- Congressman
  Benny Thompson
  3607 Medgar Evers Blvd.
  Jackson, MS 39213
  (601) 946-9003
  www.bennniethompson.house.gov

- Senator Thad Cochran
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  Jackson, MS 39201
  (601) 965-4459
  www.cochran.senate.gov

- Senator Roger Wicker
  U.S. Federal Courthouse
  501 East Court Street, Suite 3-500
  Jackson, MS 39201
  (601) 965-4007
  www.wicker.senate.gov

- Congressman Gregg Harper
  2507-A Old Brandon Road
  Pearl, MS 39208
  (601) 932-2410
  www.harper.house.gov

Bigger Pie Forum

- Bigger Pie is a self funded non profit corporation.
- Its mission is to explain and opine about issues that affect Mississippi's economy.
- Its objective is to help the economy grow - a bigger pie.
- Bigger Pie believes that flooding along the Mississippi hurts the economy because it hurts the property owners who are flooded and those whose businesses depend on them.
- Bigger Pie believes it's time for the Corps to act and for Congress to encourage it.

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