

# Environmental River Engineering

## *An Overview of “Engineering With Nature” Structures on the Mississippi River*



Rob Davinroy, P.E., M. ASCE  
Chief, River Engineering  
Applied River Engineering Center  
St. Louis District





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US Department of Transportation  
 Federal Highway Administration  
 Office of Freight Management and Operations  
 Freight Analysis Framework

**Estimated Average Annual Daily Truck Traffic**

(1998)



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**1 tow = 1800 trucks**

**35,000 trucks per day off the  
road in St. Louis region**



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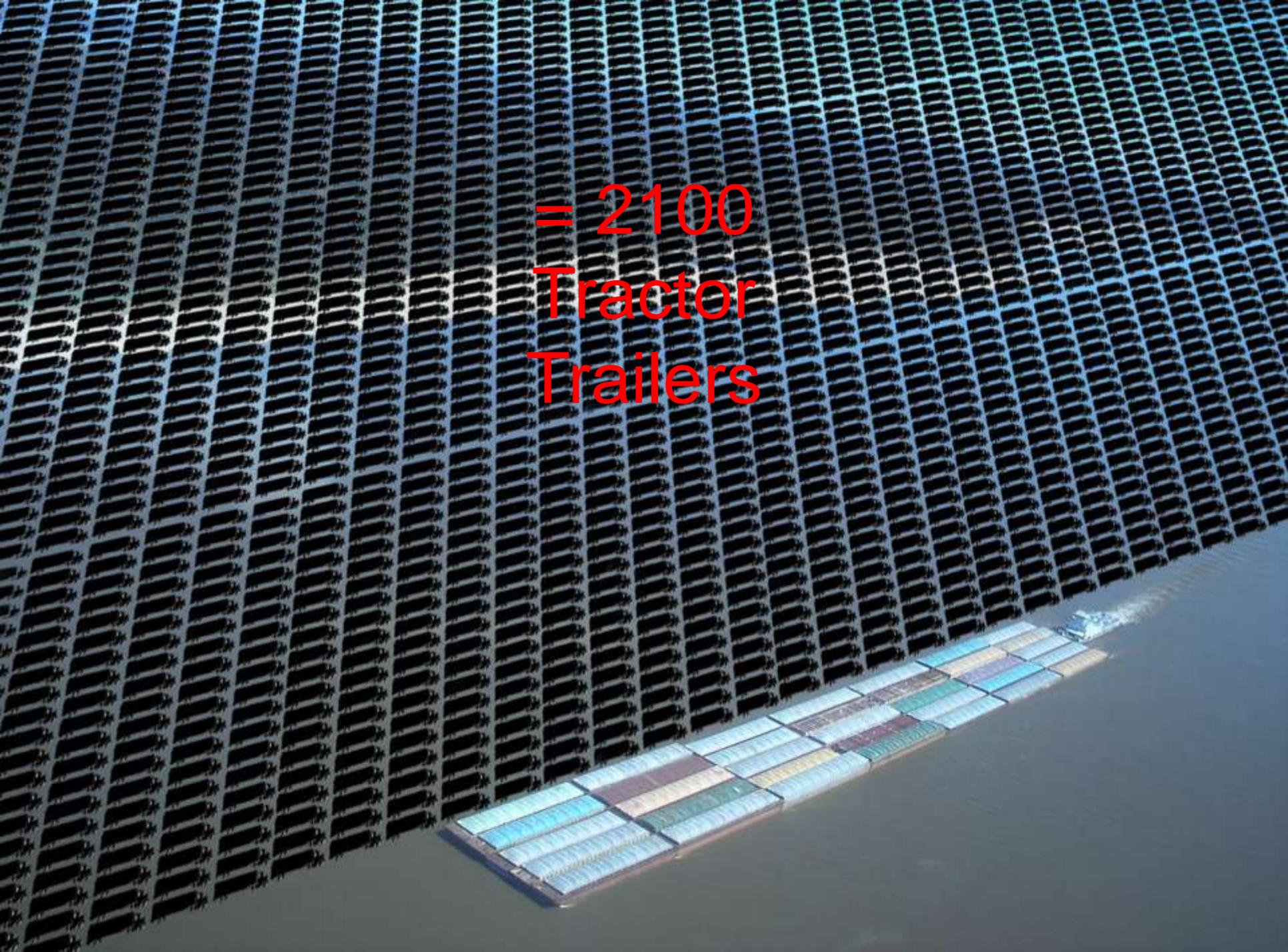
The Inland Waterway System, the most efficient, economic, environmentally efficient mode of transportation on the planet.



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= 2100  
Tractor  
Trailers

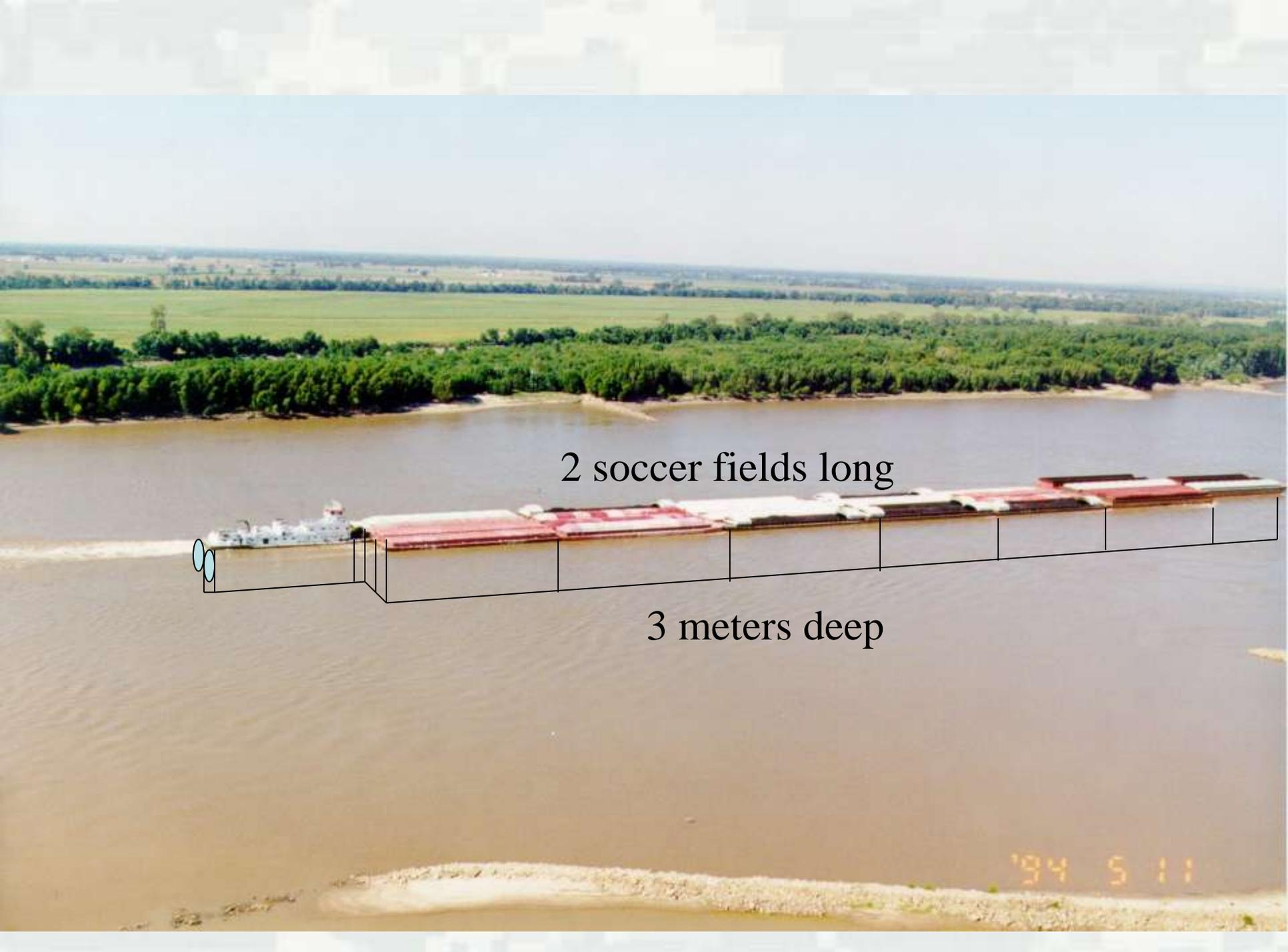


# The Design

Minimum 3 meters deep, 100 meters wide, with additional width in bends as required



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2 soccer fields long

3 meters deep

'94 5 11



An aerial photograph of a long, flat-topped barge being pushed by a tugboat on a wide river. The barge is filled with various cargo, and the tugboat is positioned at the rear, creating a white wake in the water. The river banks are visible in the background.

Corn

Soybeans

Wheat

Coal

Salt

Wood Chips

Gasoline

Petroleum

Jet Fuel

Fuel Oil

Petroleum

Asphalt

Veg Oils

Kerosene

Benzene

Alcohol

Liquefied Gases

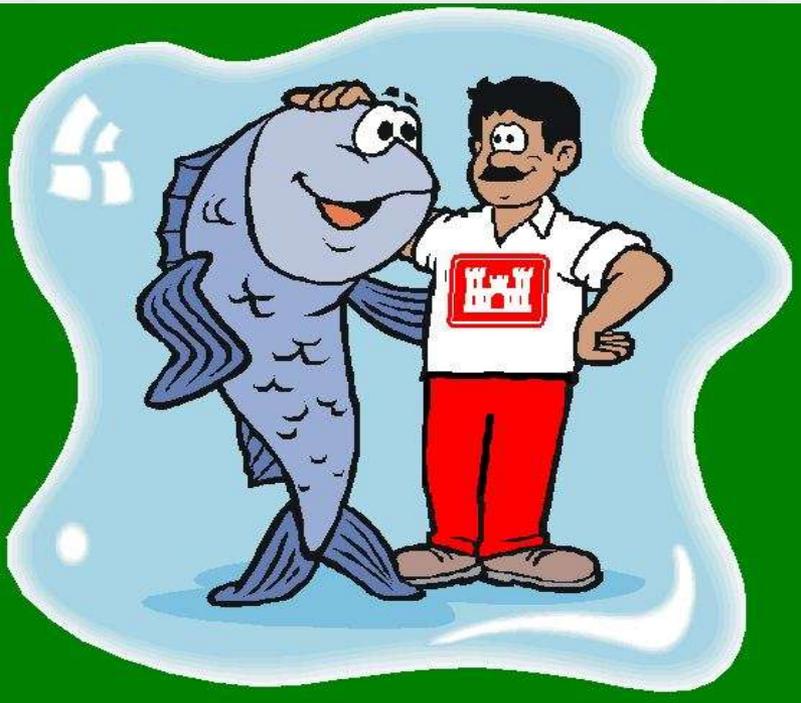
Sodium Hydroxide

Soybean Oil

Bev Alcohol

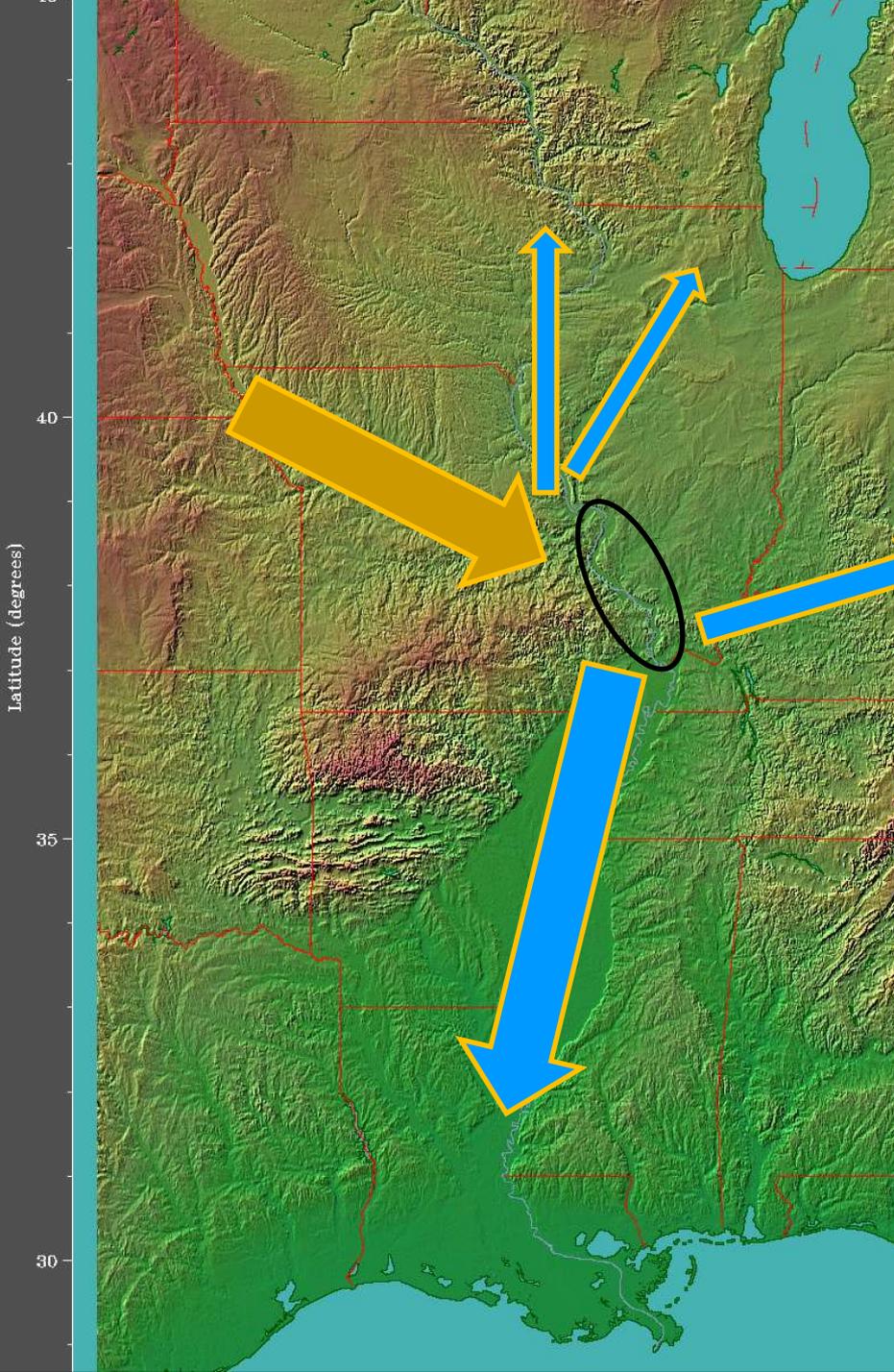


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**Goal: Obtaining and  
Maintaining a  
Reliable Navigation  
Channel, for the  
efficient transport of  
goods and services,  
in an Environmentally  
Sensitive Manner**

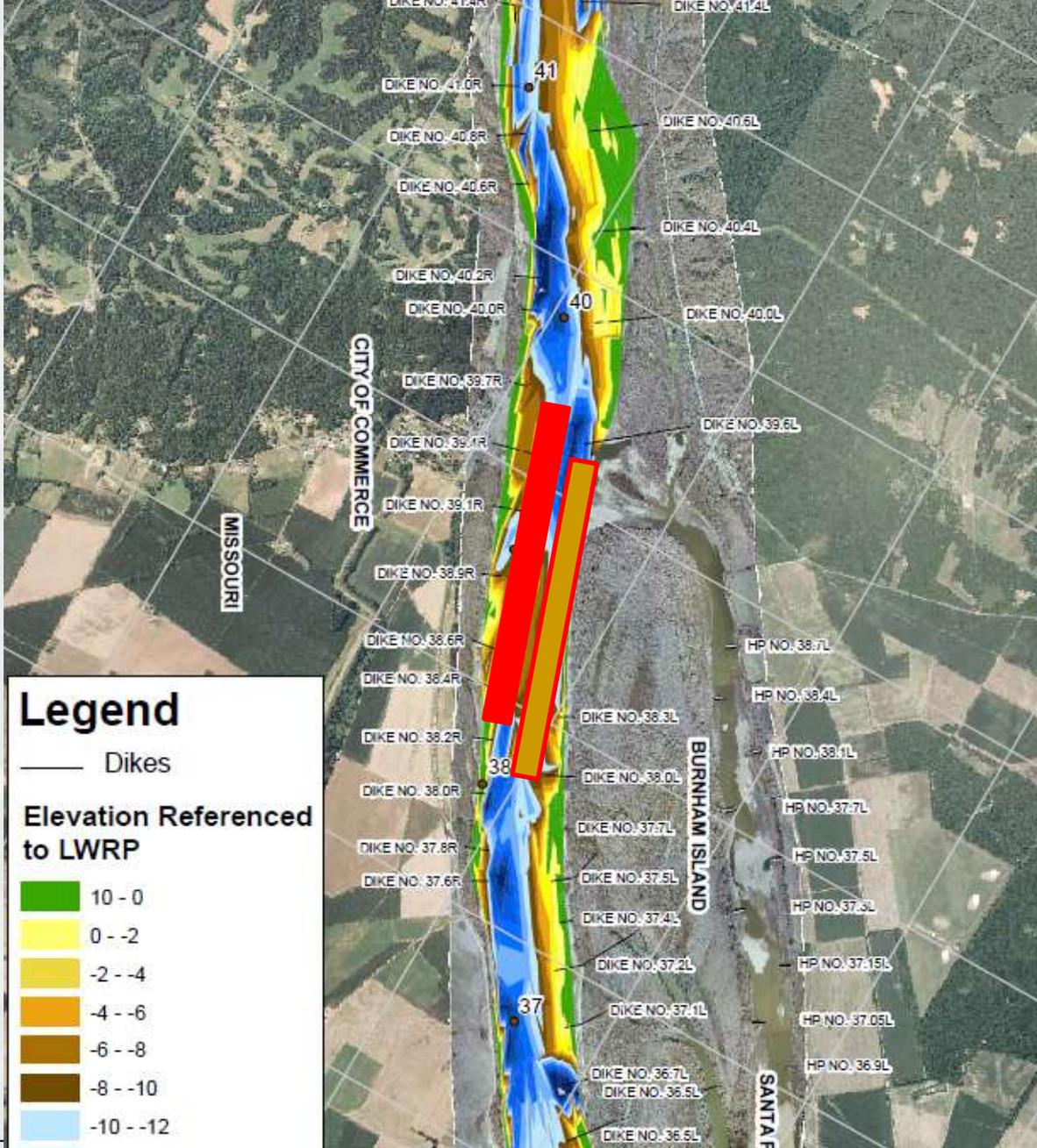


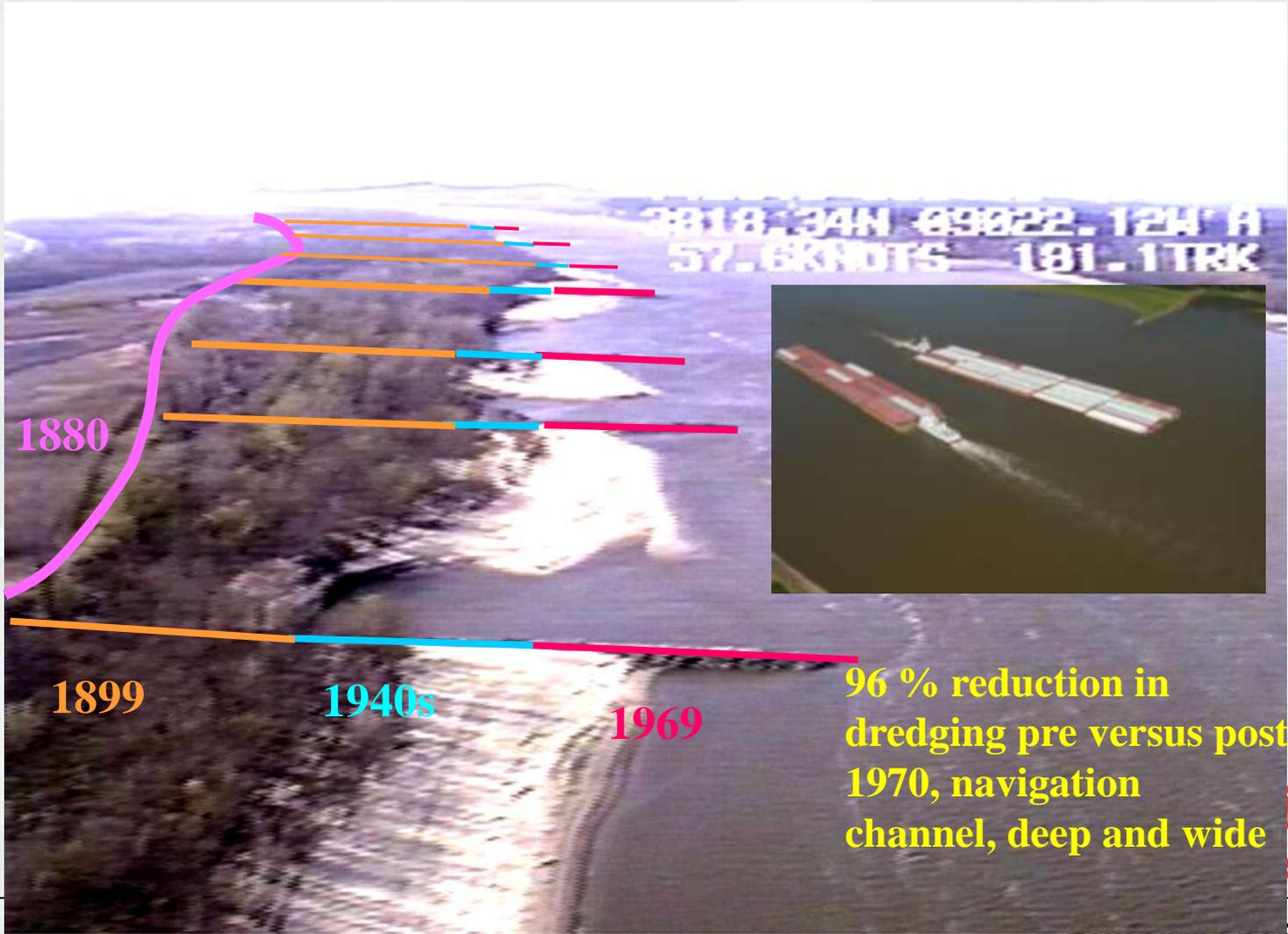


The  
Middle Mississippi River  
1300 training structures



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# Traditional, Perpendicular to the Channel, Constriction Sediment Management

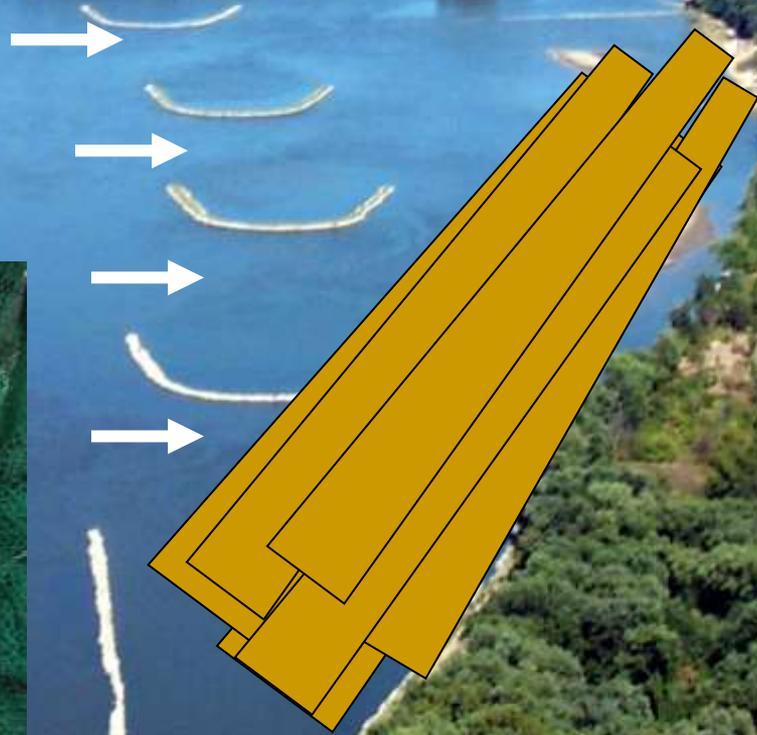


## Modern Day, Parallel to the Channel, Sediment Management



2002 Construction - \$1.5 mil

\$500 k per year





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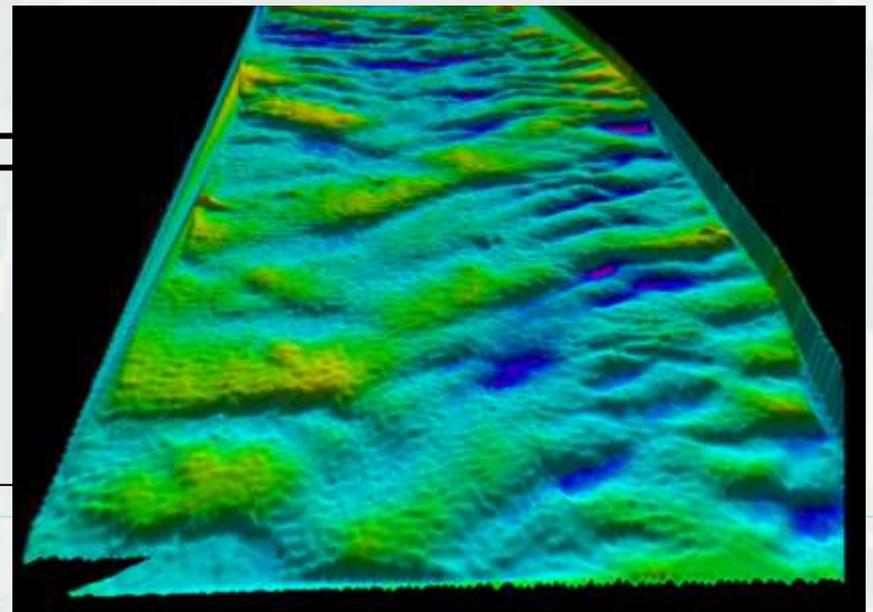
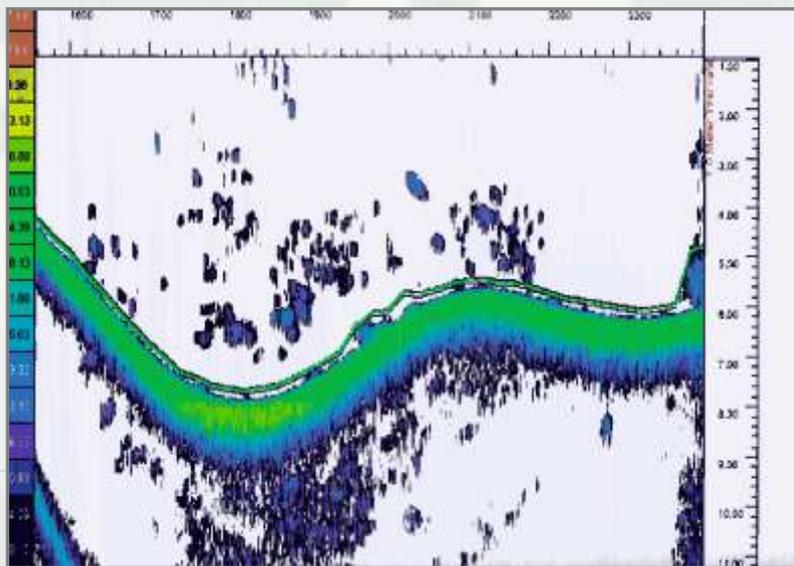


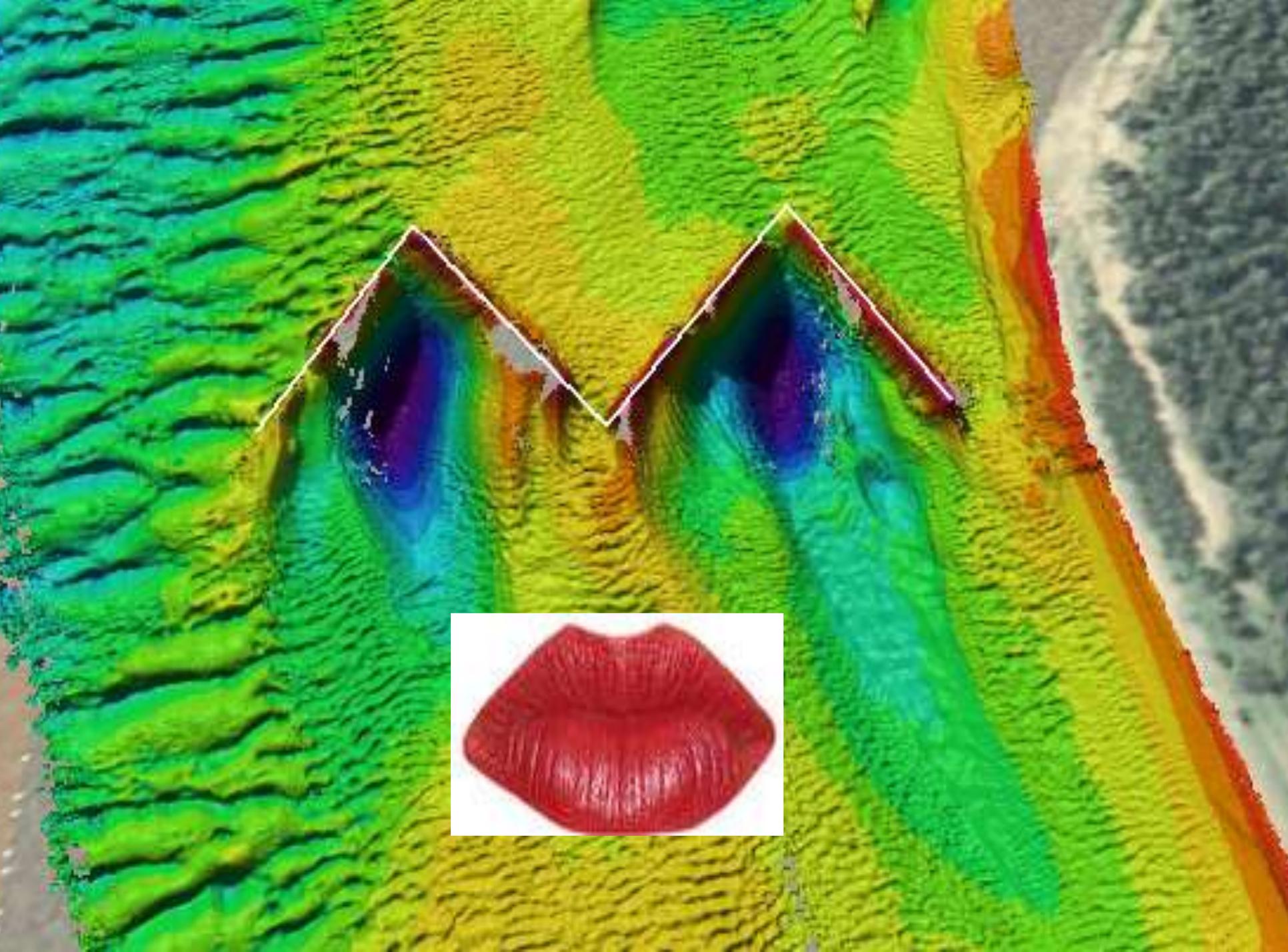
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:24000 SL 4-107

BROWN'S CHUTE

BROWN'S BAR

POSTOOTH BEND

DRY BAYOU

STEVEN



ISLAND

1:24000 SL 4-107

BROWNS CHUTE

BROWNS BAR

POSTOOTH BEND

DRY BAYOU

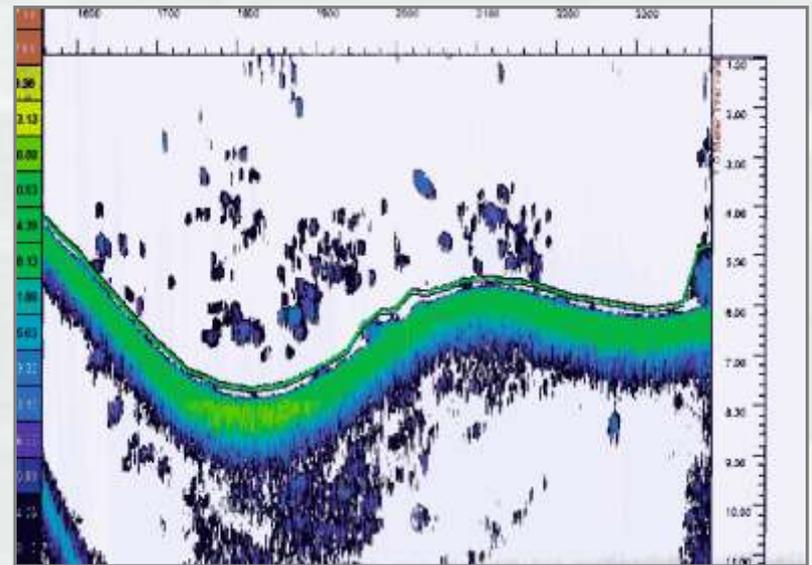
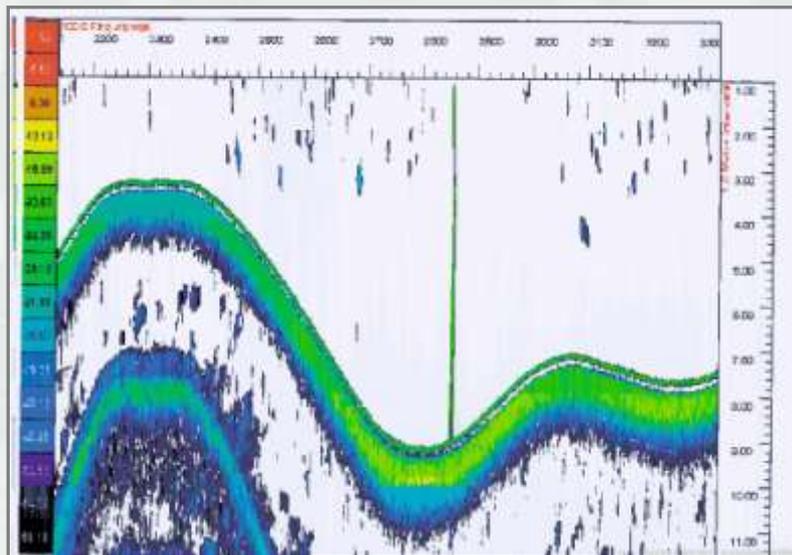
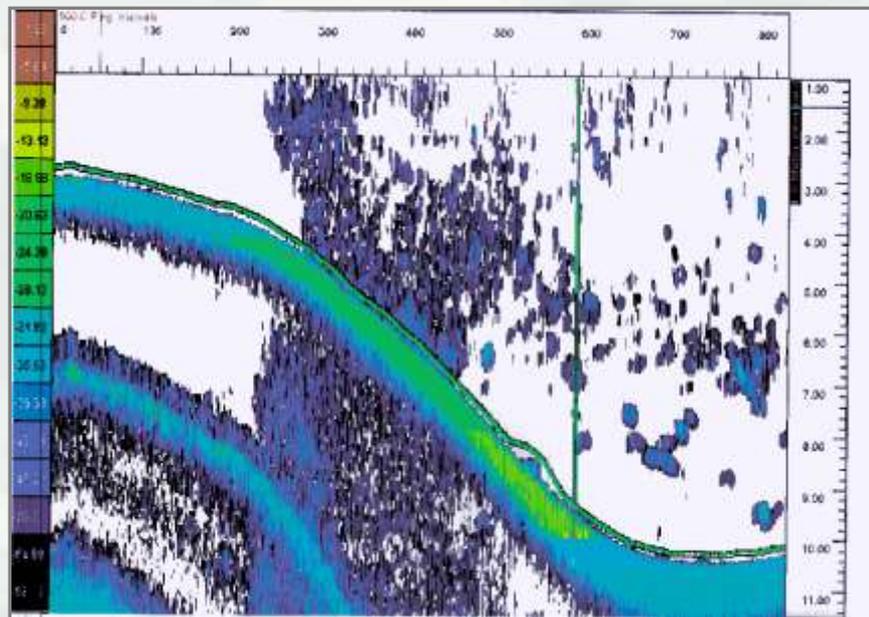
STEVEN







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# Side Channel Enhancement Dike (SCED)

Share

More info

SCED DIKE

APPLIED  
**RIVER**  
ENGINEERING CENTER

Channel Enha

Missouri

e Test

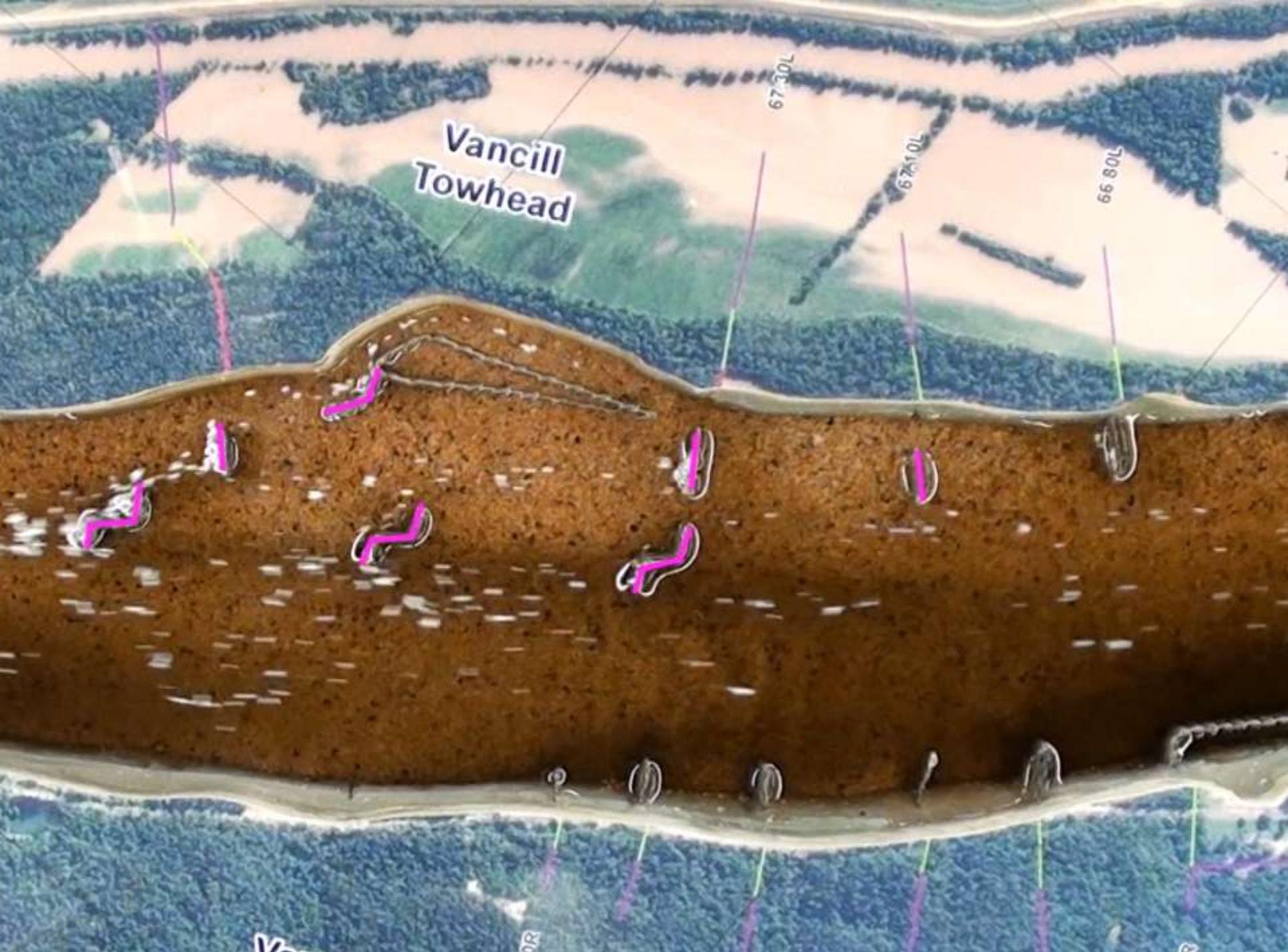
ation (ft-LWR)

10 - 0.00

1:18 / 2:36



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Vancill  
Towhead

67-30L

67-10L

66-80L

66-89

DR

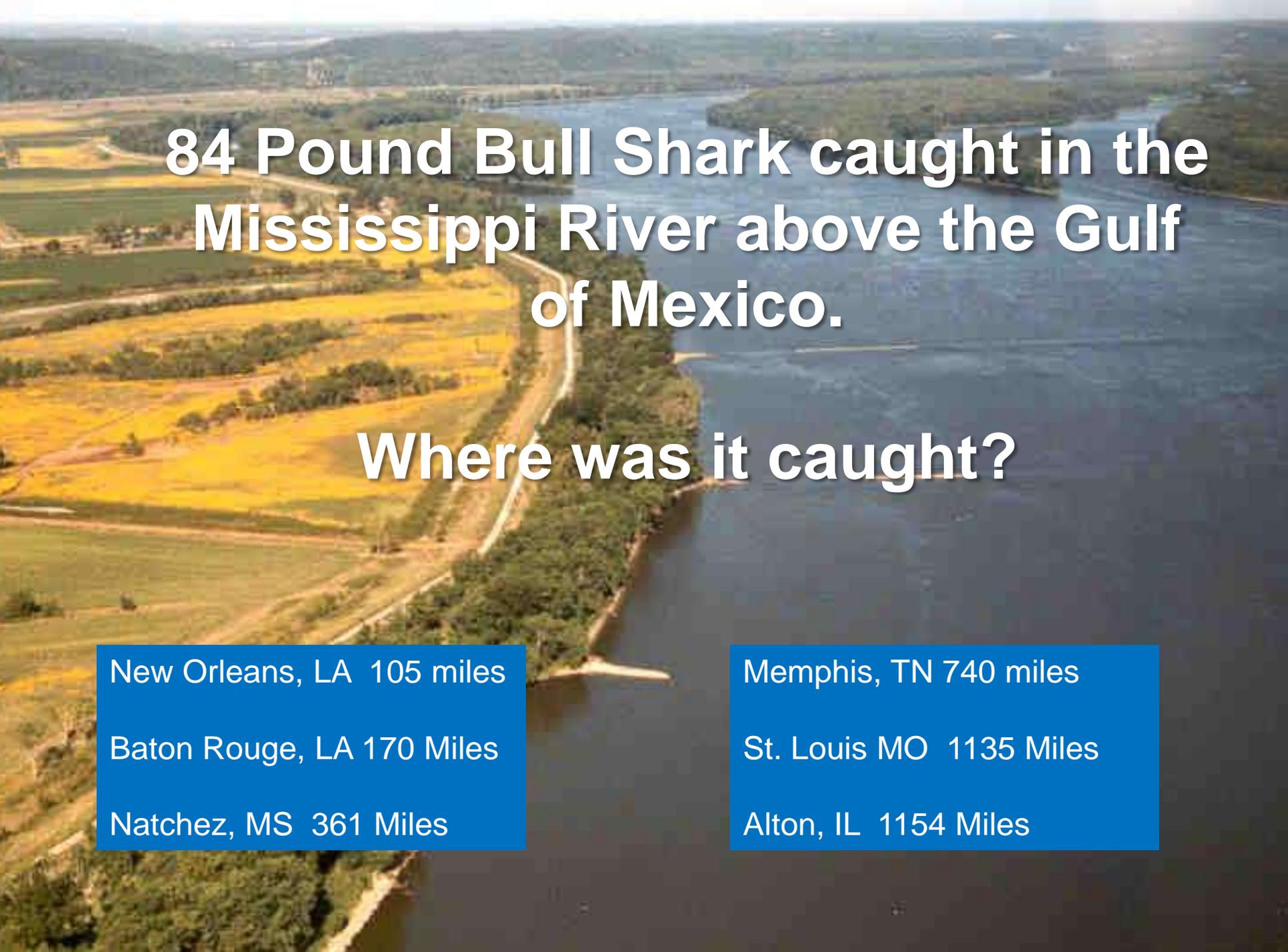


**Bull Shark, the most aggressive shark on the planet, has killed the most humans, 11 feet long, 500 pounds**



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# 84 Pound Bull Shark caught in the Mississippi River above the Gulf of Mexico.

## Where was it caught?

New Orleans, LA 105 miles

Baton Rouge, LA 170 Miles

Natchez, MS 361 Miles

Memphis, TN 740 miles

St. Louis MO 1135 Miles

Alton, IL 1154 Miles



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