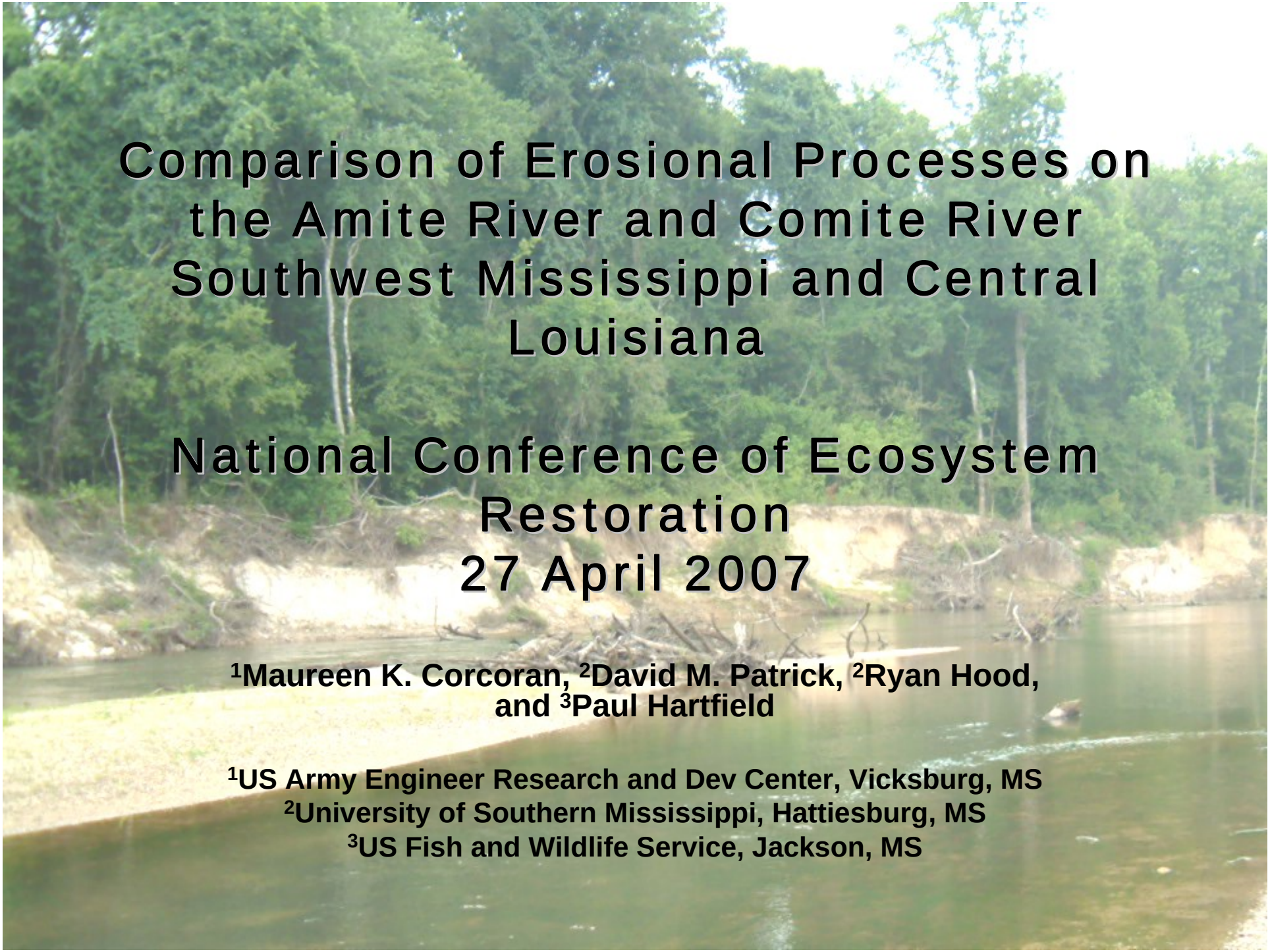

Comparison of Erosional Processes on the Amite River and Comite River Southwest Mississippi and Central Louisiana

National Conference of Ecosystem Restoration
27 April 2007

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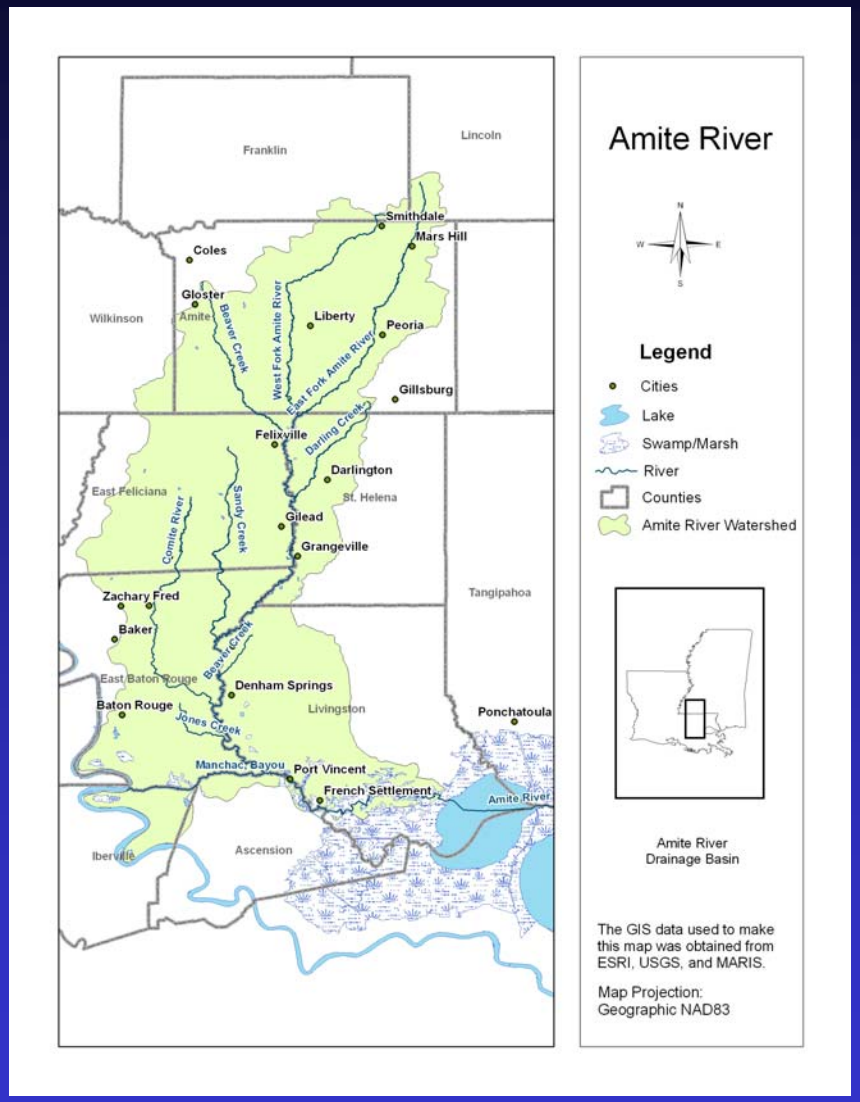
[3]US Fish and Wildlife Service, Jackson, MS

Amite River Basin

- Consists of 2200 sq miles in southwest Mississippi and central Louisiana
- Supports the threatened habitat of the Inflated Heelsplitter Mussel
  - Reduction of 10,690 acres of habitat



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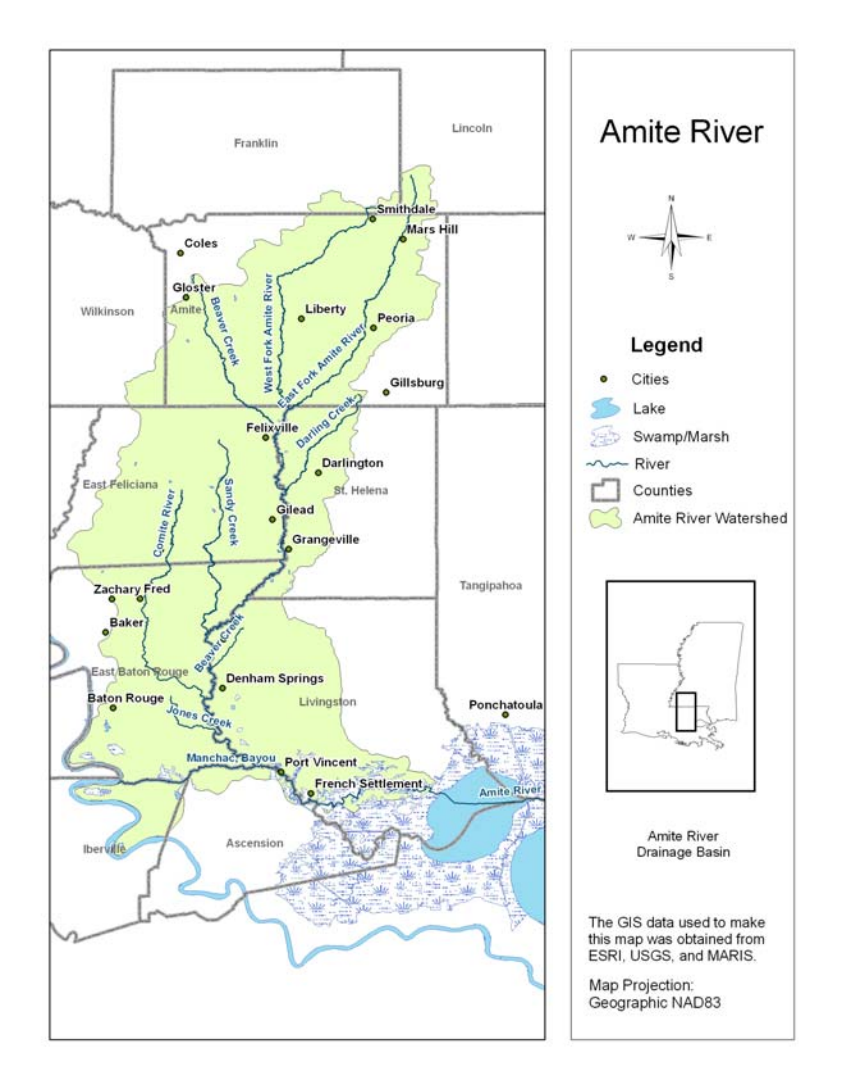
Study Reaches

- **Mined Reach of the Amite River**
- **Upstream of the Mined Reach – Amite River**
- **Downstream Amite River Reach and the Comite River**



Project Objectives

- **Provide better understanding of the effects of riparian sand and gravel mining on river processes**
- **Identify source(s) of erosional process of the Amite River and Comite River**
- **Relate erosional processes affecting the Amite River to the Comite River**
- **Offer information for habitat mitigation and management**

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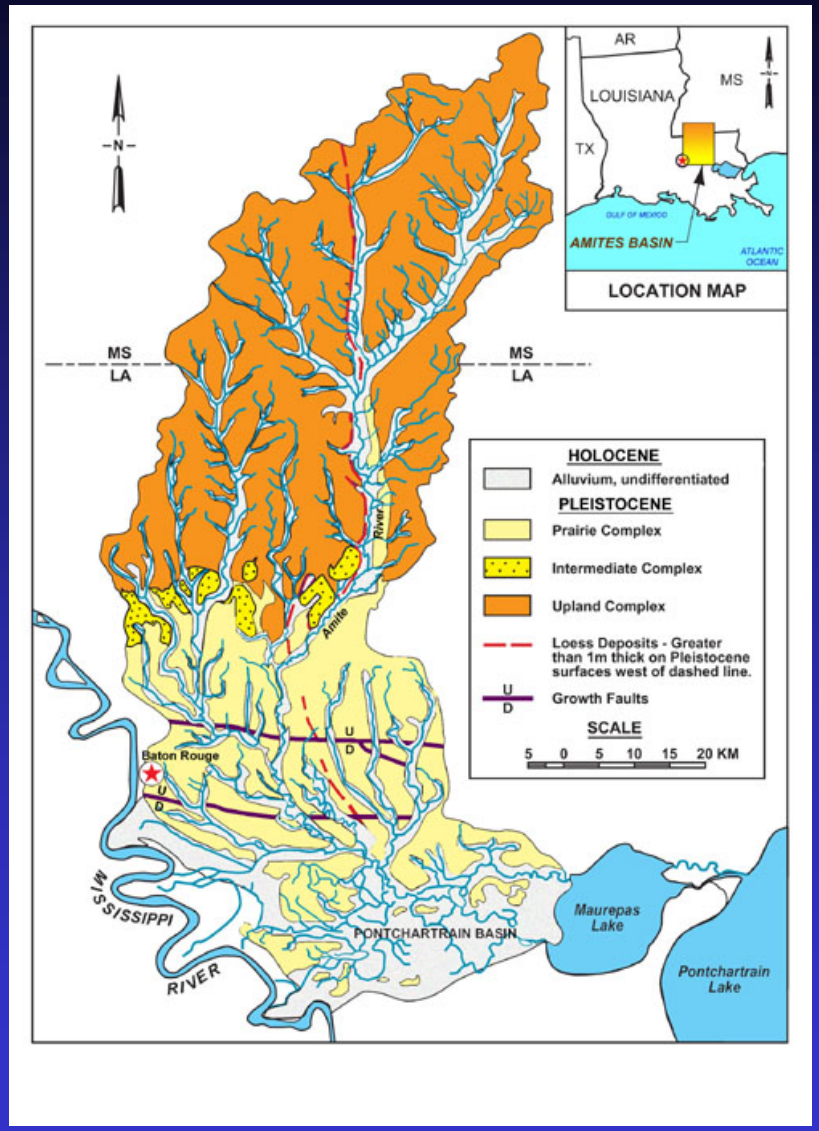
Geologic Setting

- **Amite River Basin lies on three distinct Pleistocene terraces**
  - **Upland: gradational sequence of upland fluvial gravels and sands**
  - **Intermediate and Prairie: remnants of pre-existing Pleistocene**



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History of Gravel Mining on the Amite River

- **Initiated in 1960s on the Amite River**
- **Primary gravel operations exist around Grangeville, LA**
- **Significant mining activities occur in the outcrop of the Intermediate and Prairie complexes**

Approach

- **Assemble and review data sets**
  - **Field observations (ground and aerial recon)**
  - **USGS stream gauges**
  - **USDA aerial photography**
  - **Louisiana Department of Transportation and Development**

Field Observations

Moderate to severe erosion encountered in the Amite River and the Comite River

- **Bridge scour**
- **Fallen vegetation**
- **Mid-channel development**
- **Meander erosion**

Comite River - Upstream

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Comite River - Upstream

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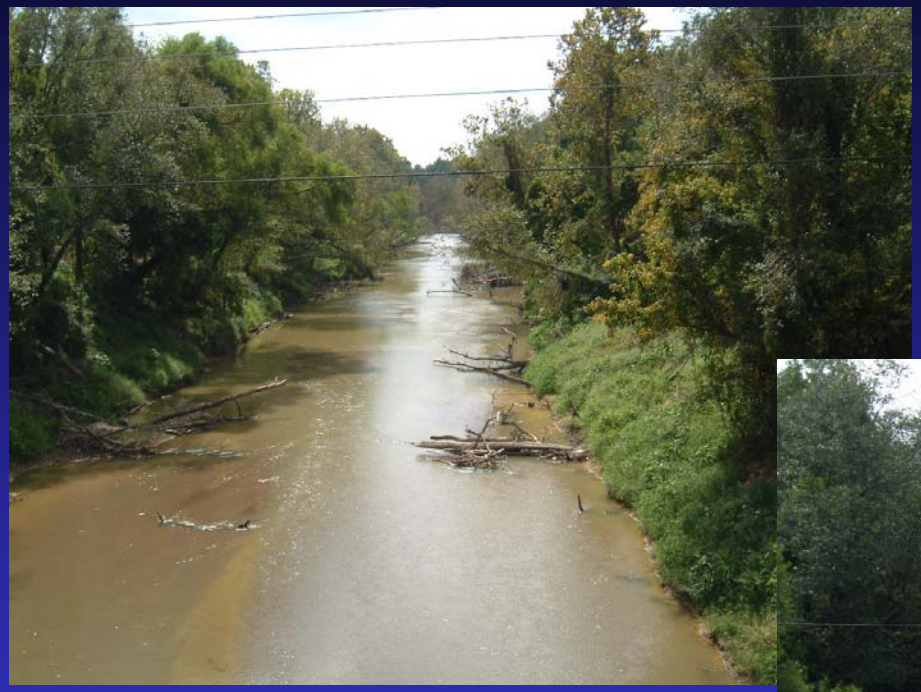
Comite River – Upstream



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Amite River – Mined Reach

Amite River - Downstream

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Amite River – Downstream of Mined Reach

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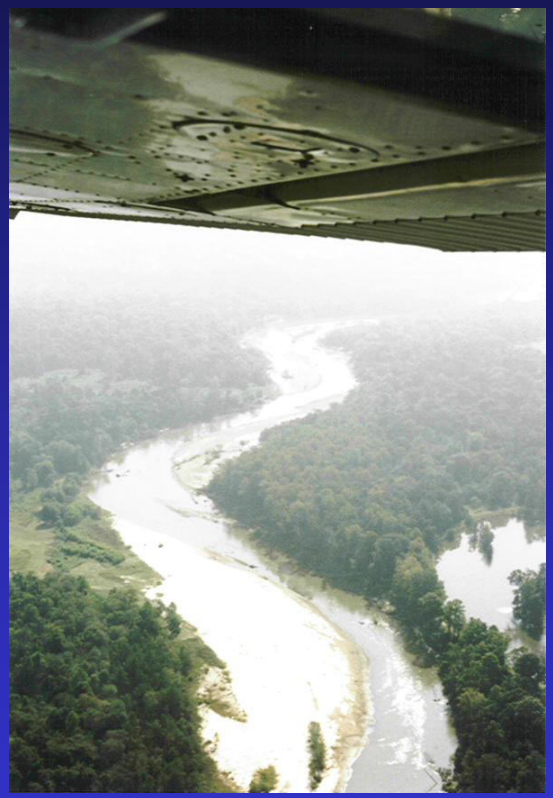
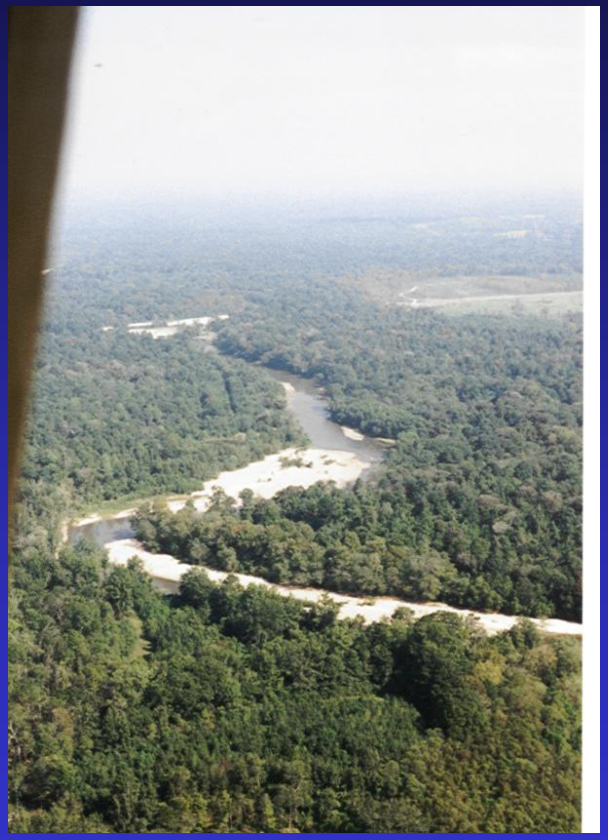
Amite River – Upstream of Mined Reach





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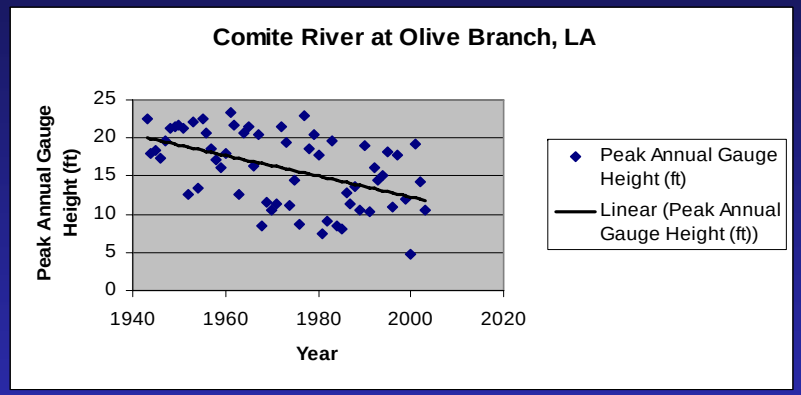
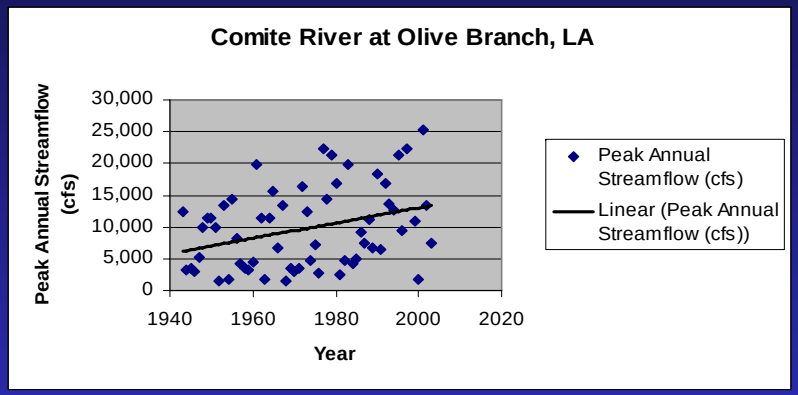
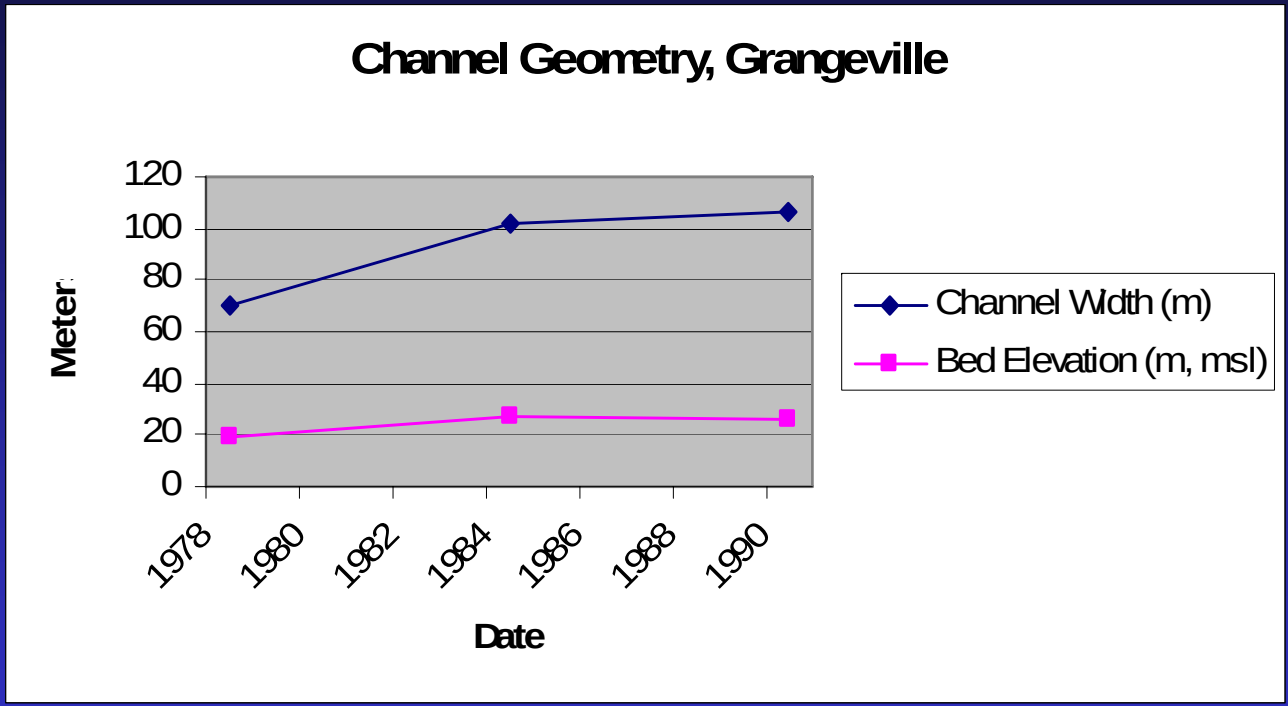
USGS Stream Gauges



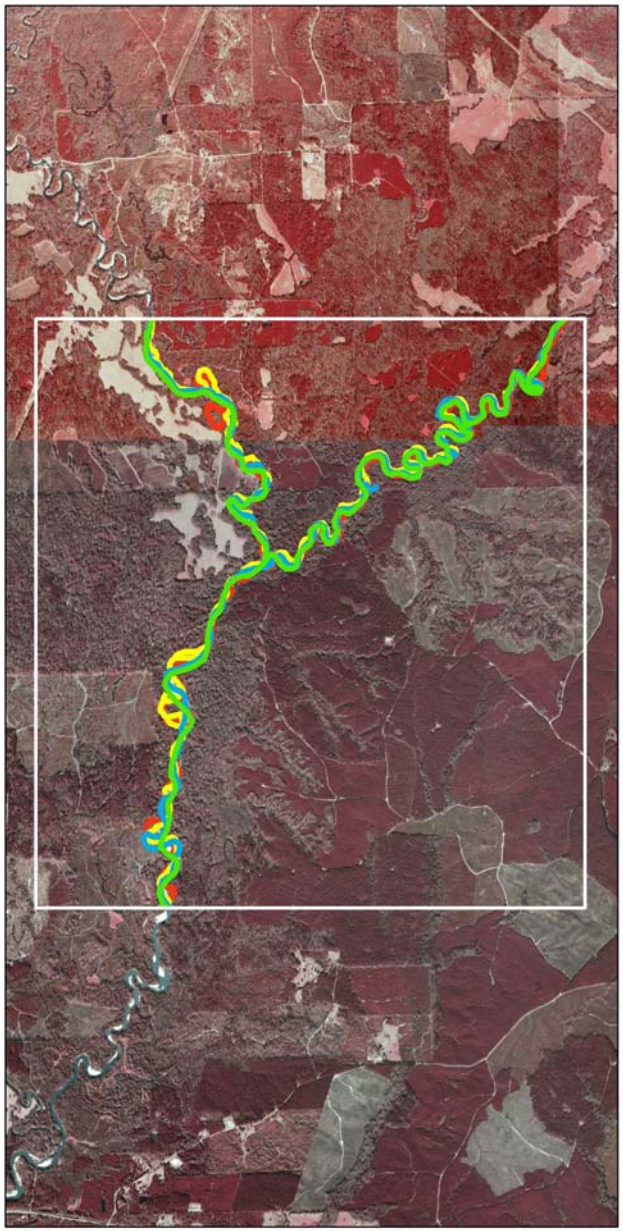


Decrease in peak annual gauge height; Increase in peak annual streamflow

LADOTD Bridge Surveys



Width of stream at Grangeville increased from ~71 m in 1978 to 107 m in 1990. Average channel elevation increased from ~19 m to 27 m



Confluence of the East and West Forks of the Amite River

N
W E
S

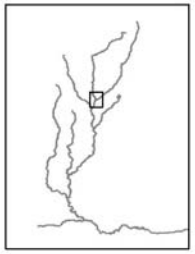
1998
(Length: 13464 meters)

1990
(Length: 14052 meters)

1978
(Length: 14667 meters)

1953
(Length: 14203 meters)

0 400 800 1,200 1,600
Meters



Amite River Drainage Basin

The GIS data used to make this map were obtained from Atlas (LSU CADGIS Research Laboratory).

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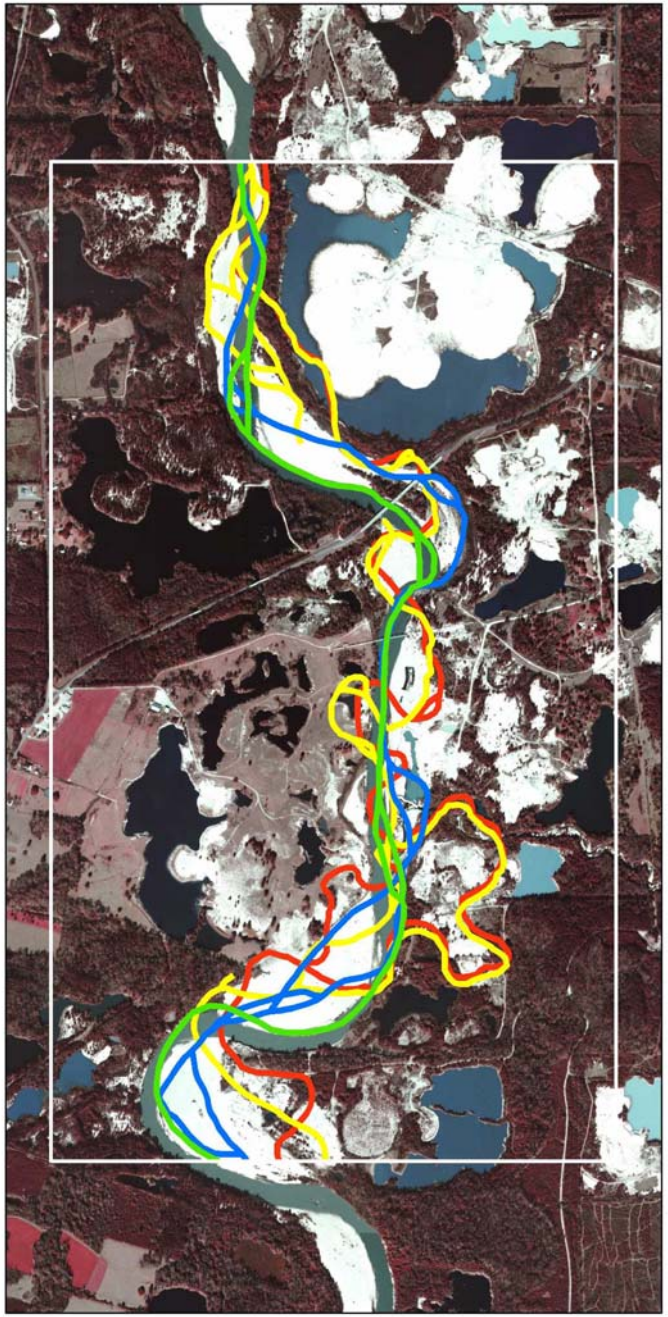


LA Hwy 37 Crossing of the Amite River near Grangeville, LA

N
W E
S

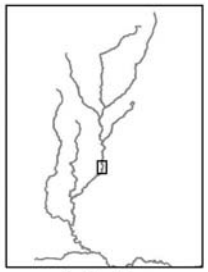
1998
(Length: 6058 meters)

1989
(Length: 7756 meters)

1967
(Length: 11509 meters)

1953
(Length: 8507 meters)

0 200 400 600 800 Meters



Amite River
Drainage Basin

The GIS data used to make this map were obtained from Atlas (LSU CADGIS Research Laboratory).

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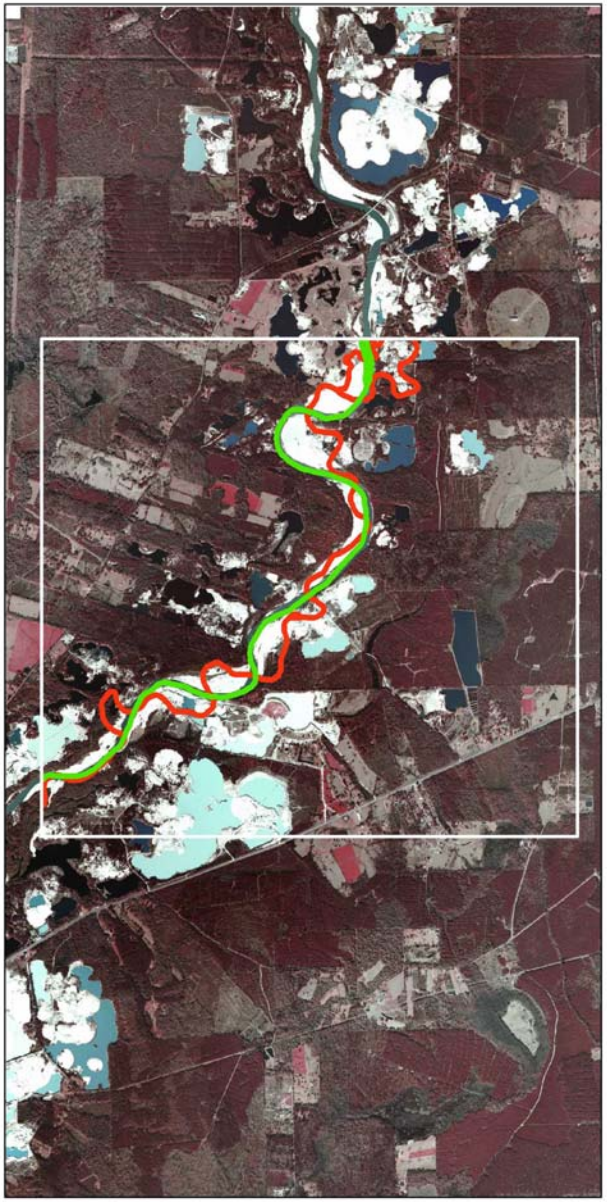


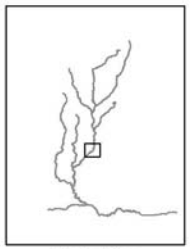
Amite River just down-stream of the LA Hwy 37 crossing near Grangeville, LA

N
W E
S

1998
(Length: 8218 meters)

1953
(Length: 11585 meters)

0 450 900 1,350 1,800
Meters



Amite River
Drainage Basin

The GIS data used to make this map were obtained from Atlas (LSU CADGIS Research Laboratory).

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Observations and Conclusions

- Moderate to severe bed and bank erosion exists on the Comite River, mined reach and upstream of the Amite River
- Distance of the Amite and Comite rivers confluence from mining operations and lack of Amite River downstream erosion suggest gravel mining does not significantly contribute to erosion on the Comite River
- Erosion more pronounced on upstream reaches suggesting headcutting
- Stream gauge data support increased streamflow and increased erosion over time
- Historical imagery indicates increased urbanization on the Comite River
  - Increased stream discharges are considered the result of increased runoff from urbanization on the Comite River