

Beneficial Use of Dredged Material at Horseshoe Bend: An Engineering With Nature Case Study

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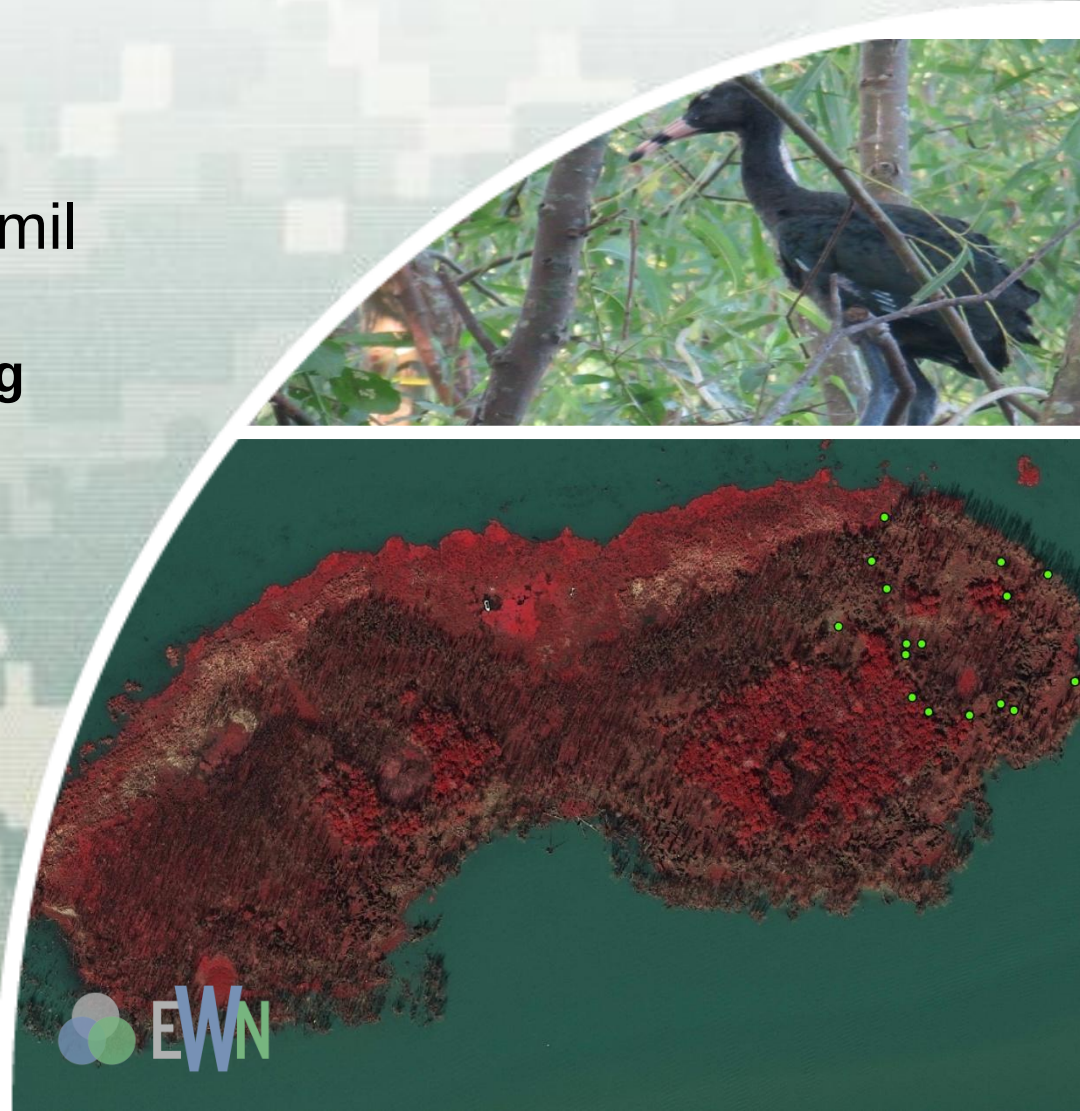
EWN-SWG Collaboration Meeting

Galveston, TX

30 September 2014



US Army Corps of Engineers
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Atchafalaya River Federal Navigation Channel

Environmental Benefits Derived from a
Novel Dredged Material Placement Practice
at Horseshoe Bend





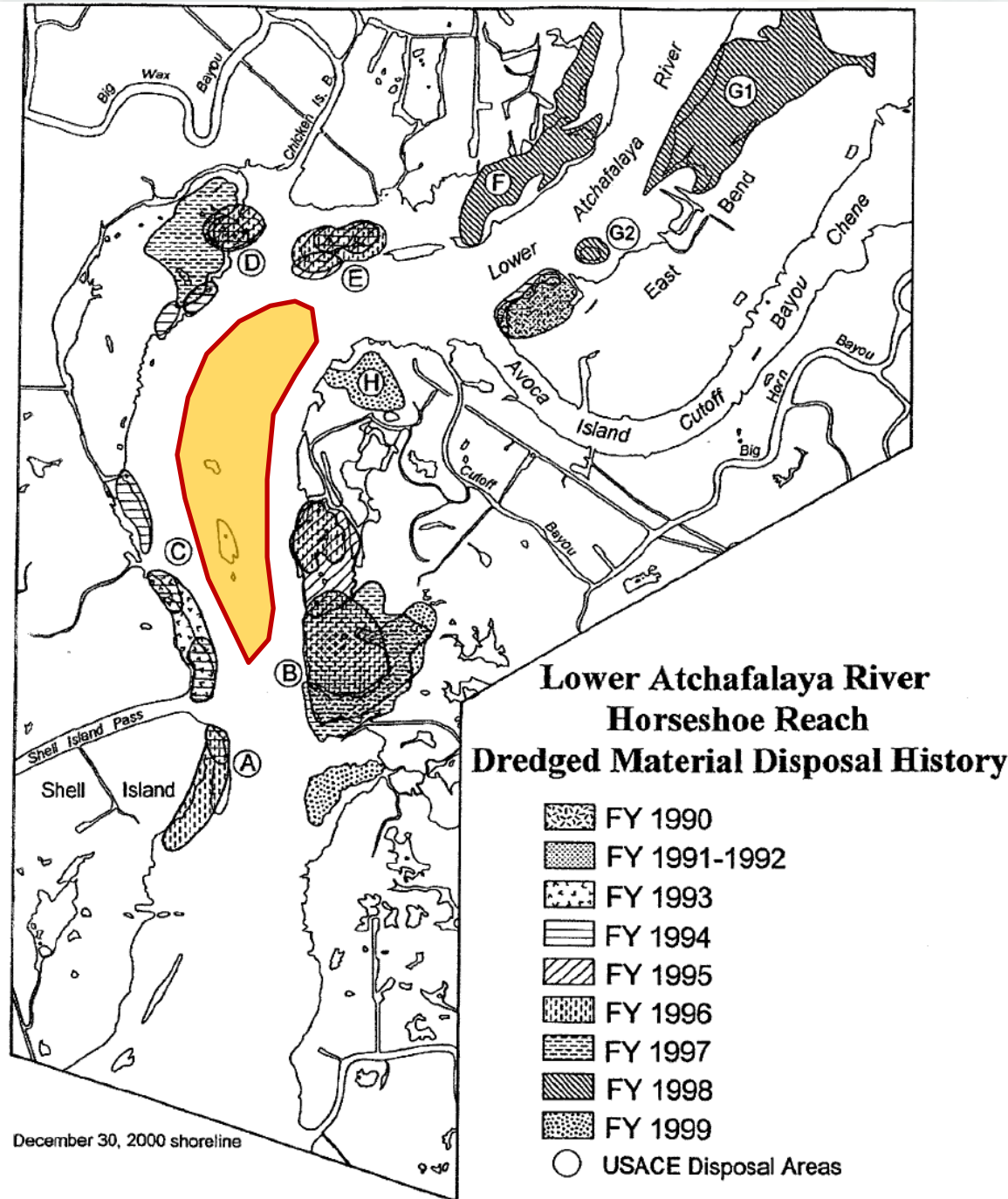
Capacity of Bankline
Disposal Areas Exhausted

Alternatives

~~Conversion of Wetland
Disposal Areas into Upland~~

~~Open Water Disposal in
Atchafalaya Bay~~

Mid-River Mounding of
Dredged Material



Pre-Disposal (1998) – Natural Mid-River Sandbar



1998 DOQQ

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Initial Dredged Material Mounds (2002-2004)

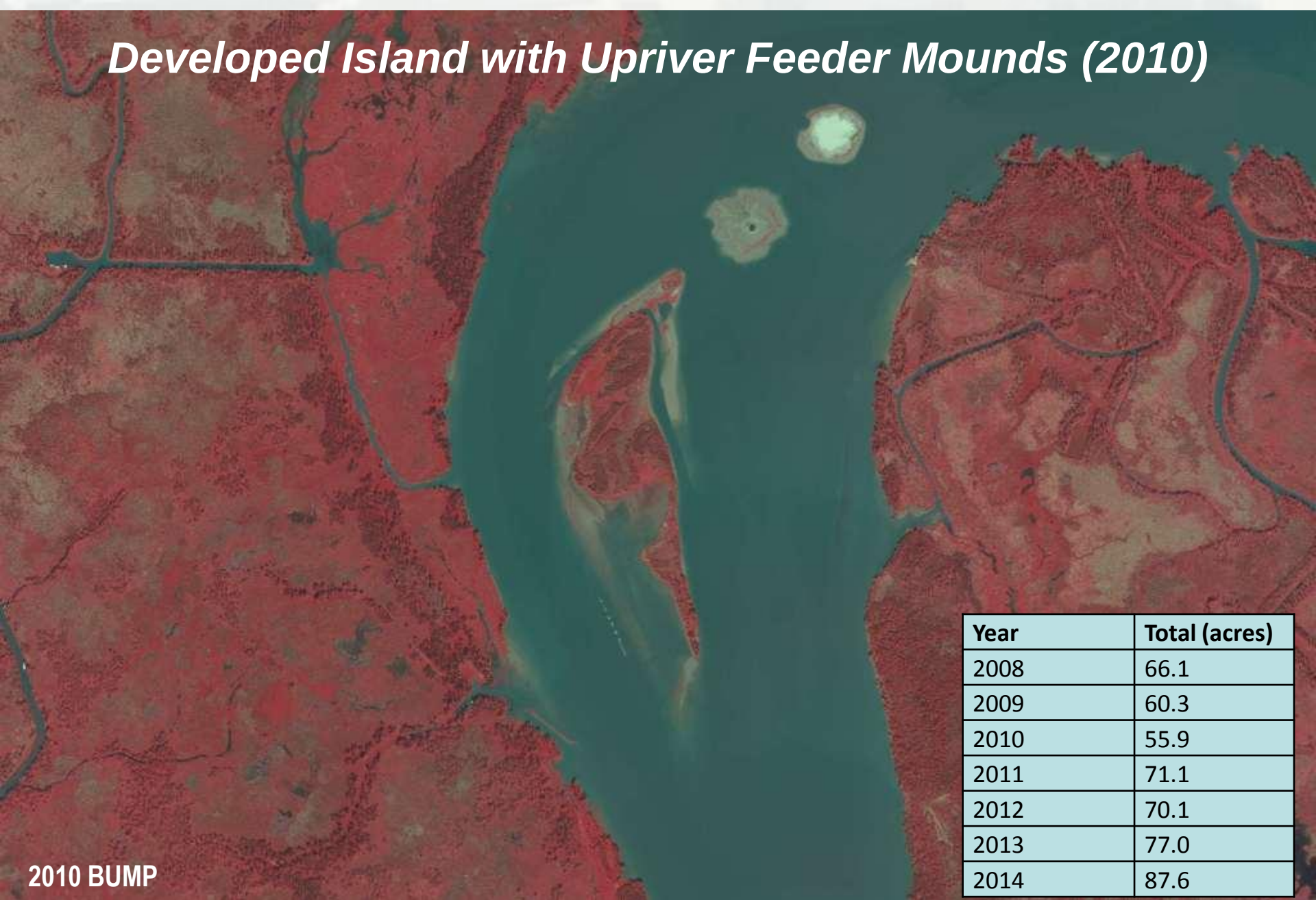


2004 DOQQ



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Developed Island with Upriver Feeder Mounds (2010)



Year	Total (acres)
2008	66.1
2009	60.3
2010	55.9
2011	71.1
2012	70.1
2013	77.0
2014	87.6

2010 BUMP



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Quantification of the Environmental Benefit

- Identify and Classify Distinct Habitat Types
- Catalogue Plants and Animals
- Evaluate Soil Horizons



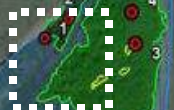
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Habitat Classification



Horseshoe Bend Dredged Material Island

Photo Area
(at Right)



EAB 7

EAB 2

EAB 3

EAB 4

EAB 1

EAB 5

EAB 6

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Stability

Complexity

Age

Elevation
+
-



Mature Forested & Scrub-Shrub Wetlands



Young Forested & Scrub-Shrub Wetlands



Emergent Wetland Transition Zone



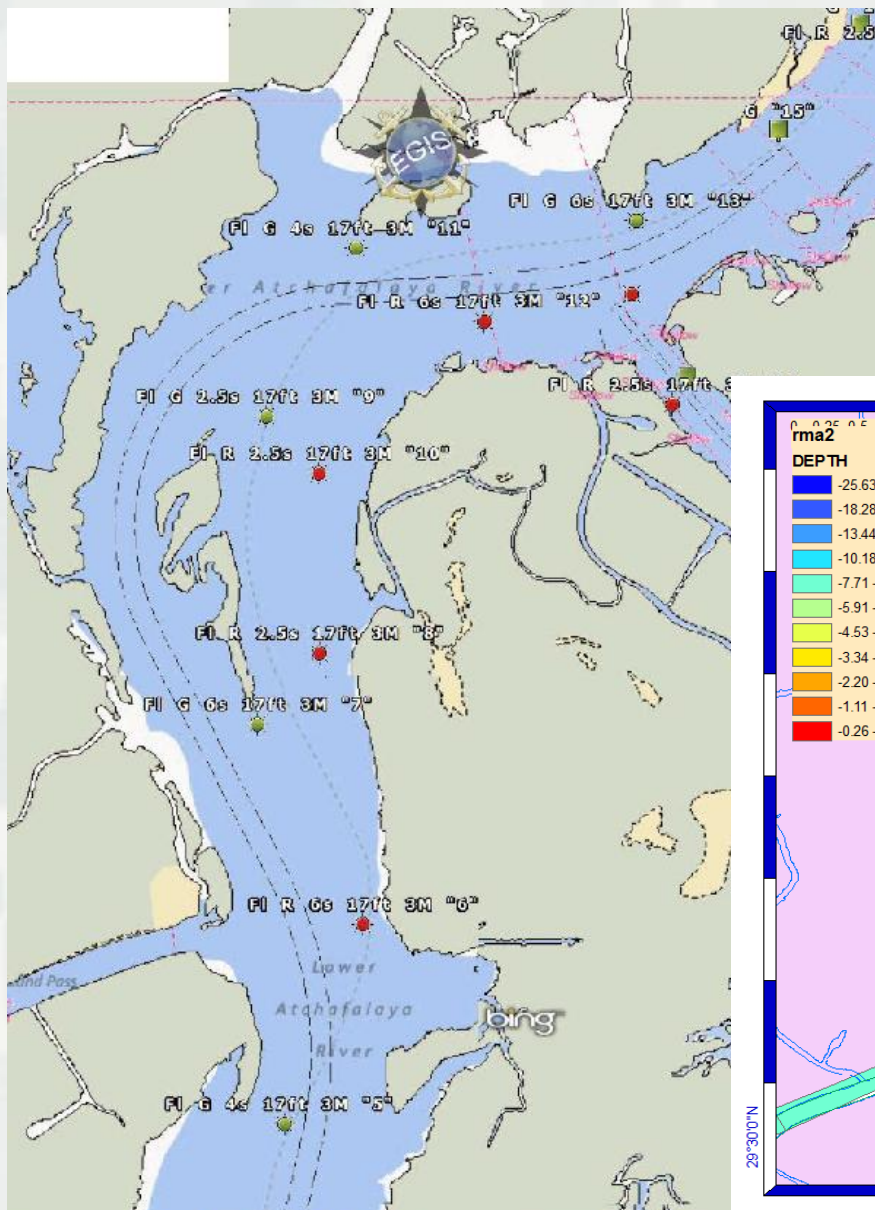
Aquatic Bed Features



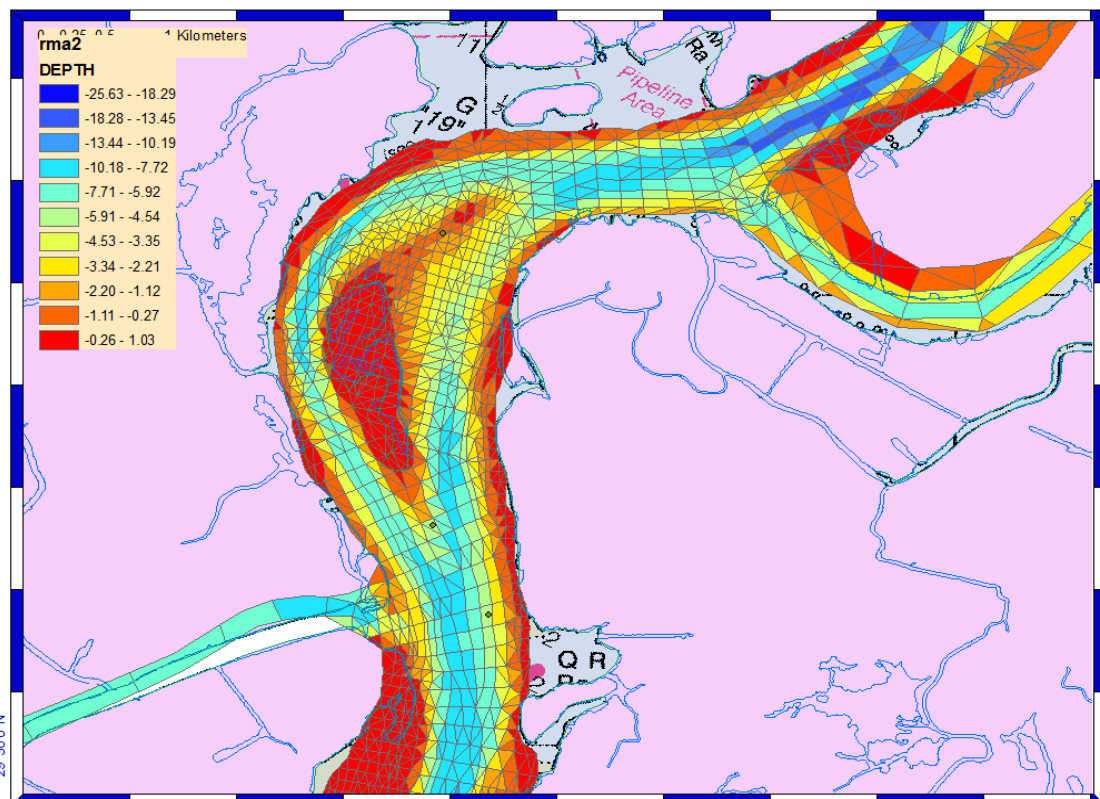
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Modeling: Implement LTFATE to characterize study area hydrodynamics





20" Soil Plugs Evaluated for
Zonation, Color, Texture &
Redox Features



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Social Benefit



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Summary of Environmental Benefits

- Four distinct wetland habitats within a small area (35 ha), supporting a larger than expected variety of plants and animals
- 81 plant species observed on island, compared to 53 plant species noted for natural wetlands along the lower river
- Island performs like a natural wetland, traditional dredge and fill wetlands take 5-10 years to develop
- Soils are active, function to cycle nutrients and sequester carbon



What Happens Next?



- Continue scientific research (hydrology and environment)
- Document positive / negative channel maintenance impacts
- Identify and quantify benefits
- Communicate findings widely (publications, conferences, press releases)
- Seek other applications for this novel placement practice



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