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163789-MS
Wetland Restoration Using Mangroves in Southern Louisiana

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ConocoPhillips

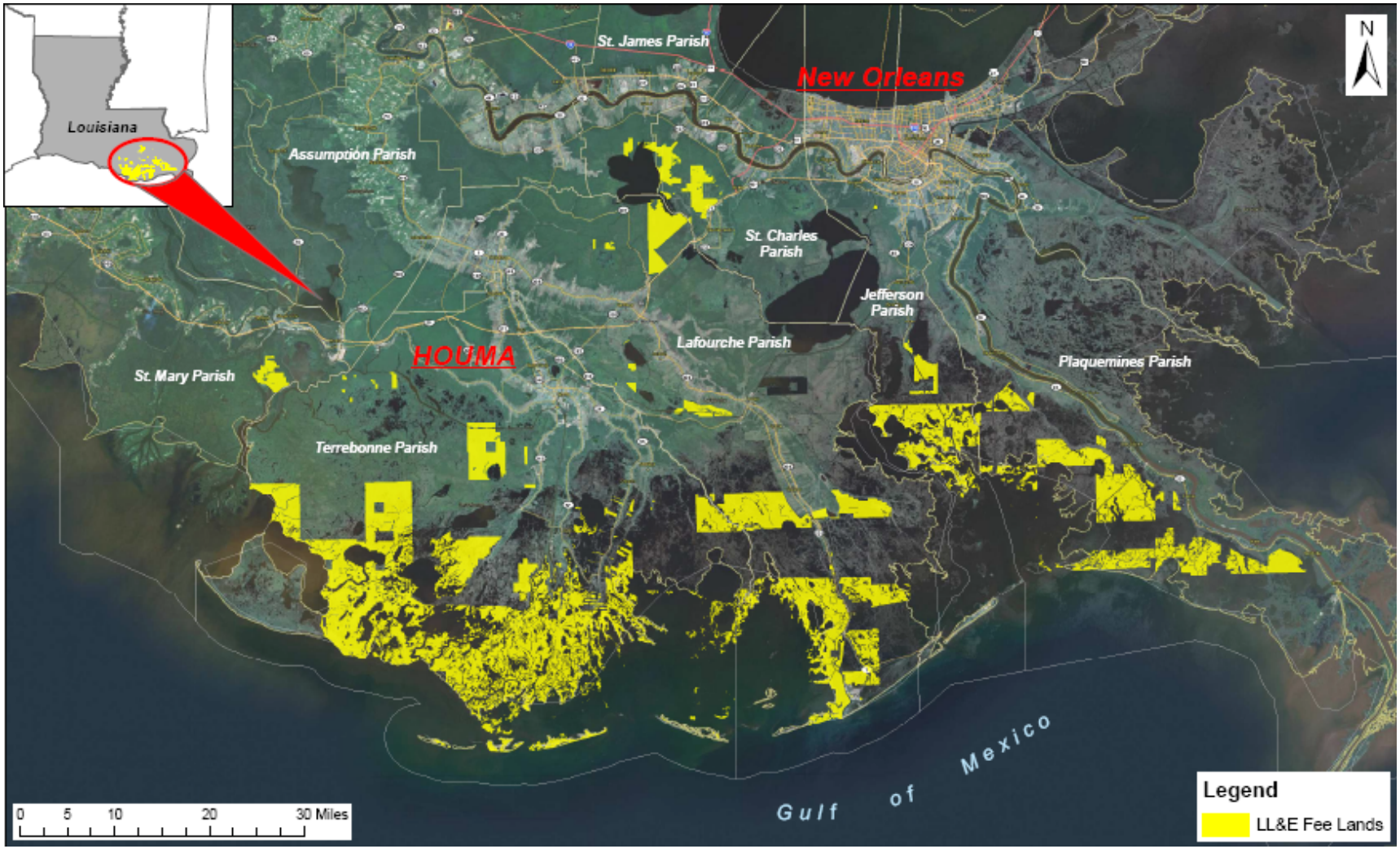
TIERRA RESOURCES

Society of Petroleum Engineers
SPE International

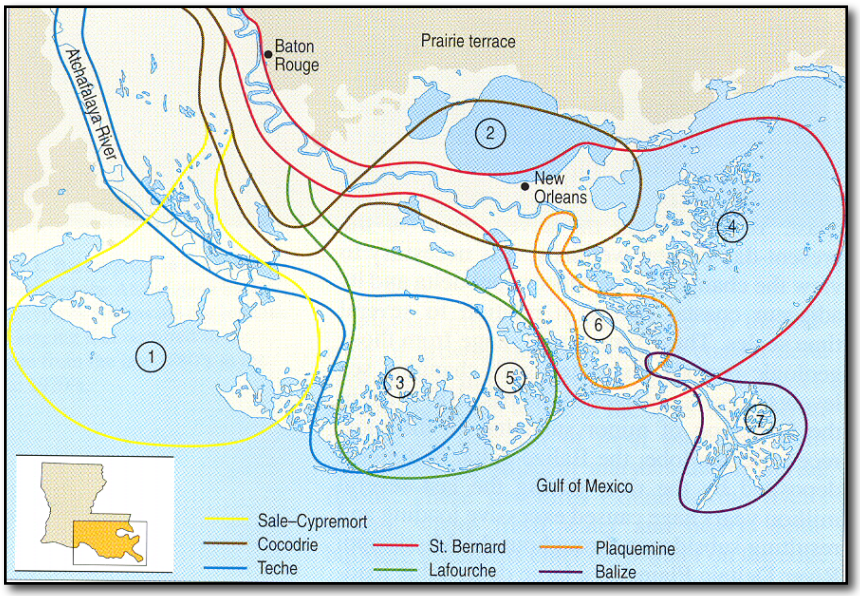
Outline

- Mississippi Delta Background
- Blue Carbon
- Wetlands Methodology
- Pilot Project
- Next Steps

ConocoPhillips' Property – 640,000 acres



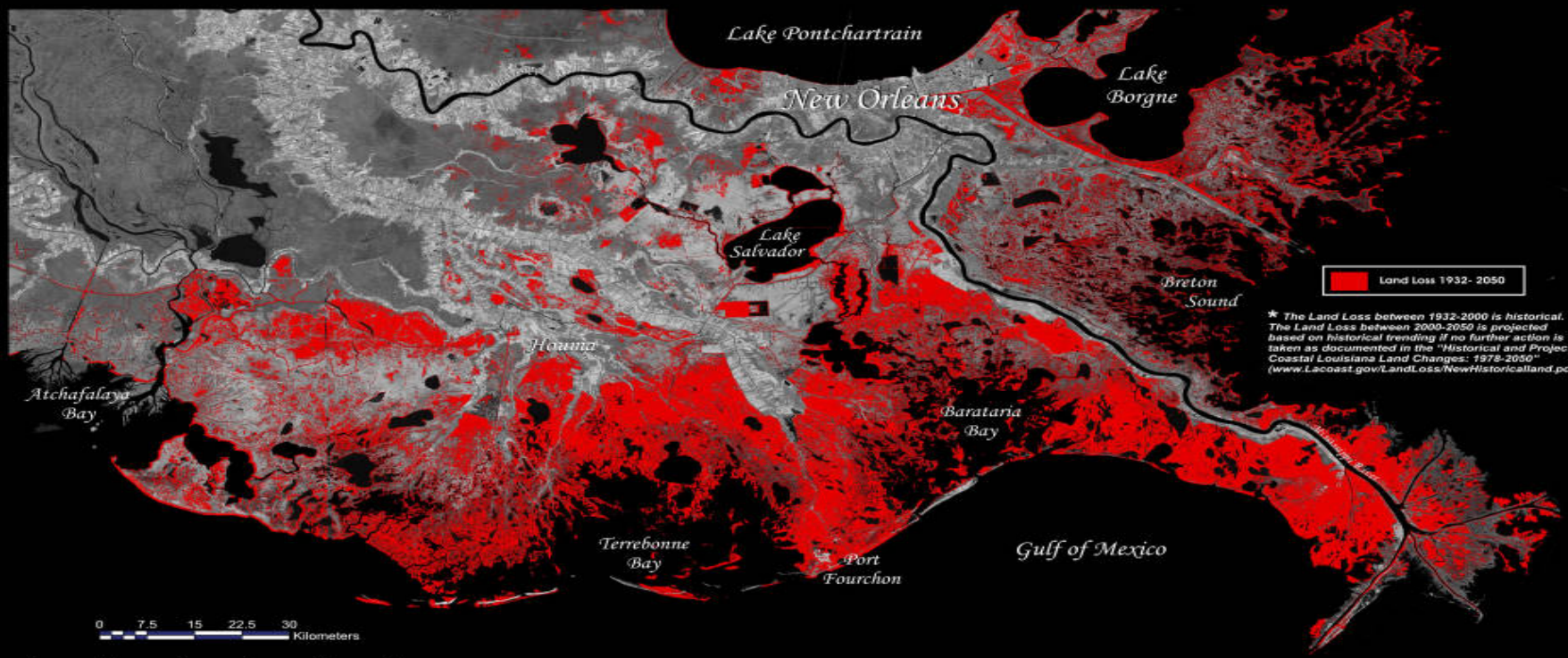
Delta Formation



Source: http://www.shell.us/environment-society/respecting-the-environment/dialog.html

Southeast Louisiana Land Loss

*Historical and Projected Land Loss in the Deltaic Plain



Coastal Louisiana has lost an average of 34 square miles of land, primarily marsh, per year for the last 50 years. From 1932 to 2000, coastal Louisiana lost 1,900 square miles of land, roughly an area the size of the state of Delaware. If nothing more is done to stop this land loss, Louisiana could potentially lose approximately 700 additional square miles of land, or an area about equal to the size of the greater Washington D.C.- Baltimore area, in the next 50 years.

For more information about the land loss analysis or to see an animated time series of wetland change, visit www.LaCoast.gov/LandLoss

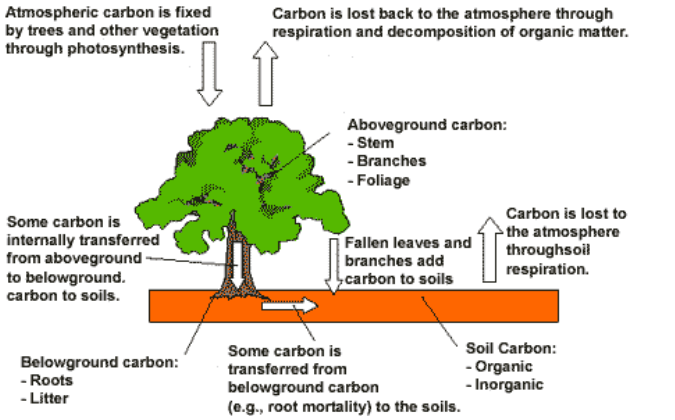
Data Sources:
1932-1956 Land Change Analysis
U.S. Army Corps of Engineers, New Orleans

1956-1990 Land Change Analysis
1978-2050 Land Change Analysis
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Lafayette, LA

Prepared by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Lafayette, LA

Map ID: USGS-NWRC 2005-16-0001
Map Date: December 6, 2004

Ecosystem Services



Source: www.epa.gov

Blue Carbon

The carbon stored in mangroves, seagrasses, and coastal wetlands.

Mangrove Pilot Project Goals

- Planting techniques
- Wetlands methodology
- Fate and transport of carbon

Black Mangroves

- Native to Louisiana
- High salt tolerance
- High carbon sequestration rate
- Drought-tolerant
- Sensitive to freeze conditions

Mangrove Propagules

"Restoration of Degraded Deltaic Wetlands of the Mississippi Delta" Wetlands Methodology

Foundation for third-party validation and verification

- Defines Project Eligibility
- Establishes Project Geographic Boundaries
- Addresses Permanence
- Establishes Baseline
- Outlines Monitoring
- Certification Process

Eligibility Requirements

4 Million Acres of the Mississippi Delta

Mangrove Pilot Project

- Three year project
- Twelve 1-acre plots
- Interior saline marsh
- 5000 mangrove plants
    - LA Pelican
    - Native stock

Mangrove Pilot Project

- Apply the methodology
- Monitoring Plan
    - •Survivorship
    - •Hydrology
    - •Accretion
    - •Soil bulk density
    - •Elevation transects
- •Determine cost-saving measures

Carbon Fate & Transport

- Current science gap
- Prevented wetland loss
  - Measure soil carbon using soil cores
  - Calculate soil carbon accumulation
  - Measure CO_2, CH_4, & N_2O

Next Steps

- **Expand the methodology by adding new modules**
  - Fate and transport of carbon
  - Other regions

Pilot Project Impact

- Prove the science
- Reduce monitoring
- Determine true costs and benefits
- Learn optimal restoration techniques
- Become better stewards of our land
- Benefit the region at large

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Thank you for your attention!