American Carbon Registry Methodology for Restoration of Degraded Deltaic Wetlands of the Mississippi Delta

Webinar

December 12, 2012

Outline

- Brief background on Winrock and ACR
  - *Nicholas Martin, Chief Technical Officer ACR*
- ACR Wetland Restoration Methodology and Luling Wetlands Pilot Project
  - *Dr. Sarah Mack, Tierra Resources LLC*
- Q&A
  - *Dr. Sarah Mack, Tierra Resources LLC*
  - *Dr. Robert R. Lane, Louisiana State University*
  - *Dr. John W. Day, Louisiana State University*

Webinar logistics

- To ask questions:
  - During presentation, type questions into '**Chat**' box near bottom of your webinar pane.
  - Or '**Raise Hand**' (in vertical bar at left of your webinar pane) to hold your place in line to ask a question verbally
  - As a participant, your microphone will be muted until the organizers un-mute you
- Q&A period at end: we will direct written questions to appropriate person, and call on anyone with hand raised
- Webinar will be recorded and posted shortly to www.americancarbonregistry.org

Winrock International Institute for Agricultural Development

Non-profit organization that works in the U.S. and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources

- Formed in 1985 from three Rockefeller family organizations
  - Headquarters in Little Rock, AR
- Dedicated to economic development and sound resource management in the U.S. and around the world
- Climate change and its impacts on the poor are a central concern
- Support market mechanisms as a means to improve the environment and alleviate poverty

American Carbon Registry

- **First U.S. voluntary carbon registry**
  - 37.5 MMT CO_2e verified carbon reductions since 1996
  - Non-profit organization
- **Registry roles:**
  - Develop and approve carbon protocols
  - Review and register projects
  - Oversee independent verification
  - Transparently track transactions and retirements
  - Support California compliance market, both as OPR and with new protocols
- 2011: 2.9 million ERTs sold, retired or contracted at average price of $5.51/tCO2e (range $1-14)
- Most widely used forest carbon standard in North America in 2011 (2012 *State of the Forest Carbon Marke*t report)

Why wetland restoration?

- Tremendous potential to sequester carbon and avoid emissions from wetland loss
- Significant replication potential in US and worldwide
- Key economic and environmental importance to large region of U.S.
- Wildlife habitat, water quality, storm surge protection
- Soft infrastructure to protect hard infrastructure
- Long-term commitment to economic development and sound resource management in the Midsouth U.S.

Photo: Montgomery Hunter, Comite Resources Inc.

Restoration of Degraded Deltaic Wetlands of the Mississippi Delta

Sarah K. Mack, PhD, CFM
Robert R. Lane, PhD
John W. Day, PhD

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American Carbon Registry

Outline

- Tierra Resources
- Background on the Mississippi Delta
- Overview of eligibility requirements
- Wetland carbon pilot
- Application of the methodology to pilot
- Next steps

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Tierra Resources' Mission

To conserve, protect, and restore coastal wetland ecosystems by creating innovative solutions that support investment into blue carbon.

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Blue Carbon

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

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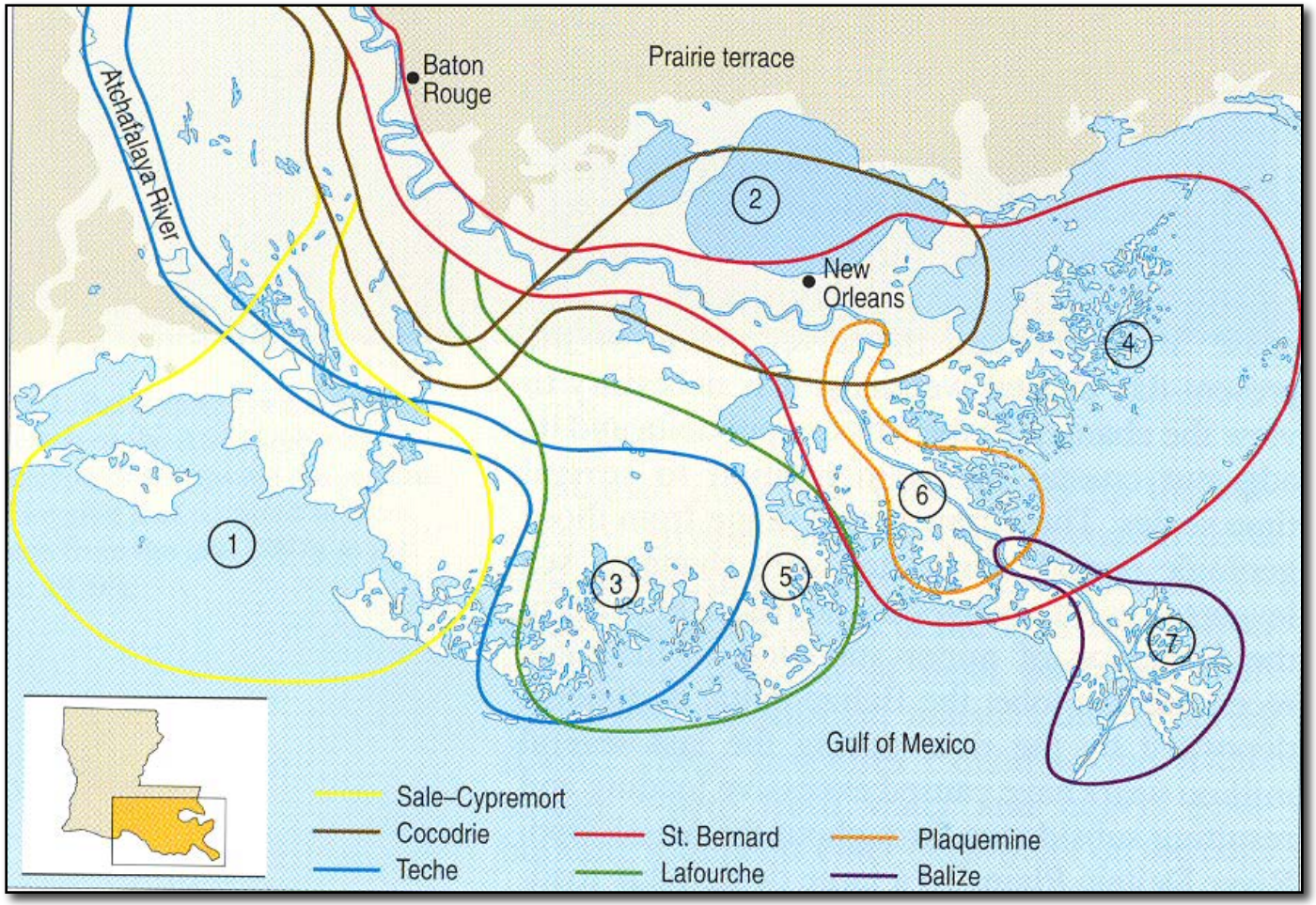
Delta Formation



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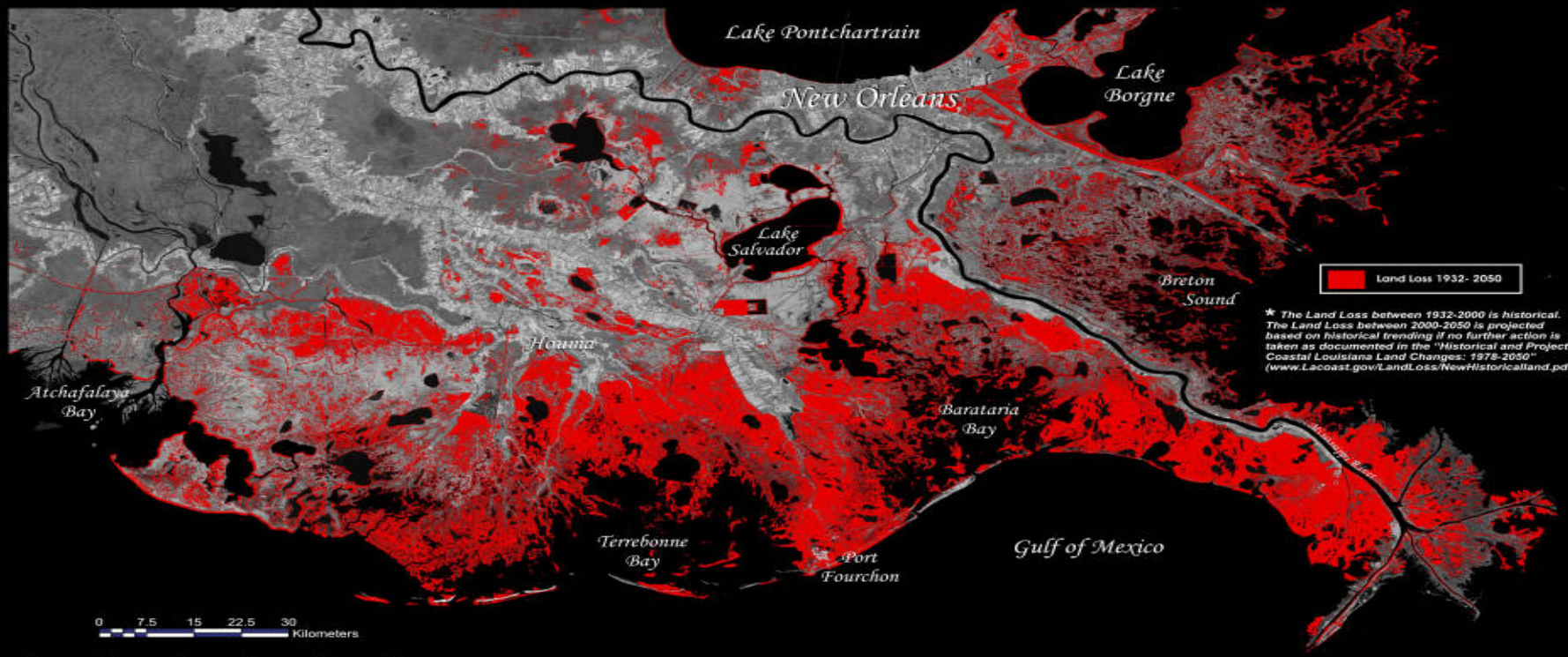
Levee
Levee

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

BTNEP

USGS science for a changing world

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

Why ACR?

- **Bottom up approach**
- **Address science gaps through projects**
- **The American Carbon Registry**
  - **Forest Carbon Standard**
- **First route to market September 2012!**
  - Modular
  - Different types of projects
  - Performance standard

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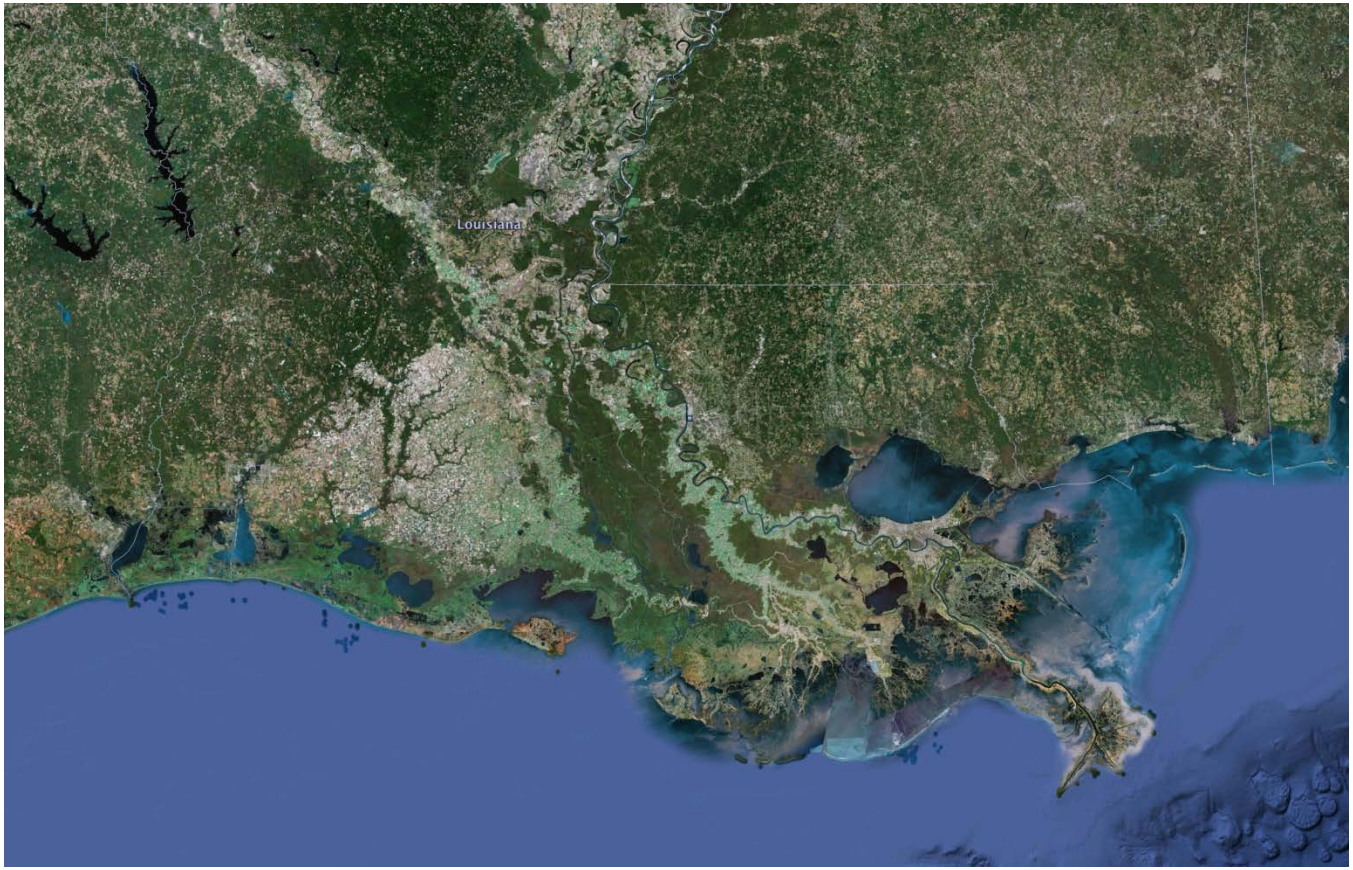
Eligibility Requirements

4 Million Acres of the Mississippi Delta



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Eligibility Requirements

- **Wetland eligibility**
  - Forested and non-forested wetlands in the Mississippi Delta ranging from fresh to saline conditions
    - Not required by Section 404 of the Clean Water Act
- **Eligible restoration techniques**
  - Reforestation with a variety of species
    - (e.g., cypress, mangroves, grasses)
  - Hydrologic management
    - Diversion of river water into wetlands
    - Introduction of nonpoint source runoff
    - Discharge of treated municipal effluent into wetlands

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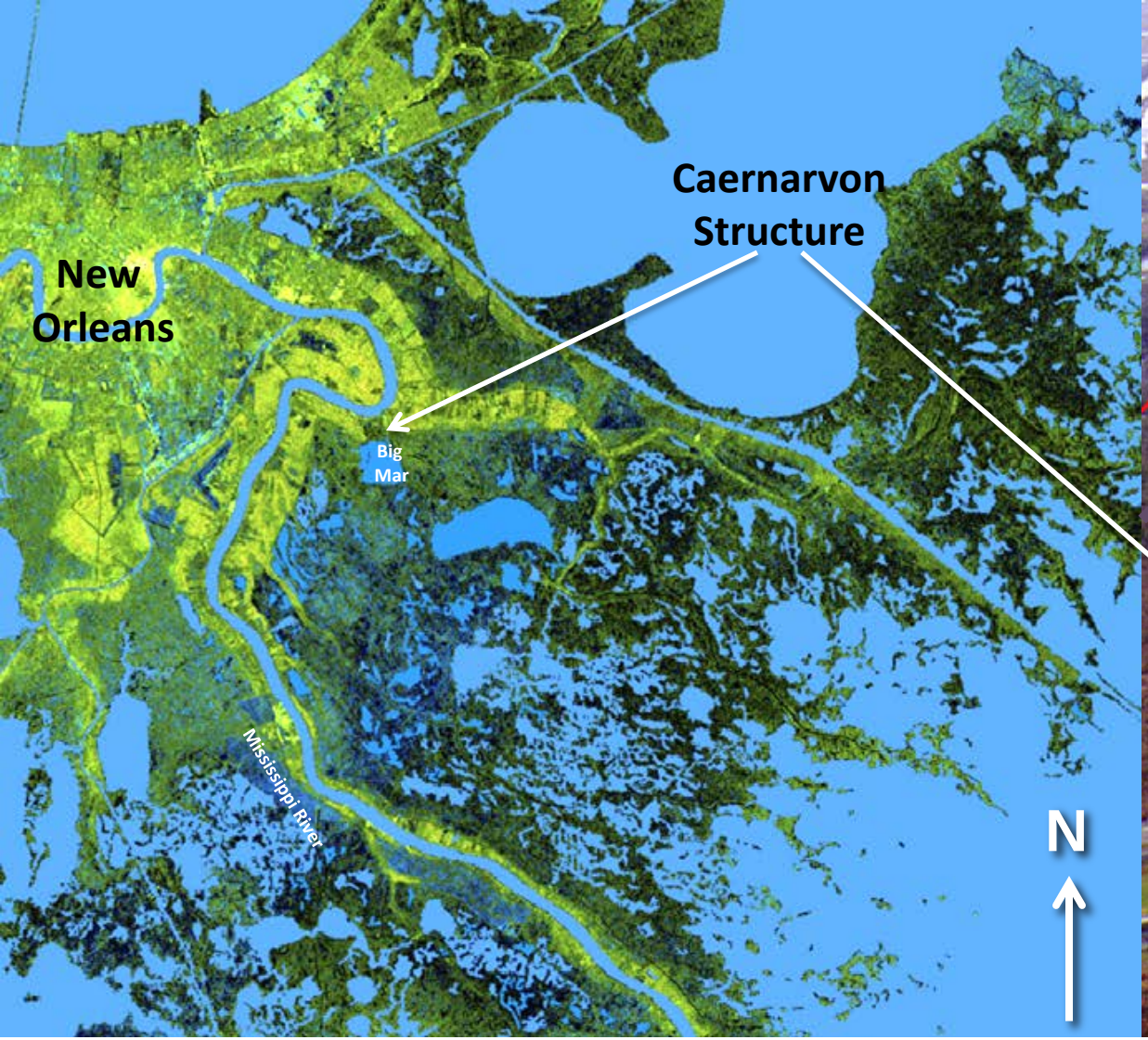

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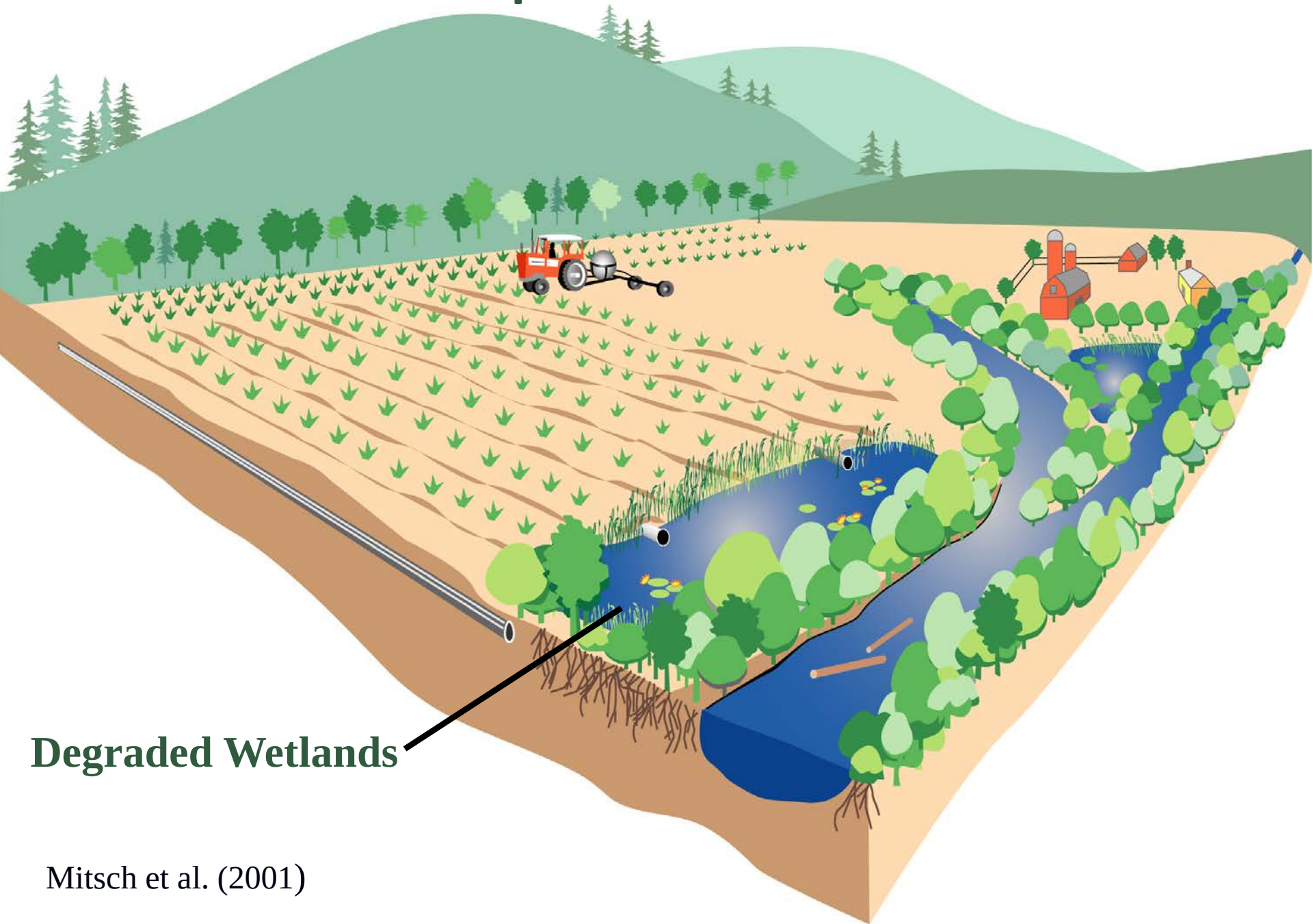
Introduction of Nonpoint Source Runoff



Mitsch et al. (2001)

Wetland Assimilation of Treated Effluent

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St. Charles Parish

- *Mission to provide high quality, efficient services to sustain and enhance the quality of life for all residents*
- Population of approximately 53,000
- Subject to hurricane-related flooding and tidal surges due to wetland loss
- 18 hurricanes in the last 30 years
- 10 federal disaster declarations

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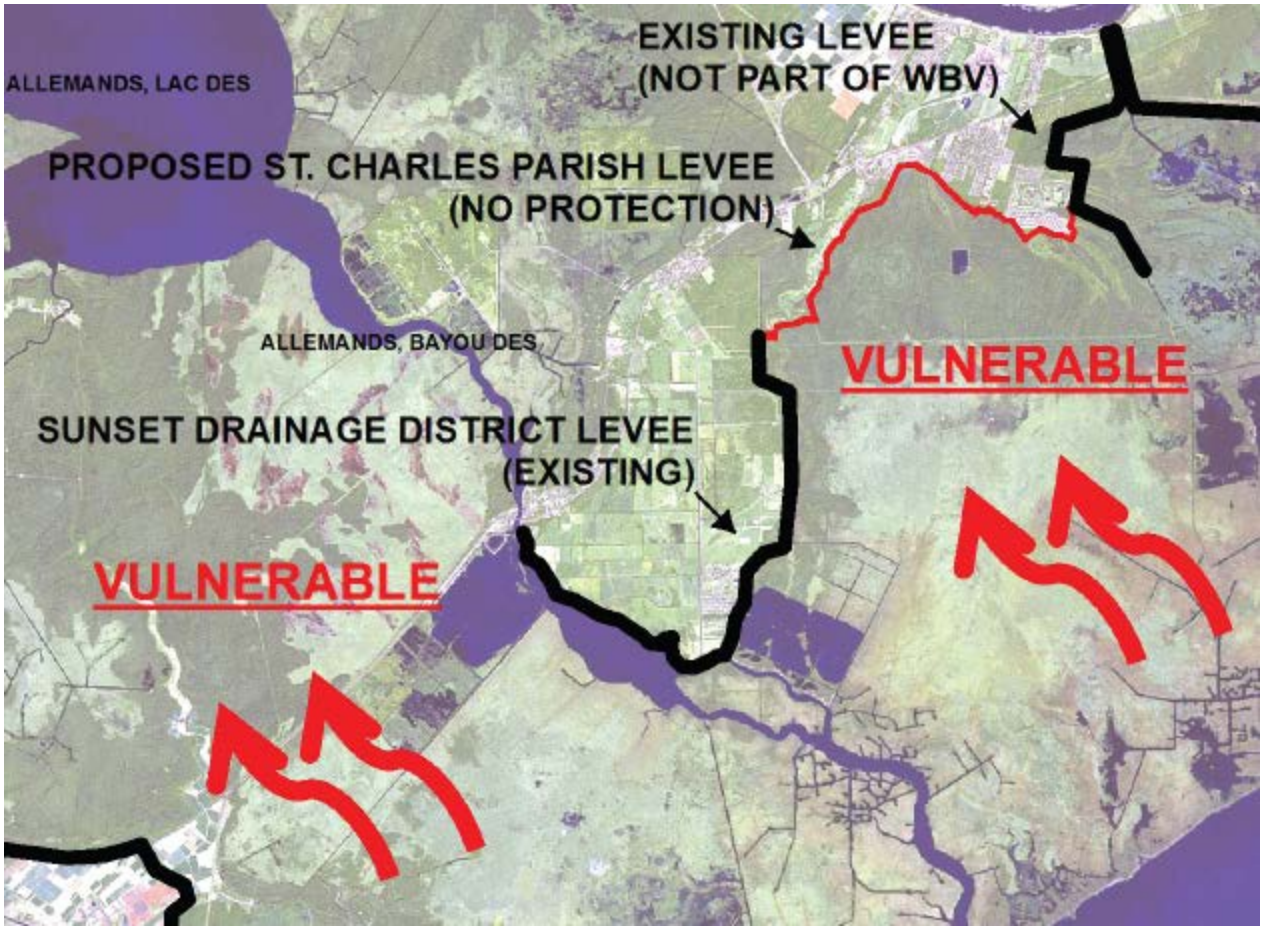
ST. CHARLES PARISH

St. Charles Parish at Risk!



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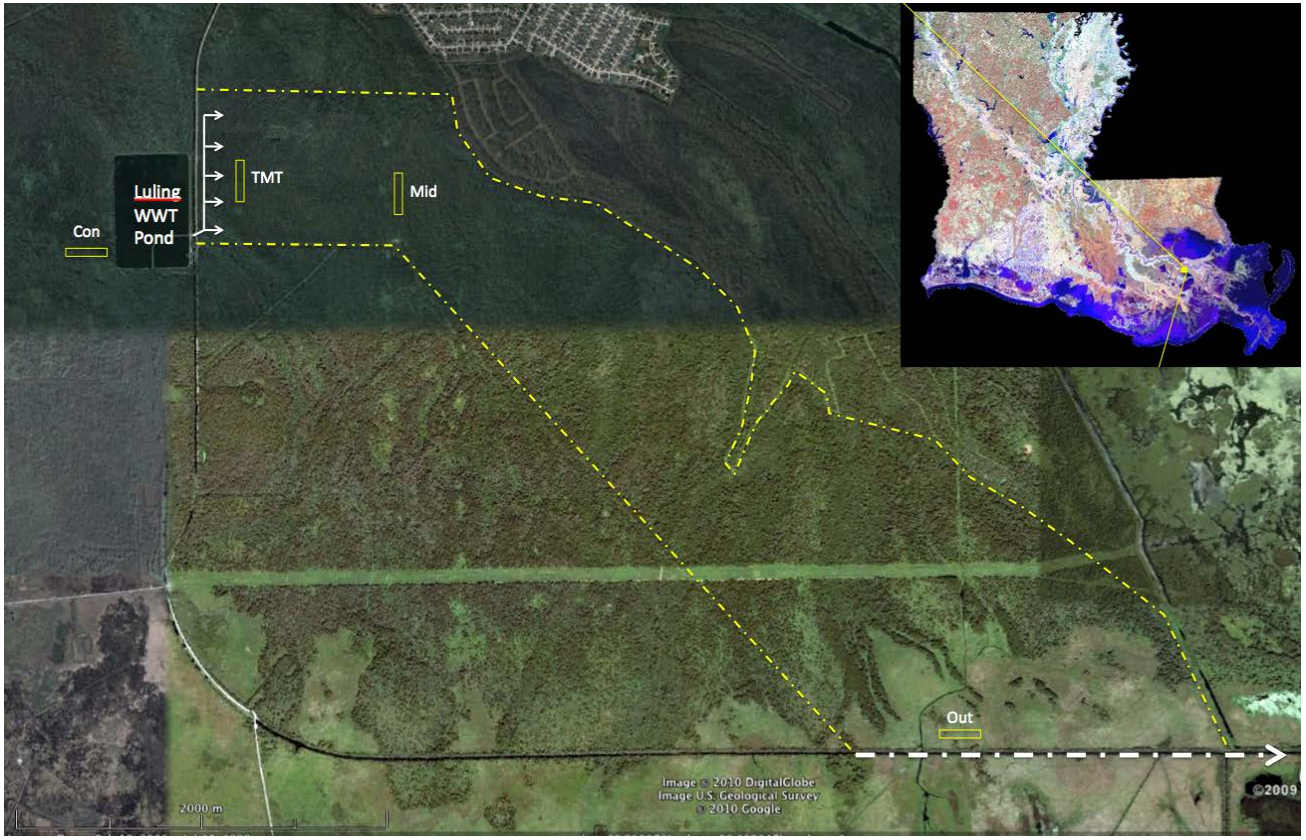
First Wetland Carbon Pilot!



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WHERE NATURE'S TECHNOLOGY MEETS HUMAN INGENUITY
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Goals

- Apply the methodology
- Determine cost-saving measures
- Produce commercially viable carbon credits
- Compensate landowner for the use of their land without additional cost to parish or citizens
- Demonstrate public-private partnerships that leverage carbon finance
- Prove the commercial viability of wetland carbon credits.

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Framework Module

1. Select modules
2. Bring together calculations from selected modules
3. Calculate credits to be held in permanence risk buffer
4. Calculate number Carbon Credits = Emission Reduction Tons (ERTs)

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Methodological Procedure

1. Identification of the most plausible project activity baseline
2. Definition of the project boundaries
3. Demonstration of additionality
4. Development of monitoring plan
5. Estimation of baseline carbon stock changes and GHG emissions
6. Estimation of total net GHG emissions reductions (project minus baseline and leakage)
7. Calculation of uncertainty
8. Assessment of reversal risk
9. Calculation of ERTs

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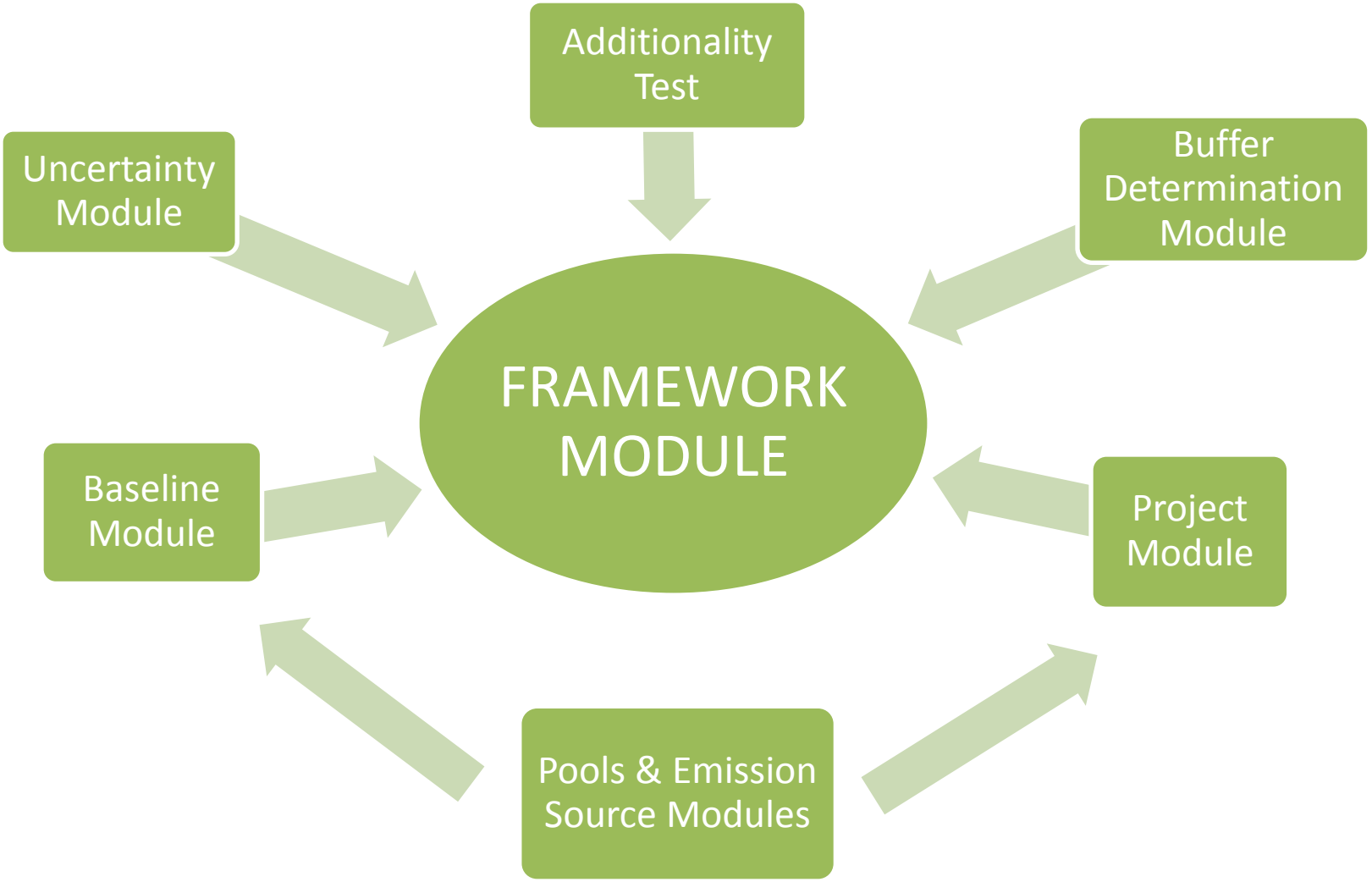
Individual Modules Are Applied Under the Framework Module



Modules

Dėtermination of when module/tool use is mandatory (M), conditional (C), or optional (O).

Determination	Module/Tool	Wetland Restoration	Wetland Restoration with Hydrologic Management
Always Mandatory	WR-MF	M	M
	T-DEG	M	M
	T-RISK / T-PERM	M	M
	X-UNC	M	M
Baselines	BL-WR	M	N/A
	BL-WR-WL	O	N/A
	BL-WR-HM	N/A	M
	BL-WR-HM –WL	N/A	O
Pools	CP-TB	C	C
	CP-S	O	O
Emissions	E-E	N/A	C
	E-FFC	C	C
Project Scenario	PS-WR	M	N/A
	PS-WR-HM	N/A	M

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Structure of Each Module

Each module has three key sections:

1. Scope, applicability and output parameters
   - Gives users immediate upfront information on purpose and outputs of module
2. Procedure
   - Methodological steps and calculations
3. Parameters
   - Gives parameters used in the methodology and where they are derived from

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Baseline Scenarios

- **<u>Conservative baseline scenario:</u>**
  - Uses the degraded carbon sequestration rate determined prior to Start Date or that would have occurred in the absence of the project activity
  - Constant wetland project area in baseline
- **<u>Projected wetland loss scenario:</u>**
  - Uses the degraded carbon sequestration rate determined just prior to Start Date or that would have occurred in the absence of the project activity, and also incorporates a projected reduction of total wetland project area due to wetland loss that would occur over a 40-year Crediting Period if no activity were to take place.

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Choosing a Baseline

Four Forms of Baseline

- BL-WR = wetland restoration
- BL-WR-WL = wetland restoration including projected wetland loss in baseline
- BL-WR-HM = wetland restoration using hydrologic management
- BL-WR-HM-WL = wetland restoration using hydrologic management including projected wetland loss in baseline

Will hydrologic management be implemented as part of the project activity?			
NO		**YES**	
Will wetland loss be included in the baseline scenario?		Will wetland loss be included in the baseline scenario?	
NO	**YES**	**NO**	**YES**
BL-WR	BL-WR-WL	BL-WR-HM	BL-WR-HM-WL

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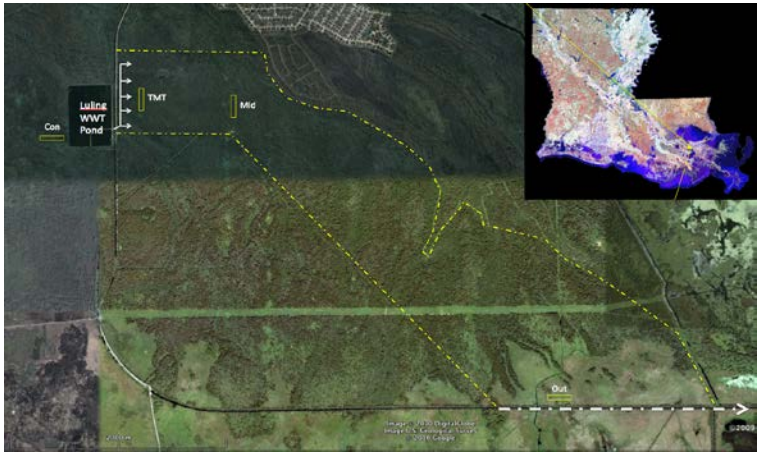
Project Boundaries

Carbon Pools

1. **Aboveground biomass**
2. **Belowground biomass**
3. Forest floor litter
4. Dead wood
5. Soil

Geographic Boundary



Wetland Emission Sources

1. CO_2
2. **CH_4**
3. **N_2O**

No leakage is allowed = no activity shifting

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Demonstration of Additionality

- **<u>Two additionality tests include:</u>**
  1. Regulatory Surplus Test,
     (Must not be mandated by law)

  2. Practice-based Performance Standard
     (Land building is 15% or less of persistent wetland loss in the delta)

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Project Scenario

Addressing science gaps and reducing costs:

PS-WR = Plantings

- Minimal monitoring requirements

PS-WR-HM= Hydrologic Management

- More extensive monitoring requirements
- Monitoring can be reduced over time as science gaps are addressed

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Key Equation

Net emission reduction = Project - Baseline

Carbon Credit = ERT = $(\Delta C_{ACTUAL} - \Delta C_{BSL})*(1\text{-}LK)*(1 - UNC)*(1\text{-}BUF)$

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Impacts

- **Wetlands - A New Offset Sector**
  - **First time to invest in wetlands!**

- **Funding**
  - **25% of the 4 million acres in the Mississippi Delta**
  - **$5 billion - $15 billion over the next 40 years**

- **National and Global Awareness**
  - **Start to put a $ value on wetlands**

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Next Steps

- **Pilot project**
  - Prove the science
  - Reduce monitoring
  - Determine true costs and benefits
  - Scale to commercial projects
- **Expand the methodology by adding new modules**
  - Fate and transport of carbon during wetland loss
  - Other regions
    - Causes of wetland loss
    - Other restoration techniques
    - Leakage

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- **American Carbon Registry**
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  - Mary Grady
  - Sandra Brown, PhD

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Be Involved!

Pilot projects

Project participant

Market assessment

Methodology expansion

Sarah K. Mack, PhD, CFM
sarahmack@tierraresourcesllc.com
(504) 339-4547

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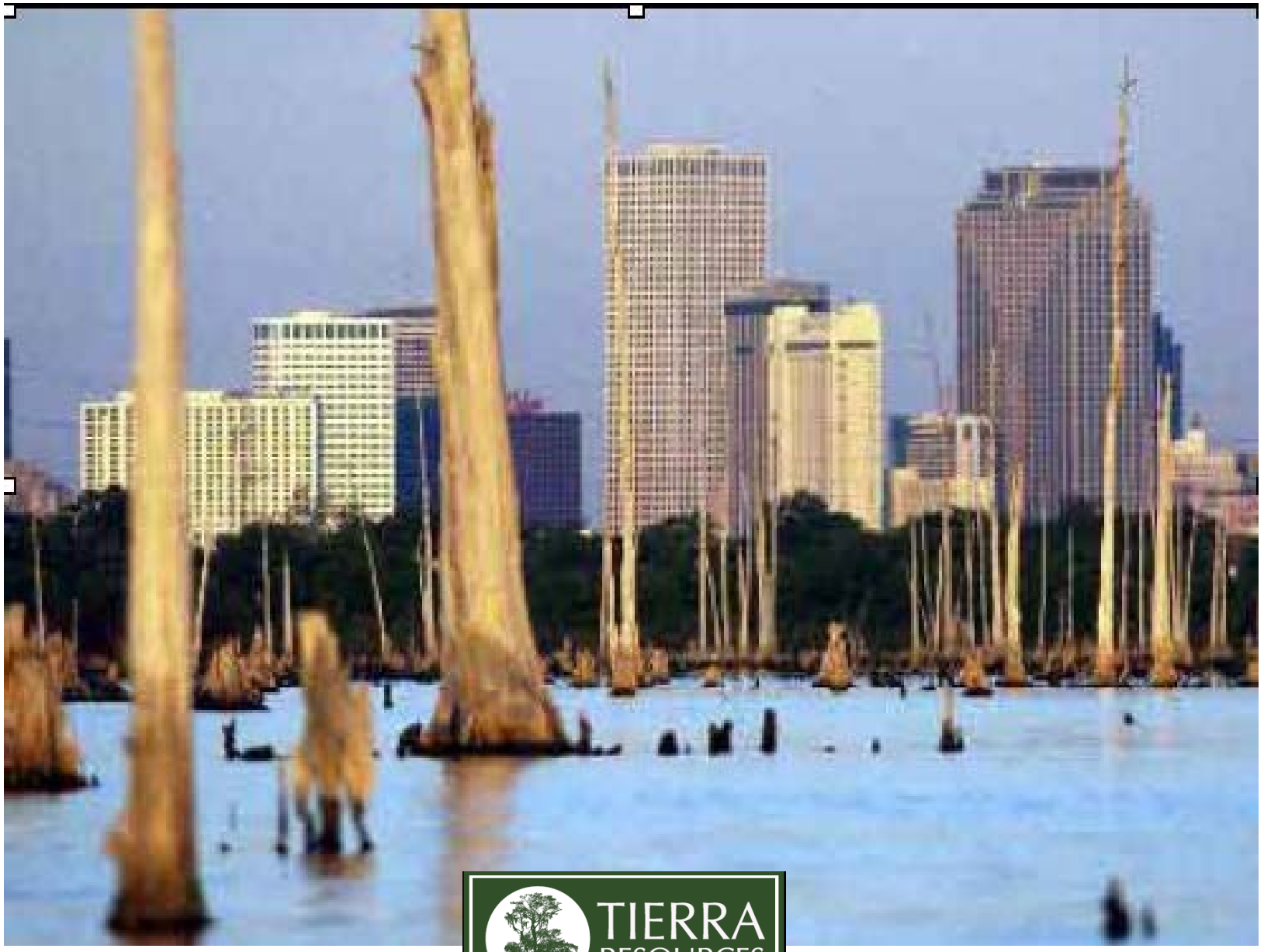
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Questions?

Methodology Authors and Contributors:

Dr. Sarah Mack, Tierra Resources
Dr. Robert Lane, Louisiana State University
Dr. John Day, Louisiana State University

Nicholas Martin, American Carbon Registry

Further information

Nicholas Martin
American Carbon Registry
nmartin@winrock.org

Sarah Mack
Tierra Resources
sarahmack@tierraresourcesllc.com