CPRA
Coastal Protection and Restoration Authority of Louisiana

Diversions Update

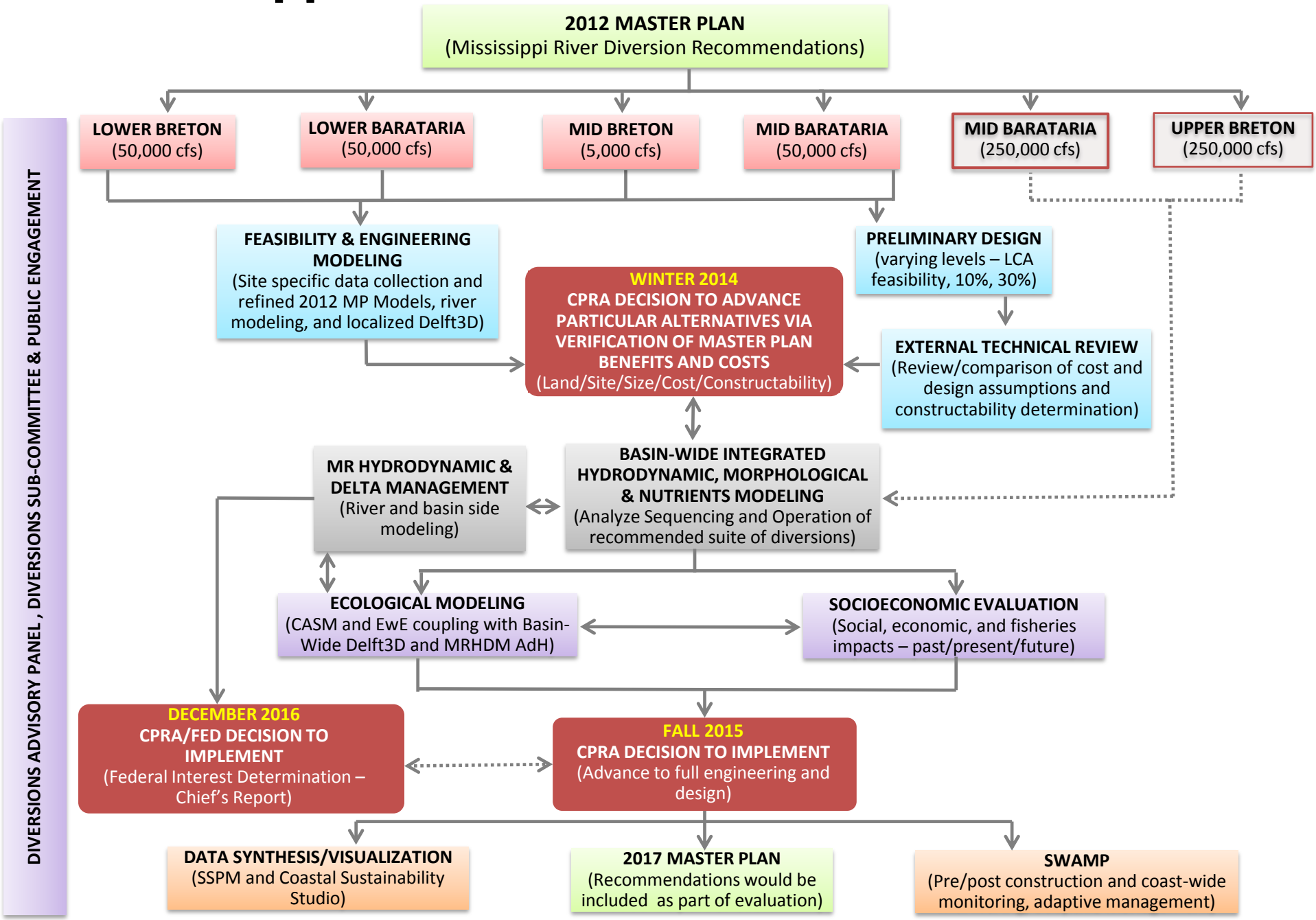
Bren Haase, CPRA

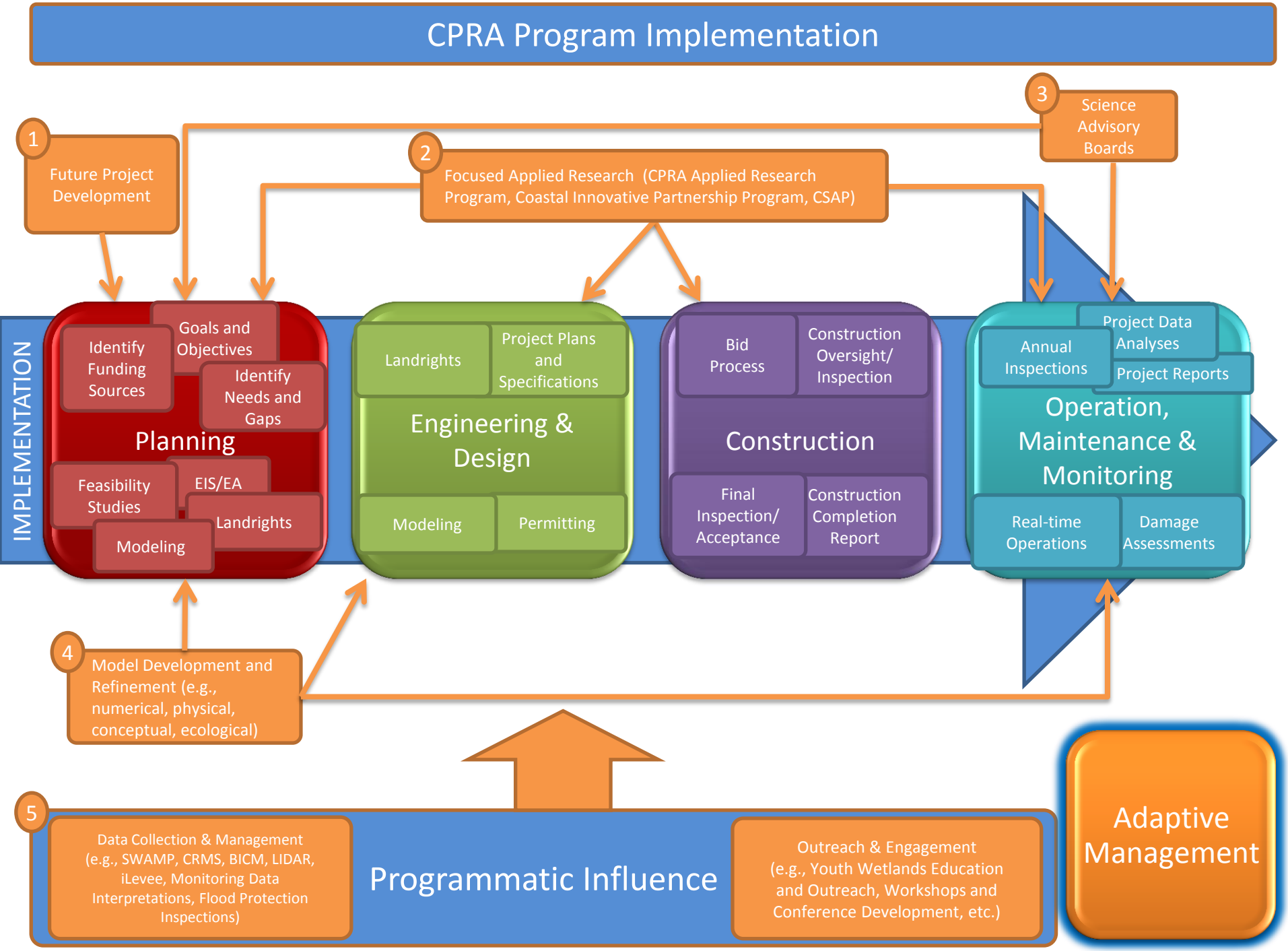
Presentation to Diversions Advisory Panel, Meeting #4

February 12, 2015

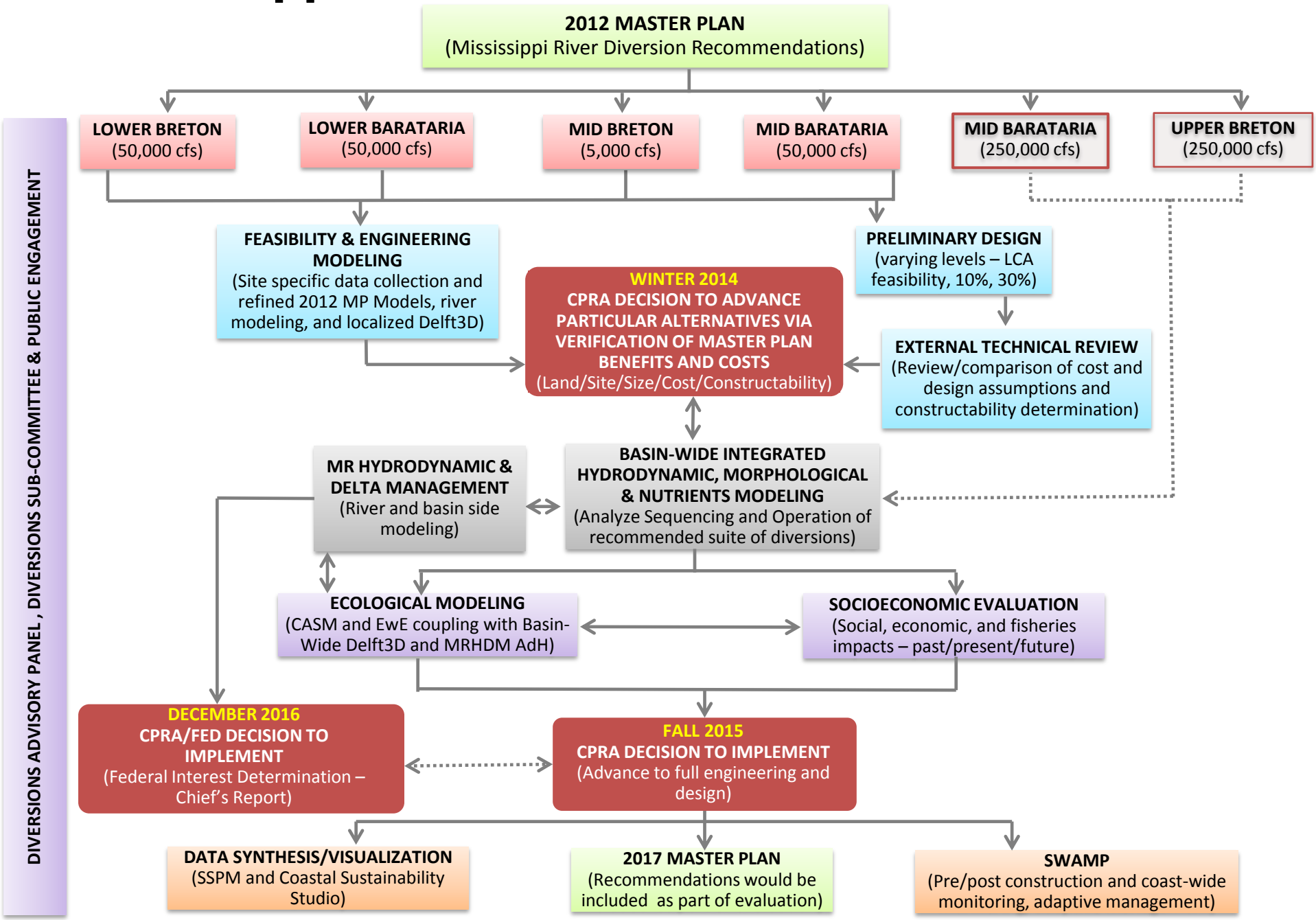
committed to **our coast**

Mississippi River Sediment Diversions: Process




CPRA Program Implementation
1
Future Project Development
2
Focused Applied Research (CPRA Applied Research Program, Coastal Innovative Partnership Program, CSAP)
3
Science Advisory Boards
IMPLEMENTATION
Identify Funding Sources
Goals and Objectives
Identify Needs and Gaps
Planning
Feasibility Studies
EIS/EA
Landrights
Modeling
Landrights
Project Plans and Specifications
Engineering & Design
Modeling
Permitting
Bid Process
Construction Oversight/ Inspection
Construction
Final Inspection/ Acceptance
Construction Completion Report
Annual Inspections
Project Data Analyses
Project Reports
Operation, Maintenance & Monitoring
Real-time Operations
Damage Assessments
4
Model Development and Refinement (e.g., numerical, physical, conceptual, ecological)
5
Data Collection & Management (e.g., SWAMP, CRMS, BICM, LIDAR, iLevee, Monitoring Data Interpretations, Flood Protection Inspections)
Programmatic Influence
Outreach & Engagement (e.g., Youth Wetlands Education and Outreach, Workshops and Conference Development, etc.)
Adaptive Management

Mississippi River Sediment Diversions: Process



Feasibility & Preliminary Engineering

Lower Barataria, Lower Breton, Mid Breton, and Mid Barataria

- **Where we've been**

  2012 Master Plan concepts expanded upon, alternatives modeled and evaluated

- **Where we are**

  Tentatively selected plans, conceptual level engineering and designs

- **Where we are going**

  Basin-wide and ecological modeling, socioeconomic evaluation, Fall 2015 decision on whether to advance to full engineering and design

Basin-Wide Model Development (Delft 3D)

Model Domain of Integrated Hydrodynamic, Morphological, and Nutrient Dynamics

- **<u>Where we've been:</u>**
  Set up and development of model components complete
- **<u>Where we are:</u>**
  Integration of model components and model calibration underway
- **<u>Where we are going:</u>**
  Model validation and application of model for evaluation of FWOP and alternative scenarios

Mississippi River Hydrodynamic and Delta Management Study

- **Where we've been**
  Initial array of alternatives screened to focused array using decision criteria based on the study's goals, objectives, and constraints

- **Where we are**
  As model development continues, team refining focused array to final array of alternatives and defining model runs to evaluate alternative scenarios

- **Where we are going**
  Evaluate final array of alternative scenarios and chose TSP

Fish and Shellfish Modeling/Studies

- **<u>Where we've been</u>**
  EwE model for 2017 MP - Southeast developed
- **<u>Where we are</u>**
  Modifications to the MP EwE model and development of CASM for the Delta Management study underway
- **<u>Where we are going</u>**
  Application of models for evaluation of FWOP and alternative scenarios

BASINWIDE SOCIO-ECONOMIC ANALYSIS

Where we've been:

Literature review, ID of data gaps, initial data collection complete

Where we are:

Draft model output being reviewed - bio-physical linkages

Where we are going

Draft framework will be recommended to outline methodology for assessing socio-economic effects of diversion activities

Themes from Panel Report #3

- Stakeholder Concerns
  - Tools/analyses intended to address but need refinement
  - Do not appear to be addressed
  - More effective communication
- Biophysical monitoring
- Ecosystems Modeling

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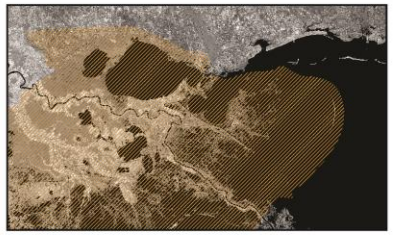
Clearly articulate CPRA vision for the uses of diversion-related socioeconomic analyses

BASINWIDE SOCIO-ECONOMIC ANALYSIS

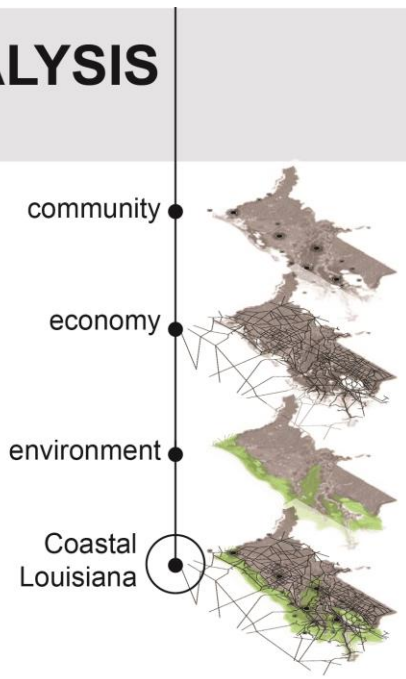
[Past - Present - Future]

GOALS: *Further analyze the potential effects to communities, fisheries, and the economy from continued land loss and the implementation of sediment diversion projects recommended in the 2012 Coastal Master Plan.*

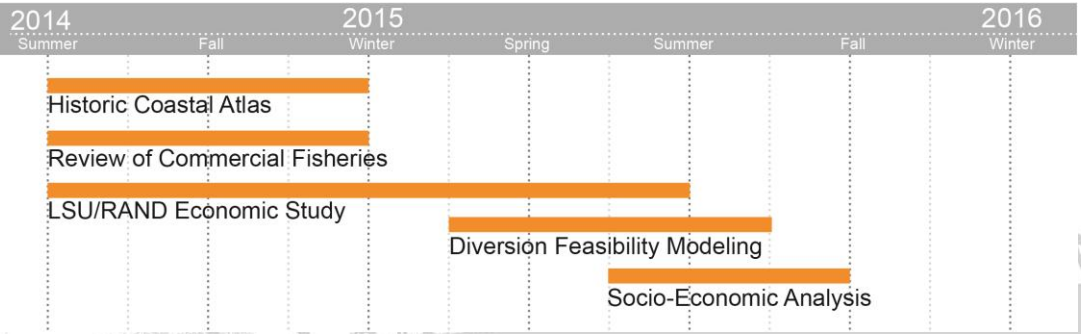
SCALE:



Regional

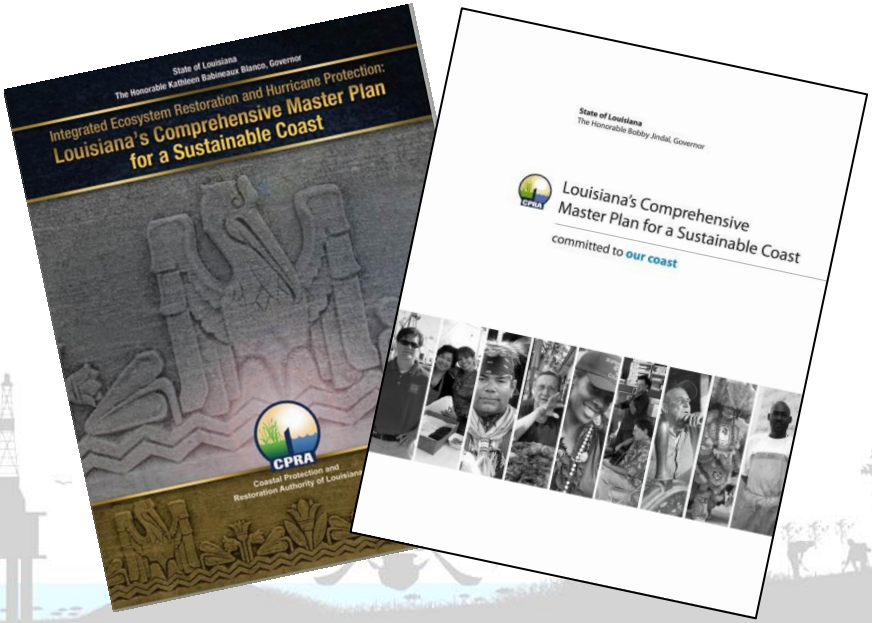


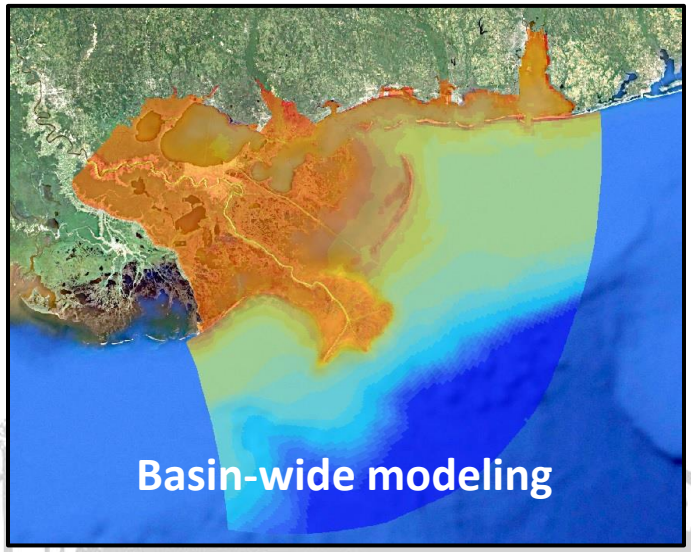
TIMEFRAME:



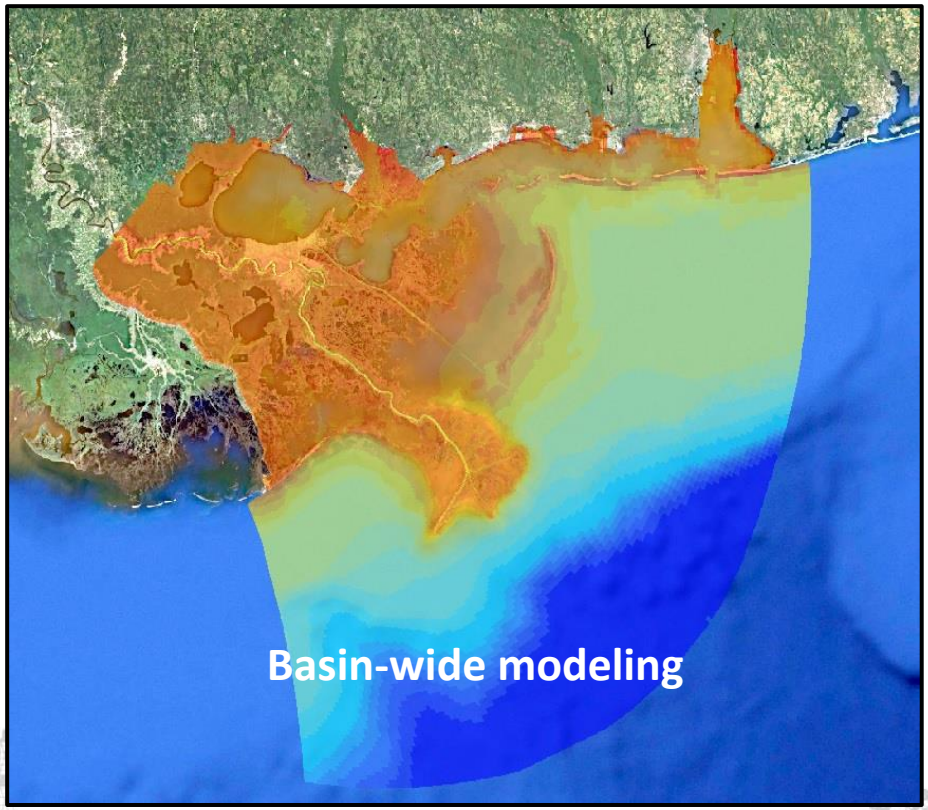
Begin public discussion:

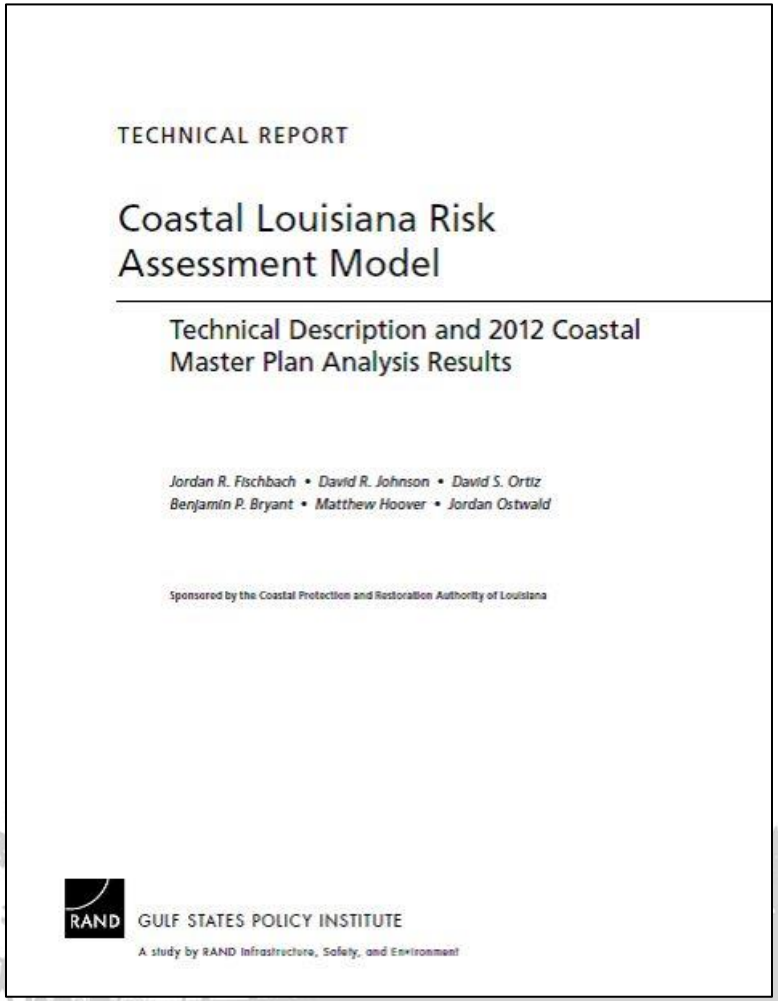
- **Types of operational scenarios under consideration**
- **How models will be used to evaluate these scenarios**
- **How stakeholder feedback will be incorporated into decisions on operations**





Develop more explicit conceptual approach of how model output would be used to determine effects of flooding





TECHNICAL REPORT

Coastal Louisiana Risk Assessment Model

Technical Description and 2012 Coastal Master Plan Analysis Results

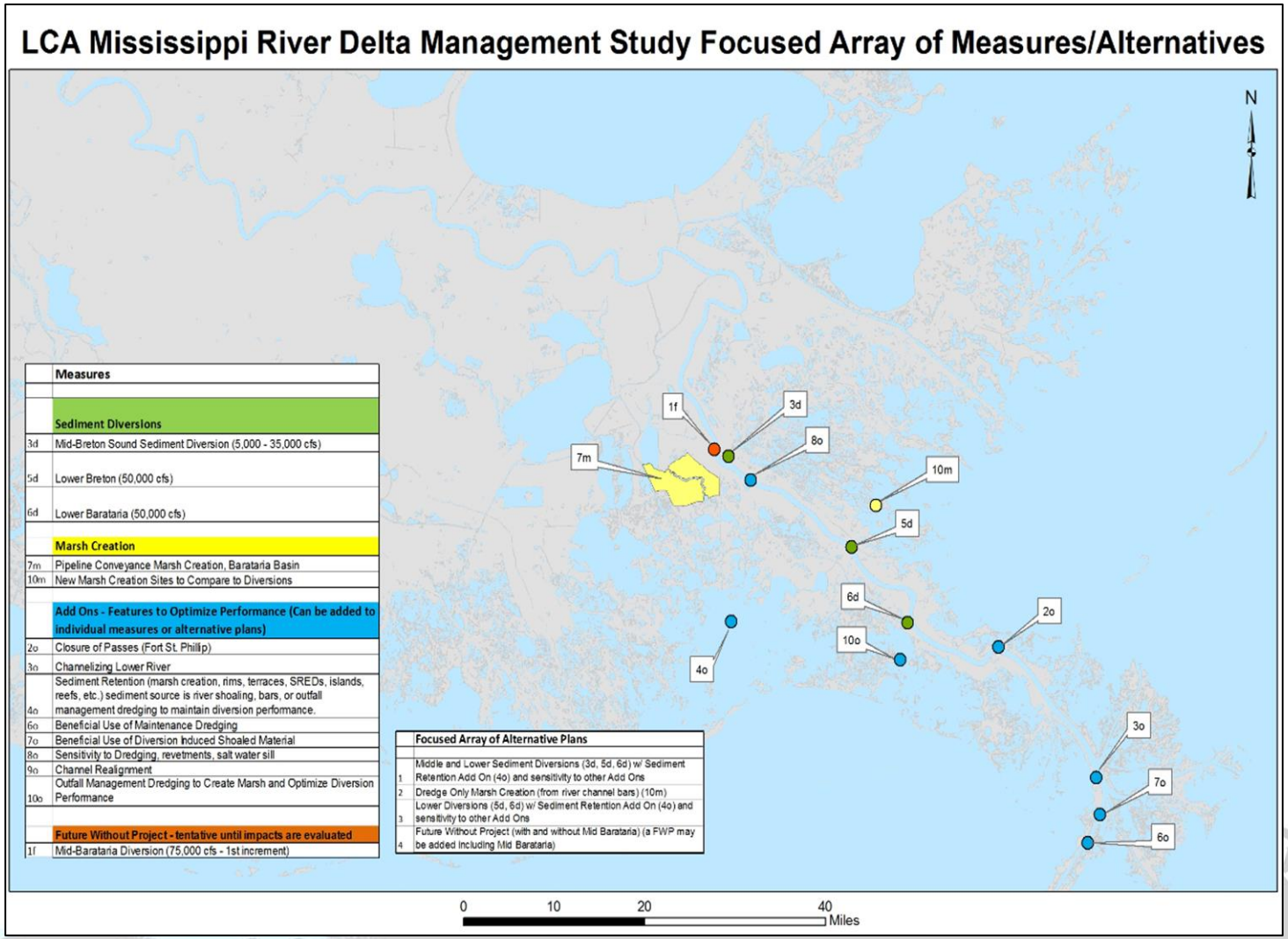
Jordan R. Fischbach • David R. Johnson • David S. Ortiz
Benjamin P. Bryant • Matthew Hoover • Jordan Ostwald

Sponsored by the Coastal Protection and Restoration Authority of Louisiana

RAND GULF STATES POLICY INSTITUTE

A study by RAND Infrastructure, Safety, and Environment

Include dredging restoration projects as an alternative restoration strategy for further discussion with stakeholders



	Measures
	Sediment Diversions
3d	Mid-Breton Sound Sediment Diversion (5,000 - 35,000 cfs)
5d	Lower Breton (50,000 cfs)
6d	Lower Barataria (50,000 cfs)
	Marsh Creation
7m	Pipeline Conveyance Marsh Creation, Barataria Basin
10m	New Marsh Creation Sites to Compare to Diversions
	Add Ons - Features to Optimize Performance (Can be added to individual measures or alternative plans)
2o	Closure of Passes (Fort St. Philip)
3o	Channelizing Lower River
4o	Sediment Retention (marsh creation, rims, terraces, SREDs, islands, reefs, etc.) sediment source is river shoaling, bars, or outfall management dredging to maintain diversion performance.
6o	Beneficial Use of Maintenance Dredging
7o	Beneficial Use of Diversion Induced Shoaled Material
8o	Sensitivity to Dredging, revetments, salt water sill
9o	Channel Realignment
10o	Outfall Management Dredging to Create Marsh and Optimize Diversion Performance
	Future Without Project - tentative until impacts are evaluated
1f	Mid-Barataria Diversion (75,000 cfs - 1st increment)

	Focused Array of Alternative Plans
1	Middle and Lower Sediment Diversions (3d, 5d, 6d) w/ Sediment Retention Add On (4o) and sensitivity to other Add Ons
2	Dredge Only Marsh Creation (from river channel bars) (10m)
3	Lower Diversions (5d, 6d) w/ Sediment Retention Add On (4o) and sensitivity to other Add Ons
4	Future Without Project (with and without Mid Barataria) (a FWP may be added including Mid Barataria)

Themes from Panel Report #3

- Stakeholder Concerns
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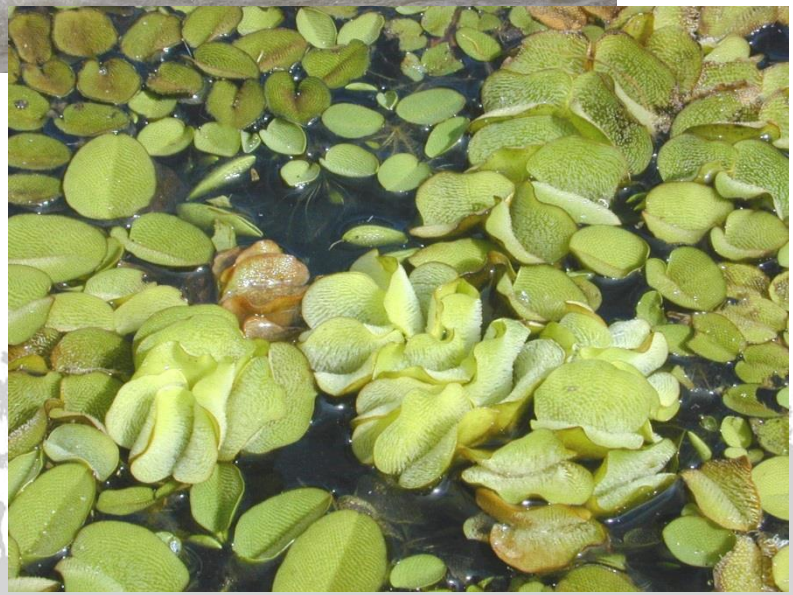
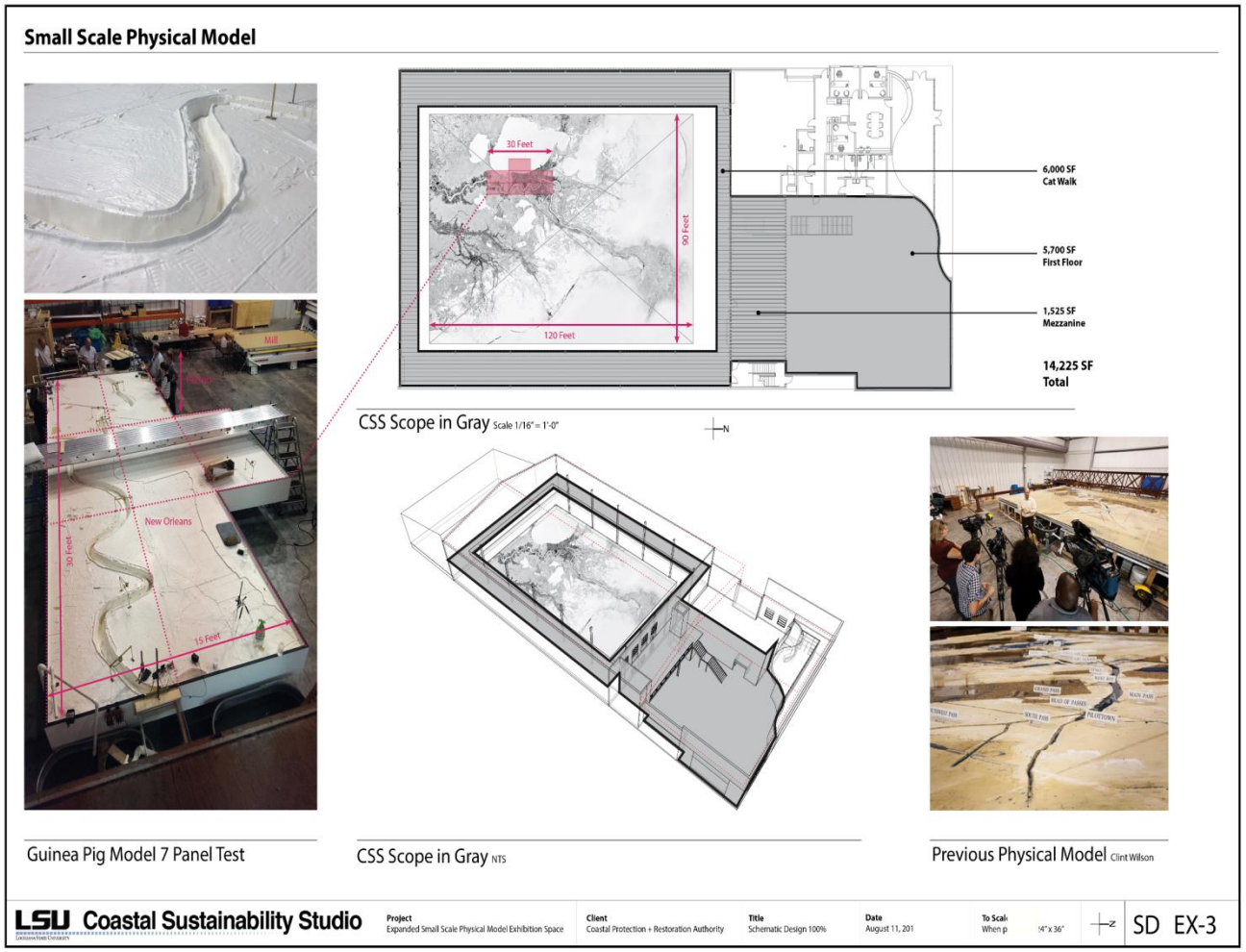
Work with local scientists to develop a scale-appropriate experimental design that encompasses a range of nutrient levels and sediment types

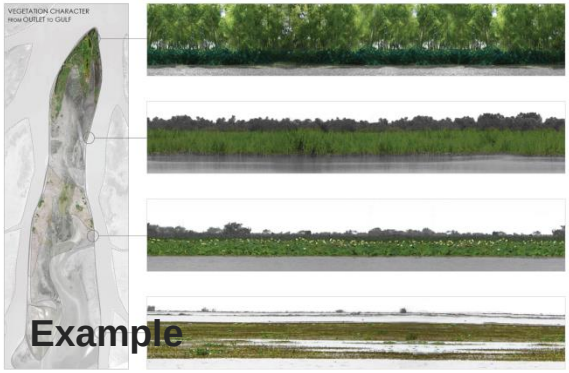
- Applied Research and Development Program
- Evaluating options for commissioning priority applied research and development
- Willing to collaborate with academia

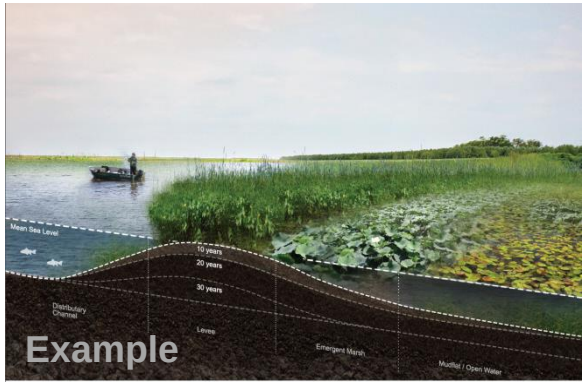
Prepare white paper to identify potential hazards associated with invasive species, and appropriate and effective approaches to address



Draft communication plan that provides conceptual approach for how technical outputs will be translated, tailored to specific locations and to each of the numerous target audiences.

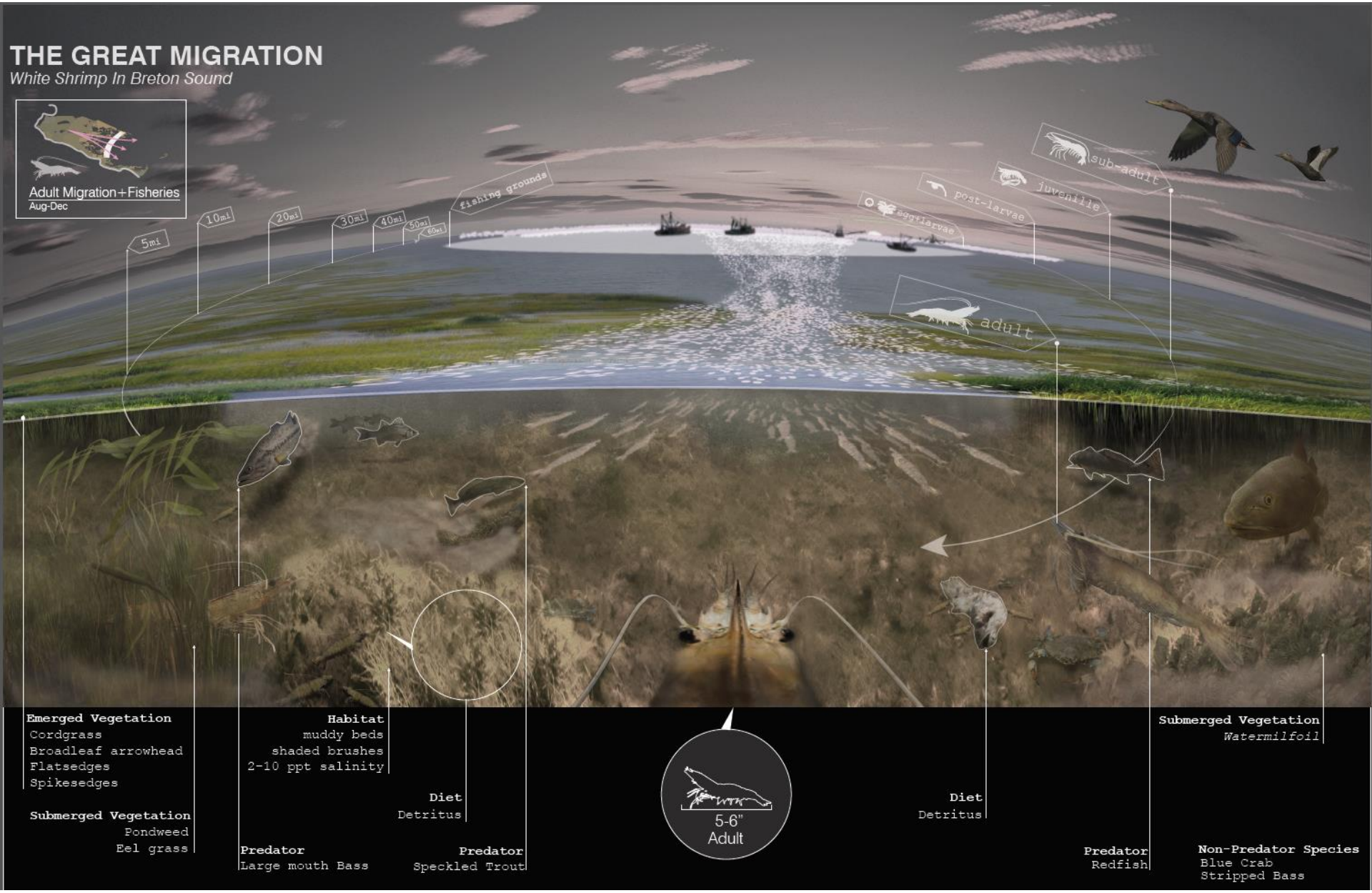



VEGETATION CHARACTER
from OUTLET to GULF
Example


Mean Sea Level
10 years
20 years
30 years
Distributary Channel
Levee
Emergent Marsh
Mudflat / Open Water
Example


WATER VOLUME AND SEDIMENT LOAD OF THE ATCHAFALYA RIVER
ATCHAFALAYA RIVER
MISSISSIPPI RIVER
Example


WEST BAY MECHANICAL PROCESS OF LAND BUILDING


THE GREAT MIGRATION
White Shrimp In Breton Sound
Adult Migration+Fisheries
Aug-Dec
5mi
10mi
20mi
30mi
40mi
50mi
60mi
fishing grounds
egg/larvae
post-larvae
juvenile
sub-adult
adult
Emerged Vegetation
Cordgrass
Broadleaf arrowhead
Flatsedges
Spikesedges
Submerged Vegetation
Pondweed
Eel grass
Habitat
muddy beds
shaded brushes
2-10 ppt salinity
Diet
Detritus
Predator
Large mouth Bass
Predator
Speckled Trout
5-6"
Adult
Diet
Detritus
Predator
Redfish
Submerged Vegetation
Watermilfoil
Non-Predator Species
Blue Crab
Stripped Bass

Evolution of a Diversion

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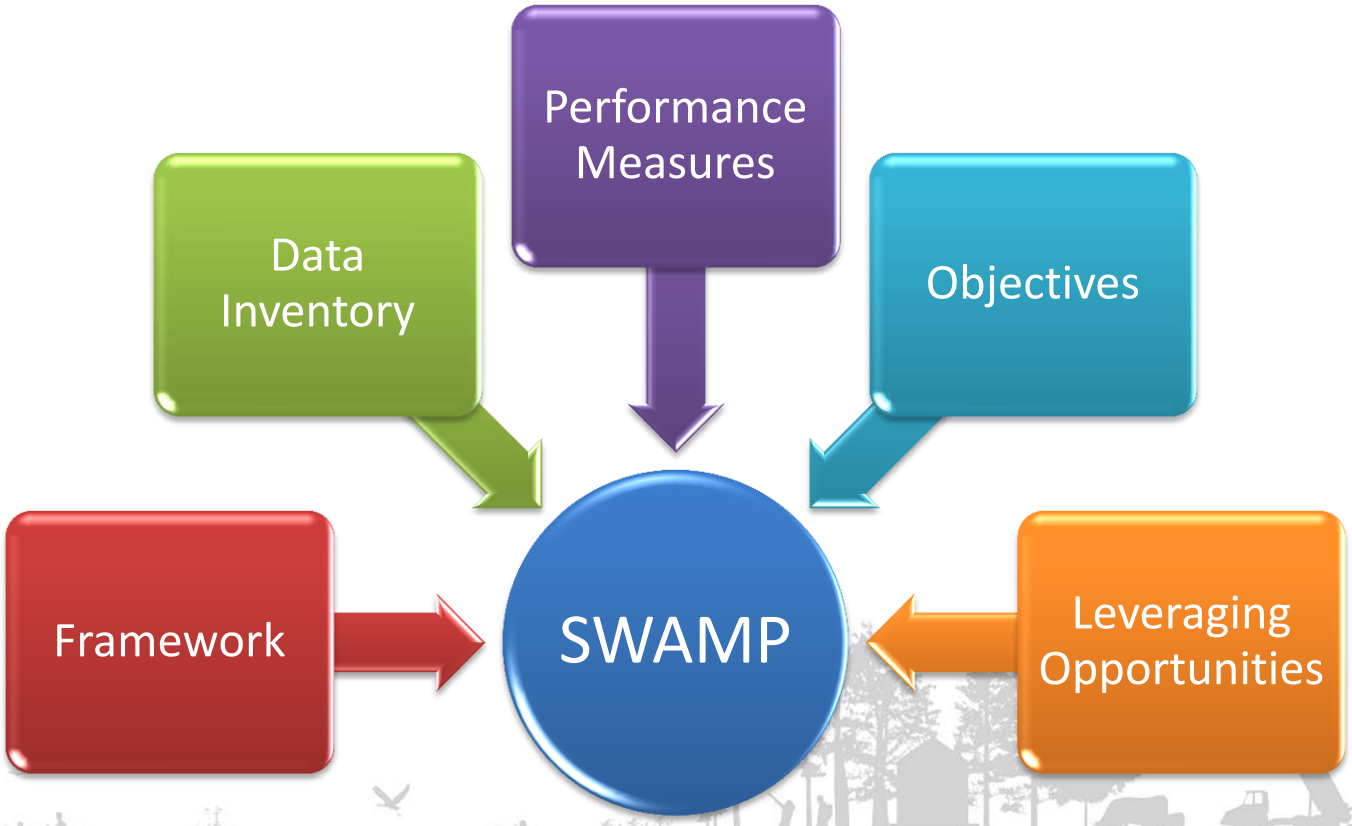
Address key data needs by: (1) expanding monitoring program - turbidity sensors, coring of bottom (2) quantifying sensitivity of the DELFT-3D modeling to initial bathymetry/topography and wave action



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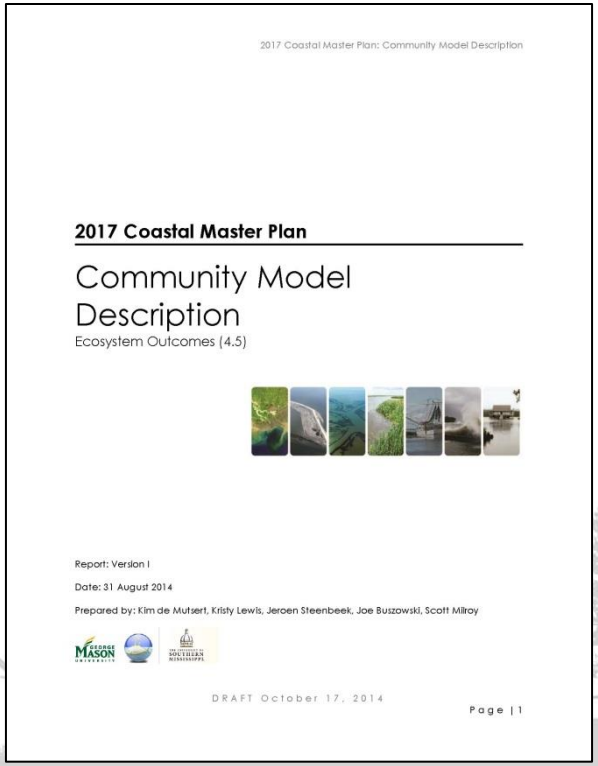
Develop a peer-review process for both the EwE and CASM models

- 2017 Master Plan: EwE external peer review
- LCA Mississippi River Delta Management Study: EwE and CASM reviews



2017 Coastal Master Plan: Community Model Description

2017 Coastal Master Plan

Community Model Description

Ecosystem Outcomes (4.5)

Report: Version I

Date: 31 August 2014

Prepared by: Kim de Mutsert, Kristy Lewis, Jeroen Steenbeek, Joe Buszowski, Scott Milroy

DRAFT October 17, 2014

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Assemble independent working group to assess adequacy of consumer monitoring data and plan for tasks/approaches that have been proposed

- Work with partners to inform discussion on adequacy
- Expect SWAMP monitoring designs help address
- LCA Mississippi River Delta Management Study: Fish and Shellfish Models Technical Workgroup

Key Considerations Moving to 2015 Decision Point

- Land Built/Sustained
  - Which ones, which one first
- River effects
- Water levels
- Water Quality
  - Salinity
  - Temperature
  - Nutrients – fate/distribution
- Vegetation/Habitat diversity
- Fish and shellfish biomass/distribution
- Socioeconomic considerations
- Funding

WWW.Coastal.LA.Gov

Thank You!

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