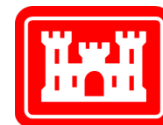




Coastal Protection and
Restoration Authority of Louisiana



US Army Corps
of Engineers®

Modeling the Effect of Diversions on Land Building, Vegetation and Water Quality

Expert Panel on Diversion Planning
and Implementation Meeting # 5
August 4, 2015



committed to our coast

Basin-wide Models

- Designed to evaluate effects of large-scale restoration projects, such as diversions, over several decades (study period of analysis is 50 years)
- Take into account complex biophysical processes (e.g., hydrology, morphology, water quality dynamics)
- Outputs will include: acres of land, water levels, salinities, etc.



LCA Mississippi River Hydrodynamic and Delta Management Study (MRHDMS)

Hydrodynamic Study

River Science

Data Collection, Analysis,
and Modeling

Delta Management Study

Receiving Basins Science

Full Feasibility Study with
Chief's Report



Delta Management Study

- Mississippi River Delta Management (MRDM) is a feasibility study that parallels CPRA's decision on which diversions to move to Engineering and Design.
- The MRDM study provides an opportunity for the state to gain federal interest in restoration projects and consensus on evaluation tools and methods.



Delta Management Study

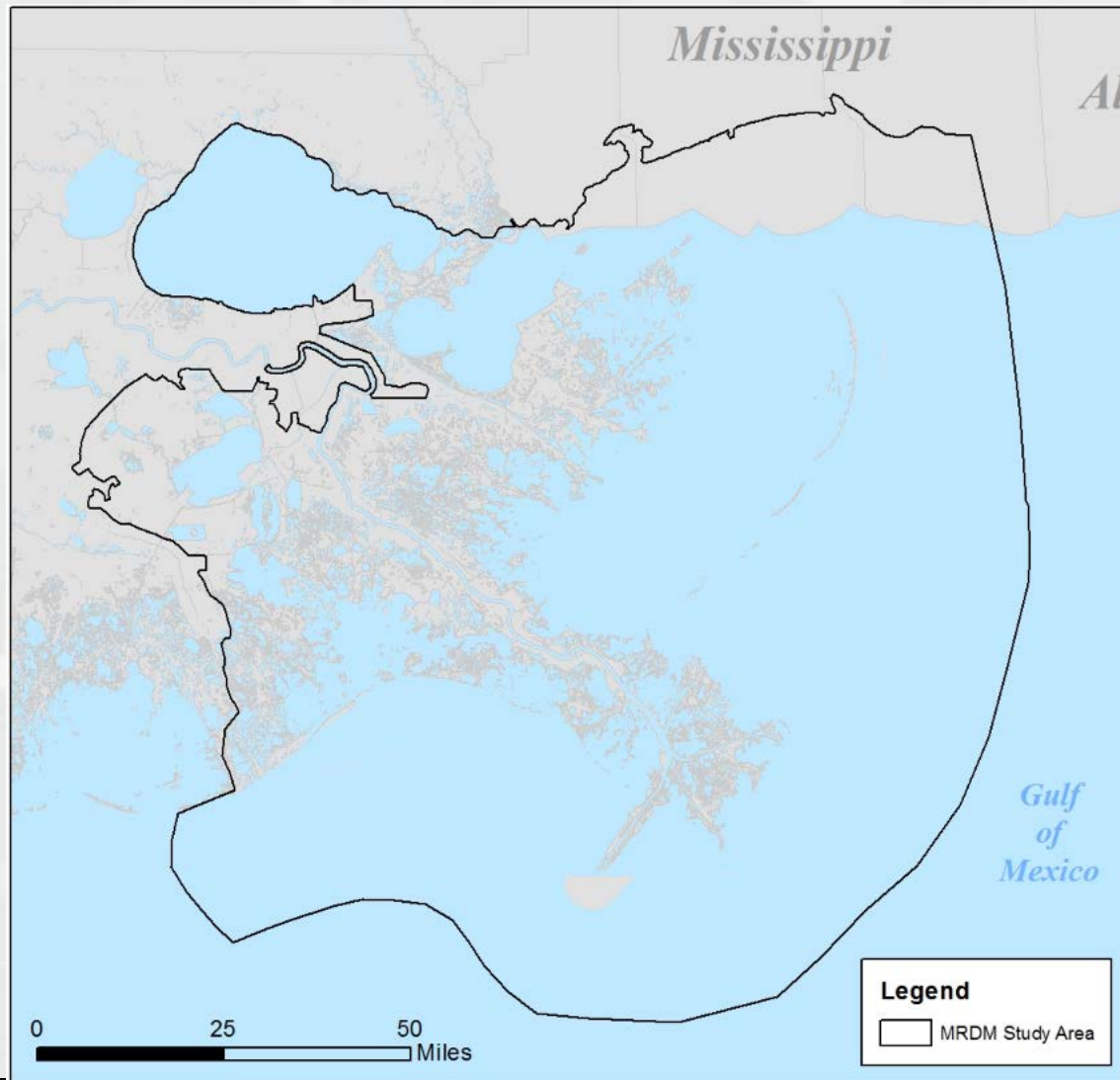
- The MRDM Project Delivery Team (PDT) consists of representatives from multiple state and federal agencies and partners.



NOAA FISHERIES SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



MRDM: Study Area



MRDM: Objectives and Constraints

- Maintain maximum acres of wetlands
- Sustain diverse habitats
- Reduce tidal prisms, improve interior hydrology
- Maintain flood conveyance capacity of the river
- Maintain navigation mission of the river
- Minimize flood risk to communities
- Minimize adverse impacts to fisheries



MRDM: Plan Formulation

1. Develop **Initial Array** of alternatives *(2014)*
2. Screen initial array to a **Focused Array** using existing information *(2014)*
3. **Develop models** to evaluate river and basin effects for the focused array *(2015)*
4. **Apply models** to conduct runs for the focused array *(underway)*
5. Select the **Tentatively Selected Plan (TSP)** *(2015)*



MRDM: Model Development

- Basinwide models
 - Delft (Water Institute)
 - AdH (USACE, ERDC)

- Fish and Shellfish Community Modeling
 - EwE (GMU)
 - CASM (Dynamic Solutions)



MRDM: Model Application

- 50 year simulations underway:
 - Future without project (FWOP)
 - Mid-Barataria
 - Mid-Breton
 - Lower Barataria
 - Lower Breton
 - All 4 diversions operation concurrently



Next Steps

MRDM

- Use outputs to drive further analyses
 - Wetland Value Assessment
 - Cost/benefit analysis
- Evaluate results relative to FWOP
- Choose TSP based on study objectives and constraints

CPRA

- Decision on which projects to advance to E&D



Multiple Models

- Value in comparing results because there are strengths and limitations of each model
- Inputs for Delft and ADH were held as consistent as possible, but results will differ.
- Model performance will be assessed with calibration/validation statistics, and this will help the PDT interpret results



Modeling Presentations

- **Data Collection** - Mead Allison, WI
- **Delft Model** - Melissa Baustian, WI
- **Vegetation in Delft** - Scott Duke-Sylvester, ULL
- **AdH Model** - Gary Brown, ERDC

