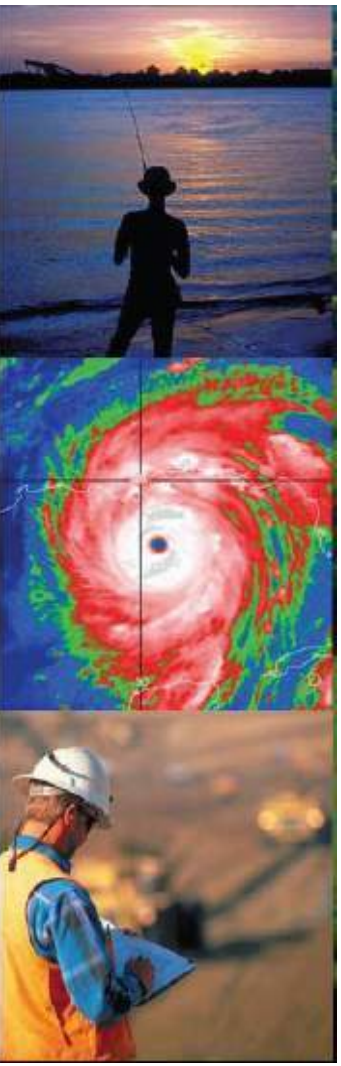


Louisiana Coastal Protection and Restoration (LACPR) Project

Edmond J. Russo, Jr., P.E.
Technical Director

Coastal and Hydraulics Laboratory
U.S. Army Engineer Research and Development Center

Congressional Direction

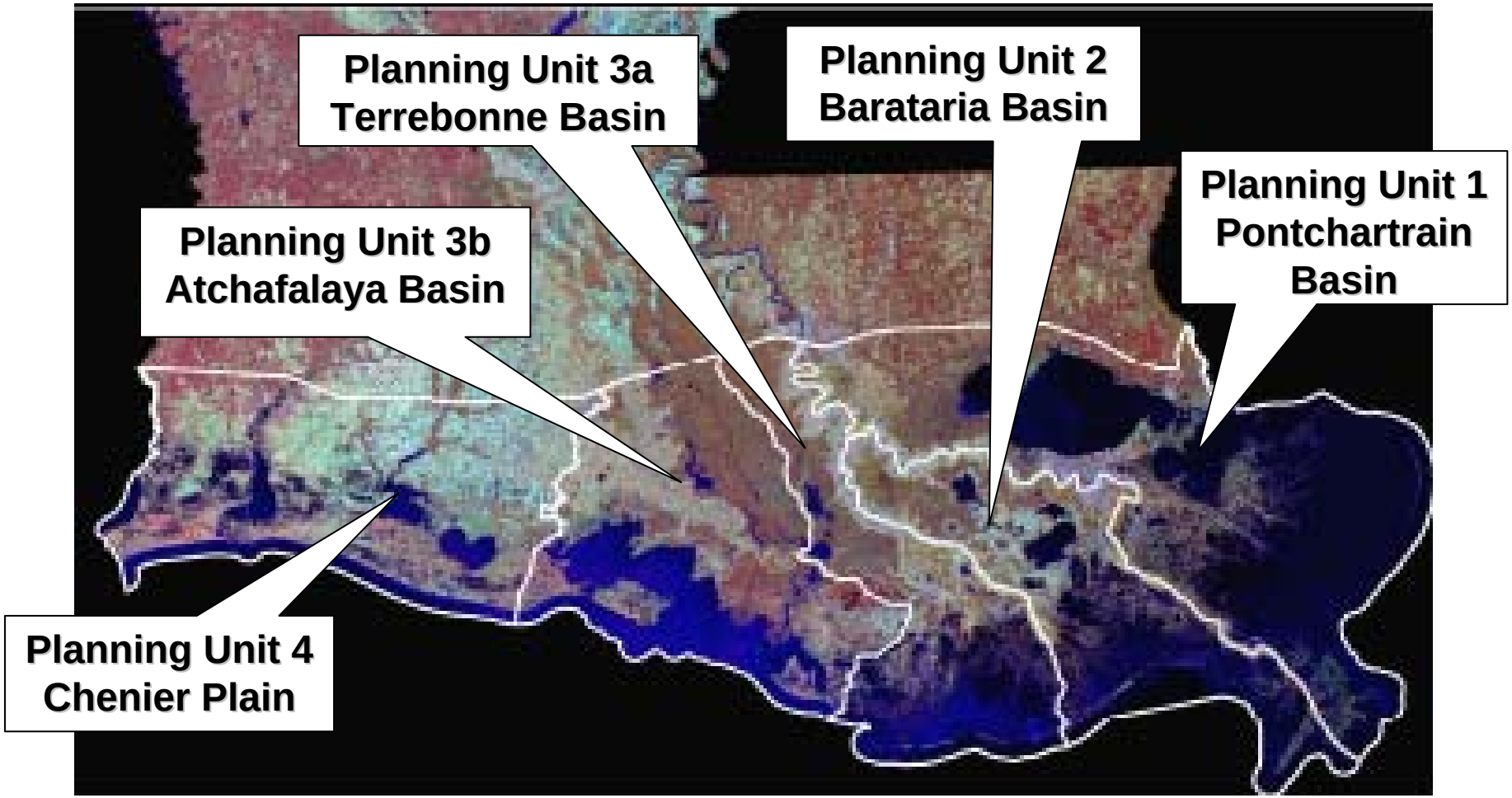
- Comprehensive hurricane protection analysis and design
- Full range of flood control, coastal restoration, and hurricane protection measures
- Storm surge equivalent to a “Category 5” hurricane
- Exclusive of normal policy considerations
- Preliminary Technical Report (PTR) within 6 months
- Final Technical Report (FTR) within 24 months
- Reports on component areas for authorization as soon as practicable
- Close coordination with the State of Louisiana

State Master Plan and LACPR Path Forward

- State Master Plan:
  - Provides overarching vision of Louisiana coastal protection and restoration
  - Developed through significant participation by the public, stakeholders' views, and scientific and technical expert input

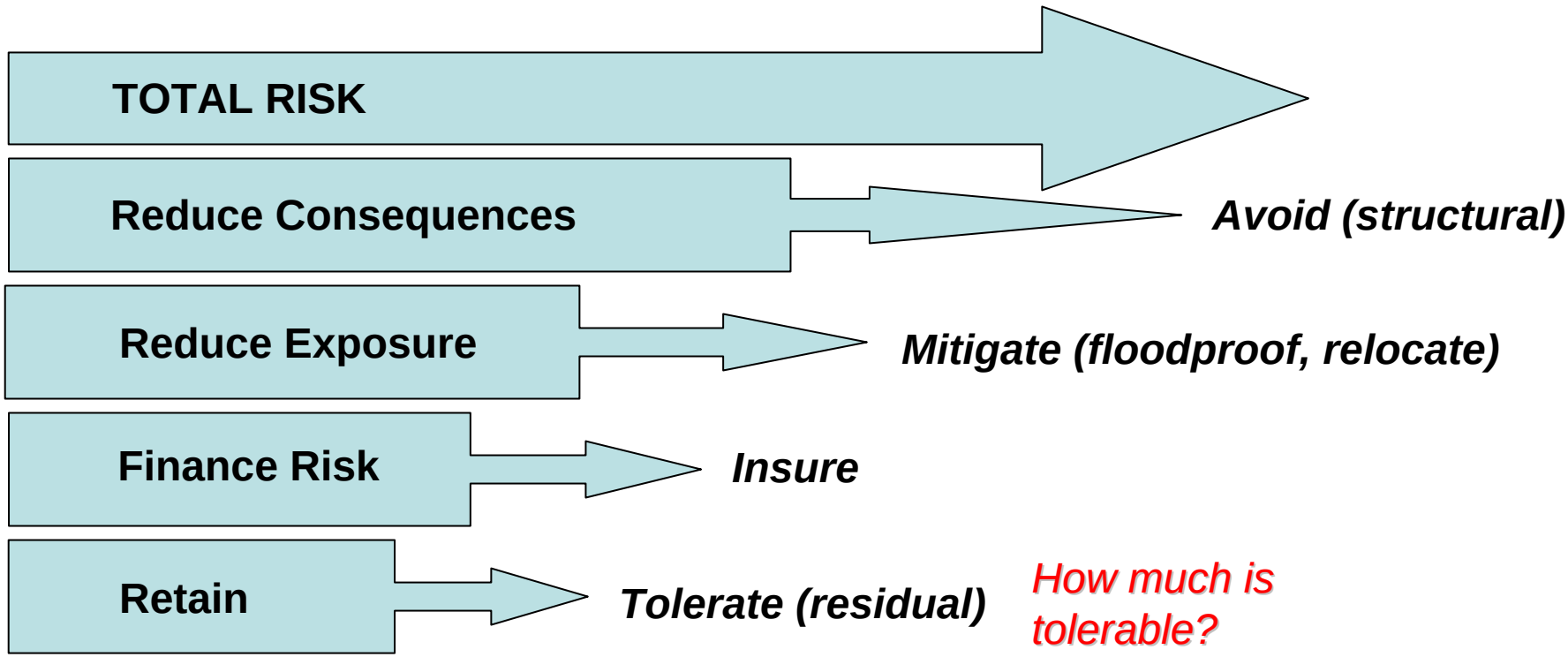
- LACPR:
  - Is a planning effort perform additional work to meet Federal Requirements in developing an actionable report
  - With other Federal/State initiatives will provide a means for delivery of this vision

Planning Units*

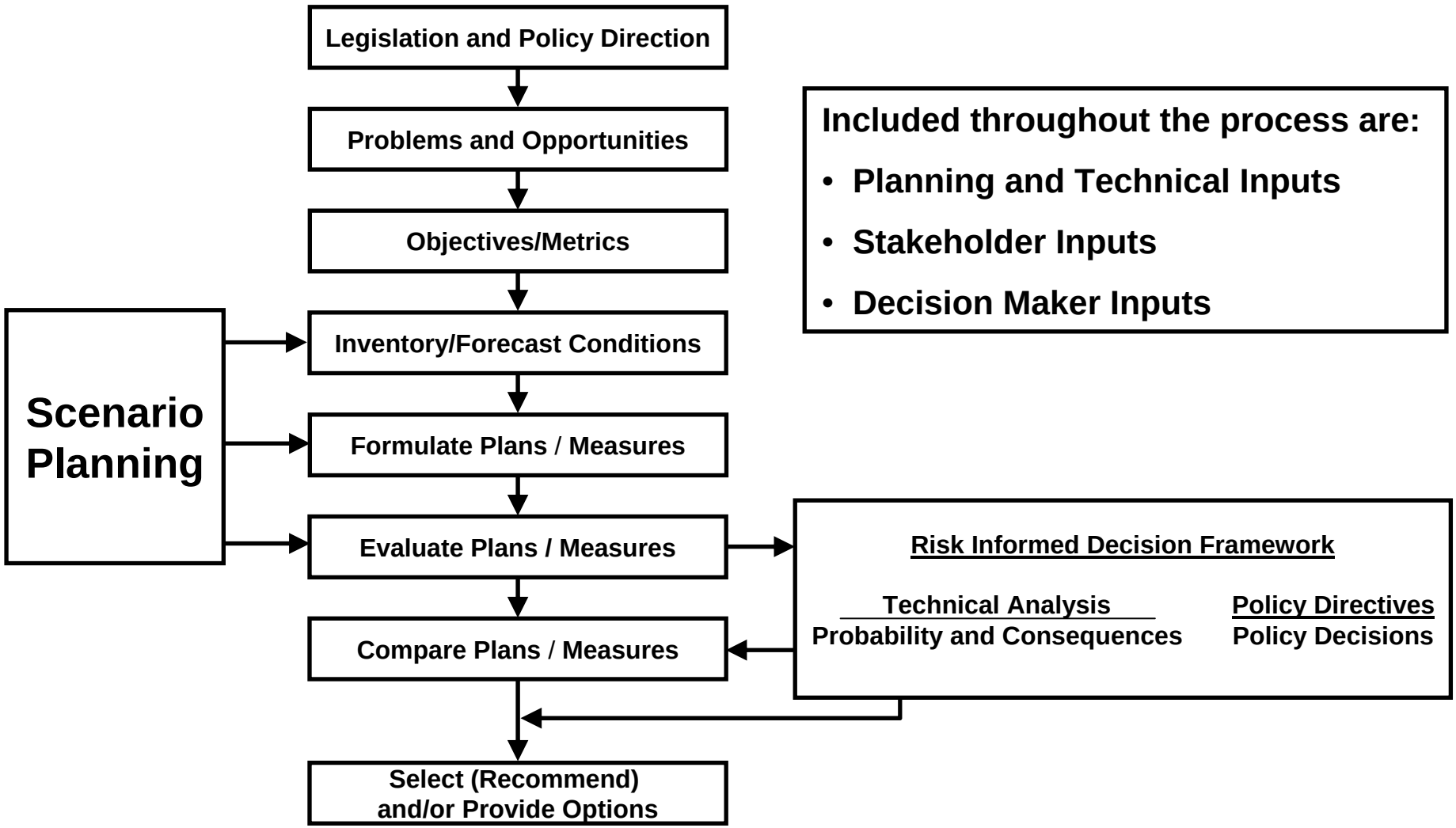


* Further divided into sub-units for better resolution as investigation progresses

Risk Management Concepts



Risk-Informed Planning



LaCPR Planning Objectives

- Reduce risk to public safety from catastrophic storm inundation
- Reduce damages from catastrophic storm inundation
- Promote a sustainable ecosystem
- Restore and sustain diverse fish and wildlife habitats, and
- Sustain the unique heritage of coastal Louisiana by protecting historic sites and supporting traditional cultures

LaCPR Risk Metrics

- People
  - Resident/exposed population
- Economy
  - Expected Annual Damages
  - Regional Economic Development (jobs, income, regional output)
  - Life-Cycle Costs; Implementation, O&M
  - Residual risk; EAD with projects
- Environment
  - Sustainability; acreage loss index
  - Habitat relative abundance
  - Surge/wave reduction
- Culture
  - Cultural sites protected

LACPR Plan Formulation Atlas

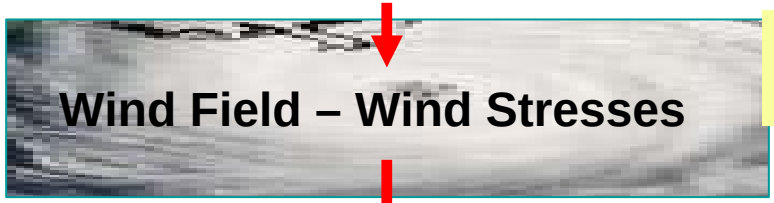
- Inventories and documents array of risk reduction measures being considered by Planning Unit
  - Structural
  - Non-structural
  - Coastal landscape stabilization

- Based on extensive stakeholder involvement efforts with State, resource agencies, NGO's, academia, and public

- Includes proposed measures/plans by others

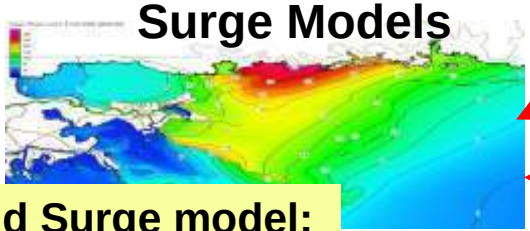
Inundation Stage-Frequency Analysis: Joint Probability – Optimal Sampling Method

Probability Characteristics for Set of PBL Parameters and Tracks (including potential climate variability)



Winds: Oceanweather PBL

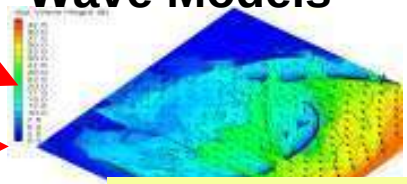
Surge Models



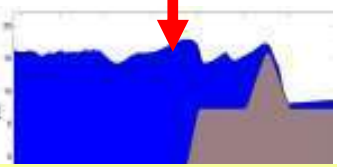
Unified Grid Surge model: ADCIRC with wave set-up (V 46.50)

Coupling

Wave Models



Offcoast Waves: WAM/Wavewatch Nearshore Waves: STWAVE/SWAN

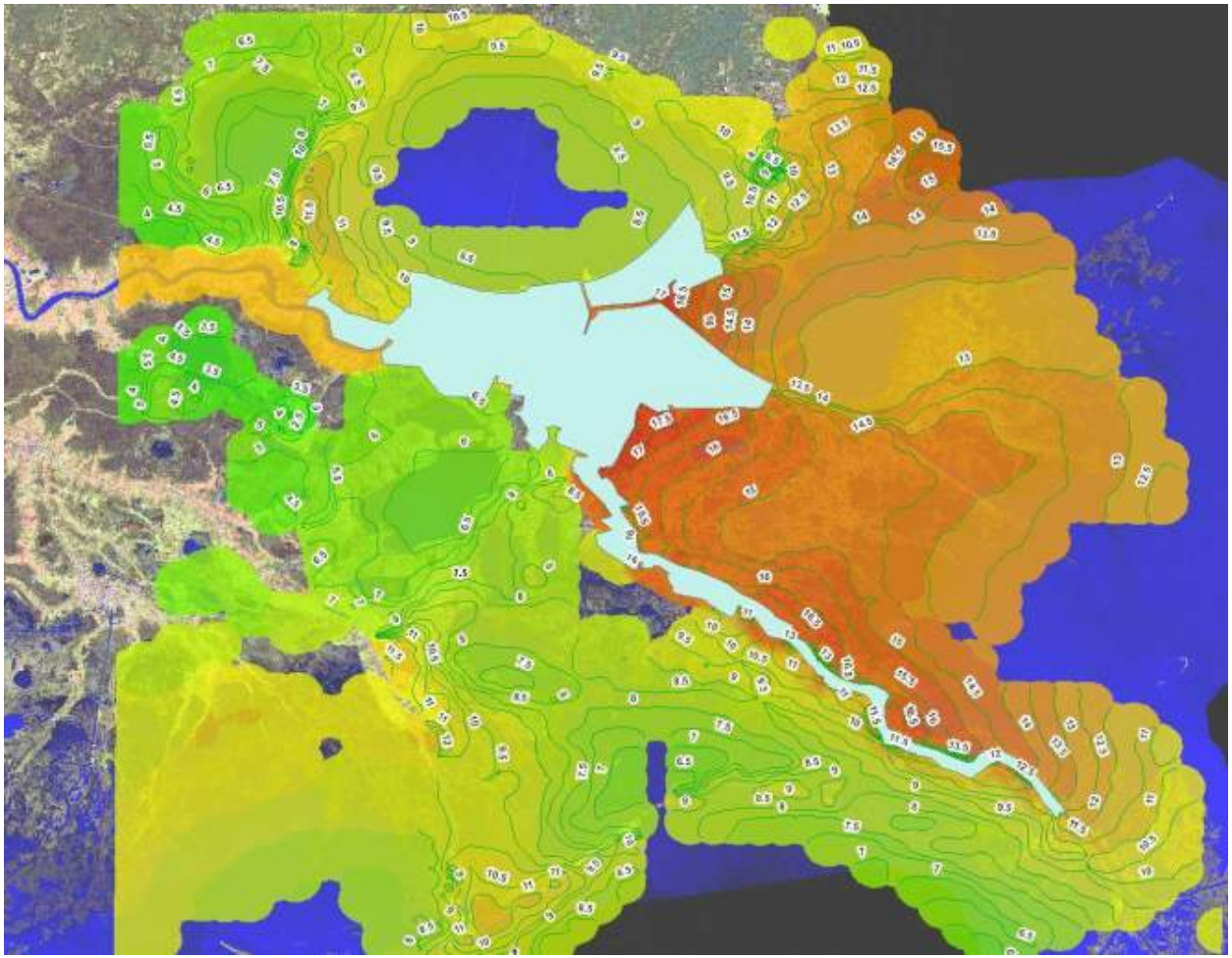


Local Scale Waves: Boussinesq - Parametric

Water Levels, Overtopping, Loads on Structures, etc.

Integration of JPM Probabilities for Inundation Threat

Example Modeling Determination of Flood and Storm Threats



JPM-OS Simulation:

1% chance of stage inundation frequency – Base Conditions

FT

18

12

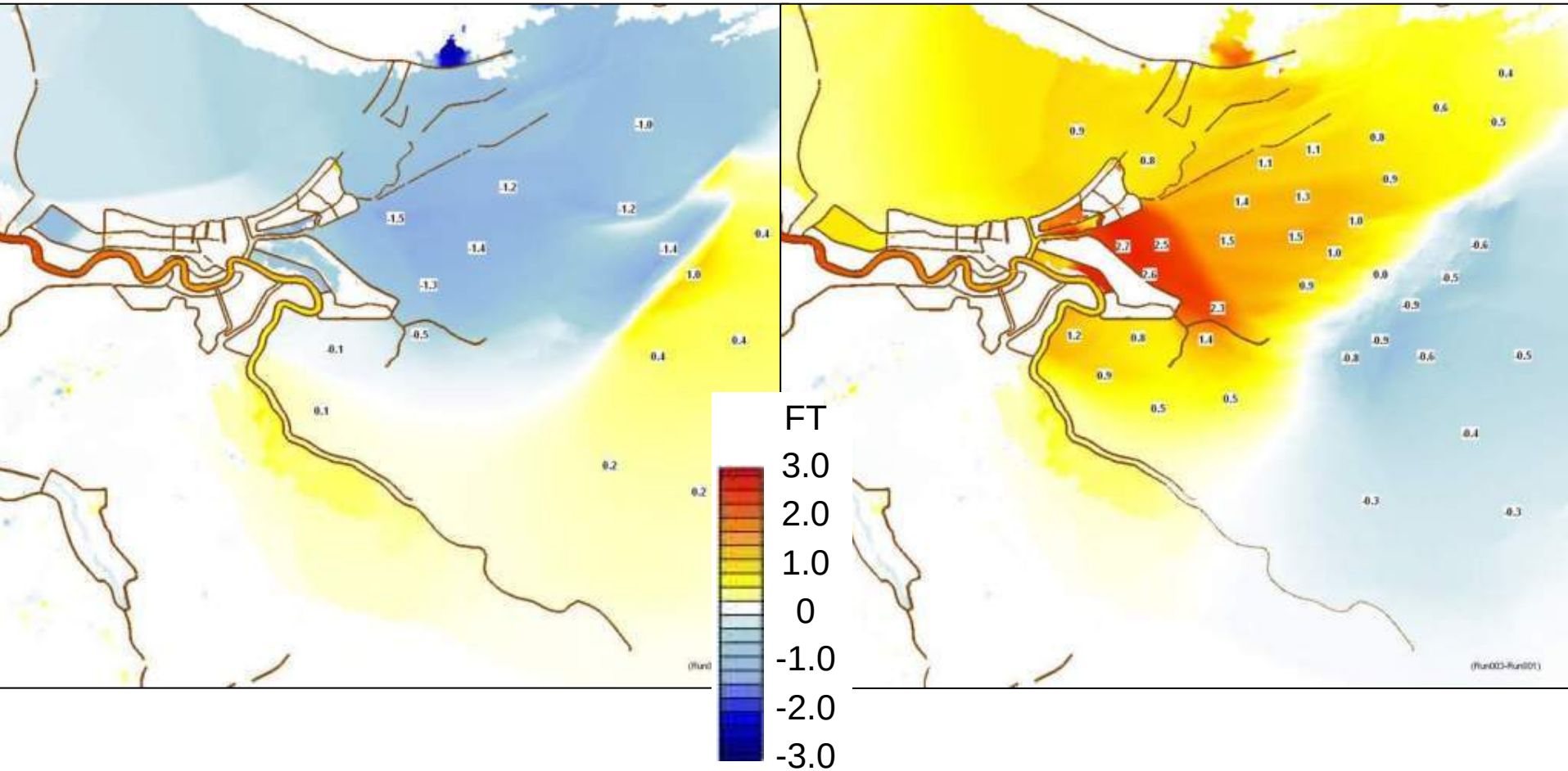
8

4

Coastal Features are Important

Surge Reduction Difference
Biloxi Marsh raised 1.05 ft to Existing Elevations

Surge Reduction Difference
Biloxi Marsh lowered 2 ft from Existing Elevations



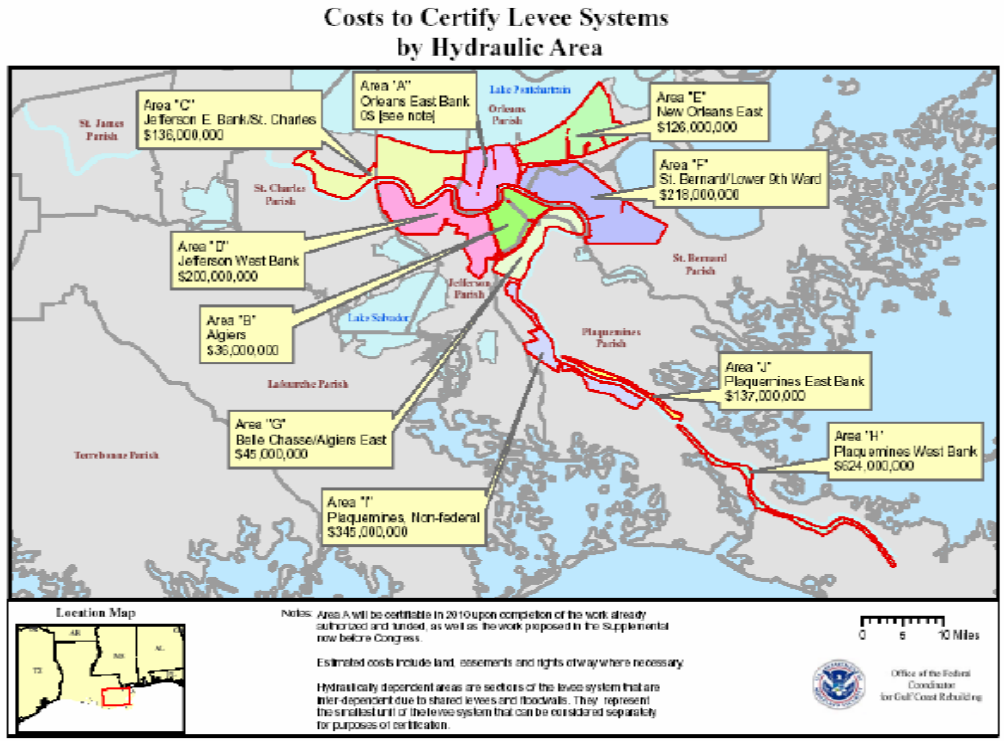
One Team: Communicating, Collaborating, Consensus

LACPR December 2007 Technical Report Scope

- Investigate risk reduction to populations, assets, and coastal landscape
- Identify Tentatively Selected Comprehensive Plan
- Varying levels of recommendation for construction, analysis and design, and further study
- Provide stand-alone chapter covering MRGO, including NEPA documentation required to support construction authorization
- Complete PEIS on separate track by mid-2008 to support implementation plans

Risk Communication

- Residual risk fully communicated to decision makers and public for 100-yr stage-frequency up to most rare and severe storms
- Discussion on uncertainty in future projections



LACPR and State Master Plan Timelines

12 APR 07	State Master Plan approved by CPRA
30 APR 07	State Master Plan submittal to State Legislature
AUG 07	Draft Technical Report
SEP 07	Alternative Formulation Briefing
SEP 07	Draft LACPR Tech Report for External Peer Review
OCT-NOV 07	Draft Technical Report for public comment
OCT-NOV 07	Draft Tech Report for Admin Review
DEC 07	Tech Report for transmittal to Congress
DEC 07	Report with draft Programmatic EIS for public review
FEB 08	Civil Works Review Board
MAR 08	Report with final EIS for State and Agency review
JUL 08	Chief's Report and Record of Decision sent to Congress