DEQ
LOUISIANA

ENGINEERING ENVIRONMENTAL IMPROVEMENTS
IN LOUISIANA'S COASTAL ZONE

LOUISIANA DEPARTMENT OF **ENVIRONMENTAL QUALITY**

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ENGINEERING ENVIRONMENTAL IMPROVEMENTS IN LOUISIANA'S COASTAL ZONE

PRESENTATION OUTLINE

Background – Louisiana's Coastal Zone
Hurricanes Katrina and Rita
Challenges Bring Opportunities

- Integration of Hurricane Protection and Coastal Restoration
- Integration of Transportation Infrastructure Recovery and Coastal Restoration
- Wastewater Infrastructure Recovery and Water Quality Improvements
- Recovery Planning/Redevelopment
- Rebuilding Sustainable Communities

Programmatic Sources of Funding
Conclusions

Louisiana's Valuable Coastal Zone

Population – In 2000, over 2 million residents (more than 50% of state's population according to U.S. Census estimates) lived in Louisiana's coastal parishes. This, of course, was affected by 2005 hurricanes.

Waterborne Commerce – Louisiana ports carry 469 million tons of waterborne commerce annually (19% of all waterborne commerce in the U.S. each year). Five of the top 15 largest ports in the U.S. are located in Louisiana.

Energy – Including Outer Continental Shelf Production, Louisiana ranks 1st in the nation in crude oil production and 2nd in the nation in natural gas production. Excluding OCS production, the state ranks 4th in crude oil production and 5th in natural gas production.

Commercial Fishing – In 2004, Louisiana commercial landings exceeded 1 billion pounds with a dockside value of $274 million, that accounts for about 26% of the total catch by weight in the lower 48 states.

Recreational Fishing – Annual expenditures related to non-commercial fishing in Louisiana can amount to between $703 million and $1.2 billion.

Louisiana's Valuable Coastal Zone (Cont.)

Hunting – In 2001, hunting-related expenditures in Louisiana amounted to $446 million.

Fur Harvest – Trapping in Louisiana coastal wetlands generates approximately $2 million annually.

Alligator Harvest – The Louisiana alligator harvest is valued at approximately $30 million annually.

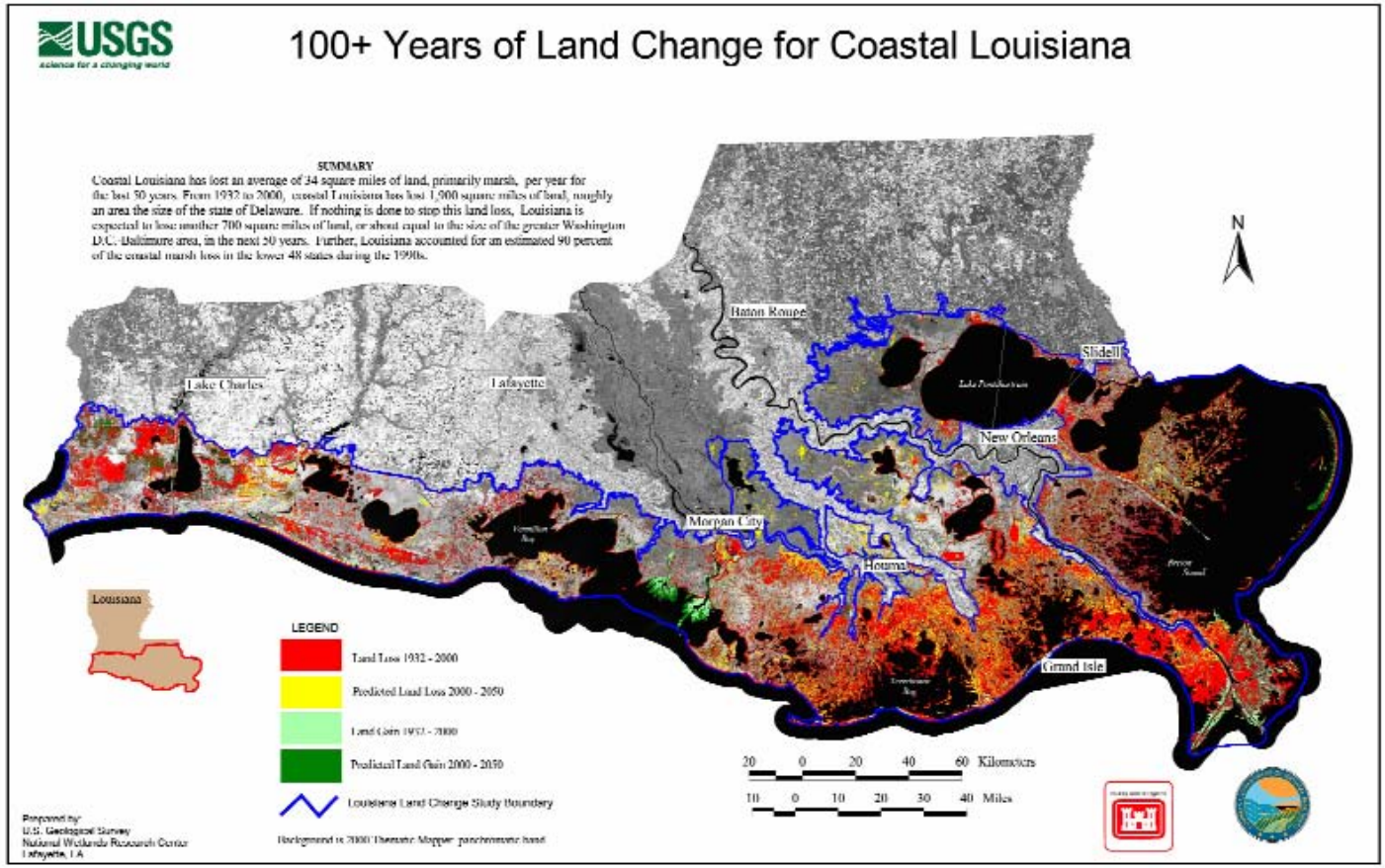
Waterfowl – Louisiana's coastal wetlands provide habitat for over 5 million migratory waterfowl.

Wildlife Watching – In 2001, expenditures related to wildlife-watching in Louisiana amounted to $168 million.

Hurricane Protection – Coastal wetlands and forests provide valuable protection against winds and tidal surges from hurricanes.

Environmental Challenges in Louisiana's Coastal Zone

- Rapid land loss (about 24 square miles per year) caused by a combination of natural forces and human activities
- Subsidence – some parts of the coast will subside 1 ft within the next decade; parts of New Orleans are sinking more than an inch a year; levee protection is falling
- Alteration of hydrologic regimes: levees, canals, navigation channels
- Loss of coastal forests
- Coastal storms – salt water intrusion from coastal storms kills vegetation and accelerates erosion
- Water quality degradation from untreated/poorly treated wastewater
- Energy-related activities: drilling, canals, pipelines, discharges
- Invasive species (e.g. aquatic vegetation, nutria)

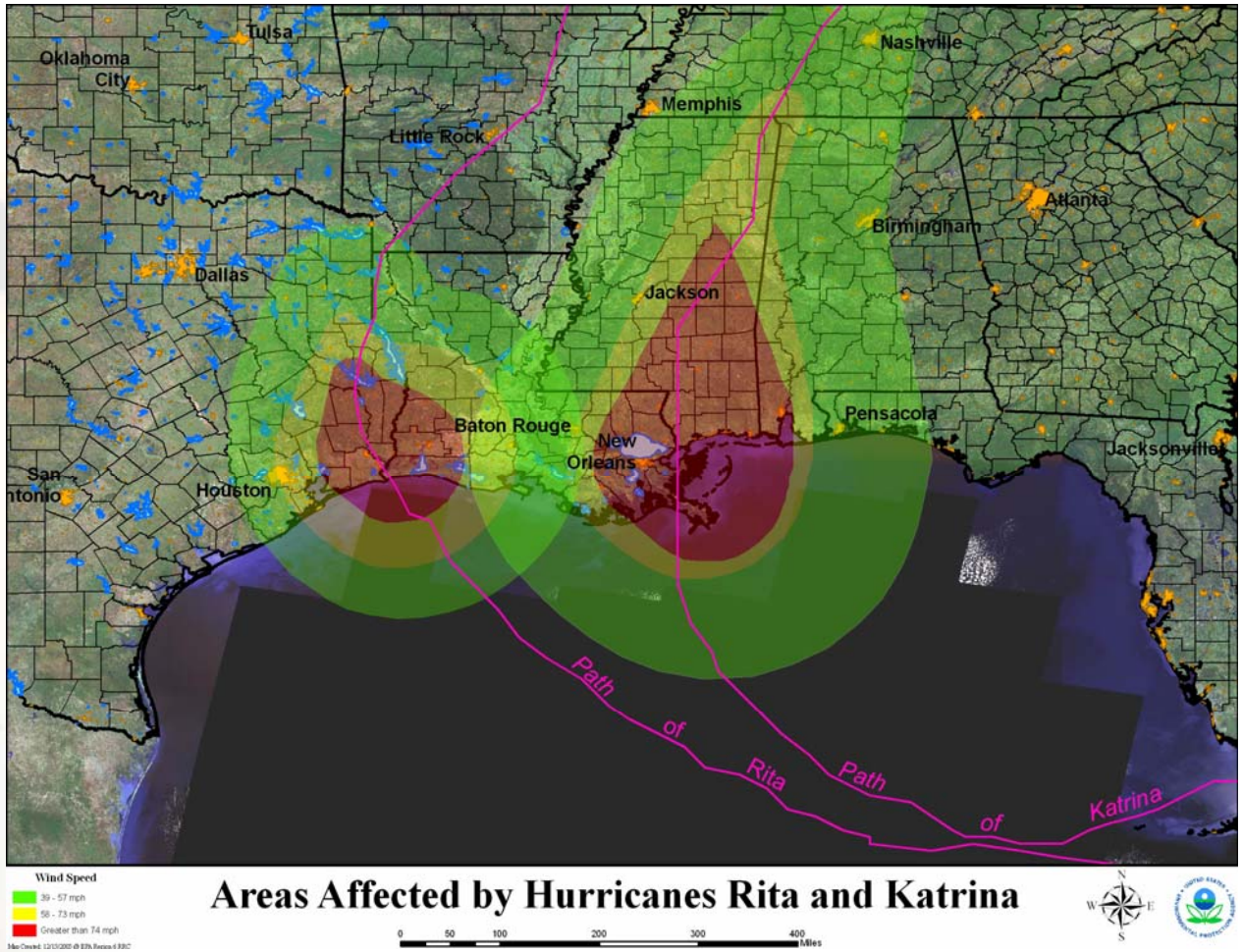


- We lose about 24 sq mi of coast land each year.
- NOAA projects portions of coastal Louisiana could lose up to one foot of elevation over the next decade.
- Scientists at the National Geodetic Survey and LSU estimate 15,000 square miles of land along south Louisiana will be at or below sea level within the next 70 years.

Louisiana Coastal Area (LCA) Ecosystem Restoration Study

Strategies

- Freshwater and sediment re-introductions by diverting some Mississippi River flows into hydrologic basins
- Barrier island restoration through placement of sand from offshore sources or the Mississippi River to sustain key geomorphic structures
- Hydrological modifications to help restore salinity and marsh inundation patterns and provide fishery access in previously unavailable habitats
- Create a marsh platform for habitat in areas near existing navigation channels through the beneficial use of maintenance dredging materials

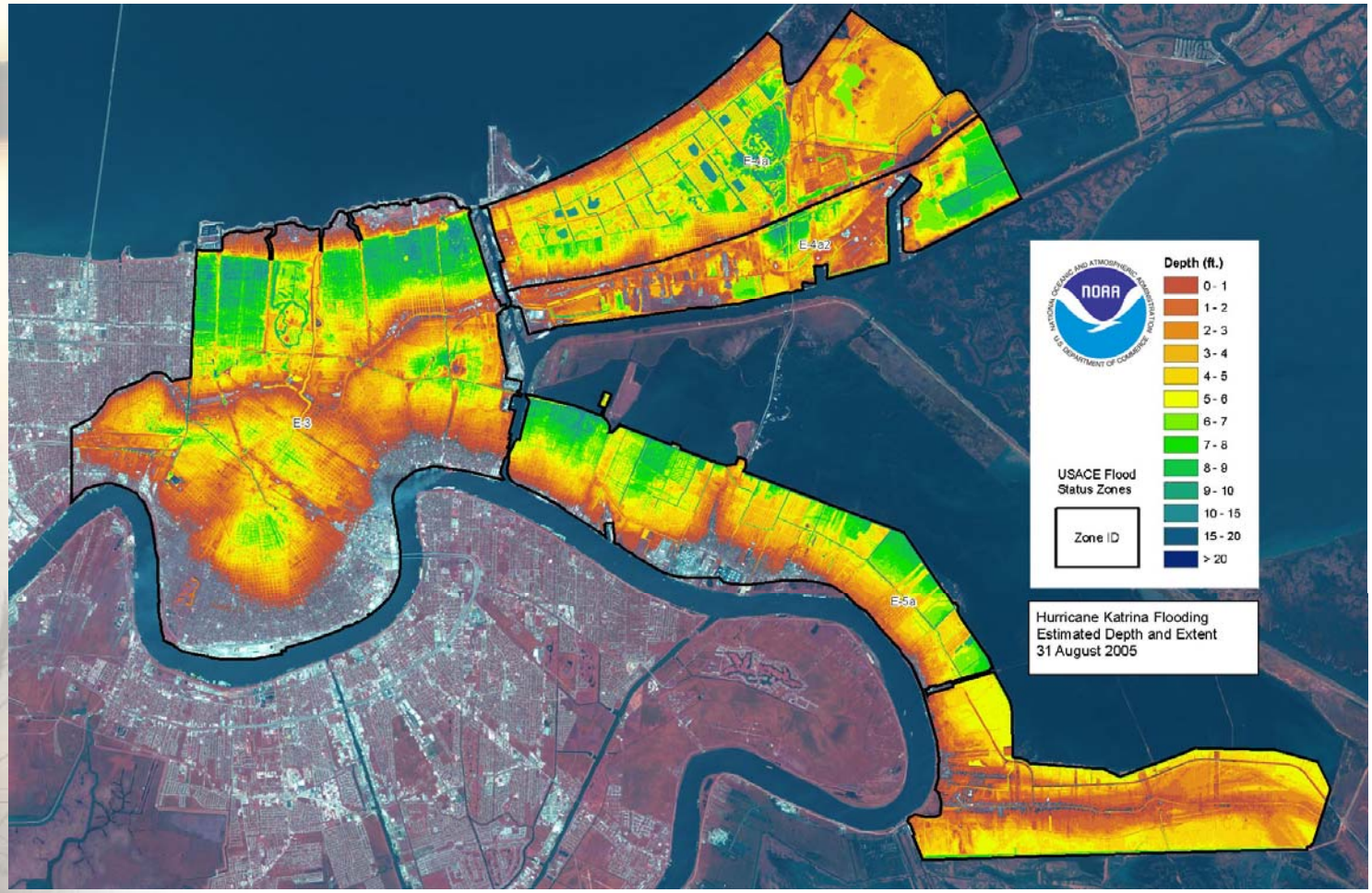


The One-Two Punch of Hurricanes Katrina and Rita

Louisiana Coastal Surface Elevation

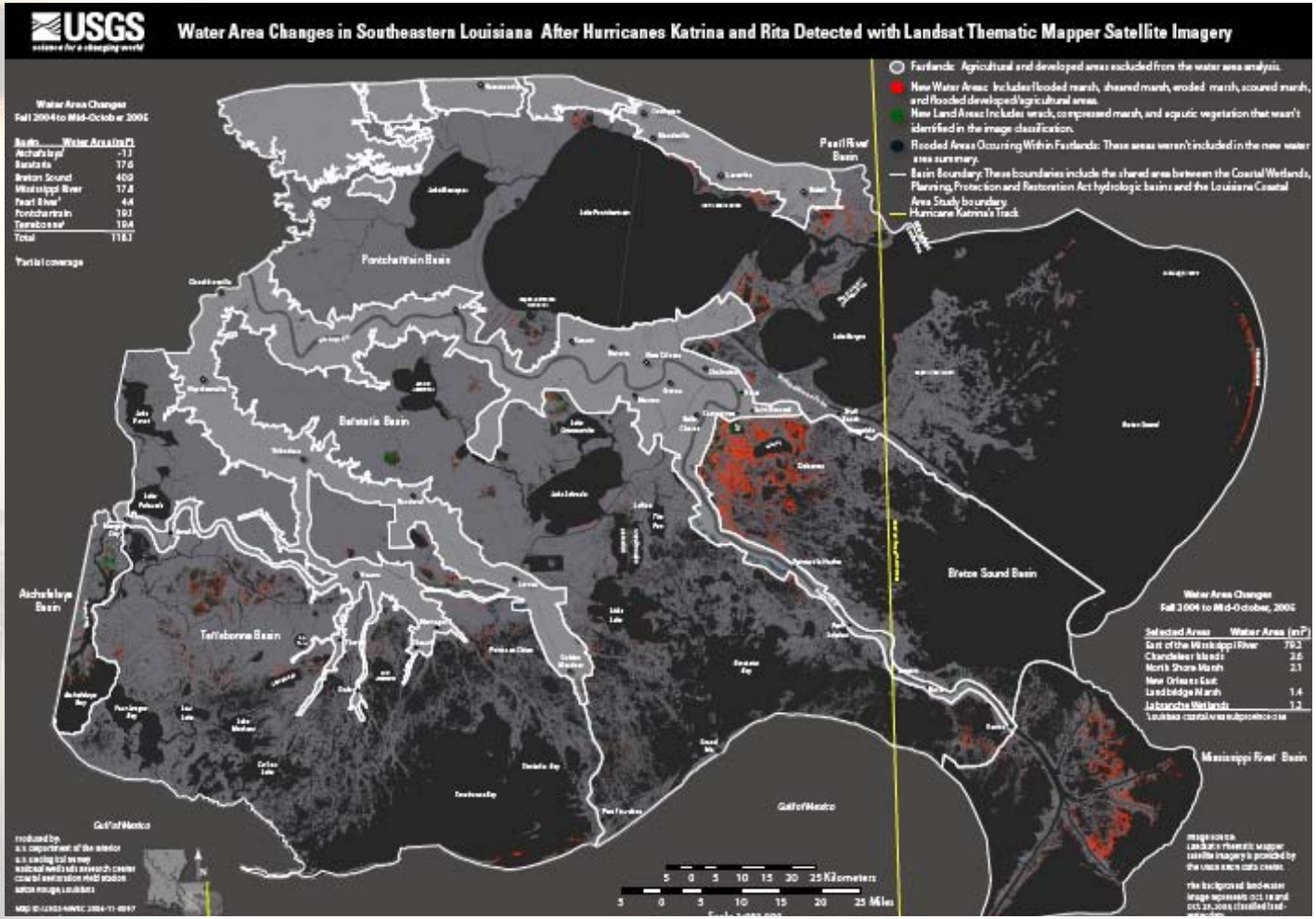
Storm Surges for Katrina and Rita Were 20+ Feet

Flooded Areas of New Orleans
31 August 2005



Katrina Flooding in New Orleans

USGS reports that the change from land to water in all of coastal Louisiana east of the Mississippi River from 2004 to 2005 (after Hurricanes Katrina and Rita) was 72.9 sq. mi., exceeding the 60-square miles projected to occur from of period of 50 years (2000-2050) by the Louisiana Coastal Area Ecosystem Restoration Study.



STORM DEBRIS MANAGEMENT:

Debris Management: Perspective

22M tons of Katrina Debris

- Enough to fill the Louisiana Superdome more than 13 times.

- 25 times as much as the ruins of the World Trade Center

- Enough to fill the Empire State Building 40 times

Estimated Cost to Repair/Rebuild Storm-Damaged Wastewater Infrastructure - $1 Billion

Challenges Bring Opportunities

- Integration of Hurricane Protection and Coastal Restoration
- Integration of Transportation Infrastructure Recovery and Coastal Restoration
- Wastewater Infrastructure Recovery and Water Quality Improvement
- Recovery Planning/Redevelopment
- Rebuilding Sustainable Communities

Integration of Hurricane Protection and Coastal Restoration

- Senate Bill 71 (Dupre) was one of Governor Blanco's top priority bills and became Act 8 of the 2005 1st Extraordinary Session of the Louisiana Legislature after Governor Blanco signed the bill into law on November 28,2005.
- Act 8 established the Coastal Protection and Restoration Authority, which is charged with creating a master plan that fully integrates the state's coastal restoration and hurricane protection efforts. It also empowers the Authority to exert oversight of levee districts in south Louisiana. Importantly, it provides a single voice to articulate priorities for comprehensive coastal protection.

Integration of Transportation Infrastructure Recovery and Coastal Restoration

There are good opportunities for coastal restoration projects integrated into rebuilding transportation infrastructure.

Example:

In late 2004, LDOTD received a permit for the construction of new Highway LA 1 from Golden Meadow to Fourchon. Once complete, the project will have a direct impact to 113 acres of brackish-to-saline marsh. In order to mitigate for this, LDOTD and a consultant developed a plan to create 11 mitigation sites equaling a total of 207 acres. Approximately 984,000 cubic yards of dredged material will be deposited in the 11 mitigation sites and planted with cordgrass. Construction of this project commenced in March of 2006.

Wastewater Infrastructure Recovery and Water Quality Improvements

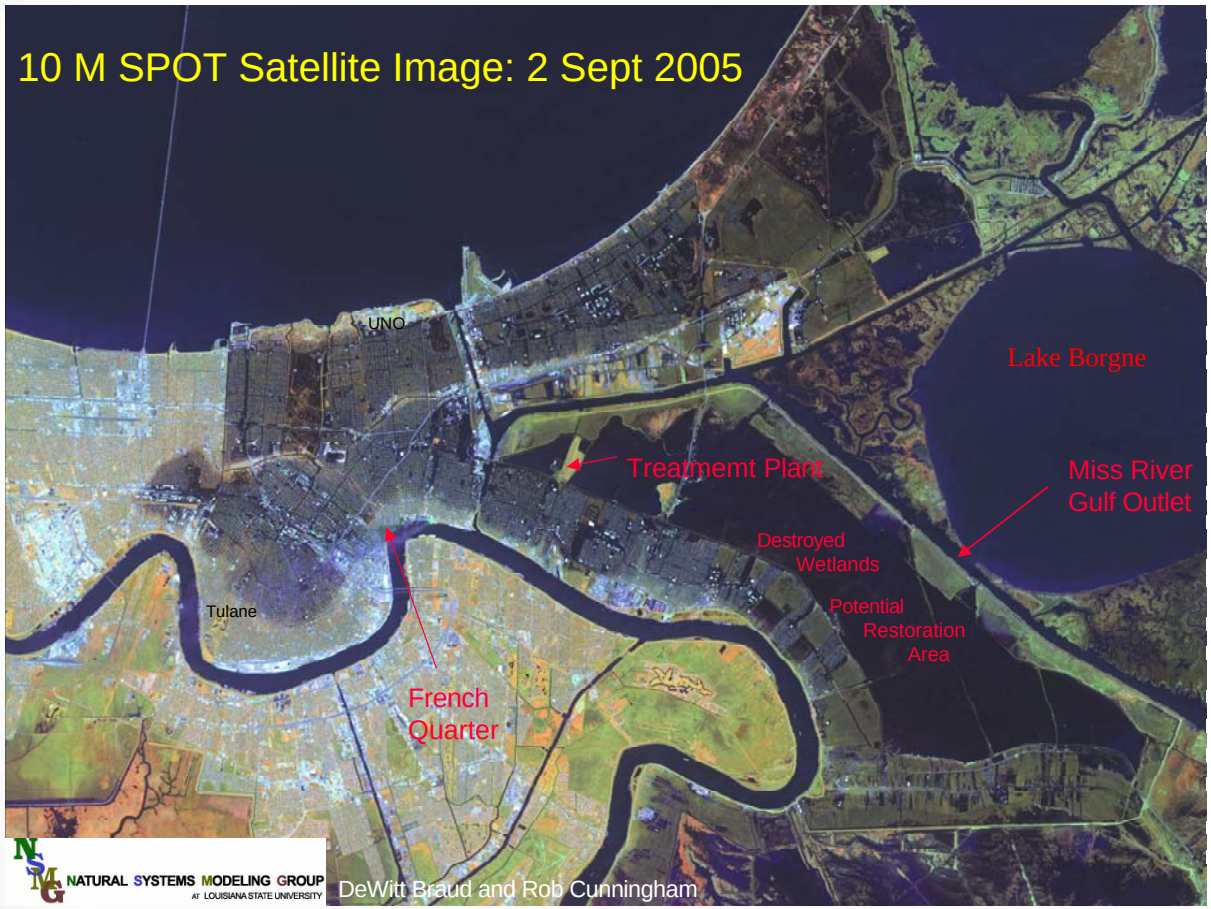
Wetlands Assimilation/Restoration

"The addition of nutrient rich secondarily treated wastewater to LA's hydrologically isolated and subsiding wetlands should be viewed as not only an economic alternative to conventional wastewater treatment, but as an ecological restoration technique for wetlands. Thus, use of wetland assimilation enhances the storm buffer capacity of wetlands."

Dr. John W. Day, LSU

Wastewater Infrastructure Recovery and Water Quality Improvements

NOSWB/St. Bernard Potential Wastewater/ Wetlands Assimilation Project



Recovery Planning/Redevelopment

Recovery Planning/Redevelopment

Parks and Open Space Plan

- Parks in every neighborhood.
- Multi-functional parks and open spaces connect neighborhoods and employment.
- Use canal edges and covered canals as open space amenities.
- Parks are part of internal stormwater management system.

3 Framework Plan

Rebuilding Sustainable Communities

Example:
Holy Cross Neighborhood Demonstration

LDNR has partnered with the Tulane School of Architecture, the Tulane/Xavier Center for Bioenvironmental Research, Global Energy Center for Community Sustainability, and others to initiate a demonstration project to implement energy efficiency and renewable energy practices into a design for a sustainable community.

Rebuilding Sustainable Communities

Example:
Holy Cross Neighborhood Demonstration

Vision: Preserving architectural integrity while employing best available energy, environmental, and disaster protection methods including:

- Identifying types of insulation/other energy products specific to climate
- Providing information on financial assistance/incentives
- Exploring bulk purchasing (e.g. Energy Star products)
- Geothermal heating/cooling systems/passive solar
- Computer planning tools for strategic tree plantings to reduce cooling costs
- Stricter building codes
- Using energy efficiency/renewable energy as an economic development tool
- Mass transit
- Continual training at homeowners association meetings

Rebuilding Sustainable Communities

Example:

Holy Cross Neighborhood Demonstration

Listed in the “Sustainable Restoration” plan is a wide array of technologies including:

- Heat pumps and heat recovery systems
- Energy Star appliances/low emission glass windows
- Instantaneous hot water heaters
- Insulation/air leakage
- Deconstruction and salvaging of materials
- Communal use of technologies to save on infrastructure and space (geothermal cooling and water heating, solar photovoltaic, river water cooling/heating, wind and water turbines)
- Landscaping, porches/galleries, overhanging eaves for sun mitigation
- Wastewater plant – methane recovery

Some Programmatic Sources of Funding

- The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) - USACE Program Administrator
- Louisiana Coastal Area (LCA) Study – pending authorization (under WRDA).
- FEMA recovery and mitigation funding
- Louisiana Recovery Authority (LRA) – CDBG grant funds
- Louisiana Coastal Protection and Restoration Authority (CPRA)
- Coastal Impact Assistance Program (CIAP)
- Clean Water Act State Revolving Loan Fund – LDEQ Program Administrator

Programmatic Sources of Funding

CONCLUSIONS

- Louisiana's coastal zone is a valuable asset to the state and to the nation and should be protected
- Good progress has been made recently toward recognizing the value of and protecting "America's Wetlands"
- The hurricanes of 2005 brought an unprecedented natural disaster to the Louisiana Coast
- With the challenges of recovery and rebuilding from the storms come unprecedented opportunities for environmental improvements in both natural and human environments