Louisiana Coastal Protection and Restoration:
The National Research Council Report

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The Issue: Cat 5 Protection for LA

NASA SeaWiFS
March 15, 1999
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The Corps of Engineers funded this study and our report was provided to the Corps, Congress, and the public.
The Corps’ Charge from Congress

In late 2005, the U.S. Congress directed the Corps of Engineers, New Orleans District, in partnership with the State of Louisiana, to compile a technical comprehensive hurricane risk reduction analysis and design for Category 5 surge protection using a wide range of flood control, coastal restoration, and hurricane protection measures.

The LACPR study began in early 2006 and an interim report was issued in July 2006 and a final draft in March, 2009.
The Committee’s Charge

The NRC committee will review all aspects of the two Corps reports, including assessment of the hurricane risk reduction framework, alternatives for flood control, storm protection, coastal restoration, and risk analysis.

The NRC committee will issue two reports that include conclusions, findings, and recommendations for improving the LACPR study.

Reports: 2008; July, 2009
The Committee

ROBERT A. DALRYMPLE, Chairman, Johns Hopkins University, Baltimore, Maryland

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JOAN OLTMAN-SHAY, Northwest Research Associates, Redmond, Washington

ASBURY H. SALLINGER, U.S. Geological Survey, St. Petersburg, Florida

NRC Staff: JEFFREY JACOBS, Study Director, Water Science and Technology Board
Many Alternatives for Each Planning Unit

Structural

Non-structural

Coastal restoration

No single plan of action provided. Menu only.
New Orleans and the Mississippi Delta

75 km²/year of wetlands lost annually
Sustainability of the Coastline

CORPS: Extensive coastal landscapes in Louisiana can be constructed and maintained at a pace sufficient to offset expected future landscape degradation (USACE, 2009, p. 43, main report).

The projected loss over the next 50 years, with current restoration efforts accounted for, is estimated to be approximately 500 square miles (Barras et al., 2003).

“It is obvious that not all of the coastline can be maintained, much less restored, and not all coastal communities can be adequately protected” (Science Board of the LCA, 2009).

It is not feasible to maintain coastal Louisiana in its current form and that the Corps should modify its plans and educate stakeholders about other approaches that will need to be taken, Drawing Louisiana’s New Map (NRC, 2006).
“….significant [land] drowning is inevitable, even if sediment loads are restored, because sea level is now rising at least three times faster than during delta-plain construction.”

Blum & Roberts, 2009
Committee’s Conclusion

The LACPR team should complete a sediment budget for coastal Louisiana.

Estimate how much sediment is needed per year to counter erosion. Estimate the sources of sediment.

Rather than .... trying to maintain the current configuration of southern Louisiana’s eroding coastline, the LACPR team is encouraged to focus .... on high-priority projects.
Levels of Protection

Category 5: 400-1000 year storm surge event

For areas in which catastrophic levee failure is not a major public safety concern, .... the 100-year standard may be appropriate. For heavily-populated urban areas, where the failure of protective structures would be catastrophic—such as New Orleans—this standard is inadequate (NRC: IPET, 2009).

The level of storm surge protection for the City of New Orleans should be designed for a hurricane storm surge event with an expected return interval of 400 to 1,000 years.
River Diversions

The LACPR report should provide a better .... explanation of the scientific uncertainty associated with .... marsh and wetlands restoration (including diversions), surge attenuation by wetlands, numerical modeling efforts, and the implications of Mississippi River diversions.

Careful monitoring .... of existing diversions.

Diversions impact on navigation not addressed.

“Out-of-scope” realignment of the Mississippi River mouth
Structural Measures

How to avoid induced development? Do levees attract people to hazardous areas?

No consideration of failure.
Non-Structural Measures

Elevating structures, buy-outs, zoning measures, and the use of zoning requires the cooperation of the State, Parishes, and the local communities. (No implementation plan.)

How to discourage development in hazardous regions.
Coastal Restoration

Rebuilding wetlands is a useful goal, but if the sediment budget is unknown, then these are holding actions at best.
Our Report


Recommended that the Corps work with the State to pick one approach by end of 2009.

Impact?
Panel

John Boland

John Christian

Denise Reed