

# **LOUISIANA COASTAL PROTECTION AND RESTORATION (LACPR)**

## **COMMENT ADDENDUM**

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**U. S. Army Corps of Engineers  
New Orleans District  
Mississippi Valley Division**



LACPR Final Technical Report  
Comment Addendum

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**Attachments**

# LACPR Final Technical Report Comment Addendum

## Introduction

The purpose of this document is to provide decision makers with supplemental information to the June 2009 LACPR Final Technical Report. The information provided in this addendum documents the initial reaction of technical experts, stakeholders, and the public to identification, and technical assessment, of alternatives for the reduction of storm damage risk in south Louisiana. The comments included in this supplement also represent the initiation of broad discussion of the technical information and alternative tradeoffs critical to a fully informed decision process.

On June 9, 2009, the U.S. Army Corps of Engineers (USACE) New Orleans District released the LACPR Final Technical Report for review by other Federal agencies, the State of Louisiana, local government, non-governmental organizations (NGOs), and the public. The USACE solicited public comments for 45 days with the comment period closing on July 24, 2009. This document summarizes the comments received during the public comment period.

During the public comment period, approximately 1,780 individuals, six NGOs, and three Federal agencies submitted comments related to the LACPR effort. Those comments are summarized and attached to this document as follows:

- Federal agency comments on the LACPR report are included in **Attachment CA-1**.
- Parish council comments on the LACPR report are included in **Attachment CA-2**.
- NGO comments on the LACPR report are included in **Attachment CA-3**.
- Public comments submitted to the USACE by mail/email are included in **Attachment CA-4**.
- Public comments on LACPR written on comment cards at the Greater New Orleans Hurricane and Storm Damage Risk Reduction System public meeting in St. Tammany Parish are included in **Attachment CA-5**.

No comments were received from the State of Louisiana.

## Federal Agency Comments and Responses

Letters were received from the following agencies:

- United States Department of the Interior, Fish and Wildlife Service
- United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- Environmental Protection Agency

The major comments contained in the letters, which are included in their entirety in **Attachment CA-1**, are summarized with responses below.

### Fish and Wildlife Service

The Fish and Wildlife Service (FWS) reviewed the LACPR Final Technical Report and offered comments as technical assistance in accordance with the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq). The letter states that *“Recommendations and comments submitted by the Service during the course of this study have largely been adopted by the Corps.”* The letter dated July 14, 2009 offers the following additional recommendation (in italics):

**FWS Comment:** *The first item under the “Key-Findings on Long-Term Sustainability of the Coast” (page S-27) states that diversions are essential for restoring processes that provide wetland sustainability. The Service supports this statement. However, the LACPR findings indicate that a more aggressive diversion strategy than previously envisioned is needed to restore a substantial degree of ecosystem sustainability. The Service, therefore, recommends that this key finding be expanded to indicate that a substantial degree of diversion-related wetland sustainability will be achieved only through a more aggressive and adaptively-managed diversion strategy to effectively re-connect the river with the coastal wetland ecosystem. This key finding should also be reiterated in the summary “Conclusions” on page S-30.*

**USACE Response:** The LACPR team agrees that the wetland sustainability identified in the plans in the report can only be achieved through a more aggressive and adaptively-managed diversion strategy to effectively re-connect the river with the coastal wetland ecosystem. The details of this strategy and refinement of the comprehensive plan will need to be resolved as we move forward in subsequent project phases and through coordination with the proper agencies and stakeholders.

### National Marine Fisheries Service

The following excerpts (in italics) summarize the National Marine Fisheries Service (NMFS) comments:

**NMFS Comment:** *NMFS recommends the path forward from the (report) include further evaluation of restoration projects as components of comprehensive risk reduction alternatives in planning units 3a, 3b, and 4...The durability and sustainability of some structural features proposed in some areas is not sufficiently documented. NMFS is*

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*most concerned with the sustainability of proposed levees in both Terrebonne and Barataria basins...*

- Terrebonne Basin: *...one of the final suites of alternatives proposed for planning unit 3a is the Morganza to the Gulf of Mexico Hurricane Protection levee (Morganza). Considering the rapidly degrading coastal ecosystem in southern Terrebonne Parish, the Morganza levee likely would be exposed to direct impacts from storm surges in the future without the inclusion of wetland restoration actions in that portion of the state. Portions of that levee alignment also would likely be exposed to daily tidal and wave erosion. Lacking buffers provided by floodside wetland restoration efforts, it may not be feasible or financially practicable to maintain levee segments exposed to those forces. Alternatively, NMFS believes restoration projects could be developed by the HET for planning unit 3a that would provide benefits in terms of protecting proposed levee sections from erosion and reduce overall operations and maintenance costs.*
- Barataria Basin: *The Gulf Intracoastal Waterway (GIWW) levee alignment in the Barataria Basin is one of the more environmentally controversial components in the (report). Specifically, the evaluated benefits and costs associated with the GIWW barrier-weir plan (C-G-100-I) are questionable. This levee alignment, like the Morganza levee alignment in the Terrebonne basin, is a cross-basin alignment. However, unlike Morganza, the GIWW plan is even more problematic in that it would not be located on existing barriers and would divide the Barataria ecosystem roughly in half with a suite of levee and water control structures. Such a feature would directly destroy a large acreage of wetlands and enclose hundreds of thousands of acres of tidally influenced wetlands within a leveed system. This planned hydrologic barrier could lead to the accelerated loss of wetlands both inside and outside of the system from ponding of surge waters and intercepted drainage waters, thereby exacerbating ecosystem impacts by altering water salinity regimes. This levee alignment could also limit the beneficial effects of existing and planned freshwater diversions for habitat restoration and sustainability. In addition, floodgate management will be increasingly subject to more frequent and longer closures in the future due to relative sea level rise and associated wetland losses in the basin. Therefore, NMFS believes the GIWW alternative may not be among the best structural choices, given the magnitude of wetland losses and the substantial limits this alignment places on wetland restoration and associated mitigative measures in the upper half of the basin.*

**USACE Response:** Per the Congressional authority for the LACPR Technical Report “to conduct a comprehensive hurricane protection analysis and design,” the focus of the LACPR effort has been on hurricane and storm damage risk reduction considering a combination of coastal restoration, nonstructural, and structural measures utilizing a multiple lines of defense strategy. Where it has been determined that coastal restoration measures contribute to risk reduction, such measures have been included in alternatives included in the final array. In some areas of the coast, such as the Terrebonne Basin, the wetlands showed a negligible effect on risk reduction. However,

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the LACPR report does identify the need for continued, more detailed, evaluation of the performance of strategically located wetland restoration features. This focused evaluation will provide a refined understanding of specific risk reduction benefit on a feature by feature basis. Additionally, wetland restoration features will be also be assessed on their ecologic output in subsequent phases.

The ongoing Morganza to the Gulf Post Authorization Change (PAC) study will identify an optimized level of risk reduction along the authorized alignment. Subsequent to completion of the PAC, detailed design efforts will incorporate mitigation plans and ensure that all structures are sized to provide adequate tidal exchange along the alignment. Coastal restoration measures beyond mitigation requirements could be added to the Morganza to the Gulf project through additional PACs or other authorities. The Donaldsonville to the Gulf Feasibility study will evaluate options in the Barataria basins in greater detail and consider the finding of this report. The comprehensive planning effort called for under the LCA authority will consider and optimize additional restoration features for broad range of criteria. The evaluation of strategically located restoration may be particularly important relative to the Terrebonne basin.

**NMFS Comment:** *For some alternatives and/or planning units it maybe desirable to proceed as soon as possible. However, for other alternatives such as some of the proposed levee alignments, additional higher level data are necessary to adequately inform the public and decision makers on the type and scope of trade-offs for each particular levee alignment.*

**USACE Response:** Agree. The need to consider tradeoffs extends to all components of a comprehensive plan.

**NMFS Comment:** *It is critical the path forward include greater levels of information sharing and coordination with the state of Louisiana, other natural resource agencies, non-governmental organizations and stakeholders, based on a commitment to acquire necessary data to assess a full array of alternatives, impacts, and mitigation measures.*

**USACE Response:** Agree. A tentative approach and structure for integrating engagement, information, and facilitating consistent decision making is presented in the LACPR report.

**NMFS Comment:** *NMFS recommends close coordination with the Gulf of Mexico Alliance. Within the Alliance, the Habitat Conservation and Restoration Team is working to develop the Gulf Regional Sediment Management Master Plan (GRSMMP).—The objective of the GRSMMP is to provide a regional blueprint for the beneficial use of dredged material for habitat restoration. ...the Corps is currently developing a Regional Sediment Budget for coastal Louisiana to determine the feasibility of sustaining the coast. This work by the Corps' New Orleans District would likely benefit from the contributions of the Gulf of Mexico Alliance members who are contributing to the GRSMMP.”*

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**USACE Response:** The USACE New Orleans District is already collaborating with the Gulf of Mexico Alliance on these complementary sediment efforts. Section 17 of the LACPR report on Collaboration and Coordination further describes the roles of local, State, and Federal agencies in implementing comprehensive plan(s) for coastal restoration and lays out an approach that could be employed to facilitate collaboration and coordination to move such plan(s) forward.

**NMFS Comment:** *NMFS requests NOAA be specifically identified as one of the federal agencies serving on the Federal Advisory Panel.*

**USACE Response:** The omission of NOAA in the list of Federal agencies on page 228 of the LACPR report was an oversight; NOAA will certainly be part of any Federal Advisory Panel on coastal protection and restoration for Louisiana.

### **Environmental Protection Agency**

The EPA letter dated July 24, 2009 offers the following comments (in italics):

**EPA Comment:** *The LACPR report effectively outlines some of the primary advantages and trade-offs associated with various combinations of coastal restoration and protection measures. Looking forward, the selection of any particular plan in the LACPR Report should be informed by a fuller understanding of some of these advantages and trade-offs, particularly with respect to levee alignments that would enclose coastal wetlands.*

**USACE Response:** Agree. Additional assessment of tradeoffs is a critical step in a fully informed decision process.

**EPA Comment:** *The Gulf Intracoastal Waterway (GIWW) levee alignment being considered for the Barataria Basin is a prime example of this potential conflict between levees and coastal restoration. As opposed to a levee along a ridge or some other substantial hydrologic barrier, the GIWW alignment could impound large acreages of coastal wetlands and open waters.*

**USACE Response:** Each alternative in the LACPR report provides a different approach to reducing risk and each has its own set of tradeoffs. Structural alignments which are adjacent to developed areas (e.g. ridge levees) are susceptible to greater adverse consequences related to overtopping prior to and once the design level surge is exceeded. This effect is correlated to the relative capacity for storing, or absorbing, flood water once surge levels exceed the design associated with each plan. The tradeoff between reduced effectiveness and avoidance of environmental impacts must be weighed in the decision.

**EPA Comment:** *Given environmental concerns regarding levees that enclose wetlands, we would recommend that the Corps of Engineers convene a high-level workgroup of scientists, engineers, and policy experts from Federal, State, and local government, academia, non-governmental organizations and elsewhere. This panel would further*



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*review the potential environmental impacts associated with such levee alignments, describe in greater detail key scientific uncertainties and research needs, and review less environmentally damaging alternatives for reducing flood risks for coastal communities. The findings of this panel could then be used to inform ongoing and future levee studies, including the Donaldsonville to the Gulf feasibility study for the Barataria Basin.*

**USACE Response:** The LACPR team contemplated these types of high-level workgroups/panels in Section 17 of the LACPR report on Collaboration and Coordination further describes the roles of local, State, and Federal agencies in implementing comprehensive plan(s) for coastal restoration and lays out an approach that could be employed to facilitate collaboration and coordination to move such plan(s) forward.

## Parish Council Comments and Responses

Letters were received from the St. Tammany Parish and Plaquemines Parish councils. The major comments contained in the letters, which are included in their entirety in **Attachment CA-2**, are summarized with responses below.

### St. Tammany Parish

The letter from the St. Tammany Parish Council includes a copy of St. Tammany Parish Resolution Council Series No. C-2657 which was adopted by the Parish Council, backed by Parish President Kevin Davis, supporting the construction of a weir in the Rigolets for hurricane protection in St. Tammany Parish. The council unanimously resolved to fully support the LACPR Pontchartrain Basin Comprehensive Lake Pontchartrain Surge Reduction Plan (PU1-LP-a-100-1) and urges that the barrier-weir plan alternative be the first order of construction when submitted to Congress for approval and funding.

**USACE Response:** The barrier weir plan presented is the LACPR report as a technically viable approach for achieving broad reduction of risk, including impacts associated with Category 5 level surge events, across the upper Pontchartrain basin. Detailed studies to optimize the barrier-weir and describe its impacts will need to be completed for the barrier-weir plan presented in the LACPR report. Before the USACE could recommend a barrier-weir plan for construction, the existing environmental impact statement would have to be supplemented and extensive public meetings would be held in affected areas in both Louisiana and Mississippi.

### Plaquemines Parish

Plaquemines Parish government has officially adopted the Multiple Lines of Defense Strategy as the foundation for the parish's restoration and protection planning. In their letter, they offer the following comments:

- 1. The LACPR report also supports the Multiple Lines of Defense Strategy, but falls short of including the results of the modeling conducted by the Parish that quantitatively evaluates the benefits of restoration projects. We have asked the Corps to incorporate at least some representative examples of the results of our work in the report, at least as an appendix, which we are ready to provide.*
- 2. In the report the primary alternatives for the southern parts of Plaquemines Parish include only limited structural flood protection and emphasize elevating homes and buyouts. We recognize that nonstructural approaches such as elevating homes and flood-proofing need to be a part of our comprehensive plan. However, we believe that buyouts are not an effective approach. Continued economic development of the southern areas of Plaquemines Parish is in the best interest of the state and nation, and we believe it should be accounted for through enhanced flood risk reduction.*
- 3. It is clear from our work that flood risk reduction for the New Orleans metropolitan area is directly connected to the condition of the coastal features and levees in*

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*Plaquemines Parish. Exploiting the potential benefits of the restoration of sustainable landscape features in Plaquemines Parish should have been more fully addressed in the report. Plaquemines Parish is the first of the lines of defense in the Multiple Lines of Defense Strategy.*

- 4. We believe the report does not provide the most comprehensive attempt to date to look beyond the historic levels of flood risk reduction considered in the past. We also believe that Plaquemines Parish can contribute more to the reduction of the hurricane flooding risk to southeastern Louisiana than is reflected in the report.*

**USACE Response:** It is agreed that the investigated coastal restoration measures in Planning Unit 1 in the Breton Sound/Plaquemine Parish area, as well as in the Lake Borgne and Biloxi Marsh areas, all significantly contribute to the reduction of risk from hurricane surge. This is reflected in the projected project performance of the coastal only alternative for Planning Unit 1 which provides for an average of 31% risk reduction (as a percent of the No Action residual damages) for the 100-year to 2,000 year frequency storm events. The potential specific contributions of coastal restoration features in Plaquemines Parish have not been incrementally evaluated at this time. Refinements to the critical coastal measures modeled for risk reduction purposes will be done in subsequent studies conducted by the USACE to incrementally evaluate and prioritize the features, and adaptively manage implementation, of a comprehensive plan. As a part of this effort, the results of any modeling efforts conducted by the Parish to evaluate the benefits of proposed restoration projects are welcomed and will be considered and further assessed as part of these future refinements.

In regard to nonstructural measures, the decision criteria used for the preliminary development and evaluation of nonstructural plans or plan components to indicate a high degree of flood risk was velocity zones (V-zones) and depth of inundation. As such, structures identified in the V-zones or in areas of projected inundation of 14 feet or higher, were identified as candidates for potential buyout/permanent evacuation. As noted in the LACPR report, nonstructural measures should be a key component of any comprehensive plan to reduce storm risk. However, it is also noted that relocation of all residents out of the floodplain is not a viable option. As guidelines, criteria, and subsequent plans are refined additional combinations of structural and nonstructural measures will be evaluated and tradeoffs assessed.

## NGO Comments and Responses

Letters were received from the following organizations:

- A group of five non-governmental organizations (NGO) including the Coalition to Restore Coastal Louisiana, Environmental Defense Fund, Lake Pontchartrain Basin Foundation, National Audubon Society, and National Wildlife Federation.
- Lake Pontchartrain Basin Foundation

The major comments contained in the letters, which are included in their entirety in **Attachment CA-3**, are summarized with responses below.

### Lake Pontchartrain Basin Foundation

Dr. John Lopez submitted comments on behalf of the Lake Pontchartrain Basin Foundation (LPBF) dated July 24, 2009 regarding the LACPR Final Technical Report. The 32 page comment letter includes around 50 separate points. The primary concerns have been summarized and responded to in the following general areas:

#### **LPBF Area of Concern: Didn't fully apply the multiple lines of defense strategy (MLODS) in plan formulation and alternatives evaluated.**

*"Unfortunately, LACPR presents the "promise" of a system, but does not deliver.... If LACPR used system engineering to manage risk of storm surge events, it would allocate 100% of the risk to the various elements of the proposed flood protection alternatives... The LACPR effort fails to realize that the measures we impose on the landscape today are the same measures that will be on the landscape for hundreds and thousands of years, not just 50 or 100 years... This type of analysis does not allow for the benefits of self-sustaining or long-lasting projects to be comprehensible... The LACPR and future extension of the LACPR process should not be rigidly confined to the current LACPR alternatives. It is very likely that alternative refinement or alternative hybrids are likely to produce significant benefits..."*

**USACE Response:** The focus of the LACPR effort has been on hurricane and storm damage risk reduction considering a combination of coastal restoration, nonstructural, and structural measures utilizing a multiple lines of defense strategy. Where it has been determined that coastal restoration measures contribute to risk reduction, such measures have been included in alternatives included in the final array. Coastal measures for ecological purposes only have not been evaluated or specifically included in alternatives formulated. Such measures will be evaluated and optimized in other ongoing efforts, including LCA. The LACPR presents a full range of viable alternative plans that if implemented can provide risk reduction at and above the Category 5 threshold of storm events and indicates the types and potential magnitude of the tradeoffs required for implementation of each plan for further consideration in reaching a decision on implementation. During recommended follow-on study efforts to reexamine alternatives for implementation, hybrid alternatives, as suggested, could be evaluated.

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**LPBF Area of Concern: Concerned that no habitat goals were established and plan formulation didn't optimize coast for ecological features.**

*“The Multiple Lines of Defense Strategy proposes that wetland habitat goals need to be established to assure that the cacophony of coastal projects still result in a functioning estuary with the best chance of being sustainable... Habitat goals should be proposed to force the issue that all these projects must consider the ebb and flow, and biological function of the estuary... It is inevitable that the LACPR Program will have to explore various restoration alternatives in the future, and that including only one restoration alternative does not qualify within the alternatives analysis framework of the National Environmental Policy Act (NEPA)... It is also disturbing that for all planning units only one restoration plan was considered for all the comprehensive alternatives for each planning unit... This analysis has a way to go before being able to lend itself to on-the-ground restoration projects that can achieve the objectives of ecosystem sustainability...”*

**USACE Response:** Per the Congressional authority for the LACPR Technical Report “to conduct a comprehensive hurricane protection analysis and design,” the focus of the LACPR effort has been on hurricane and storm damage risk reduction., This point has been reinforced in the report. As a result, wetland habitat goals were not established as part of the LACPR effort.

**LPBF Area of Concern: Need more emphasis on nonstructural measures, particularly in reducing risk behind existing levees, especially for NOLA.**

*“ The Corps alternatives do not include elevating within the city to address the residual risk... overtopping of levees in New Orleans is residual risk which should then also include home elevation in the alternative... The USACE could exert much more influence over the design and implementation of a non-structural program by making it a condition of significant federal hurricane protection investments that could induce development in low-lying, flood-prone areas...”*

**USACE Response:** In the LACPR findings, it is noted that nonstructural measures should be a key component of any comprehensive plan to reduce storm damage risk. Of the 27 plans identified in the final array of alternatives for all planning units across the coast, 24 plans include nonstructural measures (buyouts and raise-in-place of structures), as well as providing for the protection/flood proofing of critical facilities such as hospitals, utility facilities, etc. The nonstructural alternatives (designated in the report by PU1-NS-400 and PU1-NS-1000) address minimizing residual risk (remaining damages) within the existing and/or authorized levee system for the City of New Orleans by implementing nonstructural measures to increase levels of protection to structures and property. The nonstructural alternatives also include the consideration of coastal restoration features. It is further agreed and noted in LACPR that any remaining damages shown behind any existing and/or proposed levee could be further reduced by complementary nonstructural measures. However, such an analysis of the many possible multiple combinations of nonstructural and structural measures for the entire

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coast were beyond the reasonable scope given the timeframe of the LACPR effort. During recommended follow-on study efforts to reexamine alternatives for implementation, such hybrid alternatives could be evaluated.

In addition, it is also noted that the Corps is limited in its ability to unilaterally restrict private development in flood-prone areas and relies heavily on the State for development land use regulation guidelines. Using the information in this technical report, the Corps will continue to coordinate with the State of Louisiana and further develop options and priorities in each planning unit. The Corps and the State will then jointly coordinate those options and priorities with other Federal agencies, local entities, non-governmental organizations, and the public.

### **LPBF Area of Concern: Didn't take into account the potential loss of life in plan formulation process.**

*"None of the project alternatives describes the number of deaths or lives-saved that may result from any plan... Potential loss of life is a key metric not included..."*

**USACE Response:** A forecast of potential fatalities prevented resulting from future storm events and the implementation of any of the proposed alternatives would be speculative at best. With the exception of nonstructural buyout/ permanent evacuation, the alternatives presented only manage the depth of inundation relative to structures. Because of the number of potential scenarios possible in trying to estimate how many people will evacuate, or stay behind, during any particular storm event and the range of potential consequences for each individual fatality estimates were not used as a metric. Instead, the population metric is a measure of the number of residents who would experience any amount of flooding after implementation of a plan. This metric represents part of the residual risk to health and safety of the resident population impacted.

### **LPBF Area of Concern: Need to address evacuation scenarios in plan formulation and analysis.**

*"No explicit evacuation scenarios are included in the LACPR... we are concerned that the LACPR report does not place stronger emphasis on evacuation as the primary risk reduction measure designed to protect human life and public safety in both less developed and highly populated urban areas... The LACPR report suggests that evacuation routes might be treated as "critical infrastructure" but entirely misses the opportunity to alter or design alternatives considering existing, improved or new evacuation routes..."*

**USACE Response:** The Hazard Mitigation Plan and required actions from others addresses evacuation and sheltering services and their importance. Subsequent studies and detailed design of plan to be implemented would consider specific project requirements for evacuation routes.

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**LPBF Area of Concern: Construction periods used in analysis are not realistic and are inconsistent.**

*“As stated in the Draft Technical Report, structural measures can be implemented in 6 to 16 years. However, the Engineering Appendix states that these structures can take up to 40 years to implement (pg 38). In another portion of this appendix (pg 262), it states that the initial lift costs were based on a 14 year construction period... This assumption concerning implementation time is unrealistic and will therefore bias the analysis of when risk reduction can be achieved and damages reduced... The inconsistencies in the timeframes used throughout the report are confusing and can lead to invalid analysis... Both timeframes are skewed (non-structural slower and structural faster) in a manner that seems to favor structural solutions... Some of the uncertainties presented in the LACPR will take numerous years to analyze...”*

**USACE Response:** In regard to the specific references in the LACPR report (which appear to be from a draft document and not the current document under review) concerning the construction periods for structural measures, the 40 years is in reference to the estimated final lift required for levee settlement over time for a hypothetical 40 foot levee (no levees included in LACPR alternatives are proposed at this height). The initial construction periods shown reflect building the proposed levee to the required design height to realize projected benefits. The future lifts are required to maintain the design height because of settlement and consolidation of materials. In regard to the reference to the 14 year construction period, the 14-year period was only used to develop the possible fully funded costs as displayed in the Engineering Appendix. The development of fully funded costs was requested during Agency Technical Review. These costs did not impact plan formulation, screening, or identification of the final array. Fully funded costs are typically shown for future budgetary considerations and for disclosure of all possible costs including inflation during construction. Since the purpose of LACPR was to make a relative comparison of possible (conceptual) alternatives for reducing risk from storm surge, and since assumptions made are consistent across alternatives, any change in assumptions would not impact plan formulation since all plans would be impacted equally, i.e., the relative comparison and ranking would not be impacted. It is agreed that some of the uncertainties identified in the LACPR report could take numerous years to analyze. Additional technical, economic and environmental work needs to be done before specific solutions can be authorized and funded. The LACPR report also recognizes the importance of adaptive management for reducing uncertainties.

**LPBF Area of Concern: Location of alternative levee alignments, particularly in the Lake Pontchartrain, Barataria and Terrebonne Basins.**

*“The cross-basin alignments within these planning units could place as much as 1/4 of Louisiana remaining wetlands behind levees... the proposal to move levees away from*

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*population centers is more likely to increase residual risk rather than residual protection... Some components of alternative plans may actually increase risk or at least seriously challenge the management of storm surge..."*

**USACE Response:** The array of alternatives developed reflects a cross section of many interests. It is through the evaluation of each alternative's performance, based on measured metrics, that tradeoffs among alternatives can be made. The purpose of the presented evaluations and comparisons is to present the stakeholders and decision makers, etc. with the information (tradeoffs) necessary to make informed choices on desired actions and the potential impacts of those decisions. The Corps fully expects that alternatives and evaluations will be further refined in subsequent steps toward selection and implementation.

**LPBF Area of Concern: Don't believe assumptions regarding sediments are realistic and need to look at re-management of the Mississippi River.**

*"The assumptions about sediment resources, funding resources, and engineering ability for the next 100 years are unrealistic and do not seem to be supported by objective data...The LACPR report must consider and incorporate large-scale diversions or potential modifications/realignment of the Mississippi River in order to convey large volumes of Mississippi and Atchafalaya River sediment into the sediment-starved deltaic landscape... there is a lack of serious commitment to address the larger issue of re-managing the river for traditional uses and coastal restoration even when it benefits flood protection..."*

**USACE Response:** The restoration plans in the LACPR report for planning units 1 & 2 currently identify diversions with a peak discharge totaling up to approximately 900,000 cfs. The Corps of Engineering Research Development Center is currently assisting the New Orleans District in developing a regional sediment budget for the coastal and riverine regional system in southern Louisiana. This regional sediment budget is needed to best manage planned and future projects along the Louisiana coast.

**LPBF Area of Concern: Don't think MCDA was effective in communicating risk/tradeoffs and not enough people engaged.**

*"Since the release of the Draft Technical Report, the lessons learned to improve the deterministic elements of the RIDF and the Multiple Criteria Decision Analysis (MCDA) have not been incorporated. Without proper development and utilization of the RIDF and MCDA, the tools can become manipulated and biased toward the certain outcomes dictated by the users... Unless the metrics are developed by the stakeholders including the general public, then the results of the MCDA may not capture the true priorities... the outreach effort performed by the USACE to inform stakeholders about risk and tradeoffs was extremely minimal considering the area of impact..."*

**USACE Response:** The report recognizes and documents the shortcomings of the application of Multi-Criteria Decision Analysis in this effort. MCDA is just one tool for



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communicating risk or informing decisions. The LACPR report explicitly describes the purpose and limitations of the MCDA approach as applied to the LACPR effort. The MCDA tool did not provide fully useable results but it did reinforce the need for the Corps to incorporate other factors in the decision besides damages and dollars. In addition, the MCDA approach exposed some of the tradeoffs involved in hurricane risk management decisions and the need for further broad engagement to resolve the issues.

### **LPBF Area of Concern: Concerns regarding assumptions used in assessing potential impacts of wetlands on surge attenuation.**

*“Surge models assume a frictionless landscape even though landscape is known to contribute to reducing surge...”*

**USACE Response:** This comment is an inaccurate observation from data presented in the LACPR report. As presented in the report, the without friction analysis applies only to the STWAVE simulations, not the hurricane surge modeling. As stated in the LACPR report, the STWAVE simulations (the modeling for shallow waves) were run with and without friction coefficients for bottom and vegetation interaction in wetland areas for levee design purposes. After completion of the wave modeling, an independent analysis (by technical modeling experts) examined results from several near shore wave models and a variety of conditions with a focus on wave energy dissipation effects. After careful review of the simulated wave heights at some locations inshore of the coastal marsh areas it was believed that the with-friction STWAVE results may underestimate the wave height. Therefore, in the interest of conservatism and in the absence of field-verified values for friction coefficients, the design process for determining estimated levee heights for the LACPR structural alternatives applied STWAVE simulations without friction dissipation. This assumption has been concurred in through agency and independent technical review. As further stated in the LACPR report, future planned efforts to obtain the necessary field data along with more accurate estimates of future wetland conditions should provide improved quantitative estimates of friction coefficients suitable for detailed design purposes.

### **Letter from Group of Five NGOs**

The Coalition to Restore Coastal Louisiana, Environmental Defense Fund, Lake Pontchartrain Basin Foundation, National Audubon Society, and National Wildlife Federation submitted comments by joint letter dated July 24, 2009. **Attachment CA-3** includes their letter with attachments, including a copy of their comments on the Draft Technical Report to the NRC and a copy of their comments on the Draft Final Technical Report to the NRC. The following summarizes their recommendations to the Corps and local, state, and Federal governments and agencies to protect Louisiana’s coastal communities, economic infrastructure, and environment (excerpts from the letter in italics):

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1. *The White House, through the Council on Environmental Quality, must convene the “Coastal Louisiana Ecosystem Protection and Restoration Task Force” that Congress established in the Water Resources Development Act of 2007 § 7004.*
2. *Congress must appropriate the funds for and the Corps must complete the comprehensive coastal restoration study required by WRDA 2007, § 7002 on an expedited timeframe and integrate with LACPR to have a comprehensive, scientifically sound planning document.*
3. *Congress must appropriate the necessary funds for the LCA and non-LCA restoration projects authorized in WRDA 2007 and the Corps and other federal agencies must expedite construction of these projects and hold oversight hearings on the Corps’ progress, or lack thereof, on the LCA projects.*
4. *All Levels of Government Must Invest in a Robust Non-Structural Program.*

**USACE Response:** Items 1 through 3 are being handled outside the scope of the LACPR report at a higher level than the USACE. The LACPR report agrees with Item 4—multiple parties must bring together their missions and strengths in order to create a comprehensive plan which includes a robust nonstructural program. The report also advocates the development of an integrated set of federal standards and guidelines for the application of nonstructural alternatives and measures.

## Public Comments

Approximately 1,780 public comments were received during the public review period. The majority of the comments (1,553) were based on one of three form letters:

- 53 of the public website comments were based on Form Letter A, which asks that the Corps to submit a specific plan that could be adopted and built right away for Category 5 protection.
- 1,183 of the comments emailed to the New Orleans District were based on Form Letter B, which has the subject line “Please listen to your critics, and provide a clear path for a sustainable coast.”
- 317 people sent Form Letter C to the Mobile District, which expresses opposition to the barrier-weir plan identified in Planning Unit 1.

In addition, the Gulf Restoration Network, Coalition to Restore Coastal Louisiana, and the Lake Pontchartrain Basin Foundation submitted a joint cover letter and a set of postcards/letters addressed to Louisiana Governor Jindal as follows:

- 807 signed postcards from the public saying that “levees alone are not enough to protect our communities” and 1,612 names of those who have signed the same postcard for a total of 2,419 people supporting a comprehensive approach to storm protection.
- 464 hand written letters collected by the Gulf Restoration Network in support of the prioritization of the protection and restoration of the coastal lines of defense in USACE plans and projects.

Public comments are included in **Attachments CA-4 and CA-5**. Attachment CA-4 includes examples of the form letters and other comments sent to the USACE via mail, email, or the public website. Attachment CA-5 includes transcriptions of comment cards received at or following a meeting held in St. Tammany Parish at the request of the parish council.

### Public Comments from the St. Tammany Parish Meeting

The St. Tammany Parish Council passed a resolution on June 4, 2009 in support of the barrier-weir plan, which is included in **Attachment CA-2**. At the request of St. Tammany Parish officials, the USACE held a meeting on June 16, 2009 at the Northshore Harbor Center in Slidell, Louisiana. The purpose of the meeting was to inform residents about the following efforts: the 100-year Hurricane and Storm Damage Risk Reduction System, Southeast Louisiana (SELA) flood control projects and studies, and the LACPR Final Technical Report. At the meeting, the USACE distributed comment cards and requested that comments be provided on the cards. The 141 comments related to LACPR have been transcribed for this document in **Attachment CA-5**.

Over one third of the comments showed an interest in the barrier-weir plan for Lake Pontchartrain. Many people had questions or comments about the barrier-weir plan details (benefits, impacts, cost, funding, design and operation, history of the original

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barrier plan, etc). Twenty-two comments showed support for the barrier-weir plan. None of the St. Tammany Parish comments were in opposition to the barrier-weir plan.

Approximately one fourth of the comments expressed dissatisfaction with study process and/or concerns about the length of time it takes to implement risk reduction plans.

The following themes were represented by approximately 10 to 20 comments each:

- Concerns about induced flooding and/or equitable risk reduction (between states or between the north shore and the south shore of Lake Pontchartrain).
- Interest in nonstructural measures.
- Interest in structural measures in addition to or in place of the barrier-weir plan.
- Interest in plans for specific areas (e.g. Slidell, Mandeville, Madisonville, Lacombe, Eden Isles, Palm Lake, Quail Ridge, etc.)
- Interest in coastal restoration (wetlands, diversions, barrier islands, etc) or other environmental concerns.
- Need to improve communication, e.g. through better outreach, maps, and/or computer models.
- Interest in the planning and decision process.

Five comments recommended seeking international expertise (e.g. from the Dutch). A few comments expressed a general lack of trust in the Corps and/or federal government.

### **Themes Contained in the Public Comments**

Since so many form letters were received and could not be fully reproduced for this document, only unique comments or the unique portions of the form letters are included in the attachments. All original comments are on file at the District. The table shown below summarizes the theme(s) presented in each of the comments. Many of the comments contained more than one theme. Themes with occurrences of 10 percent or more are shown in bold.

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| Question/Comment Related to:                                                                                                                    | No. of Occurrences |                        |             |       | %   |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|-------------|-------|-----|
|                                                                                                                                                 | Form Letters       | Unique Emails/ Letters | St. Tammany | Total |     |
| Desire for “Cat 5” risk reduction                                                                                                               | 54                 | 12                     |             | 65    | 1%  |
| <b>Support for lines of defense strategy</b>                                                                                                    | 1183               | 3                      |             | 1183  | 17% |
| Barrier-weir plan support (or support for any plan that reduces surge in Lake Pontchartrain)                                                    |                    | 30                     | 22          | 52    | 1%  |
| Barrier-weir plan opposition                                                                                                                    | 317                | 9                      |             | 307   | 5%  |
| Barrier-weir plan specifics (benefits, impacts, cost, funding, design & operation, history, etc)                                                |                    | 9                      | 36          | 45    | 1%  |
| <b>Dissatisfaction with study process/time it takes to implement risk reduction plans</b>                                                       | 1236               | 18                     | 35          | 1288  | 18% |
| Induced flooding and/or equitable risk reduction concerns (between states or between the north shore and the south shore of Lake Pontchartrain) | 318                | 8                      | 22          | 328   | 5%  |
| Nonstructural measures - More information on buyouts desired                                                                                    |                    |                        | 15          | 15    | <1% |
| Nonstructural measures - Would consider buyouts                                                                                                 |                    |                        | 3           | 3     | <1% |
| Nonstructural measures - Would oppose buyouts                                                                                                   |                    | 2                      |             | 2     | <1% |
| <b>Other nonstructural approaches such as zoning, building codes, and/or raise in place</b>                                                     | 1183               | 3                      | 3           | 1189  | 17% |
| <b>Structural measures (in addition to or instead of the barrier-weir plan)</b>                                                                 | 1183               | 7                      | 15          | 1205  | 17% |
| Plans for specific areas (e.g. Slidell, Mandeville, Madisonville, Lacombe, Eden Isles, Palm Lake, Quail Ridge, etc.)                            |                    | 7                      | 23          | 29    | <1% |
| Improve communication, e.g. through better outreach, maps, and/or computer models                                                               |                    | 3                      | 14          | 17    | <1% |
| <b>Coastal restoration (wetlands, diversions, barrier islands, etc) or other environmental concerns</b>                                         | 1183               | 25                     | 11          | 1218  | 17% |
| Planning and decision process                                                                                                                   |                    | 4                      | 10          | 14    | <1% |
| Seeking international and/or external expertise (e.g. from the Dutch) is important                                                              |                    | 1                      | 5           | 6     | <1% |
| General lack of trust in the Corps and/or federal government                                                                                    |                    | 2                      | 2           | 4     | <1% |
| Miscellaneous comments (not captured by themes above)                                                                                           | 3                  | 7                      | 3           | 10    | <1% |
| Other comments not specifically related to LACPR (e.g. pump to the river)                                                                       |                    | 7                      | 5           | 12    | <1% |

Note: The table does not include letters addressed to Governor Jindal.

## Responses to Form Letters

This section provides responses to the major comments contained within the form letters.

**Comment in Form Letter A:** *We are writing to ask you to demand that the Corp submit a specific plan that could be adopted and built right away for Category 5 Protection...We need no more discussion of options, but rather specific recommendations for immediate action...*

**USACE Response:** All Federal decision documents must be in compliance with the National Environmental Policy Act (NEPA). The Corps cannot recommend that specific projects be built without proper NEPA documentation. Since the LACPR Final Technical Report does not include a corresponding Environmental Impact Statement, the USACE cannot recommend specific projects in the LACPR Final Technical Report for construction. In order to make a recommendation, the Act would require the USACE to prepare a detailed statement on the following:

- The environmental impact of the proposed action,
- Any adverse environmental effects which cannot be avoided should the proposal be implemented,
- Alternatives to the proposed action,
- The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

All of the above information must be provided to the public throughout review and should incorporate the public views during development. Originally, the Corps thought that it may be possible to go beyond the Congressional direction to make construction recommendations within the 2-year timeframe. Once the technical work was underway, it became evident that the scope of LACPR far exceeded any other study that the Corps has completed in so short of a timeframe. Continuing with the NEPA documentation would have added another 6 to 12 months to the report schedule and could have potentially halted ongoing work, such as restoring the Greater New Orleans levee system back to a 100-year level of risk reduction. The USACE recognizes that the highly complex nature of this effort demands and will require significant public engagement to resolve issues and enable sound decisions.

**Comment in Form Letter B:** *This Report fails to comply with the clear direction provided by Congress that the Report provide recommendations for comprehensive storm protection of coastal Louisiana.*

**USACE Response:** Unlike the parallel effort in Mississippi (MsCIP) where the Congressional direction specifically states that “*the Secretary shall recommend a cost-effective project,*” the LACPR Congressional direction never uses the term recommend

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or recommendations. Instead, the Corps has met the Congressional direction by providing technical information for a “**full range of flood control, coastal restoration, and hurricane protection measures.**” Deciding on which projects to move forward with requires Congress and the Administration to understand and make tradeoffs with the input of other Federal agencies, the State, local government, other stakeholders, and the public. The decisions to be made involve tens of billions of dollars and will impact the coast and the people who visit, live, and/or work in South Louisiana and the Nation over the next 100 years and beyond. All final alternative plans may have social and economic impacts requiring further evaluation with our local and state partners, as well as requiring sequencing for implementation over time.

**Comment in Form Letter B:** *The LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps.*

**USACE Response:** The LACPR plan formulation was based on a multiple lines of defense strategy. Within the context of a multiple lines of defense or comprehensive system, numerous risk reduction measures can be combined to form alternative plans. Each type of measure provides unique opportunities to reduce risk of hurricane-induced flooding. Combining these different types of measures provides opportunities to develop comprehensive solutions to the flooding and habitat loss problems of the Louisiana coast. For the LACPR effort, the following types of alternatives were developed:

- **Coastal restoration alternatives** consist of hundreds of coastal restoration measures, which may include land/marsh-building river diversions, freshwater redistribution, mechanical marsh creation, barrier island/shoreline restoration, bank/shoreline stabilization, and/or ridge restoration.
- **Structural measures and alternatives** reduce flood risk using features that are designed to withstand the forces of storm events, such as surge-reduction weirs, floodgates, continuous earthen levees, floodwalls, and ring levees.
- **Nonstructural measures and alternatives** reduce the exposure to risk by removing vulnerable populations and assets from the threat through measures such as buyout of properties or raising structures in place. Additional nonstructural measures include wet and dry flood-proofing of critical facilities.
- **Comprehensive alternatives** contain combinations of at least two types of risk reduction measures—nonstructural, structural, and/or coastal restoration—in a multiple lines of defense strategy, providing comparable levels of risk reduction to all economic assets in the surge impacted areas.

No single measure or approach for achieving risk reduction will be sufficient for achieving the multiple risk reduction objectives established for coastal Louisiana. Each individual measure has weaknesses and tradeoffs. Therefore, an integrated comprehensive system comprising coastal restoration features, nonstructural measures,

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and structural components is the most promising approach for reducing storm surge risk in South Louisiana.

**Comment in Form Letter B:** *The LACPR does not consider the full range of coastal restoration measures, such as using sediment from the Mississippi River, rebuilding barrier islands, restoring cypress swamps and natural ridges, etc.*

**USACE Response:** Five coastal restoration alternatives including the State Master Plan were developed or identified for analysis in the LACPR report. Each alternative included a full range of measures, including diversions from the Mississippi River (some of which would be located to restore cypress swamps), marsh creation using dredged material, ridge/chenier restoration, and barrier island restoration. The focus of LACPR was to consider coastal restoration for its risk reduction potential rather than its ecosystem function, which is the goal of the authorized LCA program. The critical landscape features identified through this review range from critical wetland segments to natural ridges to manmade embankments.

The LACPR report acknowledges that diversion of Mississippi River freshwater, nutrients, and sediment is essential for the restoration of natural deltaic processes that sustain coastal wetlands. Therefore, projects to divert freshwater and sediments from the Mississippi River into adjacent estuaries are integral components of coastal protection and restoration plans. Currently, over 20 diversions are either being studied or constructed along the Mississippi River. The LACPR report includes diversions that could be classified as large diversions with high flow design capacities greater than 15,000 cfs with the largest diversion being over 175,000 cfs.

**Comment in Form Letter B:** *Some of the LACPR's levee alternatives could significantly increase storm surge and rely almost exclusively on levees that would enclose almost 1/4 of Louisiana's remaining wetlands. Wetlands behind levees cannot provide protection or a buffer for the levee system and communities inside. The Corps should focus on leaving wetlands outside of the levee systems to act as storm surge buffers.*

**USACE Response:** One of the findings of the LACPR analysis was that structural measures provide the greatest potential for risk reduction when removed from the immediate proximity of development. Levee alignments that allow some distance between the levee and the development footprint produce greater, and often significant residual protection above the indicated design level. Structural alignments which are adjacent to developed areas (e.g. ring levees) are susceptible to higher and more immediate consequences once the design level surge is exceeded. This effect is correlated to the relative capacity for storing wave overtopping and flood water once surge exceeds the design associated with each plan. At the same time, the LACPR report acknowledges that the potential for a levee project to induce development is a concern for many reasons. Most obviously, encouraging development in wetlands would be directly counter to the wetland restoration goals of LACPR and the other Federal and



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State efforts to restore coastal Louisiana. The destruction of wetlands within levee systems can result in the loss of natural flood attenuation functions, while at the same time putting people and properties at greater risk of flooding during heavy rains and/or in the event of levee overtopping or failure. The LACPR report addresses induced development by (1) evaluating levee alignments to assess the potential to induce development in wetlands (2) developing alternatives that do not include levees such as nonstructural and coastal restoration alternatives and (3) acknowledging that additional actions by other Federal, State, parish, and municipalities are necessary to ensure consistency between coastal restoration efforts, regulatory decisions, and other civil works projects. Tradeoffs to achieve balance between risk reduction and wetland restoration will need to be made in many areas of the coast.

**Comment in Form Letter B:** *Nonstructural solutions (elevating homes, flood-proofing, etc.) are downplayed, despite the fact that they can be implemented quickly and provide cost-effective, environmentally sound risk reduction. The Corps should consider non-structural solutions more seriously.*

**USACE Response:** For the LACPR report, the USACE gave nonstructural solutions the same consideration as structural and coastal restoration solutions. One of the key findings from the LACPR report is that *Nonstructural measures are a key component for risk reduction*. The final array consists primarily of nonstructural and comprehensive (structural and nonstructural) alternatives. Of the 27 plans in the final array, all but three of the plans have a nonstructural component. The comparison of nonstructural options with other alternatives was also based on their performance assuming 100 percent participation in any plan. The consideration of the impact of diminishing public participation was addressed secondarily as a sensitivity analysis and did not influence plan ranking.

**Comment in Form Letter B:** *Evacuation is a critical element in keeping our communities safe and saving lives, but is not included in any alternatives. The Corps should incorporate evacuation, and all of the lines of defense into their analysis.*

**USACE Response:** The only way to ensure safety from storm or flood risk is through evacuation before the storm. The Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) ensures that the State of Louisiana is prepared to respond to, and recover from, all natural and man-made emergencies. GOHSEP provides the leadership and support to reduce the loss of life and property through an all-hazards emergency management program of prevention, mitigation, preparedness, response and recovery. GOHSEP has enabled the Integrated Public Alert and Warning System (IPAWS) which is administered by FEMA for the Department of Homeland Security and addresses the mandate and vision of Executive Order 13407 to create a comprehensive and modern public alert and warning system. The IPAWS components and pilot project work in conjunction with GOHSEP's existing Emergency Alert System. IPAWS will help provide critical and timely information alerts and warning that will save lives and property not only to governmental agencies, but to the general public,

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business, schools and other groups. This program is an essential element in reducing risk. Individuals have a personal responsibility to be prepared to evacuate as directed by local officials or sooner. The effectiveness of any evacuations directed by local officials, for any particular storm event would be similar across all alternatives evaluated for each planning unit and therefore would not impact plan formulation or the performance ranking of alternatives.

**Comment in Form Letter B:** *The inevitable interaction of levees, flood gates, barriers, weirs, and leaky levees with diversions is not addressed.*

**USACE Response:** Plan designs are not detailed enough at this point to forecast and evaluate the exact non-storm related hydrodynamic interactions between levees, diversions, etc. It would have also been tremendously inefficient to perform such an evaluation on the dozens of plans still being considered up to the end of this effort. As the refinement and narrowing of plans progresses, these interactions will be considered in more detail.

**Comment in Form Letter B:** *Habitat goals for a sustainable coast should be proposed so that the natural function of the estuary is supported.*

**USACE Response:** Per the Congressional direction, the focus of the LACPR report was on “Category 5” risk reduction. Ecological values are considered under the Louisiana Coastal Area authorization.

**Comment in Form Letter C:** *I am writing this letter to formally protest the thought or intention of the U.S. Army Corps of Engineers intent to construct levees that will adversely affect my community and especially my home...I also feel this is a direct violation of the United States Clean Water Act and unless a study was conducted, and proven that all of the 6 coastal counties and counties north along the Pearl Rivers would be subject to no adverse impacts and that the proper advertisements and public hearings were held in those areas to inform the general public.*

**USACE Response:** See response to Form Letter A. The USACE cannot recommend that specific projects be built without proper NEPA documentation. The LACPR report preliminarily evaluated regional impacts of the Pontchartrain barrier-weir plan; however, further analysis would be required if the barrier-weir plan were to proceed into engineering and design. This analysis along with a fully developed and inclusive public engagement effort will be required to fully describe and account for project effects, complete an Environmental Impact Statement, and arrive at an informed decision. The Pontchartrain barrier-weir plan could potentially be optimized to minimize adverse impacts with any remaining impacts mitigated.

## **Responses to Public Comments and Questions**

Responses to comments from the public not already addressed through the responses provided in the sections on NRC, NGO, and Federal agency comments have been summarized in the form of frequency asked questions.

### **Barrier-Weir Plan Q&A**

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**It seems so obvious—keep water out of the Lake to protect the surrounding communities—why is it not the first plan? What are the plans to keep the water (surge) out of the lake?**

A barrier-weir plan including floodgates at the Rigolets was evaluated in the LACPR report (see plan LP-a-100-1 in Planning Unit 1). The barrier-weir plan, which includes flood gates at the Rigolets and Chef Passes, would keep surge from entering Lake Pontchartrain below the 100-year level and would reduce surge entering the lake above the 100-year surge level.

**Would the barrier-weir plan protect the whole Lake Pontchartrain area? Can you estimate the benefit?**

The barrier-weir alternative plan, which includes floodgates at the Rigolets and Chef Passes, is designed to be overtopped at the 100-year surge level. It would therefore provide some risk reduction to all areas around the lake but not necessarily 100-year risk reduction. The actual level of risk reduction at a particular point around the lake would depend on other levees/structures in addition to the barrier-weir plan and water levels in the lake, wind speed and direction, waves, etc. The barrier-weir plan tradeoffs, including its estimated benefits, are included in Table 15-2 of the LACPR report.

**What would the flood plain map look like with the barrier-weir installed?**

Maps showing the change in depth of flooding with and without the barrier-weir in place can be found in the Evaluation Results Appendix to the LACPR report, on pages 23 through 25 of the Planning Unit 1 section.

**How much would the barrier-weir cost?**

The total first cost for the barrier-weir plan is approximately \$8 billion, which includes engineering and design, facility relocations, real estate, mitigation, and construction costs but not maintenance. Annual operation and maintenance costs for the barrier-weir are estimated to be \$2 million per year with an additional \$8 to \$9 million of refurbishment and major rehabilitation every 10 to 12 years.

Note: The LP-a-100-1 plan in the LACPR report includes both the barrier-weir and a coastal restoration plan. The estimate of total first costs for the entire plan is \$44.2 billion. The coastal restoration component cost estimate is \$36.2 billion.

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**How much would it cost per lot to acquire land for the barrier-weir plan?**

The acquisition cost per lot for any risk reduction project would depend on the appraised value of each lot.

**How long will it take to study, design, and construct the barrier-weir? What can we do to speed this process?**

The Corps has not developed an implementation schedule for the LACPR alternatives; the Corps has only completed a report that identifies not one but a suite of technically appropriate projects that provide a level of risk reduction. A feasibility level study on the barrier-weir including an Environmental Impact Statement could take between 3 to 5 years to complete. Construction time depends partially on funding streams. The LACPR analysis assumed that if funding was not a constraint, the barrier-weir and associated levees on the North Shore could be built within 14 years. Existing authorizations such as the Lake Pontchartrain and Vicinity authorization may be applied to St. Tammany Parish but the Corps cannot recommend projects unless directed by Congress. Residents would need to contact local, state and federal elected officials and representatives to influence requests for risk reduction projects.

**Which part would you start with on that long tie in from the Mississippi River to the Pearl River with the weir in the middle? Or would you start working on the whole thing at once?**

If funding were available we would start on several pieces of the system at once. If funding were constrained we would probably start with construction of the structures for the Rigolets and Chef passes since those would have the longest construction times and are considered the most critical features of the barrier-weir.

**Would the barrier-plan encompass the CSX railroad bed or US- 90 highway?**

The exact alignment for the barrier-weir plan has not been determined but it could follow either the highway or the railroad in some areas.

**There are many paths that surge could take into the lake besides the Chef Pass and Rigolets. Would the barrier-weir plan include locks at the multiple Pearl River crossings along Hwy 90?**

The barrier-weir plan includes levees to the east of Slidell that tie back to high ground so that surge can't go around the levees and floodgates. The alignment is to the west of Pearl River and does not cross the Pearl River along Hwy 90 so locks would not be needed at those crossings.

**What would have happened following Hurricane Katrina if there had been a barrier-weir in place at the time?**

The answer to this question would be hypothetical because models can't predict exactly what would have happened if conditions were different. Rather than modeling single storm events, LACPR analyzed over 300 storms and 3 million data points to derive the

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surge and wave heights across the Louisiana coast. The maximum stage at each of the ADCIRC grid points was used to compute the stage frequency at each of the grid points. The planning area contains thousands of these stage frequency relationships covering a frequency domain from about one in 50 years to about one in 3,500 years. This range of stage frequencies was used to generate statistical water surfaces that could be mapped to illustrate existing flood risk. These same state-of-the-art models are also being applied to the design for the 100-year hurricane risk reduction system around New Orleans. For an approximation of change in depth of flooding for a 400-year surge event (similar to Hurricane Katrina)—with and without the barrier-weir added to the post-Katrina Hurricane and Storm Damage Risk Reduction System—see the map on page 24 of the Planning Unit 1 section in the Evaluation Results Appendix to the LACPR report.

### **What happened to the original barrier plan that was approved after Betsy? Why didn't the Corps pursue the barrier plan despite local opposition?**

The USACE first recommended the Barrier Plan in 1962; however, in 1975, a local environmental advocacy group challenged the 1962 plan's environmental compliance and stopped the project's construction. As a result of the court injunction, the USACE switched to the high level plan, which did not adversely impact the ecological features of the lake. Until Hurricane Katrina and the LACPR planning effort, the USACE has been focused on completing and then upgrading the high level plan.

### **What is the modeling certainty for estimating of effects of LACPR alternatives, such as the Lake Pontchartrain barrier-weir plan?**

All important hydrodynamics processes including tides, river flows, wind, and short wind waves are fully integrated into the models and each process is validated separately. During Hurricanes Katrina and Rita, the USACE New Orleans District, National Ocean Service, and National Weather Service collected hydrograph data at nine stations. The USACE and URS/FEMA also collected about 400 reliable High Water Marks during post-storm surveys. For both data sets, the average absolute difference between modeled and measured High Water Marks is about 1 foot. For details of hydrodynamics validations one please refer to FEMA Flood Insurance Study report, region 6, Southeastern Parishes, Louisiana, 24 July 2008.

### **How and when would the barrier-weir plan surge gates be closed and reopened? How big would the openings be?**

The University of New Orleans performed a study to determine the required size of the structures at the Rigolets and Chef Passes to avoid adversely affecting the tidal prism. These would be gated structures allowing tidal exchange during non-storm conditions. This preliminary study determined that the structure at the Rigolets would need to be 1900 feet wide and the structure at the Chef would need to be 750 feet wide. Further study will be necessary during detailed design to determine the exact size and configuration of these structures.

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**If you put locks at the Chef and Rigolets will the current be so strong that it will be hard to navigate through the locks?**

If there is a lock the velocities will be low and there will be no navigation concerns. Approach channels would be designed to ensure safe navigation. If we look at open gates instead of a lock, we would perform a detailed navigation study to demonstrate that safe passage is possible.

**Could the surge gates at the Chef and Rigolets hold water in the lake causing flooding in the low lying areas? What if after the storm passes we get 30 to 50 inches of rain to fill lake will the gate be opened before the lake fills too high?**

If the surge gates close off Lake Pontchartrain, the local winds would still cause increased water levels within the lake (although these surge levels would be significantly lower than in an open situation). The effect of the local wind depends on the location along the lake and also the storm characteristics, but could still lead to flooding of low-lying areas along the lake which are not protected.

Heavy rainfall directly after the storm passes could potentially increase the water levels if the system is closed. Note however that it is very unlikely that there will be a 30 to 50 inch rainfall event over such a large area like Lake Pontchartrain. A detailed study of the gate operation would address various combinations of rainfall and surge.

**If the barrier-weir plan were built would the levee system on the south shore of Lake Pontchartrain still be necessary?**

Yes. Even with a barrier-weir in place the south shore would still be affected by wind-driven waves during a hurricane event.

**If you stop the water from going into the lake how much money will you save that is now being spent in New Orleans? Could funds from those levees be reallocated to the barrier-weir plan in order to accelerate that project?**

Congress has allocated funds for construction of the 100-year Hurricane and Storm Surge Risk Reduction System by 2011 and those funds cannot be reallocated. The barrier-weir is in a preliminary planning stage. The proposed barrier-weir would not stop water from entering the lake under all conditions. Also, with a barrier-weir in place the south shore would still be affected by wind-driven waves during a hurricane event.

**To finance part of the barrier project why not charge a flat fee similar to the fire protection fee in some areas? The fee could be on only flood prone areas or on all area south of I-12.**

Hurricane and storm damage risk reduction projects are typically financed by a combination of federal, state and/or local funds. As an example, Terrebonne Parish residents voted in 2001 to begin paying a quarter-cent sales tax to fund the local match required for construction of the Morganza-to-the-Gulf Hurricane Protection System. The tax revenue is dedicated to the Morganza project and is used to help pay for design and engineering of the project, as well as to begin construction on the system's first two

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levee segments in two of the parish's most vulnerable communities. Tax revenue will also be used to maintain and operate the system once complete. However, substantial funding is still needed from the federal government in order to complete the levee system.

**Why does the levee for a surge barrier have to be of the same material as a levee on the Mississippi River which has continued use? A barrier levee only has to hold for a short time even if it broke it would not flood the entire area. This would seem to be a lesser cost.**

Hurricane and storm damage risk reduction system levees are designed based on certain conditions. The design takes into account the amount of time the water levels are expected to be sustained. The barrier-weir proposed in the LACPR report is also designed to be overtopped when surge elevations exceed a certain level. This would require the use of a certain type of material. The materials used in construction of the barrier would have to be sufficient to survive this overtopping. Exact specifications for materials used in construction of the barrier weir will be determined during detailed design of the barrier.

**What alternatives exist besides levees, which if breached, keep water bottled in longer? Can't barriers be erected offshore to decrease surge?**

In addition to traditional levees, LACPR evaluated a range of other alternatives including barrier-weirs, coastal features, and nonstructural measures. All of these alternatives would provide varying levels of risk reduction and have different characteristics in terms of reliability. One of the findings of the LACPR report is that *structural measures provide the greatest level of risk reduction when removed from the immediate proximity of development*. Levee alignments that allow some distance between the levee and the development footprint produce greater, and often significant residual protection above the indicated design level. Structural alignments which are adjacent to developed areas (e.g. ring levees) are susceptible to higher consequences once the design level surge is exceeded. This effect is correlated to the relative capacity for storing flood water once surge exceeds the design associated with each plan.

**Do the current studies of increased levee heights in New Orleans take into consideration the water filling into the lake and then how the water then drains out?**

Yes. Advanced Circulation (ADCIRC) modeling was performed to determine the effect of the Hurricane and Storm Damage Risk Reduction System on water levels in the lake. ADCIRC is a type of hydraulic modeling that simulates wind-driven storm surge. Hydrographs show the water levels along the north shore of Lake Pontchartrain prior to the storm making landfall, during the storm, and after landfall.

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**Who and by what process determined that impacts of the full barrier (as opposed to the barrier-weir) to Mississippi are unacceptable?**

An early screening process was used to refine the number of measures to be investigated in greater detail and eventually included in alternative plans. A three-tiered screening process was used to reduce possible structural measures, alignments and alternatives to a more manageable number for further evaluation and consideration across a wide range of stakeholder interests. During the Tier 2 screening of structural measures, the interdisciplinary, multi-agency LACPR team conducted a preliminary comparison of potential costs and impacts of a full (non-overtopping) barrier vs. a barrier-weir. The Tier 2 screening allowed for considerations to be given to preliminary results of hydromodeling, as well as to costs, including determination of water surface stages associated with various storm surge events. At this screening level, residual damage estimates for each alternative were not available for comparison of plan performance and cost efficiency of each in reducing risk from storm surge.

The costs developed at this stage of the LACPR effort were based on very preliminary (ball park) estimates and construction assumptions. These assumptions may not have captured all costs associated with engineering feasibility issues and foundation requirements of the large levee structures being considered and therefore, may have been underestimated when compared to more detailed design costs (if developed). However, these preliminary costs were believed to be sufficient for comparison and screening of alternatives to identify alternatives for more detailed analysis. The preliminary cost estimates also did not include any costs for mitigating for increased impacts to areas outside the Lake Pontchartrain area due to increases in surge elevations resulting from construction of the Lake Pontchartrain barrier.

The increase in costs for providing for a full non-overtopping barrier for 400-year and 1000-year surge levels, including run-up and overtopping volumes, over the costs for the basic barrier-weir with elevation set at the 100-year surge elevation, would be approximately \$2.5 to \$20.4 Billion (based on preliminary costs shown in Table 7).

It is also questionable as to whether or not the additional costs for a full barrier, which requires significant levee improvements to the Lake Borgne area to achieve the proposed increased level of protection, as well as significant modification to proposed plans for Mississippi Coastal area, are very cost effective, particularly for areas around Lake Pontchartrain, when compared to the basic barrier weir. Ultimately, the height of the proposed barrier-weir plan would have to be optimized through more detailed design and analysis.



## Induced Flooding Q&A

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**It was said that erecting a levee system to protect lower St. Tammany would impact our neighbors to the East (Mississippi). What are the tradeoffs between the benefits to Louisiana with the barrier-weir plan with respect to impacts to Mississippi? How does that impact the decision to build a levee system to protect lower St. Tammany?**

A regional analysis conducted for Louisiana and Mississippi identified potential impacts and tradeoffs for each state. This analysis is included in Volume IV – Supplemental Appendices—Regional Considerations for LACPR and MsCIP. The Pontchartrain barrier-weir plan (LP-a-100-1 and C-LP-a-100-1), which is included in the final array for Planning Unit 1, has a potential to raise water levels in Mississippi resulting in economic, environmental, and cultural impacts. The estimated additional annual impact of \$5 million would represent an approximately 6 percent increase in potential damages over the Mississippi base condition. Conversely, these potential impacts to Mississippi correspond to a little over one percent of the expected annual damage reduction in Louisiana (approximately \$375 million annual benefits). The significance of those relative impacts should be weighed against the benefits achieved on a regional scale. Further analysis would be required if the Pontchartrain barrier-weir plan were to proceed into engineering and design. The Pontchartrain barrier-weir plan could potentially be optimized to minimize adverse impacts with any remaining impacts mitigated.

**Have studies been done regarding the impact this barrier-weir system would have along the Mississippi coastline and on how the levee system would affect our wetlands? Do you plan on having public meetings in Mississippi regarding the proposed levee system and how it will affect the Mississippi coastline?**

As indicated in the response above, a regional analysis was conducted for Louisiana and Mississippi to identify potential impacts and tradeoffs for each state associated with the 12.5-ft barrier-weir. Detailed analyses to optimize the barrier-weir and to better describe its associated impacts have not yet been completed for the barrier-weir plan. These analyses would be conducted in future studies. In addition, before the USACE could recommend a barrier-weir plan for construction, an environmental impact statement would have to be completed and public meetings would be held in affected areas in both Louisiana and Mississippi.

**Will levees along the south shore of Lake Pontchartrain push water to the north shore?**

All physical features that exist today to some extent affect the movement of water into and out of Lake Pontchartrain. The levee system is considered part of the existing condition.

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### **How did the Corps come up with only a one inch impact?**

Hydrologic modeling isn't specific enough to determine with certainty that a project will generate one more or one less inch of water. One inch is within the model's bound of error.

### **How accurate can the calculations be on old studies when there have been so many changes since the 1990s?**

One of the most significant accomplishments in the last few years is the development and application of numerical models to replicate hurricane surges and to statistically determine the potential frequency of events at individual locations across the coasts of Louisiana and Mississippi. The Federal government adopted these models for the rebuilding of the New Orleans levee system, for determining flood insurance maps, and for evaluation of hurricane risk to the Louisiana and Mississippi coasts.

## **Plans for Specific Areas Q&A**

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### **Is St. Tammany Parish included in the Master Plan for flood control? What plans are being made to protect St. Tammany Parish and other areas on the North Shore of Lake Pontchartrain?**

The State Master Plan provides the State of Louisiana's conceptual vision of a sustainable coast and the overarching vision for LACPR. The State Master Plan recommends that an outer barrier be built to provide risk reduction to areas on the north shore but does not specify the exact location. The LACPR technical report complements the State Master Plan by presenting a technical evaluation of those components within the USACE's mission. Six primary alternative plans in the LACPR report for Planning Unit 1 would provide varying levels of risk reduction for St. Tammany Parish. Plans range from coastal restoration to nonstructural measures such as voluntary buyouts to the structural barrier-weir plan.

### **Why are there no plans to levee South Slidell, Mandeville and Madisonville and Lacombe?**

The LACPR analysis evaluated levees along the north shore of Lake Pontchartrain but those alternatives did not perform well in terms of cost efficiency and environmental tradeoffs. In contrast, the barrier-weir plan, which includes floodgates at the Rigolets and Chef Passes, performed well and is included in the final array of alternatives. Detailed studies to optimize plan features and design have not yet been completed. These subsequent studies could reexamine the need for and merits of additional north shore levees with or without a barrier-weir in place.

### **Is there funding for north shore projects?**

Corps projects are authorized and appropriated (funded) by Congress. Currently, no projects are funded in St. Tammany Parish. The SELA W-14 Canal project is dependent

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on completion and approval of the report now in preparation and on the appropriation by Congress of funds for design and construction. The SELA team hopes to have the report completed this summer and approved by the end of 2009; however, design work can't begin until Congress provides funding. The project is not in the proposed Congressional budget for the fiscal year beginning October 1, 2009. None of the alternative plans in the LACPR report are funded.

### **Why are north shore projects so far behind south shore projects? We flooded too. Will St. Tammany get a 100-year protection program?**

The Hurricane Protection Decision Chronology report, which is available online at <http://www.iwr.usace.army.mil/inside/>, provides an explanation of how Corps policies and organization, legislation, and financial and other factors influenced the decisions that led to the Lake Pontchartrain and Vicinity Hurricane Protection Project structures in place when Hurricane Katrina struck the Gulf Coast. The LACPR report will provide Congress with technical information to aid in the Federal decision making process for future projects, including the north shore.

### **How can I find out what the hurricane risk reduction plans are for my particular neighborhood or subdivision?**

The LACPR report covers all of South Louisiana and therefore presents alternatives at the planning unit scale, not at the scale of individual neighborhoods. The evaluations presented allow for a relative comparison of alternatives for decision on large-scale conceptual plans. Once decisions are made on the implementation options that will be pursued in each planning unit, more detailed plans and their performance will be presented to the public.

### **What is the coastal restoration and storm surge plan for Vermilion Parish? Also, what is the time frame for the above plans?**

The alternative plans for five planning units across the State are located in the LACPR Final Technical Report dated June 2009. Vermilion Parish is located in LACPR Planning Units 3b and 4. Using the information in this technical report, the USACE will continue to coordinate with the State of Louisiana and further develop specific options and priorities in each planning unit. Plans for Vermilion Parish are also being developed under the ongoing Southwest Coastal Louisiana Feasibility Study. The estimated \$8.8 million feasibility study is anticipated to be complete in 24 months and will cover Vermilion, Cameron and Calcasieu parishes.

## **Nonstructural Measures Q&A**

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### **Would the buyouts be mandatory? Would people in the buyout areas be forced to leave?**

The buyouts in the LACPR report are all proposed as voluntary at this time.

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### **It is stated that some communities may have to relocate. Have any of these communities been identified? Which communities are in the LACPR buyout zone?**

Proposed voluntary buyout areas are shown on the maps on pages S-18 through S-24 of the LACPR Summary Report. These preliminary buyout areas are based on broad decision criteria for analysis on a planning unit scale. Buyout areas were not identified on a community-by-community basis nor has the level of interest in participation in buyouts yet been determined.

### **How would property be appraised in the buyout areas?**

The United States Constitution and the State of Louisiana Constitution require that a property owner be paid just compensation when the government acquires private property for a public use. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (P.L. 91-646) was enacted to ensure uniformity in the treatment of persons displaced by a federal project. The Act requires that property owners be offered the market value of the real estate interest to be acquired; this offer is to be based upon an approved appraisal of the property. The government is required to conduct good faith negotiations with each landowner in an effort to acquire the property in an amicable manner. The government must pay the agreed purchase price for the property interest before requiring the owner to surrender possession of the property being acquired.

### **When would buyouts be offered?**

The voluntary buyout zones in the LACPR report are designed to provide technical information for decision making. A buyout program on the scale of the LACPR nonstructural alternatives has never been attempted and would likely take decades to implement.

### **Are we going to get support and aid for rebuilding our homes and businesses to a higher level?**

The alternatives in the LACPR report do not have associated funding at this time; however, homeowners can currently elevate or retrofit their homes using available hazard mitigation funds. The USACE New Orleans District website (<http://www.mvn.usace.army.mil/>) includes Hurricane Recovery Links to the following Federal, State, and non-profit resources:

- FEMA Disaster Help
- FEMA Disaster Assistance
- State of Louisiana
- Official Louisiana Emergency Information
- Louisiana Recovery Authority
- Road Home
- Louisiana Disaster Recovery Foundation

**Would property owners have the option of elevating homes above 14 feet?**

For the LACPR analysis, where inundation depths were potentially 14 feet or higher, buyout/permanent evacuation measures were applied (rather than elevation of structures) based on the FEMA publication, "Recommended Residential Construction for the Gulf Coast: Building on Strong and Safe Foundations," FEMA 550, April 2006. When elevating their homes, citizens must comply with the provisions of the 2007 Louisiana State Uniform Construction Code, which is designed to ensure that new construction can withstand hurricane force winds.

**Coastal Restoration Q&A**

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**To what extent has the Corps investigated restoring natural defenses in lieu of or in addition to man made barriers?**

All of the alternatives formulated for LACPR initially included coastal restoration. The LACPR technical evaluation then applied state-of-the-art storm surge models in order to quantify the risk reduction benefits provided by the coastal landscape. In the planning units east of Bayou Lafourche, the evaluation demonstrated measureable risk reduction benefits attributable to maintaining the existing landscape; therefore all the alternative plans in those planning units contain a coastal restoration component. In the planning units west of Bayou Lafourche; however, the technical evaluation failed to detect any measureable risk reduction that could be attributed to maintenance of the coastal landscape in its existing state. This exclusion does not mean that coastal restoration would not be needed in these planning units, but that the focus should be on ecosystem restoration and strategic restoration for risk reduction. More detailed modeling is needed to identify significant coastal restoration features capable of producing discrete risk reduction benefits in these areas.

**I've heard that for every few miles of marsh, one foot of storm surge is absorbed; so why can't we just restore the coast instead of building levees?**

Rule of thumb approaches for estimating the contribution of wetlands to risk reduction are unreliable. Prior to the storm surge modeling performed for LACPR, a common rule of thumb ("x miles of wetlands reduce surge heights by y feet") was used to predict the storm surge reduction potential of wetlands; however, the results of the LACPR model have shown that a general rule of thumb is not appropriate for making risk-informed decisions. Protecting and restoring coastal wetlands in some areas of the coast provides greater risk reduction potential and in others greater ecologic benefit.

**Is an environmental impact study going to be done for each of the proposed plans? Are impact studies going to be done for areas outside the protection system?**

Before recommending a project for construction, the Corps would complete a full NEPA analysis and environmental impact statement. The cumulative effects analysis would consider impacts to areas outside the risk reduction system.

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**What percent of land do you estimate was lost on West Grand Terre Island because of Katrina and due to erosion in the past 5 years? When and what is the LACPR going to do to restore this loss of land and by what means?**

The LACPR final array of alternative plans includes the restoration of approximately 15,000 acres of barrier islands in Planning Unit 2 (Barataria Basin). Barrier island restoration for East and West Grand Terre Island (approximately 700-acre project area) is a Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) project (BA-30). For information on land area change in Louisiana contact: John A. Barras, U.S. Geological Survey, National Wetlands Research Center, Baton Rouge, LA 70894; Phone: 225 578 7486; email: barrasj@usgs.gov.

**Are there any plans to help increase the flow of fresh water into the marshes and wetlands surrounding St. Bernard Parish?**

A project to divert freshwater from the Mississippi River into the coastal waters of Louisiana and Mississippi at or near Violet, Louisiana, for the purposes of reducing salinity in the western Mississippi Sound, enhancing oyster production, and promoting the sustainability of coastal wetlands was authorized by Section 3083 of WRDA 2007. Design and construction of this project by the USACE are contingent upon future Congressional appropriations. No funds have been appropriated for the project subsequent to its authorization in WRDA 2007. The Violet Freshwater Diversion Project is also a major feature in the Louisiana Master Plan for Hurricane Protection and is currently being designed by the state of Louisiana. Information on tradeoffs associated with diversion projects in general can be found on pages 100-101 of the LACPR Final Technical Report dated June 2009.

**Why are the costs so high especially the coastal restoration costs? What are the costs based on?**

The preliminary costs provided in this technical report are to be used for screening and relative comparison of plans and not intended to be used for funding construction. The cost estimates were developed using post-Hurricane Katrina impacts to labor, equipment, materials, and supplies. The estimated costs were based upon an analysis of each line item evaluating quantity, production rate, and time, together with the appropriate equipment, labor, and material costs. A 50% contingency was applied to the final array of alternatives based on similar risk-based contingencies calculated on the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. Considerable additional design will be required before final costs of an implementable plan are determined. The high coastal restoration costs point to the need to focus on strategic application of coastal restoration rather than in all areas of the coast.

More information on the cost estimates for the structural and coastal restoration measures is included in Annex 2 to the Engineering Appendix (e.g. costs for levees, flood control structures, rock protection, diversion structures, clearing, soil mixing, marsh creation and nourishment, beach nourishment, and ridge restoration). More information on the cost estimates for the nonstructural measures is included in the

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Nonstructural Plan Component Appendix (e.g. costs for evaluation/buyout of structures or vacant lots or raising in place).

**Would 50-foot sand dunes on the barrier islands help slow down surge?**

Landscape features such as barrier islands have the potential to create frictional resistance and affect storm surge and wave energy. The influence of these features is reduced if they are lost or inundated due to hurricanes or sea level rise. A sensitivity analysis was performed to assess the impact of barrier islands on storm surge and wave energy at the mainland coast. Several conditions were modeled including a restored barrier island configuration of 12 feet for Cat Island, Ship Island, Horn Island, Petit Bois Island, and Dauphin Island and 6 feet for the Chandeleur Islands. The results of the sensitivity analysis can be found in Volume II-Annex A of the Hydraulics and Hydrology Appendix. The model results indicate that the barrier islands provide some level of risk reduction as a first line of defense; however, in the case of barrier islands far offshore, such as the Chandeleur Islands, surges can regenerate before reaching the mainland. A 50-foot sand dune configuration was not modeled since there are many technical challenges and uncertainties associated with constructing and maintaining such large sand dunes on offshore barrier islands.

**What are the plans to upgrade or restore barrier islands east and south of the Rigolets, e.g. the barrier islands at Chandeleur Sound and Breton Sound? What about the Biloxi marsh? If so, when?**

Barrier island restoration in the Barataria and Terrebonne basins is part of the ongoing Louisiana Coastal Area (LCA) planning effort authorized by WRDA 2007. Marsh creation and restoration in the Biloxi marsh is also being considered as part of the MRGO Ecosystem Restoration Study. These plans are still in the feasibility study phase and may not be constructed for several years.

**Structural Measures Q&A**

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**Can a concrete breakwater be placed to prevent surge?**

In general a breakwater of concrete blocks is only effective to break waves but not to prevent surge.

**Can broken concrete from highway projects throughout the central US be barged down to the Gulf of Mexico and be used to build barriers?**

Broken concrete could potentially be used to build breakwaters and shoreline protection to dissipate wave energy but would not be suitable for building a barrier/levee to reduce risk from surge.

**Why can't graveyard ships be placed into Lake Pontchartrain to form a barrier (temporary) until a structure can be created?**

In order to function properly a barrier has to be solid. There are other problems with using ships such as being able to anchor them so they wouldn't move during the storm, as well as cost and environmental issues.

**Instead of building a new levee or weir across the Rigolets and Chef Pass area, could you contract with railroad to build up the existing solid railroad bed? Floodgates could be designed to open and close using railroad cars and pump stations could keep Lake Pontchartrain levels stable.**

The existing railroad bed was not constructed using current Hurricane and Storm Damage Risk Reduction System design and material standards. Since the embankment would probably have to be reconstructed to meet the required standards for the barrier-weir, it would probably be more cost efficient to build the new barrier-weir in a separate location. The exact location and design of the barrier will be studied further if this option is pursued. A combination with the railroad may be an alternative to look at if this option is further evaluated.

**For the St. Tammany Mandeville Hurricane Protection have you ever thought to propose a removable wall system (such as shown on the website [www.ekofloodusa.com](http://www.ekofloodusa.com)) that goes up before the storm and is removed afterwards so it doesn't take away from the view or use of the waterfront?**

This idea has been proposed for other areas of the current Hurricane and Storm Damage Risk Reduction System. It could be considered in future studies to optimize hurricane and storm surge risk reduction measures for Lake Pontchartrain, including the north shore.

## **Planning and Decision Process Q&A**

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**Why do we still use a 1% or 100-year flood as a design basis? The Dutch use 1000-year or greater as design criteria. Numerous subdivision have experienced several 100 year flood experiences over the past 40 years- a home that floods once in a lifetime is unacceptable.**

A common misconception is that the 100-year storm surge will only occur once every 100 years. Just as there is a 50 percent chance of getting heads each time a coin is flipped, but it is still possible to flip heads several times in a row, it is possible to experience the 100-year storm surge in consecutive years. Statistically, over thousands of years the 100-year storm surge should occur, on average, once in 100 years. However, within a given period of 100 years, the 100-year storm statistically has a 63 percent chance of occurring. Given the average lifespan of a Louisiana resident—between 70 and 75—each person living within the 100-year floodplain has a 50 percent chance of experiencing the 100-year flood event within his or her lifetime. For those same individuals with a 30-year mortgage, the chance of experiencing a 100-year storm



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surge during the life of that mortgage is over 25 percent. No one design is proposed in LACPR. The LACPR report provides information on alternatives providing up to 1000-year risk reduction and the residual risks associated with flood events up to the 2000-year event; however, the Corps cannot proceed with these plans without authorization and funding from Congress.

### **Has the Corps sought assistance from world wide experts in planning and analysis such as the Dutch?**

Yes. The Corps has been working with engineers and scientists from the Netherlands since the early stages of the LACPR technical report development in 2006. At the request of, but independent of the USACE team, the Netherlands Water Partnership produced a reconnaissance report on the "Dutch Perspective" by identifying possible measures and alternative strategies for risk reduction in Southeast Louisiana. The recommendations of that report are presented in the LACPR Final Technical Report. Many of the features and concepts proposed by the Dutch are included in the final array of alternatives presented in the LACPR report. The full Dutch Perspective report and presentations from the USACE-Dutch technical exchange are posted on the LACPR website at [www.lacpr.usace.army.mil](http://www.lacpr.usace.army.mil).

### **Who were the stakeholders in the Multi-Criteria Decision Analysis process?**

The USACE developed its list of stakeholders based on its past relationships with the stakeholder community input from the State, as well as cooperative efforts with community and civic leaders. Approximately 500 stakeholder group representatives were invited to participate in the MCDA process. Of these, a group of 114 stakeholders participated in a series of meetings across the coast where they shared their values with the Corps. These stakeholders representing diverse interests included parish government officials, levee boards, user groups such as members of the navigation, oil and fisheries, etc. and were invited based on their participation in development of the State Master Plan and their representation of larger groups. Three out of the 114 stakeholders represented St. Tammany government. After the report is completed, and there is buy in on the report by the State, the Corps will again seek stakeholder input on the LACPR report.

### **Why do we believe that a focus group approach to alternative determinations is an acceptable and representative methodology? Why are not key experts from universities and industry also polled for technical inputs? Seems like we are letting the least qualified make critical decisions?**

The LACPR report is the result of collaboration by more than 60 organizations including USACE technical experts, State and Federal resource agency technical experts, non-USACE scientists and academics, non-governmental organizations, the Dutch Rijkswaterstaat, Dutch Water Partnership, private engineering firms (U.S. and Netherlands), and stakeholders. As was learned during the LACPR effort, application of the Multi-Criteria Decision Analysis (MCDA) tool in a stakeholder "focus group" type setting has several limitations and is not a viable stand-alone risk based decision

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process as pointed out in Section 13 of the LACPR report and in the National Research Council's report on LACPR. Regardless of any recommendations made by the USACE, Congress and the Administration are the ultimate decision makers in determining what projects or studies will be authorized and funded.

### **Do we get to vote on which weir should go in the Rigolets? Are we going to vote on what plan is implemented—coastal, structural, etc. Who is going to decide what course we will take?**

As part of the planning process, the USACE solicits public input but it is not a "vote." Congress and the Administration are the ultimate decision makers in determining what projects or studies will be authorized and funded.

### **Who made the tradeoff decisions on what is being implemented now?**

The Hurricane Protection Decision Chronology report, which is available online at <http://www.iwr.usace.army.mil/inside/>, provides an explanation of how Corps policies and organization, legislation, and financial and other factors influenced the decisions that led to the Lake Pontchartrain and Vicinity Hurricane Protection Project structures in place when Hurricane Katrina struck the Gulf Coast. The Hurricane Protection Decision Chronology report focuses on project decision-making and is intended to complement the engineering forensics investigations on the performance of the Lake Pontchartrain and Vicinity Hurricane Protection Project during Katrina, such as those conducted by the Interagency Performance Evaluation Task Force and other institutions.

### **Will there be more public meetings? When?**

No more public meetings on the LACPR report are currently scheduled; however, ongoing and future studies and projects (e.g. Morganza to the Gulf, Donaldsonville to the Gulf, etc) will have extensive outreach programs and public meetings.

### **What's the next step? What should we as residents do?**

Using the information in the LACPR technical report, the USACE will continue to coordinate with the State of Louisiana and further develop options and priorities in each planning unit. The USACE and the State will then jointly coordinate those options and priorities with other Federal agencies, local entities, non-governmental organizations, and the public. The USACE will implement potential recommended projects in accordance with current policy and in the most expeditious manner available by maximizing the use of available construction and study authorities (i.e., modifications of on-going projects/studies, post-authorization change reports, or new authorizations). Residents can review the alternatives and tradeoffs described in the LACPR report and talk to their local and state representatives about their preferences. Residents can also participate in public meetings and public comment periods for ongoing and future studies and projects in their area.

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**How does a coastal protection project get into review for consideration?**

Early in the process, the LACPR planning effort incorporated ideas for risk reduction and coastal restoration measures through a plan formulation meeting and a series of scoping meetings. At this point in the process, those measures have been screened and formulated into alternatives that have been evaluated and compared. Additional public feedback was requested during the public review period from June 9 - July 24, 2009. After submission of the LACPR Final Technical Report and supplemental comment and response document to Congress, the public will still have the opportunity to participate in the USACE planning process through individual studies and projects.

**Why wasn't the LACPR report submitted to Congress by December 2007?**

Due to the breadth of the planning area and engineering, environmental, and economic complexities, report development took longer than originally anticipated. Over the last few years, the Corps has made important advances in hydromodeling and risk-informed planning. This additional time has allowed the Corps to get the technical information right so that stakeholders and state and Federal decision makers can now discuss the tradeoffs between alternatives.

**Are the Southeast Louisiana Flood Protection Authority—East and the Southeast Louisiana Flood Protection Authority—West working together on a single plan or are they acting independently from each other?**

In December 2005, the Louisiana Legislature restructured the State's Wetland Conservation and Restoration Authority to form the Coastal Protection and Restoration Authority (CPRA). The CPRA is the single state entity with authority to articulate a clear statement of priorities and to focus development and implementation efforts to achieve comprehensive coastal protection for Louisiana. The Governor's executive assistant for coastal activities chairs the CPRA. The CPRA membership includes one representative from the Southeast Louisiana Flood Protection Authority East and one representative from the Southeast Louisiana Flood Protection Authority West.

**Why aren't you seeking programmatic authorization similar to the Everglades Program?**

This type of authorization is a possibility and is at the discretion of Congress. We are only pointing out that many authorities exist that help expedite implementation if directed.

**Risk Communication Q&A**

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**If Slidell is only going to get an extra inch of water with raising the levees, why did the flood maps change in Orleans parish?**

The Federal Emergency Management Agency (FEMA) has undertaken a remapping effort in order to update flood risk maps that were 20 to 30 years old. The landscape and coastline has changed significantly over that time due to subsidence, wetlands loss

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and new development. Weather patterns have changed and there has been an increase in storm activity. In addition, significant technological advances have been made in modeling and computing power. The general public can visit the Louisiana Mapping Project (LaMP) outreach website at [www.lamappingproject.com](http://www.lamappingproject.com) to input an address and access the Preliminary Digital Flood Insurance Rate Map (DFIRM) elevation data associated with that property. Preliminary DFIRMs indicate the extent to which areas of a parish, including individual properties, are at risk of flooding.

### **Why are you using a 500-year storm model instead of a 10-year model?**

For LACPR, the team created a series of simplified levee designs at the 100-year, 400-year, and 1000-year design levels. These three design levels were chosen to illustrate “Category 5” risk reduction potential, which Congress directed the USACE to consider. The 400-year flood event was chosen as an approximation of Hurricane Katrina. The team then calculated quantities of water that would theoretically overtop the levees under various conditions including 100-year, 400-year, 1000-year and 2000-year surge events accompanied by the 10-year rainfall event. The 10-year rainfall event was chosen because it is not likely that an extreme hurricane event will coincide with a rare rainfall event, and the 10-year rainfall intensity is comparable to the historical rainfall during some major hurricanes. The 2000-year surge event was added in order to determine overtopping volumes with the 1000-year levee in place. The overtopping volumes were computed using the information on the surge level hydrographs from ADCIRC.

### **How can we make a decision unless you can show us a computer model of storm surge with and without the changes you are discussing? Do you or will you show a computer model of how our neighborhood will be affected by storms from either direction?**

In assessing hurricane threats and risks for LACPR, the team employed advanced computer storm simulation software (ADCIRC) to evaluate a full range of hurricanes that could make landfall in coastal Louisiana. The modeling of storm surge included evaluations under both “with project” and “without project (no action)” conditions. Performance of alternatives is based on comparison of with and without project conditions. The ADCIRC modeling for the numerous conditions and grids required for LACPR was a massive effort. The ADCIRC program was run on two supercomputers; it would take 4,000 desktop computers linked together to equal the computing power available in each supercomputer. This use of advanced technology has vastly improved the ability of the USACE to evaluate hurricane threats along the northern Gulf Coast but does not lend itself to interactive displays. The LACPR report contains hundreds of pages of maps and data to convey the benefits and impacts of each alternative.

### **Is there a website that allows the viewer to see where the “new levees and existing levee modifications” on the LACPR alternative maps would be relative to existing reference points, e.g. streets?**

The LACPR analysis was conducted at a planning unit scale and the lines denoted as “new levees and existing levee modifications” are not yet at a high enough resolution to

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be shown at the street level. Such information will be developed during subsequent detailed studies and design of projects for implementation.

### **Why are there differences between water levels shown on the IPET and LACPR inundation maps?**

The maps for IPET and the maps for LACPR were developed at different times and for different purposes. The IPET maps were developed as a result of detailed analysis of the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. The LACPR maps were developed on a planning unit scale for five planning units across the entire coast of Louisiana. It is important to understand the levee heights and assumptions that were used to create each map. See response to next question.

### **The modeling for Planning Unit 1 assumed a solid boundary between St. Charles and Jefferson parishes and did not allow for water to flow from one parish into another. Shouldn't the LACPR maps be updated to correctly reflect the actual situation, and not give the public, and Congress, a false sense of security?**

When the LACPR modeling and analysis was conducted, final levee heights for the Hurricane and Storm Damage Risk Reduction System were not yet determined. Assumptions had to be made about levee heights and hydrologic connectivity. Although some of the assumptions are no longer valid, the assumptions were consistent in comparing alternatives on a planning unit scale.

## **Miscellaneous Q&A**

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### **How many cubic yards of fill will be needed to build the LACPR plans?**

Based on total length of levee work as a gross indicator of possible borrow needs, the LACPR alternatives with the greatest borrow requirements (approximately 1,060 miles) is greater than the total length of levee construction under the ongoing Hurricane and Storm Damage Risk Reduction System. Therefore, levee construction under LACPR would necessitate excavation of substantial quantities of borrow in excess of 100 million cubic yards.

### **What is the plan to maintain the storm protection after it is built? Is it a parish, state or Corps of Engineers responsibility?**

Typically the local sponsor (which could be a parish or the State) provides operations and maintenance once a project is complete.

### **Can we use the revenue from our offshore oil to pay for our protection?**

The Coastal Impact Assistance Program (CIAP) was established by Section 384 of the Energy Policy Act of 2005 to help producing states and their coastal political subdivisions to mitigate impacts from Outer Continental Shelf (OCS) oil and gas production. The CIAP component is projected to provide up to \$510 million to Louisiana for fiscal years 2007 through 2010. The 19 coastal parishes (CPSs) will receive 35% of

## LACPR Final Technical Report Comment Addendum

those funds and the State will receive 65%.

Authorized uses of CIAP funds are: projects and activities to conserve, protect, or restore coastal areas, including wetland; mitigation of damage to fish, wildlife, or natural resources; planning assistance and the administrative costs of CIAP compliance; implementation of a federally approved marine, coastal, or comprehensive conservation management plan; and mitigation of the impact of OCS activities by funding onshore infrastructure projects and public service needs. Up to 23% of those funds can be spent on CIAP planning assistance and compliance, and for onshore infrastructure projects and public service needs to mitigate OCS impacts.

### **How many pages is the whole LACPR report?**

The entire report is approximately 3,280 pages. The Preface is six pages; the Summary Report is 44 pages; the comment addendum is approximately 250 pages; the main report is approximately 280 pages; and the four volumes of appendices are approximately 2,700 pages.

### **When will proposed actions take place? What hurricane protection projects are planned during the next 5-10 years?**

Several hurricane and storm damage risk reduction studies are currently ongoing as shown in Table 7-1 on page 64 of the LACPR report. Construction of any new hurricane risk reduction projects will require authorization and funding by Congress.

### **How can I view the different plans presented at the St. Tammany Parish meeting on June 16th at the Harbor Center?**

The plans presented in a slide presentation at the June 16, 2009 public meeting are available at [www.nolaenvironmental.gov](http://www.nolaenvironmental.gov). The LACPR plan alternatives are also contained in the LACPR Final Technical Report dated June 2009 which is available for download at the LACPR website, [www.lacpr.usace.army.mil](http://www.lacpr.usace.army.mil).

### **Is this document the same as the Louisiana's Comprehensive Master Plan for a Sustainable Coast? If not how do the two documents relate?**

At the same time that Congress directed the LACPR technical report, the Louisiana Legislature restructured the State's Coastal Wetlands Conservation and Restoration Authority to form the Coastal Protection and Restoration Authority (CPRA). The CPRA is the single State entity with the authority to focus development and implementation efforts for comprehensive coastal protection and restoration and to interface with the USACE on LACPR coordination.

The State's plan entitled *Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast* was unanimously approved by the Louisiana Legislature with final approval being provided on May 30, 2007. This State Master Plan, which is available at [www.lacpra.org](http://www.lacpra.org), presents the State's conceptual vision of a sustainable coast and the overarching vision for LACPR.

## LACPR Final Technical Report Comment Addendum

Although the State Master Plan recommends certain actions, it contains many unanswered questions about specific hurricane risk reduction and coastal restoration measures. The LACPR technical report complements the State Master Plan by presenting detailed technical evaluation and comparison of outputs for those components within the USACE's mission.

LACPR Final Technical Report  
Comment Addendum



# Attachment CA-1 Federal Agency Comments



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
646 Cajundome Blvd.  
Suite 400  
Lafayette, Louisiana 70506



July 14, 2009

Mr. Tim Axtman, PM-OR  
U.S. Army Corps of Engineers, New Orleans District  
Protection and Restoration Office  
Coastal Restoration Branch  
P.O. Box 60267  
New Orleans, Louisiana 70160

Dear Mr. Axtman:

Please reference the June 2009 draft Louisiana Coastal Protection and Restoration Project (LACPR) Final Technical Report prepared by the U.S. Army Corps of Engineers (Corps) in cooperation with the Louisiana Coastal Protection and Restoration Authority. The U.S. Fish and Wildlife Service (Service) has reviewed this report and offers the following comments as technical assistance in accordance with the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq).

The Service appreciates the opportunities to provide input throughout the LACPR study effort, especially considering the scope of that effort and the very restrictive study schedule. Recommendations and comments submitted by the Service during the course of this study have largely been adopted by the Corps. However, following our review of the newly developed "Summary Report" section, we would like to submit one recommendation which is provided below.

The first item under the "Key-Findings on Long-Term Sustainability of the Coast" (page S-27) states that diversions are essential for restoring processes that provide wetland sustainability. The Service supports this statement. However, the LACPR findings indicate that a more aggressive diversion strategy than previously envisioned is needed to restore a substantial degree of ecosystem sustainability. The Service, therefore, recommends that this key finding be expanded to indicate that a substantial degree of diversion-related wetland sustainability will be achieved only through a more aggressive and adaptively-managed diversion strategy to effectively re-connect the river with the coastal wetland ecosystem. This key finding should also be reiterated in the summary "Conclusions" on page S-30.



Again, thank you for the opportunity to provide comments on this report. If you have any questions regarding our comments, please contact Mr. Ronny Paille (337) 291-3117 of this office.

Sincerely,



James F. Boggs  
Supervisor  
Louisiana Field Office

cc: EPA, Dallas, TX  
NMFS, Baton Rouge, LA  
NRCS, Alexandria, LA  
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA  
LA Office of Coastal Protection and Restoration (OCPR), Baton Rouge, LA



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office  
263 13<sup>th</sup> Avenue S  
St. Petersburg, Florida 33701-5505

July 22, 2009 F/SER/RH:jk

Mr. Tim Axtman  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans District  
Corps of Engineers, U.S. Army  
New Orleans, Louisiana 70160

Dear Mr. Axtman:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Final Technical Report (FTR) for the Louisiana Coastal Protection and Restoration (LaCPR) program transmitted for our review and comment by a memorandum dated June 9, 2009. The FTR describes a suite of alternatives to provide increased levels of hurricane risk reduction across coastal Louisiana. The FTR identifies five planning units for the Louisiana coastal area; within each planning unit are presented five or six sets of alternative measures. Depending on the planning unit, those alternatives include structural actions, such as constructing new levees and installing water control structures; non-structural efforts such as raising and/or hardening structures and buy-outs; and the implementation of wetland restoration projects. According to the FTR, existing authorities will be utilized to the maximum extent possible to further evaluate and implement storm surge risk reduction measures described in the document.

Overall, the report captures the complexities of statewide plan formulation for storm surge risk reduction including both protection and restoration. However, because the FTR identifies sets of options rather than laying out a specific course of action, considerable work remains to be done to develop a clearly understandable factual basis for selecting a set of actions from the wide array of choices presented in the FTR. In some instances, additional data or analyses should be developed to inform the choice of measures to be implemented. For example, as described in more detail below, NMFS believes additional work is needed to fully consider the benefits of coastal restoration as a component for risk reduction in all five planning units.

Of particular concern, NMFS notes the FTR did not include any wetland restoration alternatives in planning units 3a, 3b, and 4, located west of Bayou Lafourche. Based on NMFS' review of the FTR and discussions with Corps of Engineers staff, it is NMFS' understanding that modeling results suggested wetland restoration efforts in that portion of the state would provide no storm surge reduction benefits. Consequently, no wetland restoration projects were included in the FTR for those planning units. While NMFS understands that the restoration alternatives developed by the interagency Habitat Evaluation Team (HET) might not provide storm surge



reduction benefits, it should be noted that the HET was not tasked with developing restoration alternatives that would provide such benefits. Rather, the guidance given the HET was to create a wetland restoration plan that achieved ecosystem sustainability to the greatest degree possible using a no net loss standard. Not knowing what the final array of structural and non-structural protection alternatives would be, the HET's restoration features were not optimized to provide surge risk reduction or minimize long term costs of operations of structures and maintenance of levees. As drafted, the FTR may create the impression that wetland restoration is not needed in the western portion of Louisiana and that restored wetlands would not provide protection in the form of storm surge reduction. In actuality, the potential to develop restoration alternatives that could reduce storm surge may exist. NMFS recommends the path forward from the FTR include further evaluation of restoration projects as components of comprehensive risk reduction alternatives in planning units 3a, 3b, and 4.

The durability and sustainability of some structural features proposed in some areas is not sufficiently documented. NMFS is most concerned with the sustainability of proposed levees in both Terrebonne and Barataria basins. For example, one of the final suites of alternatives proposed for planning unit 3a is the Morganza to the Gulf of Mexico Hurricane Protection levee (Morganza). Considering the rapidly degrading coastal ecosystem in southern Terrebonne Parish, the Morganza levee likely would be exposed to direct impacts from storm surges in the future without the inclusion of wetland restoration actions in that portion of the state. Portions of that levee alignment also would likely be exposed to daily tidal and wave erosion. Lacking buffers provided by floodside wetland restoration efforts, it may not be feasible or financially practicable to maintain levee segments exposed to those forces. Alternatively, NMFS believes restoration projects could be developed by the HET for planning unit 3a that would provide benefits in terms of protecting proposed levee sections from erosion and reduce overall operations and maintenance costs.

The Gulf Intracoastal Waterway (GIWW) levee alignment in the Barataria Basin is one of the more environmentally controversial components in the FTR. Specifically, the evaluated benefits and costs associated with the GIWW barrier-weir plan (C-G-100-1) are questionable. This levee alignment, like the Morganza levee alignment in the Terrebonne basin, is a cross-basin alignment. However, unlike Morganza, the GIWW plan is even more problematic in that it would not be located on existing barriers and would divide the Barataria ecosystem roughly in half with a suite of levee and water control structures. Such a feature would directly destroy a large acreage of wetlands and enclose hundreds of thousands of acres of tidally influenced wetlands within a leveed system. This planned hydrologic barrier could lead to the accelerated loss of wetlands both inside and outside of the system from ponding of surge waters and intercepted drainage waters, thereby exacerbating ecosystem impacts by altering water salinity regimes. This levee alignment could also limit the beneficial effects of existing and planned freshwater diversions for habitat restoration and sustainability. In addition, floodgate management will be increasingly subject to more frequent and longer closures in the future due to relative sea level rise and associated wetland losses in the basin. Therefore, NMFS believes the GIWW alternative may not be among the best structural choices, given the magnitude of wetland losses and the substantial limits this alignment places on wetland restoration and associated mitigative measures in the upper half of the basin.

For some alternatives and/or planning units it may be desirable to proceed as soon as possible. However, for other alternatives such as some of the proposed levee alignments, additional higher level data are necessary to adequately inform the public and decision makers on the type and scope of trade-offs for each particular levee alignment. Regardless of the existing program or statutory authority under which any future measures would be evaluated or executed, it is critical the path forward include greater levels of information sharing and coordination with the state of Louisiana, other natural resource agencies, non-governmental organizations and stakeholders, based on a commitment to acquire necessary data to assess a full array of alternatives, impacts, and mitigation measures.

As a specific example of an existing mechanism to foster broad-based support for the LaCPR, NMFS recommends close coordination with the Gulf of Mexico Alliance. Within the Alliance, the Habitat Conservation and Restoration Team is working to develop the Gulf Regional Sediment Management Master Plan (GRSMMP). The objective of the GRSMMP is to provide a regional blueprint for the beneficial use of dredged material for habitat restoration. The LaCPR Summary Report states the Corps is currently developing a Regional Sediment Budget for coastal Louisiana to determine the feasibility of sustaining the coast. This work by the Corps' New Orleans District would likely benefit from the contributions of the Gulf of Mexico Alliance members who are contributing to the GRSMMP.

To further the recommended plan, the FTR proposes a new communication and collaboration framework that describes how the Corps of Engineers, State of Louisiana, federal agencies and user groups would work together to implement the LaCPR plan. While not specifically mentioning NOAA, that plan appears to suggest that NOAA would serve as a member of the Integration Team. The communication and collaboration framework also describes a Federal Advisory Panel staffed by representatives of a number of federal agencies, including the Department of Agriculture, the United States Geological Survey, the United States Fish and Wildlife Service and the Environmental Protection Agency. Considering NOAA's expertise in storm surge modeling, weather prediction, and coastal restoration; our long-standing participation in other major programs in Louisiana; and our mandates to protect, preserve and restore habitat supportive of marine fishery resources, NMFS requests NOAA be specifically identified as one of the federal agencies serving on the Federal Advisory Panel.

Thank you for the opportunity to comment on the Final Technical Report. Should you wish to discuss NMFS' recommendations further, please contact Richard Hartman of my staff at (225) 389-0508, ext 203.

Sincerely,



Miles M. Croom  
Assistant Regional Administrator  
Habitat Conservation Division

**c:**

**EPA – J. Ettinger**

**FWS, Lafayette**

**NRCS, Alexandria**

**F/SER - Sutter**

---

**F/SER4 – Croom**

**F/SER46 – Swafford, Hartman**

**NOD Planning- Owen, Stiles**

**LDWF-Finley**

**OCPR-Pahl, Fruge**

**F/HC - Montanio**

**Files**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

JUL 24 2009

Colonel Alvin B. Lee  
District Engineer  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

The Environmental Protection Agency has reviewed the Louisiana Coastal Protection and Restoration (LACPR) Final Technical Report (June 2009). The LACPR report effectively outlines some of the primary advantages and trade-offs associated with various combinations of coastal restoration and protection measures. Looking forward, the selection of any particular plan in the LACPR Report should be informed by a fuller understanding of some of these advantages and trade-offs, particularly with respect to levee alignments that would enclose coastal wetlands.

The LACPR Report represents procedural and substantive progress in planning for coastal Louisiana. Procedurally, we fully support the integration of coastal restoration and hurricane protection planning, consistent with Louisiana's Comprehensive Master Plan for a Sustainable Coast. We also support the use of scenario-based planning to deal with uncertainties such as future sea-level rise. Substantively, the endorsement of the "multiple lines of defense" strategy helps promote a sound framework for future coastal restoration and protection efforts. By recognizing the potential effectiveness of non-structural measures (such as elevation of homes and businesses) while acknowledging that risk cannot be eliminated, the LACPR Report could help promote the individual actions needed to minimize future loss of life and property due to storm surges.

We fully support the LACPR Report's key conclusions on coastal wetlands. We concur features such as wetlands and barrier islands can be "critical contributors to the long-term sustainability of a comprehensive risk-reduction system for coastal communities." We also agree the reintroduction of "Mississippi River freshwater, nutrients, and sediment is essential for the restoration of natural deltaic processes that sustain coastal wetlands." However, we must note the potential conflict between certain levee alignments in the LACPR Report and our shared efforts to restore coastal Louisiana.

We are concerned with environmental implications of finding that "[s]tructural measures provide the greatest level of risk reduction when removed from the immediate proximity of development." This finding could promote levee alignments that enclose large acreages of wetlands and open waters. Potential adverse environmental effects of



such artificial barriers include increased wetland loss rates due to altered hydrology, reduced fishery access, and induced development in high-risk areas such as wetlands. Little to no science or practical experience supports the idea that levees can enclose coastal wetlands while effectively minimizing environmental impacts and facilitating coastal restoration. Uncertainties regarding sea-level rise, subsidence, and future riverine inputs compound the significant environmental challenges of such levees. This LACPR Report finding could, therefore, promote levees that conflict with coastal restoration.

The Gulf Intracoastal Waterway (GIWW) levee alignment being considered for the Barataria Basin is a prime example of this potential conflict between levees and coastal restoration. As opposed to a levee along a ridge or some other substantial hydrologic barrier, the GIWW alignment could impound large acreages of coastal wetlands and open waters. Proponents of the GIWW alignment assert that gates and other structures would be included in the levee system to mimic natural flows, except during storms (the so-called "leaky-levee" concept). However, given the significant hydrologic uncertainties mentioned above, there does not appear to be sufficient scientific understanding to actually design, construct, and operate such a levee system in an environmentally acceptable manner. Not only would it be challenging to build a GIWW alignment that mimics healthy wetland hydrology (particularly with respect to sheet-flow and future riverine inputs), but it would also be increasingly difficult to maintain natural hydrologic patterns as sea-level rise and subsidence result in higher water levels within the levee system and dictate increased closure of the gates and other structures.

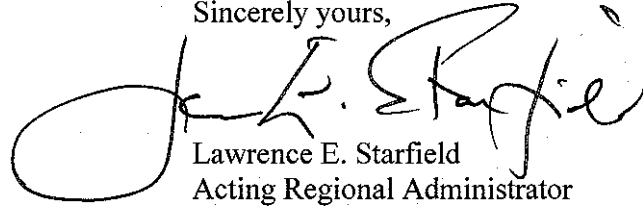
There are often environmentally superior alternatives for structural hurricane protection. In Barataria Basin, for example, the Ridge Alignment levee (along with other measures) offers many potential advantages, including greatly reduced wetland impacts, superior soil foundations, closer sources of levee building material, and lower subsidence rates. The Ridge Alignment could facilitate coastal restoration by reducing flooding from riverine reintroduction projects, while directing future development towards relatively higher and safer ground. Whereas the GIWW alignment would enclose coastal wetlands for use as a sump in the event of levee overtopping or failure, a Ridge Alignment levee would be protected by a substantially larger acreage of wetland buffer between it and the Gulf of Mexico. (Non-structural measures such as home elevation offer environmentally preferable alternatives for minimizing risks associated with levee overtopping and/or failure, while simultaneously reducing flooding risk from rain.) The environmental review process for the Ridge Alignment should be simpler and faster because it does not involve the significant hydrologic complexity of the GIWW alignment.

Given environmental concerns regarding levees that enclose wetlands, we would recommend that the Corps of Engineers convene a high-level workgroup of scientists, engineers, and policy experts from Federal, State, and local government, academia, non-governmental organizations, and elsewhere. This panel would further review the potential environmental impacts associated with such levee alignments, describe in greater detail key scientific uncertainties and research needs, and review less environmentally damaging alternatives for reducing flood risks for coastal communities. The findings of

this panel could then be used to inform ongoing and future levee studies, including the Donaldsonville to the Gulf feasibility study for the Barataria Basin.

Thank you in advance for your consideration of these comments. We look forward to working with you and our other partners to move forward with the large-scale restoration and protection efforts needed for safer and more sustainable communities in coastal Louisiana. If you have any questions or wish to discuss this matter further, please contact John Ettinger of my staff, at (504) 862-1119.

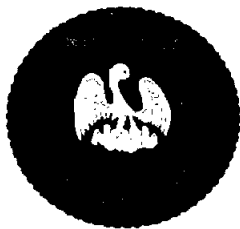
Sincerely yours,



Lawrence E. Starfield  
Acting Regional Administrator

cc: OCPR, Baton Rouge, LA  
NMFS, Baton Rouge, LA  
USFWS, Lafayette, LA  
NRCS, Alexandria, LA

# Attachment CA-2 Parish Council Comments



# St. Tammany Parish Council

21490 Koop Drive  
Mandeville, LA 70471  
(985) 898-2591

Post Office Box 628  
Covington, LA 70434  
Fax: (985) 898-2593  
Web: [www.stpgov.org](http://www.stpgov.org)

Marty Dean  
District 1

Gary Cooper  
District 2

James A. Thompson  
District 3

R. Reid Falconer  
District 4

Marty Gould  
District 5

Rebecca Crawford-Howell  
District 6

Al Hamauei  
District 7

Chris Canulette  
District 8

E. L. "Gene" Bellisario  
District 9

Henry L. Billiot, Jr.  
District 10

Steve Stefancik  
District 11

Jerry Binder  
District 12

Richard Artigue  
District 13

Kenneth Burkhalter  
District 14

Michael Sevante  
Administrator

Dena Lopez  
Assistant Administrator

Donald C. Henderson, Jr.  
Assistant Administrator

Theresa L. Ford  
Council Clerk

Hope W. O'Bryan  
Assistant Clerk

Kay J. Koppenol  
Council Assistant

Ashley L. Gonzales  
Council Assistant

Alissa Lemoine  
Council Secretary

Neil C. Hall, III  
Legal Counsel

July 13, 2009

Department of the Army  
New Orleans District, Army Corps of Engineers  
P.O. Box 60267  
New Orleans, LA 70160-0267

ATTN: Executive Office- Colonel Alvin B. Lee & Thomas A. Holden, Jr.

**RE: St. Tammany Parish Council Resolution Council Series No. C-2657  
June 4, 2009**

Dear Sirs:

Attached please find a copy of St. Tammany Parish Resolution Council Series No. C-2657 which was adopted by the Parish Council, backed by Parish President Kevin Davis, supporting the construction of a weir in the Rigolets for hurricane protection in St. Tammany Parish.

Your assistance in seeing this project to completion as soon as possible is greatly appreciated.

Should you need any further assistance from the St. Tammany Parish Council, please do not hesitate to contact the office.

Most respectfully,

Hope W. O'Bryan  
Assistant Clerk of Council

*Enclosure*

Cc: Honorable Steve Scalise  
Honorable Mary Landrieu  
Honorable David Vitter

ST. TAMMANY PARISH COUNCIL

RESOLUTION

RESOLUTION COUNCIL SERIES NO.       C- 2657      

COUNCIL SPONSOR: MR. STEFANCIK PROVIDED BY: ENGINEERING

RESOLUTION SUPPORTING THE LaCPR PLAN AND  
SPECIFIC PLAN ALTERNATIVE

WHEREAS, the United States Army Corps of Engineers, (USACE) has completed the Louisiana Coastal Protection and Restoration Plan (LaCPR) and have submitted the report to the National Academy of Sciences for review, and

WHEREAS the LaCPR Plan contains several alternatives that will provide surge protection to the residents of St Tammany Parish, and

WHEREAS St Tammany Parish is in the process of pursuing several surge and flood protection projects, which are only interim solutions, and

WHEREAS the Parish has reviewed the LaCPR Plan and determined that the maximum Hurricane Protection benefits for St Tammany Parish will result from implementation of the Plan Alternative that controls the Lake Pontchartrain water level during storm surge events by constructing a BARRIER-WEIR complex in the vicinity of the Rigolets and Chef Passes; and

THE PARISH OF ST. TAMMANY HEREBY RESOLVES, to hereby fully support the LaCPR Pontchartrain Basin Comprehensive Lake Pontchartrain Surge Reduction Plan (PU1-LP-A-100-1) and urges that the aforementioned Plan Alternative be the first order of construction when submitted to Congress for approval and funding.

THIS RESOLUTION HAVING BEEN SUBMITTED TO A VOTE, THE VOTE THEREON WAS AS FOLLOWS:

MOVED FOR ADOPTION BY MR. STEFANCIK, SECONDED BY MR. BURKHALTER

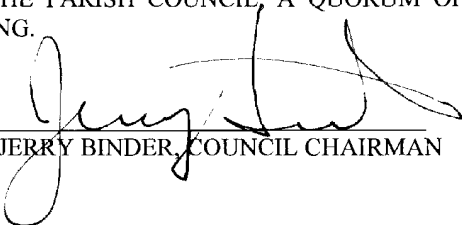
YEAS: DEAN, COOPER, THOMPSON, FALCONER, GOULD, CRAWFORD-HOWELL, HAMAUEI, CANULETTE, BELLISARIO, BILLIOT, STEFANCIK, BINDER, ARTIGUE, BURKHALTER (14)

NAYS: (0)

ABSTAIN: (0)

ABSENT: (0)

THIS RESOLUTION WAS DECLARED DULY ADOPTED ON THE 4<sup>TH</sup> DAY OF JUNE 2009 AT A REGULAR MEETING OF THE PARISH COUNCIL, A QUORUM OF THE MEMBERS BEING PRESENT AND VOTING.

  
JERRY BINDER, COUNCIL CHAIRMAN

ATTEST:

  
THERESA FORD, COUNCIL CLERK



**St. Tammany Parish**

Department Of Engineering  
P. O. Box 628  
Covington, LA 70434  
Phone: (985) 898-2552  
Fax: (985) 898-5205

*Kevin Davis*  
*Parish President*

**Date:** June 4, 2009  
**To:** Bill Oiler, Chief Administrative Officer  
**From:** E. deEtte Smythe, Ph.D. - Director of Engineering  
**Subject:** Justification for off the floor items for agenda for June 4, 2009 Council Meeting

The Department of Engineering is supporting the submittal of an off the floor item for the June 4, 2009 Council Meeting. The off the floor item pertains to hurricane protection for the residents of St. Tammany Parish; more specifically, the resolution is to support the USACE LaCPR Plan and Specific Plan Alternative.

The justification for off the floor introduction is that the need for this resolution was not identified until after the May 29, 2009 meeting with the USACE, LaCPR, OCPR, St. Tammany Parish and other elected officials. This meeting occurred after the deadline to submit regular agenda items for the June 4, 2009 meeting. Furthermore, this resolution needs to be introduced prior to the June 16, 2009 USACE public meeting to support the Corps plan to provide hurricane protection to the residents of St. Tammany Parish. Therefore, the resolution can not wait until the next council meeting.

# Plaquemines Parish Government

**BILLY NUNGESSER**

Parish President

8056 Hwy. 23, Suite 200  
Belle Chasse, LA 70037

(504) 392-6690  
(504) 274-2462  
1-888-784-5387  
Fax: (504) 274-2463

July 24, 2009

Mr. Tim Axtman, PM-OR  
United States Army Corps of Engineers  
P. O. Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160

RE: Comment to the LACPR Report

Dear Mr. Axtman:

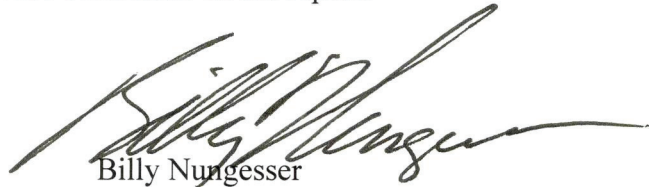
Plaquemines Parish Government has officially adopted the Multiple Lines of Defense Strategy as the foundation for the restoration and protection planning by the parish. This approach integrates structural protection such as levees and flood gates, with restored natural landscape features such as barrier islands, marshes, natural ridges and cypress swamps. We also believe that non-structural elements such as home-elevation and evacuation have a role to play in limiting the impact of hurricane flooding on our citizens. In light of our recent comprehensive planning activities, we offer the following comments concerning the report;

1. The LACPR report also supports the Multiple Lines of Defense Strategy, but falls short of including the results of the modeling conducted by the Parish that quantitatively evaluates the benefits of restoration projects. We have asked the Corps to incorporate at least some representative examples of the results of our work in the report, at least as an appendix, which we are ready to provide.
2. In the report the primary alternatives for the southern parts of Plaquemines Parish include only limited structural flood protection and emphasize elevating homes and buy-outs. We recognize that nonstructural approaches such as elevating homes and flood-proofing need to be a part of our comprehensive plan. However, we believe that buy-outs are not an effective approach. Continued economic development of the southern areas of Plaquemines Parish is in the best interest of the state and nation, and we believe it should be accounted for through enhanced flood risk reduction.
3. It is clear from our work that flood risk reduction for the New Orleans metropolitan area is directly connected to the condition of the coastal features and levees in Plaquemines Parish. Exploiting the potential benefits of the restoration of sustainable landscape

features in Plaquemines Parish should have been more fully addressed in the report. Plaquemines Parish is the first of the lines of defense in the Multiple Lines of Defense Strategy.

4. We believe the report does provide the most comprehensive attempt to date to look beyond the historic levels of flood risk reduction considered in the past. We also believe that Plaquemines Parish can contribute more to the reduction of the hurricane flooding risk to southeastern Louisiana than is reflected in the report.

Thank you for this opportunity to provide comments on the report.

A handwritten signature in black ink, appearing to read "Billy Nungesser", with a long horizontal flourish extending to the right.

Billy Nungesser  
Plaquemines Parish President



# Attachment CA-3 NGO Comments

**Comments submitted to the U.S. Army Corps of Engineers**

**regarding the**

**Louisiana Coastal Protection and Restoration (LACPR) Final**  
**Technical Report**

**Submitted by**

**Dr. John A. Lopez**

**Lake Pontchartrain Basin Foundation**

**July 24, 2009**

**Or**

**1,426 days since Hurricane Katrina in which 1,440 people died**

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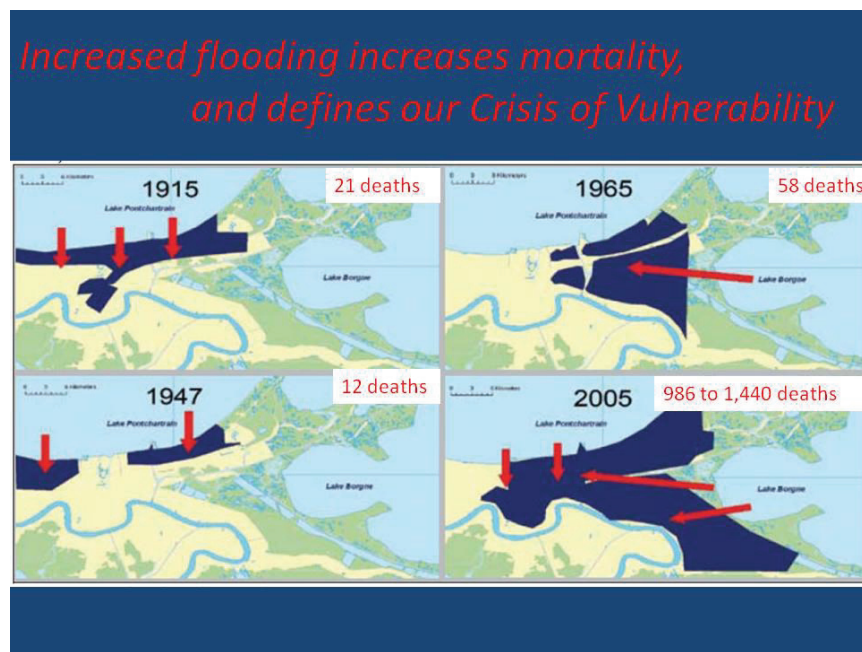
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## Introduction

The LACPR report was enacted in 2006 as a response to Hurricanes Katrina and Rita. The following comments are based on highly credible post-Katrina assessments of the disaster. All of these reports can be readily found published on the internet. Foremost, it is appropriate to first consider the loss of life.

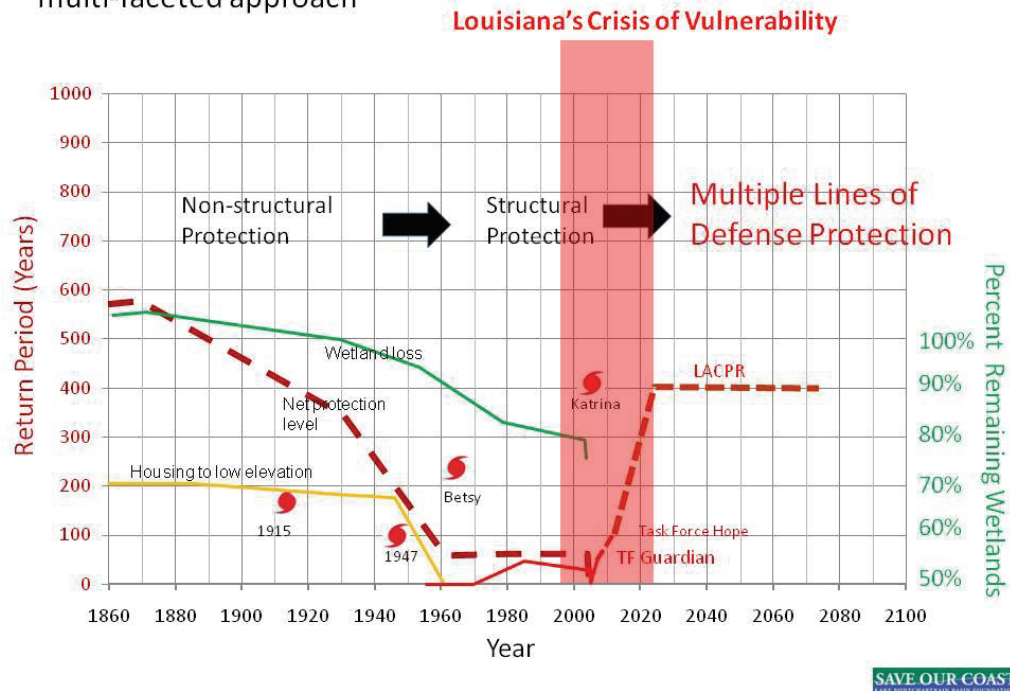
The 2008 report “Hurricane Katrina Deaths, Louisiana, 2005” (Joan Brunkard, PhD, Gonza Namulanda, MS, and Raoult Ratard, 2008) reveals with statistical clarity the nature of the deaths from Hurricane Katrina. 986 are known with certainty to have died because of the Katrina disaster. Another 431 died soon afterward but the cause of death was not recorded. The total deaths due to the storm are suspected to be as high as 1,440. Drowning was the cause of death more than any other cause. 49% of those who died were over 75 years old. How will history judge this disaster and our response in which we let our grandparents and great-grand parents drown in cold flooding water?

The figure below shows past hurricane-related flood events in the city and the associated deaths. Hurricane Katrina was an unprecedented event for the New Orleans region. The reason for the increase in the number of deaths is the simultaneous occurrence of an increase in severe hurricane events and a weakened flood protection system. The increase in severe storm events is a well established historical fact (Webster *et al*, 2005).

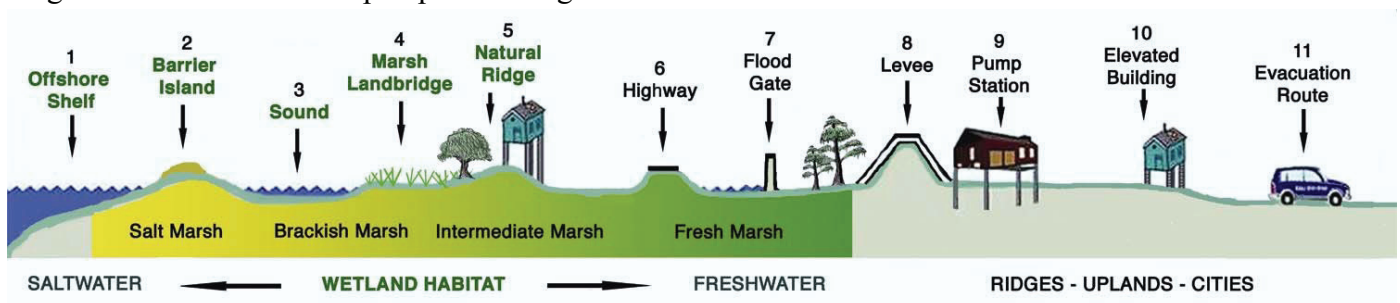


The general trends that caused the flood protection system to weaken over time are shown in the timeline graphic below. The timeline illustrates that in old New Orleans with elevated houses on high ground and with a coastal buffer, New Orleans actually had a high level of protection from storm surge. The loss of our coast and unwise choices in housing reduced the effectiveness of the non-structural protection. Hurricanes such as the 1947 Hurricane and Hurricane Betsy prompted a response of being overly reliant on levees (structural protection). It is this era of structural protection that has been highly studied since Hurricane Katrina, and which produced the levees and other structural measures that so catastrophically failed. In hindsight, these studies reveal that the protection was never as great as 1 in 100 year protection although it was legislated to be much higher (IPET, Team Louisiana, Woolley and Shabman, etc.) The graph also shows the new goals of flood protection as indicated by congressional legislation.

History of New Orleans Hurricane Flood Protection requires a new multi-faceted approach



The LACPR, the subject of these comments, is alleged to be the technical basis for this much greater level of protection. The approach suggested by the LACPR is a combination of non-structural, structural, coastal restoration and other elements that are referred to as the Multiple Lines of Defense Strategy (next figure). As author (Lopez, 2006 and Lopez, in-press 2009) of the Multiple Lines of Defense Strategy, and someone who has been very actively engaged in coastal planning, I have some perspective on the success and failure of the strategy's application in the LACPR. Furthermore, as someone who lost their home to Katrina and was displaced until July 18, 2009, I know something of the epic human struggle that continues for thousands of people in south Louisiana. As a scientist, we see a true implementation of the Multiple Lines of Defense Strategy as the only way for Louisiana to overcome its crisis of vulnerability and to achieve a future in which all generations are safe and prosperous for generations.



## Does LACPR address Post-Katrina assessments and recommendations?

### ASCE Report - “The New Orleans Hurricane Protection System: What went wrong and Why?”

In 2007, the American Society of Civil Engineers released a report titled “The New Orleans Hurricane Protection System: What went wrong and Why?” The report concludes with the following “call-to-action” recommendations which should be directly applicable to the LACPR plan.

ASCE #1 call-to-action *“Keep safety at the forefront of public priorities”*

#10 call-to-action *“Place safety first”*

On the back cover of the report is the following

“Fundamental Canons: Engineers shall hold paramount the safety, health and welfare of the public”

It is therefore profoundly ironic that the U.S. Army Corps of Engineers, dominated by civil engineers, does not use human safety as a goal or performance measure for the LACPR. Instead, the LACPR utilizes physical assets as economic justification for alternatives (figure 6-1). The Corps does use other criteria to apply the Multi Criteria Decision Analysis, but excluded any explicit criteria of human safety or mortality (Table 13-1). None of the project alternatives describes the number of deaths or lives-saved that may result from any plan.

ASCE

#2 call-to-action *“Quantify the risks”*

& #3 call-to-action *“Communicate the risks to the public”*

The Corps has undertaken significant modeling efforts of storm surge and have ad efforts to communicate this information to the public for ongoing levee projects and the LACPR alternatives. The Corps has emphasized that “Flood protection” cannot be absolute provided under any scenario. However, the Corps also identifies residual risk with new projects and does not attempt to address the residual risk. The best example of this is that levee around New Orleans will always be subject to overtopping or failure. Flooding within the city is described as a residual risk. The Corps alternatives do not include elevating within the city to address the residual risk. From a system engineering perspective all risk should be allocated in the design of a flood protection system. The risk is not that you chose to design a system with residual risk, but rather that your design will always want for improvement and so there is always still risk. Some have compared this treatment of residual risk as the approach by financial institutions to “passing on sub-prime mortgages”. It’s a way of dodging accountability and culpability. (see additional discussion in Systems engineering section). After all Congress directed the Corps to *“the Secretary shall submit a preliminary technical report for comprehensive Category 5 protection within 6 months of enactment of this Act and a final technical report for Category 5 protection”*, which is not the same as designing an incomplete system of protection with residual risks for someone else to address.

ASCE #4 call-to-action “Rethink the whole system, including land use in New Orleans”

This recommendation using a systems approach which is discussed an later section, but also a multi-faceted approach such as proposed in the Multiple Lines of Defense Strategy. The ASCE explicitly mentions land use in New Orleans, emergency response, recommendation for building elevations, of which none are included in the LACPR alternatives. Some issues are beyond the realm of traditional Corps activities, but this does not justify an assumptions that other agencies will do their part when the Corps has been delegated the responsibility of designing the whole system.

ASCE # 5 call to action *“Correct the deficiencies”*  
ASCE # 6 call to action *“Put someone in charge”*  
ASCE # 7 call to action *“Improve interagency cooperation”*  
ASCE # 8 call to action *“Upgrade engineering design procedures”*  
ASCE # 9 call to action *“Bring in independent experts”*

### **Woolley and Shabman (2007) Decision making Chronology for the lake Pontchartrain & Vicinity Hurricane Protection Project**

This report is an excellent chronicle of the flood protection system’s collapse as a death by a thousand cuts. It reveals the many incremental small and large influences and decisions which led to a catastrophic failure of the flood protection around the New Orleans region. It is a grim tale in which, too often, people believed what they wanted to believe or were told to believe. Their report concludes with the quotes below which reflect their assessment that an underlying lack of accountability or ethics was in force.

*“What the project record shows is that the District knew in at least general terms of the lessening of the project Degree of Protection and Level of protection over time. However, the Corps’ reporting requirements did not inform higher authorities or local sponsors that the project, if completed with the estimated required funds, would not provide Standard Project Hurricane protection.*

*This observation is not made to suggest that modified or new project structures would have been funded and built if the District’s general understanding of project deficiencies had been shared with higher authorities. Corps leaders have accepted responsibility for the disaster, but it has not been clear what that responsibility was or should be in the future. In fact, it is unlikely given the history told here that the necessary studies, approvals, authorities, funding, and construction sequences all would have rolled out in time to prevent the flooding from Katrina. It is also questionable whether the project, if it had been built and maintained to intended design grades, would have prevented to a significant extent the flooding of New Orleans caused by Hurricane Katrina.*

*Yet, even if no project changes or other responses were made, the Corps would have fulfilled its obligation to share with all relevant decision-makers whatever knowledge and understanding it possessed. Other decisions might then have been made differently. Perhaps the dissemination of this information would have had effects on decisions regarding land development and use, wetlands/landscape restoration activities, new or enhanced drainage pumping capability, evacuation planning and emergency response programs, and specialized protection of critical infrastructure.*

*Moving forward, Corps project evaluation and reporting protocols must be attentive to ensuring that project sponsors and relevant government officials at all levels are as fully informed about project capabilities and limitations as are the technical specialists within the Corps field offices. Further, Corps policies and procedures should seek ways to ensure that the affected public and its political leadership share with the Corps the project decisions that are made in consideration of new information.”*

*“That engineers have moral and legal obligations beyond those of the ordinary citizen is well accepted. This is because trained engineers can perceive and evaluate hazardous conditions that ordinary persons are not aware of. This is especially true for man-made hazards, because engineers*

*are often involved in making them ... In more basic ethical terms, the moral obligation of the engineer arises from the general philosophy that it is part of a natural relationship between human beings to warn and protect one another from hazards as far as they can be known. Because of his knowledge, therefore, an engineer has a higher moral obligation than one who is not knowledgeable in the field.”*

So, do the LACPR and related activities indicate a higher and appropriate ethical standard?

It seems unlikely for several reasons:

The New Orleans District has had significant turnover in personnel, resulting in a less experienced staff. In general, it is unlikely a young employee will have the acumen and will to challenge management or their decisions. Also, the District has been required to outsource significant work. Consultants have professional ethics, but it is also generally understood that it is not the role of a consultant to challenge their contracted employer. The customer is always right prevails. Also, in my experience, there have been broken promises and obstructions. In 2007, LPBF released a report of coastal recommendations. We were told by Corps management that all of our recommendations would be evaluated as part of the LACPR effort. A few months later they reneged on this promise. That is a small example but with larger implications. Later, we were again told that a particular levee alignment we proposed would be modeled. This has still not happened, and in fact we have told the District has chosen to work exclusively on another alignment without completing the analysis of alternatives.

In addition, there is a section in the LACPR which addresses systemic issues as response to Hurricane Katrina, as follows:

***“USACE Actions for Change***

*Since 2005, the USACE has embarked on an ambitious "Actions for Change" initiative to incorporate the lessons learned from Hurricanes Katrina and Rita into its future programs. The Actions for Change initiative began with an extensive internal and external review of USACE methodologies, assumptions, design standards, and decision-making processes related to the Southeast Louisiana hurricane risk reduction system. It concluded with a key element that the level of risk (either success of the expected outcome or reduced risk from damages) associated with a proposed plan should guide the decision-making process as well as inform all stakeholders of the remaining risks.*

*Four themes from the Actions for Change initiative underpinning the LACPR report are (1) Comprehensive Systems Approach (2) Risk Informed Decision Making (3) Communication of Risk to the Public (4) Professional and Technical Expertise. Additional reports that also contain these themes and complement the LACPR are the Interagency Performance Evaluation Task Force (IPET) Report and the **Hurricane Protection Decision Chronology Report.**”*

The exclusion of any statement of professional ethics ignores the direction from the Decision Chronology report even though it is explicitly referenced.

As a former employee of the Corps in New Orleans , I have some understanding of the downward institutional creep that is discussed by Woolley and Shabman. Employees are conditioned to treat any official policy as fact. Employees are trained to focus on processes and not outcomes even when it



defies common sense or ethics. The Corps uses a military command-and-control organization structure, which was largely abandoned by the private sector in the 1980s. These elements all contribute to low expectations and even lower achievement. Cumulatively, these work habits make disasters as the chronology report describes so well.

**Team Louisiana Report – “The Failure of the New Orleans Levee System during Hurricane Katrina”**  
Team Louisiana was formed after Hurricane Katrina to study the disaster. It was comprised of LSU scientists and engineers and funded by the LA Department of Transportation and Development. Their report was highly critical of the Corps’ institutional blind spots regarding the flooding of New Orleans. The Corps regarded the greatest threat as Lake Pontchartrain and not the east side of the city near the MRGO and Lake Borgne. The MRGO flood threat was a blind spot due to the non-sensical world that Corps treats authority as parallel worlds. That is, they can treat authorities independent as if they have no relation even when they do. For the MRGO, it was a navigation project authority treated independently from the flood protection authorities. There were other issues, but the Corps was digging the MRGO channel even as it was making the levee plans for New Orleans. Yet a closure gate on the MRGO was never included in any plan before Katrina even though the original barrier plan did include gates on Rigolets and Chef Passes. Even after Hurricane Betsy, the Corps ignored the importance of the MRGO.

Does the LACPR have such blind spots? Several.

The Calcasieu Ship channel is authorized separately from LACPR and so is not mentioned in the LACPR, although it is a conduit for surge to Lake Charles and is killing wetlands by saltwater intrusion. This is an eerily similar history to the MRGO. There is even a push to increase the draft of the channel which would exacerbate both problems. There is no serious discussion of a flood gate or closure due to the influence navigation has on planning.

Another blind spot is a funnel geometry of the levees created by the Morganza to the Gulf levee with the existing levee along Bayou Lafourche. The funnel is twice as large as the MRGO funnel area and Corps modeling demonstrates amplification of surge occurs with the Morganza levee funnel. Constructing the new levee actually requires significantly higher heights on the existing levee along Bayou Lafourche. However, the Morganza to Gulf levee is so heavily politically endorsed that the Corps would rather create a new problem rather than face an old one.

Team Louisiana also recognized the influence that local authorities have to compromise flood protection, as follows:

*“Although the federal government had overall responsibility for the GNO HPS, the slow pace at which federal funds were made available (\$3 to 5 million per year) led local agencies and their contractors to take a lead in many cases to get work started with local funds. As has been discussed, the USACE escalated the protection claimed for a completed Lake Pontchartrain and Vicinity Project from the 100-year to the 300-year storm level. This claim led local engineers to believe that designs originally proposed for some HPS elements were excessively conservative, and that an adequate system could be constructed more quickly and at lower cost without significantly sacrificing performance or reliability.”*

Local Levee Districts have already begun to challenge levee design. The State has initiated a review of levee standards with the impetus being the alleged over-design by the Corps. So far, the Corps and the LACPR have not compromised the new levee design criteria - except for one major example. In the preliminary re-analysis of the Morganza to the Gulf levee, it was concluded by the Corps that the most economic alternative was the original 2002 levee alignment and the obsolete levee design heights. The new surge models demonstrates that this obsolete design would provide a 1 in 26 year protection. That is clearly sub-standard to the authorized intent of 1:100 year protection and does not even meet flood insurance requirements. This levee alignment is included in the LACPR and is part of the final best performing alternative array.

### **IPET- Executive Summary of Findings**

*“All of New Orleans and Southeast Louisiana is highly vulnerable to catastrophic flooding for flood events that are in the neighborhood of 0.2% or the 500-year return period. At this time evacuation is the only effective means to substantially reduce loss of life for large hurricane events. Property risk can be reduced through elevation and flood proofing of structures, continued strengthening and improvement of the HPS components to include reliability of the pumping capability and resilience of levees and floodwalls, and appropriate land-use management of the most vulnerable areas.”*

### **IPET- Executive Summary of Lessons Learned**

*“**The System:** Planning and design methods need to be system-based, allowing a more indepth analysis of how a combination of structures and measures will perform together.”*

*“**The Performance:** Hurricane protection structures need to be designed as a part of a complete system-based approach to protection, providing balanced and uniform levels of protection from the perspectives of time, level of hazard, and reliability.”*

*“**The Risk...**” Given a relatively uniform level of reliability of the protection system, the relative risk values are largely related to elevation (below sea level) and the value of property or number of people who occupy those areas. The emergency response preparedness and efficiency of evacuation prior to a storm is a key component to reducing risk to life and human safety.”*

### **IPET- Executive Summary of Looking Forward**

*“Integrating risk reduction with other critical functions such as water quality, sustainability and commerce remain an idealistic goal. It is time for a new national emphasis on holistic water policy where public safety is a mandatory component.”*

*“The promise or perception of a system when it does not exist is perhaps more dangerous than no system at all.”*

*SUSTAINABILITY: Man-made measures alone can not sufficiently reduce risk for vulnerable areas such as New Orleans. Natural processes and attributes such as marshes, mangroves, and barrier islands need to be integral to a systems strategy for risk reduction. In combination with traditional structures and aggressive emergency management planning and execution, an enhanced natural environment would be a major component to a sustainable and effective long-term strategy to deal with the dynamics of climate, demographics, and social and economic well-being.*

The LACPR generally uses new design standards for specific elements of a flood protection system as recommended by IPET, but has not equally evaluated or applied the different elements that might compose a system in various alternatives proposed by LACPR.

For example:

- Surge models assume a frictionless landscape even though landscape is known to contribute to reducing surge.
- No explicit evacuation scenarios are included in the LACPR. It is recognized, in principle, as important but somehow is considered unnecessary to incorporate into the actual plans. This is a classic non-systems approach.
- LACPR uses economic valuation of physical assets as a proxy for human safety. This is clearly flawed logic. Human safety requires other aspects of a flood protection system, such as evacuation.

The LACPR does little to break the mold of traditional Corps planning. It uses the traditional six-step planning process and primarily uses economic metrics. It ignores broader issues of water resources, such as river diversions, which would require modification to navigation on the Mississippi River. It avoids any explicit analysis of potential loss of life of alternatives. It proposes alternatives overly emphasized with components the Corps has traditionally constructed, such as levees. In spite of Hurricane Katrina, LACPR perpetuates the inclination to believe that levees cannot fail. The LACPR alternatives do not include the elevation of homes within levees, such as in New Orleans. Although clearly directed by IPET and the Congressional authorization to develop alternatives of a complete system, what is presented in LACPR are traditional Corps-biased fragments of potential systems. Unfortunately, LACPR presents the “promise” of a system, but does not deliver.

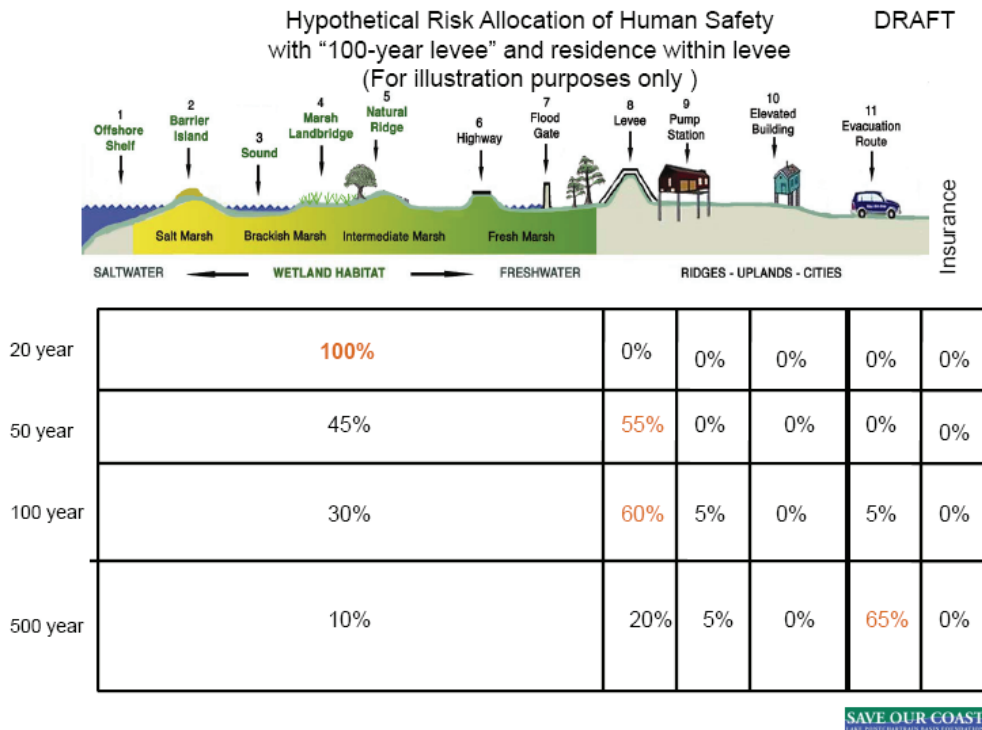
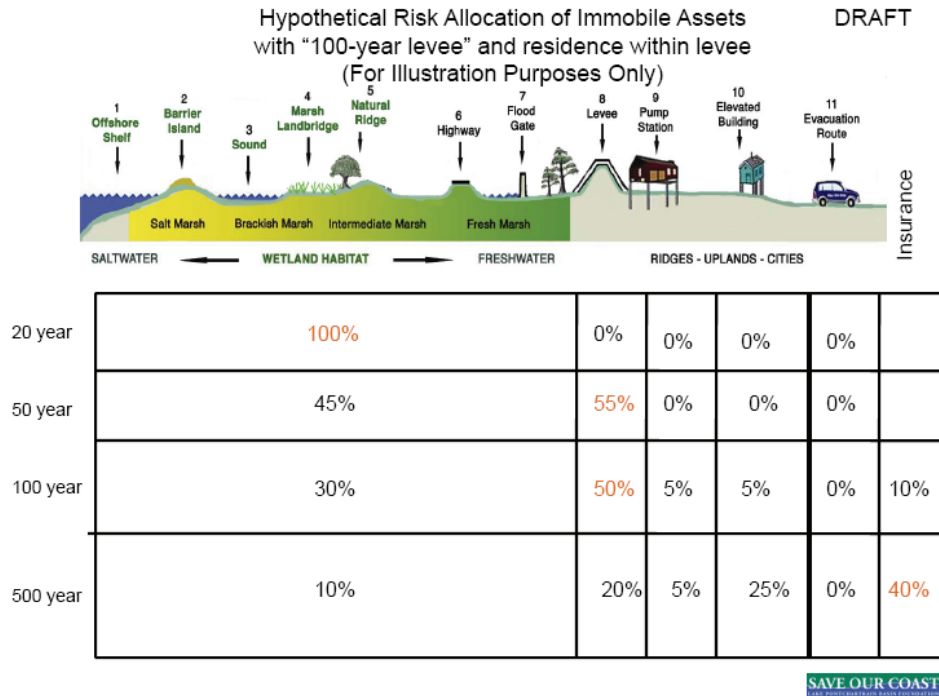
## Systems Engineering

*“Systems engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, and then proceeding with design synthesis and system validation while considering the complete problem. Systems engineering integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation. Systems Engineering considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs.” (International Council on Systems Engineering 2009)*

If LACPR used system engineering to manage risk of storm surge events, it would allocate 100% of the risk to the various elements of the proposed flood protection alternatives. The examples below illustrate how this might result considering risk allocation for physical assets or for human safety using the Multiple Lines of Defense template.

Note that for various storm events that 100% of the risk is allocated. Risk allocation varies with the different storm events. These illustration also contrast how risk allocation varies with physical assets and human safety. Insurance can be considered the last measure to protect physical assets by financial recovery. Obviously this does not apply to loss of life. Also the reciprocal relationship is found with evacuation. That evacuation is vital to protecting life, but has limited application to physical assets, since most assets are not readily mobile during an emergency.

These simple diagrams suggest the usefulness of true systems engineering analysis that allocates 100% of risks. The LACPR defines residual risk of surge due to overtopping of levees, but does not go the additional step to address the remaining flood risk in alternative arrays, such as overtopping of levees in New Orleans is residual risk which should then also include home elevation in the alternative.



# Assessment of the Planning Process and Risk-Informed Decision Framework

## 6-Step Planning Process

Congress directed the U.S. Army Corps of Engineers (USACE) to undertake the LACPR and consider a full range of flood control, coastal restoration and hurricane protection measures exclusive of normal policy considerations. The LACPR attempts to put together a 6-Step Planning Process to achieve the final recommendations for South Louisiana. The 6-Step Planning Process includes:

1. Problems/Opportunities
2. Inventory/Forecast
3. Formulate Plans
4. Evaluate
5. Compare
6. Select – Not completed as part of the Draft Final Technical Report

A key criterion for a successful step-wise process is ensuring that all of the previous steps are an accurate and thorough evaluation of the environment in which the analysis is taking place. In numerous instances throughout the 6-Step Process, major assumptions are made that if not validated, could render the entire process unacceptable. The National Research Council (NRC) Committee recognized this and other constraints on the process in the *First Report from the NRC Committee on the Review of the LACPR Program*. The NGO organizations evaluated the NRC's previous comments and the USACE ability to integrate these comments into the process and at which step in the Draft Final Technical Report. A summary of that evaluation is attached. The evaluation found that many of the concerns were occurring in the first three steps of the process. Without correctly addressing each step in the process, we can never expect to produce a product that is usable, acceptable, or achievable.

## Planning Horizons

One fundamental concern that can carry drastic implications into the future of coastal Louisiana is the planning horizons utilized within the LACPR report for planning and implementation. The LACPR effort fails to realize that the measures we impose on the landscape today are the same measures that will be on the landscape for hundreds and thousands of years, not just 50 or 100 years. The New Orleans levee system is a perfect example of how we may not be able to change the measures we put on the landscape today. There is no option to remove the levee system that surrounds New Orleans, as parts of the city have sunk to more than ten feet below sea level. The Netherlands is another example. The polder system began construction in the 1100's, and there are no other options for the Dutch but to maintain this vast, energy-intensive, cost-intensive, and non-sustaining landscape almost 1,000 years later. Although it is imperative to implement something quickly to cease or reduce the increase in risk that occurs every day, the USACE has to be cognizant and aware of potential impacts on a much larger planning horizon. The selected plan will most likely continue to have impacts on the landscape for multiple generations and potentially thousands of years.

Planning horizons vary from 50 to 100 years depending on structural versus coastal restoration measures. The variation in planning horizons for different measures could alter or bias the analysis. Structural measures will continue to depreciate with time, requiring more operations and maintenance costs specifically with

rising sea levels. Restoration has the potential to appreciate with time, having larger up-front costs but reduced operations and maintenance.

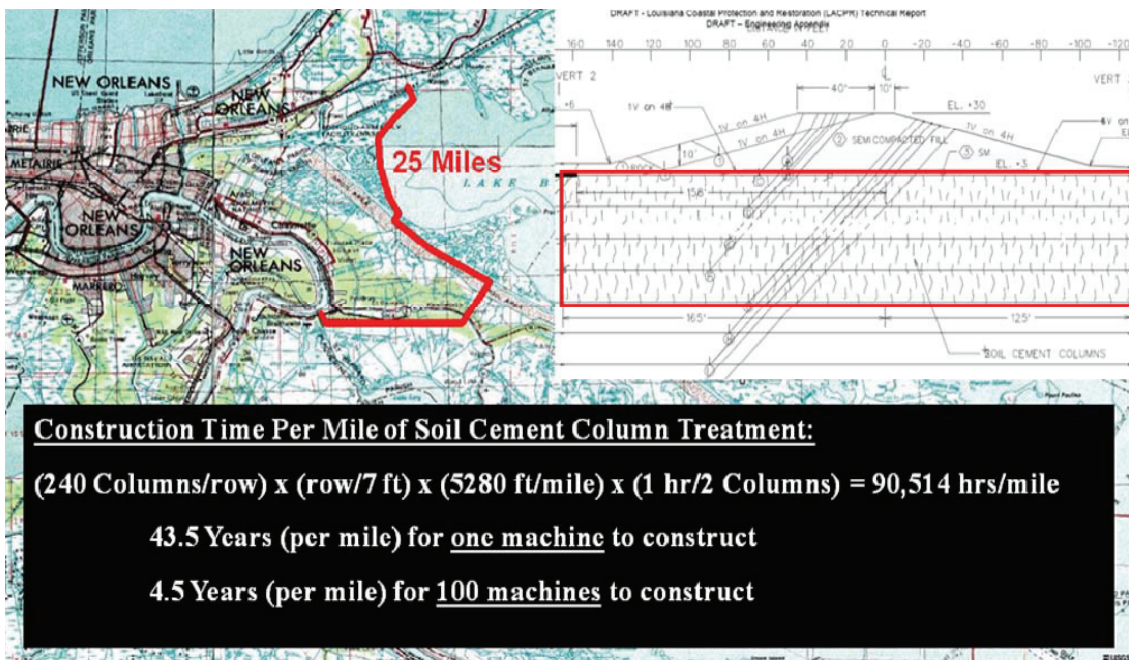
In addition, in the life cycle costs analysis, a zero residual value was assumed at the end of the 50 year period of analysis, which equates to an assumption that the system would have to be rebuilt in 50 years. By these statements, it is assumed that the coastal restoration plans would have to be built twice within the 100 year planning horizon, which is an unnecessary addition of costs. This type of analysis does not allow for the benefits of self-sustaining or long-lasting projects to be comprehensible.

In addition, there is greater variance in the timelines for implementation of plans.

- Structural Measures: As stated in the Draft Technical Report, structural measures can be implemented in 6 to 16 years. However, the Engineering Appendix states that these structures can take up to 40 years to implement (pg 38). In another portion of this appendix (pg 262), it states that the initial lift costs were based on a 14 year construction period. Most if not all of the levee systems proposed will require multiple lifts to reach design elevations. The Lake Pontchartrain and Vicinity project was started in 1965 and was not complete when Hurricane Katrina hit the coast in 2005. The project was not complete after 40 years. Since 2005, the USACE is working to finalize the levee and drainage system to the new 100-year storm surge levels by 2011. Thus, it will take 6 years to build upon a system that was already in place in most instances. Another example is the Morganza to the Gulf levee system. New engineering studies of this levee system by the USACE have determined a construction timeframe of over 37 years for a 100-year level of risk reduction. Therefore, the timeframe (6-16 years) used in the LACPR report is not a reasonable timeframe to implement structural protection measures for an entire coastal plan. This assumption concerning implementation time is unrealistic and will therefore bias the analysis of when risk reduction can be achieved and damages reduced.
- Coastal Restoration Measures: The USACE Principles and Guidelines stated that “appropriate consideration should be given to environmental factors that extend beyond the period of analysis”, therefore the restoration alternatives were evaluated from 2010 to 2100. The justification for this variance from the structural measures timeframe of 50 years is because “some alternatives were predicted to perform well at the end of the period of analysis but poorly after that point in time.” Construction time for restoration measures was estimated from 5 years (freshwater redistributions) to 25 years (shoreline protection, marsh creation, and ridge restoration). First, it is unreasonable to assume that a 100-year or greater levee system can be built in 16 years, but a ridge or shoreline protection will take 25 years to build. There is too much inconsistency within the implementation timeframes. Second, if some restoration alternatives were performing well at the end of the analysis that would mean that these measures were effective for 50+ years. These benefits over the 50-year timeframe are diminished over the 100-year timeframe, but how does that analysis compare to structural measures, which are only evaluated on a 50-year timeframe? Lastly, the restoration alternatives were constructed in 15 years and showed benefits after the 50-year timeframe, yet the LACPR assumes that salt marsh stabilization could take as long as 50 years, therefore there is no effect on surge or wave reduction. The inconsistencies in the timeframes used throughout the report are confusing and can lead to invalid analysis.

- Nonstructural Measures: The LACPR Report uses the uniform construction period of 15 years for nonstructural measures. Even though we feel that nonstructural measures could be implemented on a much quicker timeframe, we applaud the USACE for incorporating incremental implementation and the accrual of pre-base year benefits. Non-structural flood protection is generally regarded as a much more expedient solution than levee construction or other structural measures. The LACPR report, in its *Redundancy* section, recommends implementing non-structural measures inside structural measures *prior* to the completion of structural protection because non-structural solutions can be completed quicker. Both timeframes are skewed (non-structural slower and structural faster) in a manner that seems to favor structural solutions.
- Timeline to Address Uncertainties: One of the keys to the implementation schedule is addressing uncertainties to a level comfortable for the funding entity and the general public. Some of the uncertainties presented in the LACPR will take numerous years to analyze. For instance, one of the concerns of the NRC Committee was the availability of sediment to complete all the measures being proposed. The Draft Final Technical Report states that they assume the sediment will be available; however the Regional Sediment Budgets will not be complete until 2010.

In addition, some of the excellent concepts presented in the Engineering Appendix of the LACPR report will also have uncertainties in implementation. Specifically, the construction timeframes proposed do not seem feasible. One concept is to construct levees to elevation +30 feet using soil cement columns as a means to achieve the stability for the target design elevations. The time to construct the foundations for these levees is not addressed. Due to the large spatial extent of the proposed levees, it would take over 40 years for one deep soil mixing machine to complete one mile of soil columns. It would take 100 machines 4.5 years to complete one mile of soil columns. For a 25-mile levee alignment, it would take 100 machines over 100 years to install the columns. Clearly, this is not feasible from a cost standpoint nor from a timing and schedule standpoint.





Relative sea level rise (RSLR) is another uncertainty that could impact the risk reduction measures for hundreds of years. RSLR was evaluated over the next 50 years with three scenarios of change. It is imperative that we fully address the impacts of RSLR. Two of the most impressive engineered structures of the Dutch system, the Oosterschelde and Maeslantkering Storm Surge Barriers, which were completed in 1986 and 1997 respectively, will be insufficient for protection with a sea level rise of 50 centimeters. The Dutch anticipate a 50 centimeter rise in sea level in the next 40 years. So not only is it imperative to evaluate the impacts of RSLR on the risk reduction measures over a long timeframe, but it is also important to understand those measures, specifically restoration measures, that could combat RSLR and increase the risk reduction ability of these measures over time.

### **Risk Informed Decision Framework**

We continue to applaud the USACE for their use of a decision process outside of the normal policy considerations. The traditional cost-benefit analysis would not be able to incorporate the complexities of South Louisiana's landscape or the full benefits (economically, environmentally, or culturally) of this region. Unfortunately, the basis (Step 1 and 2) of the Risk Informed Decision Framework (RIDF) is flawed. Since the release of the Draft Technical Report, the lessons learned to improve the deterministic elements of the RIDF and the Multiple Criteria Decision Analysis (MCDA) have not been incorporated. Without proper development and utilization of the RIDF and MCDA, the tools can become manipulated and biased toward the certain outcomes dictated by the users. In other words, the decisions will not be transparent and open results of a stakeholder process but masked decisions of the USACE or other agency hidden within the tool itself. This potential manipulation of the RIDF and MCDA is of great concern in its continued development.

### Performance Metrics

The Draft Final Technical Report states that the selection of performance metrics was established to satisfy the planning objectives and reflects a combination of input from the technical team and stakeholders. We would argue that this is not the case. The metrics were developed by the USACE and may have been modified through input from stakeholders, but the metrics were not developed by stakeholders, which is a fundamental problem with the MCDA. The USACE used an example of buying a car to explain to stakeholders the process of value and weightings. The family was asked to identify the most important criteria and the example suggested that the family selected gas mileage, safety, color. The USACE fails to realize that none of the criteria the Corps proposes in the LACPR may be the most important to the stakeholders. Unless the metrics are developed by the stakeholders including the general public, then the results of the MCDA may not capture the true priorities.

### *Exclusion of Key Metrics*

The development of the performance metrics appear to incorporate only those items which the USACE is required to evaluate by law - specifically those metrics dealing with social, environmental, and economic issues. The only social impact metrics included were historic properties protected, historic districts protected, and archeological sites. These are completely inadequate to fulfill the objective to "sustain the unique heritage of coastal Louisiana by protecting historic sites and supporting traditional cultures." That objective does not even include basic sustainability of coastal communities and there is no mention of unique cultures, people, diversity, ties to land or sense of place being factored into the metrics. Potential loss of life is a key metric not included. We encourage the NRC to closely examine and adopt the recommendations of Dr. Shirley Laska and Dr. Robert Gramling included in the Economics Appendix titled *Expanding the*

*Identification and Measurement of the Human Consequences of Disastrous Flooding: Toward the Refinement of the “Other Social Effects” Account.*

The environmental metrics included direct wetland loss and indirect loss from structural measures aimed to meet the objective to “promote a sustainable coastal ecosystem.” These two metrics are required to be evaluated under NEPA. Additional metrics were included within the first version of the MCDA, however further refinement has occurred as a result of some major assumptions, mainly maintaining the current landscape. As a result of including only one alternative for coastal restoration, it resulted in nullification of two environmental metrics.

*Two [environmental metrics] were dropped from the multi-criteria decision analysis because they had no affect on the outcome of the rankings (i.e. results were the same with or without the metric). The two metrics dropped were wetlands sustained/restored and spatial integrity. These two environmental metrics were used to prioritize and identify restoration plans.*

The alteration of the MCDA based on this large-scale assumption is another example of ensuring that the initial steps in the 6-Step Process are completed correctly in order to move on to the next step with confidence and accuracy. It is inevitable that the LACPR Program will have to explore various restoration alternatives in the future, and that including only one restoration alternative does not qualify within the alternatives analysis framework of the National Environmental Policy Act (NEPA). At that time that the LACPR moves forward to an EIS and alternatives have to be incorporated, the MCDA will then be irrelevant as it does not incorporate a method for analysis of those alternatives based on stakeholder priorities.

#### Informing Stakeholders

The Draft Final Technical Report states the “MCDA has been a successful means to inform tradeoffs and is an effective means of communicating the wide spectrum of risks to stakeholders.” We would argue that this is not the case. First, the stakeholders were included by invitation and only 500 stakeholders were invited to attend. Although these individuals also represented larger constituents or industries, they were not inclusive of the large breadth of stakeholders in the 23,273 square mile project area and did not include the general public. The public was not made aware of these meeting through any advertisement. Therefore, the outreach effort performed by the USACE to inform stakeholders about risk and tradeoffs was extremely minimal considering the area of impact.

Secondly, many of the NGO organizations represented here attended the stakeholder meetings to provide values and weightings for the MCDA. The values and weights were collected on computers, however the program developed by the USACE was complicated and most of the participants did not understand which criteria were most important to them or how tradeoffs were being calculated. In addition, many of the criteria had changing scales. For instance, a high value and weighting for many metrics, such as employment impacted or construction time, meant a goal to minimize these criteria. Yet with other metrics, a high value or weighting meant a goal of maximizing the criteria, such as indirect environmental impact score and historic properties protected. These changing scales also led to confusion among the stakeholders. After attending these meetings and discussions with its participants, we have little confidence that the current values and weightings within the MCDA has any relevance at all to stakeholders’ priorities.

## Recommendation for the MCDA

1. All stakeholders, including the general public establish an objectives hierarchy to fully and uniquely characterize the important outcomes of each decision alternative;
2. A set of outcome measures of performance (or metrics) is developed by stakeholders to represent the performance of each alternative in terms of achieving each of the planning objectives exclusive of normal policy considerations;
3. The outcomes of the alternative plans are modeled and, to the extent there are uncertainties present that may significantly affect performance outcomes, this evaluation of plans is replicated over a set of scenarios that represents a range of possible conditions during the performance phase;
4. Once all the evaluations are complete, a multi-attribute utility function is developed (based on stakeholder assigned values for performance metrics) to assess the overall utility of each plan given its performance in terms of achieving the objectives;
5. Ranking plans based on their individual utility scores is used to provide an indication of stakeholder preference of plan options available; and
6. The RIDF procedure utilizes outputs of evaluations of other decision objectives (i.e. cost efficiencies and project effectiveness) to contrast with stakeholder preferences to identify a final array of alternatives (or top performing plans across all decision objective considerations) and to display tradeoffs among these alternatives for decision makers in a transparent and open process.

## LACPR Alternatives Analysis

The stated goal of the LACPR study, following the direction of the Congress, has been to consider a full range of flood control/hurricane protection, coastal wetland protection and restoration and non-structural/risk-reducing measures that will reduce the level of storm damage risk to a prescribed level. This is a very ambitious goal, which was not achieved in the current Draft Final Technical Report.

### **LACPR's Presumption of First-Guess Alternatives are Best**

The classic Corps' planning process (LACPR Figure 1.1) develops alternatives, evaluates alternatives and selects an alternative. There is an assumption that a priori alternatives based on limited analysis will include an alternative that is actually the best of all possible alternatives. This works for many projects of much less complexity, uncertainty and less technical analysis. This is not the case for LACPR report. The plan formulation process for the LACPR did not have the benefit of massive amounts of critical data regarding surge, ecologic and cultural impacts. The LACPR and future extension of the LACPR process should not be rigidly confined to the current LACPR alternatives. It is very likely that alternative refinement or alternative hybrids are likely to produce significant benefits.

### **Robustness of Alternatives**

The array of 107 alternatives is misleading since more than 56 of these are not comprehensive alternatives. *It is only the comprehensive alternatives that are minimally qualified to be considered a Multiple Lines of Defense (MLOD) approach. Any other narrower alternative defies common sense.* The non-comprehensive alternatives do not have minimal inclusion of essential elements of non-structural, coastal restoration or structural measures. The non-comprehensive alternative analysis provides insight into the decision process but the alternatives are not by themselves viable alternatives. Therefore in considering the realistic alternatives, the focus is on the comprehensive alternatives.

Examination of the comprehensive alternatives illustrates a lack of robustness, leading to narrower choices. In PU3a, for example, the Morganza to the Gulf alignment is in all the comprehensive alternatives. This recommendation is in spite of the LACPR's description that induced development will be addressed by considering alternative alignments. It is also disturbing that for all planning units only one restoration plan was considered for all the comprehensive alternatives for each planning unit. For example in Planning Unit 2, thirteen comprehensive alternatives of levees, non-structural elements are included but all alternatives have the same restoration plan (R2).

### **Alternative hurricane protection structures and levee alignments**

The USACE deserves credit for the advances it has made in modeling the impact of different kinds of storm events (LACPR Summary Report p. 10). As a result of this work, we have much better tools than we did a few years ago to model the impact of alternative hurricane protection projects.

However, it seems the major focus of the Corps' LACPR-related work over the last 3 ½ years has been looking at alternative levee-type measures. The amount of time and effort that has gone into the structural component of hurricane protection is enormous. The major policy question with the assessment of various hurricane levee alignment proposals is the inertial tendency within the USACE to pursue cross-basin levees, such as the Donaldsonville to the Gulf - GIWW levee alignment rather than the Ridge alignment that

incorporates major features of the swamp alignment leaving the Basin open to storm surge allowing for its dissipation.

### **LACPR Does Not Use All Restoration Methods**

The LACPR report includes very few options for restoring our coastal wetlands beyond LCA, including many coastal restoration projects identified in the State Master Plan and authorized in 2007 WRDA. The report also fails to use newly elevated land and restored wetlands, including restored cypress swamps, as a key flood risk reduction strategy. Even restoration techniques that have been proposed for years were eliminated from this evaluation.

In Planning Unit 4, restoration relies solely on marsh creation and shoreline protection. Without natural system function restoration, or preventive measures such as salinity control structures, any mechanically-rebuilt marsh will be subject to the same forces that led to loss of the original marsh. The HET did not fully evaluate the resources available to complete the level of marsh creation proposed by the alternatives. The assumptions about sediment resources, funding resources, and engineering ability for the next 100 years are unrealistic and do not seem to be supported by objective data. This analysis has a way to go before being able to lend itself to on-the-ground restoration projects that can achieve the objectives of ecosystem sustainability.

The LACPR report must consider and incorporate large-scale diversions or potential modifications/realignment of the Mississippi River in order to convey large volumes of Mississippi and Atchafalaya River sediment into the sediment-starved deltaic landscape. This will require the USACE to re-think the management of the river and its navigation system, a system that is increasingly unsustainable as the mouth of the river sinks. The USACE will have to consider the wetland system as a means of protection for these navigation systems. If adopted, this new framework for managing navigation for flood control and restoration purposes could play an increasingly important role in storm risk reduction.

### Lack of Proposals to Manage the Mississippi River

The proposed diversions in most of the alternative requires significant re-allocation of Mississippi River discharge into wetlands via various large and small river diversions. The cumulative impacts to the river hydrology sediment transport and ecology are significant.

The LACPR states:

*“It should be noted that the LACPR team has not determined the cumulative impacts that multiple diversions may cause on the system. Nor has the team quantified the impacts on navigation or flood control on the Mississippi River. In addition, technical issues for freshwater diversions persist, particularly for the larger scale diversions. These issues include how well the measures may actually perform, how they should be operated, and the tradeoffs that will be required such as over-freshening of marsh areas and displacement of associated fisheries and wildlife. These proposed measures would be expected to evolve over time and be further studied as the USACE looks to improve its understanding of large-scale diversions.” LACPR p 219*

This tepid approach suggests there is a lack of serious commitment to address the larger issue of re-managing the river for traditional uses and coastal restoration even when it benefits flood protection. Proposals such as

the MLODS report proposal to close selected passes on the Lower river while maintaining one channel for deep-draft navigation need to be evaluated.

### **Analyze all potentially useful non-structural measures**

Perhaps the most creative and unanticipated part of the LACPR report has been the work addressing the contribution of non-structural measures to risk reduction. Such measures include preventing new development in flood-prone areas, pursuing buy-outs in high risk areas where other non-structural or hurricane protection levee costs are very high, raising building elevations, assessing the quantitative impact of those measures on risk-reduction and incorporating alternative non-structural measures into comprehensive alternatives. The USACE has the necessary authority to implement these measures, but, almost four years after Katrina and Rita, has not exercised its authority. The USACE is missing an opportunity to take the lead in non-structural implementation and influence rebuilding efforts. The LACPR contains numerous potential non-structural pilot projects that should be implemented as soon as possible. The USACE should be leading the effort on non-structural. The LACPR does well to acknowledge other Federal and State non-structural efforts and should, as it suggests, coordinate with these efforts, but should not sit on the sidelines. The USACE could exert much more influence over the design and implementation of a non-structural program by making it a condition of significant federal hurricane protection investments that could induce development in low-lying, flood-prone areas.

### **Incorporating Evacuation Alternatives**

The LACPR report provides an overview of planning considerations including the following problem statement describing the nature of risk to the planning area:

#### *Problem Statement*

*The people, economy, environment, and culture of South Louisiana, as well as the Nation, are at risk from severe and catastrophic hurricane storm events as manifested by:*

- *Increasing risk to people and property from catastrophic hurricane storm events.*

#### *Objectives*

*The following planning objectives were established to help solve the problems defined above and to develop the full range of flood damage reduction, coastal restoration, and hurricane risk reduction measures:*

- *Reduce risk to public health and safety from catastrophic storm inundation. (p.30)*

In addressing the risk to people, public health and safety, the LACPR report further distinguishes between two categories of risk reduction:

*In general, within the LACPR planning area, authorized hurricane risk reduction projects fall into two categories of risk reduction. The first category applies a Standard Project Hurricane design standard for urban areas. The Standard Project Hurricane was established as the design storm to be used for highly populated areas where there is a chance for loss of life and great economic impact due to loss of property. A second category of risk reduction has been applied to less developed areas where property protection was the primary emphasis and loss of life was addressed by imposing mandatory evacuation of residents; (p. 59)*

We would agree that it is extremely difficult to achieve 100% evacuation for less developed areas and exponentially more difficult to achieve 100% evacuation for highly populated urban areas even under mandatory evacuation scenarios. But despite this acknowledgement, we are concerned that the LACPR report does not place stronger emphasis on evacuation as the primary risk reduction measure designed to protect human life and public safety in both less developed and highly populated urban areas. Additionally we are greatly concerned that risk reduction measures associated with a Standard Project Hurricane do not place a strong emphasis on evacuation as the primary risk reduction measure for protecting people in highly populated areas.

The Multi Criteria Decision-Making Analysis (MCDA) further embraces this implication by titling one criteria “Population Impacted.” We recognize that a population can be impacted due to flood damage or wind damage to their assets, infrastructure, houses and buildings without actual risk to lives or public safety, but there is a clear implication, repeated in the MCDA summary that “Population Impacted” refers to the protecting people rather than more specifically protecting assets.

*For the LACPR participants, protecting population was most frequently the most important attribute followed by the reduction of direct and indirect environmental impacts. (p. 136)*

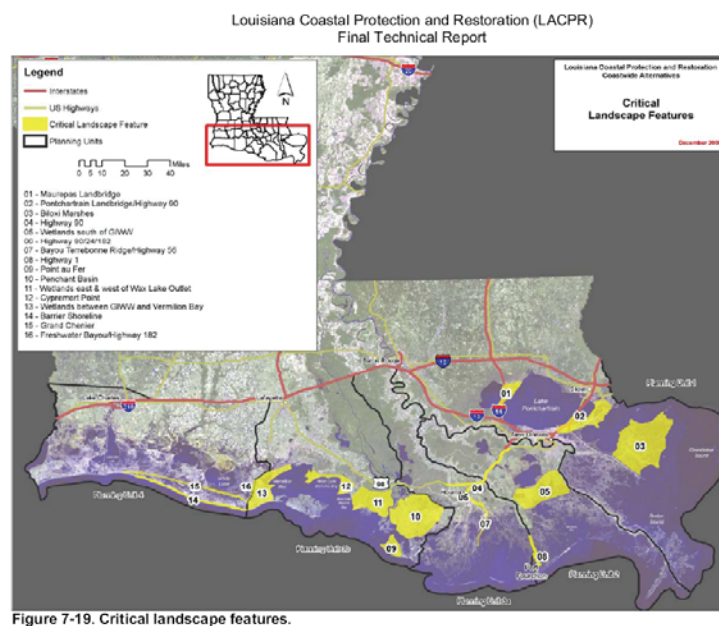
If in fact the LACPR continues to emphasize protection of human life as a significant planning objective and stakeholders are lead to believe that their input reflects a desire for higher personal safety then a substantially more robust evacuation component must be incorporated into all the alternatives proposed in the LACPR report. While we understand that evacuation planning and execution fall outside the USACE’s authority, the cooperation and partnership between the State and USACE should have produced a clearly evident and well articulated evacuation component designed to achieve a substantial, cost-effective reduction in risk to human life and public safety.

## Use of the Multiple Lines of Defense Strategy and Coastal Restoration

Congress directed the Corps to undertake the LACPR and consider a full range of flood protection measures including coastal restoration. To achieve this, the Corps adopted the Multiple Lines of Defense Strategy (MLODS) (Lopez 2006; Lopez JCR draft, 2009). This strategy is a proposed method to integrate the natural landscape and traditional flood protection such as levees into a single, sustainable flood protection system. The state of Louisiana also adopted this strategy in their State Master Plan. *The LACPR provides significant data that supports the MLODS but falls short of fully applying MLODS to the formulation process and alternatives evaluated.*

### Critical Landforms Features (CLF), Critically Important Landform Features (CILF) and Lines of Defense

Some of LACPR's evidence supporting the MLODS is the general pattern of attenuated surge along the coast, but also the identification through the surge models demonstrating the presence of "Critical Landform Features" (CLF), which beneficially reduce surge attack along the coast by slowing surge movement during a storm event. The CLF's identified in the LACPR (p 78) are land bridges, ridges and other types of landforms proposed by MLODS as "lines of defense". The CLF's are actually an important subset of Lines of Defense, and most of those identified by LACPR were previously proposed in the NGO report *Comprehensive Recommendations Supporting the Use of the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana* (MLODS draft report, 2007 draft and MLODS Version I report, 2008). In the LACPR report, the CLF's were identified considering surge only, and do not capture other important Lines of Defense. Presumably due to the lateness in the study process to identify the CLF's, the LACPR report is clear that the CLF's were not applied to the alternatives or in any way incorporated into the study. Also not all of the potential CLF's which affect surge were identified (e.g. Marsh Island) and further work is needed to identify them. Clearly many of the CLF are in need of restoration. For example, the Maurepas land bridge is described as a relic (dying) forest by local researchers.



Critical Landscape Feature identified in LACPR by "stacking" of surge (lines of defense), but were not integrated into alternative.



Further evidence in the LACPR report supporting MLODS is the identification by the Habitat Evaluation Team (HET) of “Critically Important Landform Features” (CILF). In the LACPR, the CLF’s and CILF’s were derived separately but both represent lines of defense.

The HET describes their consideration as follows:

- Coastal restoration strategies that contribute to sustainable hurricane risk reduction;
- Individual measures of varying sizes to restore and maintain landscape features and essential wetland maintenance processes;
- Combinations of individual measures which provide ecosystem-level synergistic benefits;
- Alternative plans that achieve or exceed no net loss of coastal wetlands;
- The potential for trade-offs associated with various restoration alternatives (e.g. near term protection vs. long-term sustainability and fisheries changes vs. deltaic processes).”

The HET was not entirely consistent in applying these considerations and also did not benefit from all the surge information early in the study process. The HET team is composed of coastal restoration specialists and not surge modelers or storm dynamics specialists. Therefore, the CILF’s identified by HET are driven more from an organic or coastal integrity standpoint. The HET also has many years of experience in coastal Louisiana and know the natural landscape well.

The CLF’s and the CILF’s, therefore, both represent lines of defense, but from two disciplinary perspectives (surge modelers and coastal restoration specialists). The LACPR report does not integrate the CLF’s and CILF’s even though it is apparent that they are both ‘critical’ and need to be considered through all aspects of the LACPR. When the CLF’s and the CILF’s are combined on a map it is apparent that there is dual identification of some lines of defense but also that these features complement each other, that is, the combined map of CLF and CILF is a very good template for restoration in total. The combined map is very similar to the proposed features in the MLODS reports (2007 and 2008, and also the priority features described by the NGO’s as the Louisiana Coastal Lines of Defense”). These features are also very similar to those included in the State Master Plan (SMP). *Therefore, the culmination of major planning by NGO’s, the State, and the Corps has caused strong convergence on a particular set of landscape features for flood protection and coastal integrity, which can be referred to as Lines of Defense. Unfortunately in the LACPR, these key features were not entirely captured in the comprehensive alternative analyses.*

## **Priority Lines of Defense NOT Included in LACPR Comprehensive Alternatives**

### **PU 1**

- Only R2 Restoration in Comprehensive Alternatives
- Missing 5 Lines of Defense
  - Maurepas Land Bridge (LACPR CLF and MLODS report, but no restoration plan in LACPR)
  - Chandeleur Islands (SMP and MLODS report)
  - Bayou la Loutre Ridge (SMP and MLODS report)
  - MRGO Lake Borgne LB (SMP and MLODS report)
  - Lake Pontchartrain Shoreline (SMP and MLODS report)
- High Level alternative and Lake Pontchartrain Barrier alternative rankings reversed in MCDA manipulation
- Top structural alternatives conflict with restoration

### **PU 2**

- Only R2 Restoration in the Comprehensive Alternatives
- Missing 2 Lines of Defense
- Buras Delta building diversion (MLODS report only)
- Marsh creation on Barataria Basin Land Bridge (LACPR CLF and MLODS report)

**PU 3a**

- Only R1 Restoration in the Comprehensive Alternatives
- All Lines of Defense included
- Morganza to Gulf levee in all alternatives

**PU 3b**

- Only R1 Restoration Alternative
- All Lines of Defense included

**PU 4**

- Only R1 Restoration Alternative
- Missing 2 Lines of Defense
- Chenier Ridges (LACPR CLF and MLODS report )
- Salinity control structures on Calcasieu Ship Channel, Sabine and GIWW at Gum Cove
- Sustainability threat due to saltwater intrusion not addresses and conflicts with Calcasieu Ship Channel enlargement.

It is also necessary to point out that some types of Lines of Defense were not addressed at all or not considered sufficiently. ***Evacuation is a critical element in risk reduction, and it may be the only line of defense that actually addresses risk reduction to loss of life. Evacuation is not included in any alternatives.*** Evacuation is addressed in the State Master Plan. The LACPR report suggests that evacuation routes might be treated as “critical infrastructure” but entirely misses the opportunity to alter or design alternatives considering existing, improved or new evacuation routes. The state of Louisiana has an official evacuation plan and routes, but these apparently did not influence the LACPR alternatives or the analysis. This is a glaring systemic oversight with very real specific negative consequences. For example, the Interstate 10 bridge being constructed over Lake Pontchartrain (to replace the bridge damaged by Hurricane Katrina) is being built at +30 feet MSL (well above surge heights), but the bridge’s south shore landing is at about 7 feet MSL where it is exposed to storm surge. This short stretch of Interstate 10 is very vulnerable to inundation and is the eastern evacuation and re-entry route for the Greater New Orleans Region and St. Bernard Parish. This is a major weak link in evacuation for southeast Louisiana.

**LACPR Recommendations Detrimental to Surge Management**

Some components of alternative plans may actually increase risk or at least seriously challenge the management of storm surge. These could be considered “Anti-Lines of Defense”. These are levee alignments or other significant coastal elements that influence surge detrimentally. Some examples are the Morganza to the Gulf Levee which was included in all comprehensive alternatives for Planning Unit 3a. The proposed levee creates a sharp angle with the existing Larose to Golden Meadow levee. ***This is creation of a new “funnel” which is twice the size of the infamous MRGO funnel.*** Another problem levee is along the GIWW in Barataria Basin (Planning Unit 2). With this levee storage capacity of the Barataria Basin is dramatically reduced and small funnel geometries are created on either side of the basin. Surge height is artificially increased over 100% by the levee alignment. This type of levee has a doubly-negative effect in regard to the coast: (1) Wetlands inside the levee are not able to influence surge (attenuation and storage) and

(2) wetlands outside of the levee are less effective because of the higher surge levels. Another example of an “Anti-Line of Defense” is the Calcasieu Ship Channel, which is already a conduit for storm surge and saltwater intrusion. The ship channel is being considered for significant enlargement which could potentially increase wetland loss and storm surge heights into Lake Charles. The proposed enlargement is not addressed in the LACPR report.

### **LACPR Recommendations Detrimental to Coastal Wetlands and Sustainability**

Four levee alignments in the alternatives evaluated cross major hydrologic basins (PU 1- LP barrier plan, PU 2 GIWW levee; PU 3a Morganza to the Gulf; PU 4 GIWW levee). These levees are described as “leaky levees” which would in theory allow some hydrologic function for the benefit of the estuary. The HET qualitatively evaluated the indirect effect of these cross basin levees, and generally rated them as -7 or -8 on a scale of +8 (best) to -8 (worse). What the report fails to describe is the quantitative scale of the potential impact of these levees. The estuarine area of marsh, lakes, etc. included behind these four levee alternatives is more than 2,500 square miles. The combined wetlands potentially impounded within these levees is more than 1/4 of the remaining coastal wetlands in Louisiana. Considering Louisiana has lost more than a third of historic wetlands (2,100 square miles), to place such a large wetlands area (over 1,000 square miles) under further threat is a major issue that is not seriously evaluated in the LACPR report. *The LACPR did not model the hydrology under fair weather conditions to assess the daily hydrology much less the larger biological issues of migration of aquatic estuarine species, sediment transport, nutrient or water quality etc.*

### **LACPR Lacks Wetland Habitat Goals**

The Multiple Lines of Defense Strategy proposes that wetland habitat goals need to be established to assure that the cacophony of coastal projects still result in a functioning estuary with the best chance of being sustainable. Diversions that are proposed in the LACPR are based on sustaining or rebuilding emergent wetlands. This is vital, but the performance of the diversions and the effect on the estuary needs to be evaluated beyond conceptually. *The inevitable interaction of levees, flood gates, barriers, weirs, leaky levees oyster reefs, with diversion is blithely ignored.* Habitat goals should be proposed to force the issue that all these projects must consider the ebb and flow, and biological function of the estuary. The goal is not just to avoid conflicting project but to find reinforcing aspects of coastal projects.

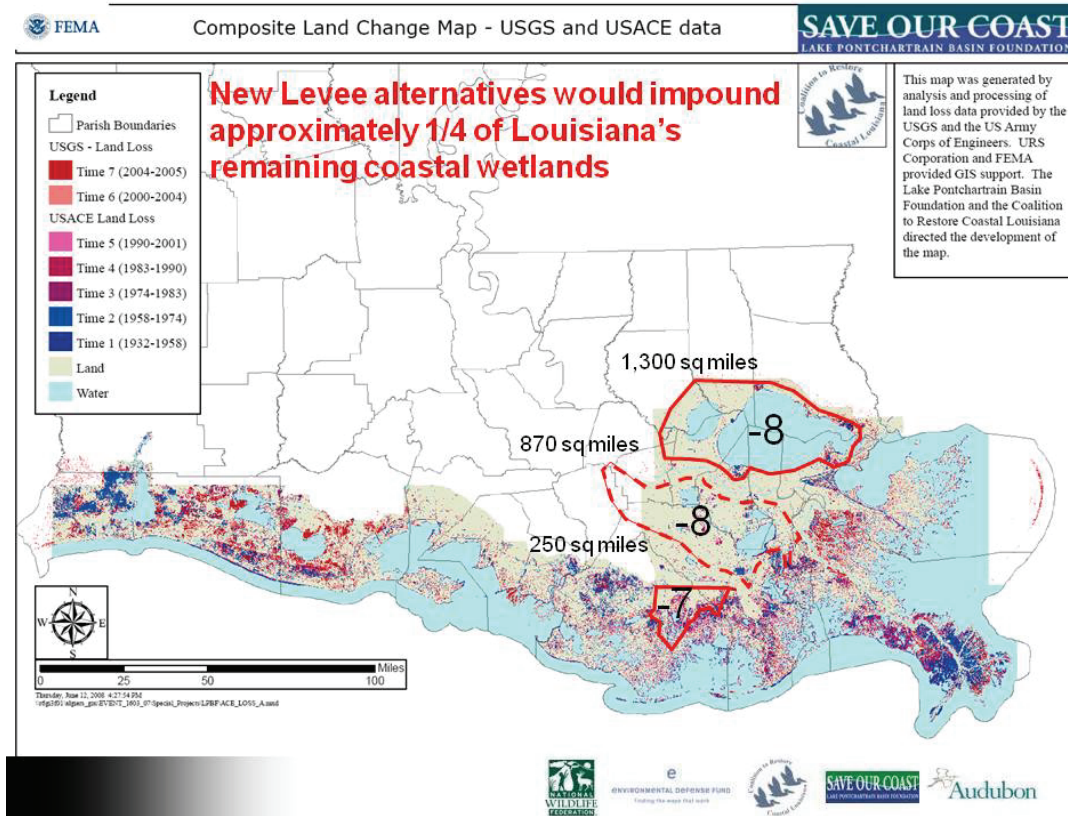
### **Critique of the LACPR’s “Top Performing Coastwide Plan” (CP-7)**

As would be expected the end result of the LACPR’s “top performing” coastwide plan is based on the entire LACPR body of work, and so it has the cumulative good and bad of the LACPR analysis. It is positive that the top performing plan (CP-7) is a comprehensive alternative and so it includes many types of Lines of Defense. Not all the Lines of Defense were included and some were systemically absent, such as evacuation. In addition, the top performing plan includes at least two anti-lines of defense (the Morganza to Gulf funnel geometry and an unaddressed Calcasieu Ship Channel). The resulting wetland landscape is entirely undefined since there are no habitat goals. Non-structural solutions are limited to the traditional Corps attitude the home elevation is only in lieu of levee protection. No home elevation is included in CP-7 for any area inside of a levee. This is in spite of the fact the New Orleans is currently proposing a Master plan for the city with aggressive home elevation for long terms sustainability of the region. CP-7 also includes two levee alignments that have significant wetland extent inside the levees (PU 1 and PU 3a). *The CP-7 is*

*probably not the very best of the alternatives evaluated and certainly is not the best possible alternative (because of the limited robustness of the comprehensive alternatives).*

### Barrier Levee Emphasis

It is becoming clear the Corps is choosing a heavy reliance of alleged risk reduction by use of large levees low on the coast with a minimal coastal buffer. This bias is evident now in Planning Unit 1, 2 and 3a, where limiting alternatives or by altering the evaluation metrics, the big cross basin levees are pushed toward the top of ranking. The cross-basin alignments within these planning units could place as much as 1/4 of Louisiana remaining wetlands behind levees.



In all three cases, these three levees significantly amplify surge placing huge dependence on the levee in each basin. This approach when coupled with lack of elevation and evacuation inside the levees is more aptly described as a “One Line of Defense” strategy, and should not be described as a Multiple Lines of Defense approach, but more importantly is creating high stakes risk while actually causing a more dangerous surge elevation. An approach which keeps surge elevations lower and widely dispersed, coupled with redundancies of non-structural lowers risk to immobile assets. When including evacuation, there is further reduction in risk to health and safety of local residents.

## Justification of Levee Alignments in LACPR

The following excerpt for the LACPR is critical to future discussion of levee alignments. It gives a one-sided view of the option to locate levees some distance from population centers.

*“Structural measures provide the greatest level of risk reduction when removed from the immediate proximity of development. All structural measures are capable of providing significant risk reduction with increasing design levels. However, the technical evaluation has indicated that levee alignments that allow some distance between the levee and the development footprint produce greater, and often significant residual protection above the indicated design level. The evaluation results show that 100-year level structural alignments that meet this parameter may provide significant risk reduction for the 400-year to 1000-year surge events. Structural alignments which are adjacent to developed areas (e.g. ring levees) are susceptible to higher consequences once the design level surge is exceeded. This effect is correlated to the relative capacity for storing flood water once surge exceeds the design associated with each plan.”*

**First**, the conclusion that “residual protection” occurs by locating a levee away from a population center assumes that the population will continue to be located in the same area and that there will be no induced development. Induced development associated with levee construction is an historical fact and the Corps has an extremely poor record of preventing induced development even when it is in harm’s way. The proposal to move levees away from population centers is more likely to increase residual risk rather than residual protection.

**Second**, it should be clear that enclosing a larger area within an levee actually reduces the area for accommodation of surge outside the levee, i.e. it will likely result in higher surge levels requiring a higher levee and increased cost.

**Third**, since population centers are located near natural ridges with better spoil properties, displacing levees away from population centers may place levees on weaker soils requiring significantly higher initial cost and maintenance cost.

**Fourth**, off-ridge levee alignments impound wetlands which have a long history of decline once impounded. The LACPR recognizes this in the HET assessments of proposed levees in PU 1, 2, and 3a, which scored very low.

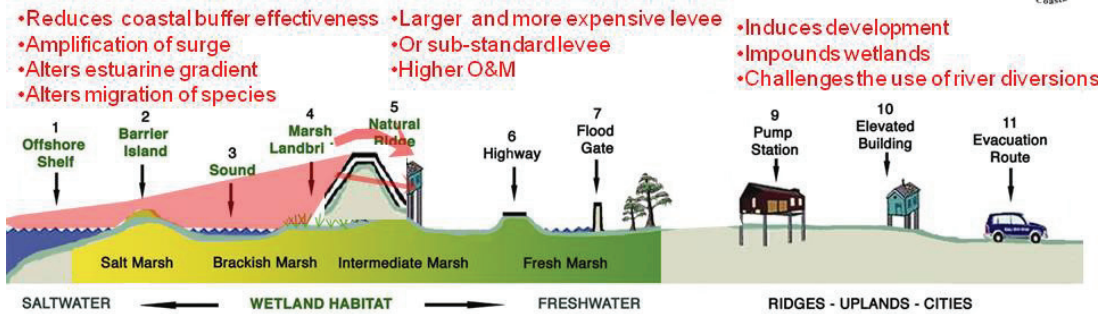
**Fifth**, off-ridge alignments that are proposed in the LACPR dramatically dissect the natural basin estuaries along the coast. This will alter the hydrology and natural estuarine processes such as migration of aquatic species that will affect not just Louisiana coastal fisheries but also fisheries of the Gulf of Mexico which are dependent on migration into Louisiana estuaries.

The figure below depicts two general approaches to levee alignments. The upper illustration depicts large linear levee low on the coast. Some refer to this as the “great wall” The lower illustration depicts the Multiple Lines of Defense approach in which levees are generally further inland and closer to population centers. These LACPR seems to strongly favor the great wall which has the enumerated issues shown on the top of the figure.

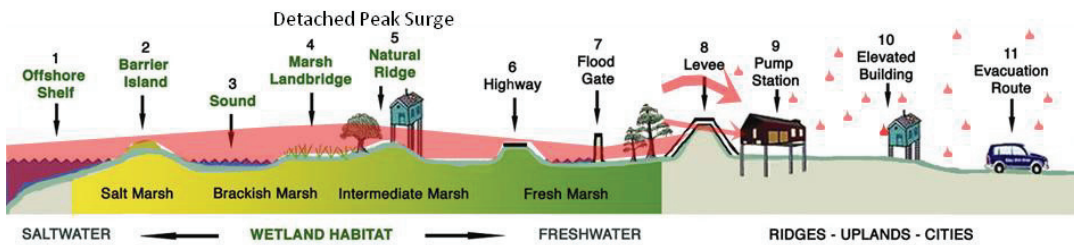


### Cross-Basin Levee With surge

Examples: Morganza to the Gulf (2002) and Donaldson to the Gulf (GIWW)



### Ridge Levee With surge



Source: Lake Pontchartrain Basin Foundation & Coalition to Restore Coastal Louisiana, 2008)

## **Future Challenges to Louisiana's Crisis of Vulnerability**

### **State Governance**

- State funding will be limited
- an over zealousness in the reliability of levees encourages blind faith in their may compromise coastal environment and flood protection
- Recurring storms require emergency responses and drive reactionary policies

### **Federal Governance**

- State & Corps' relationship is highly stressed
- Corps' District organization is still in a Post-Katrina recovery mode
- Mandatory (3-year) rotation of District Engineers weakens Corps' senior district management
- Corps has limited ability to implement the breadth of agency accountability needed for MLODS
- Corps lacks ability to coordinate with other Federal agencies, e.g. FEMA
- Corps continues to underperform in project planning and construction
- LACPR has technical weaknesses, but may be salvageable
- LACPR has no recommendations and is not congressionally actionable
- Multiple project authorizations create ambiguity and may lead to lower standards, e.g. pre-Katrina designed projects are being pursued
- Litigation and threat of litigation may compromise projects

### **Environmental**

- Louisiana's coast is still declining
- Politically engineered flood protection (levees) trumps coastal restoration/preservation and long term regional sustainability
- Wetland hydrology is not being given sufficient consideration and may exacerbate loss
- State & Corps disagree on the state's cost share for MRGO Ecosystem Restoration construction, which will likely delay implementation

### **Louisiana Residents**

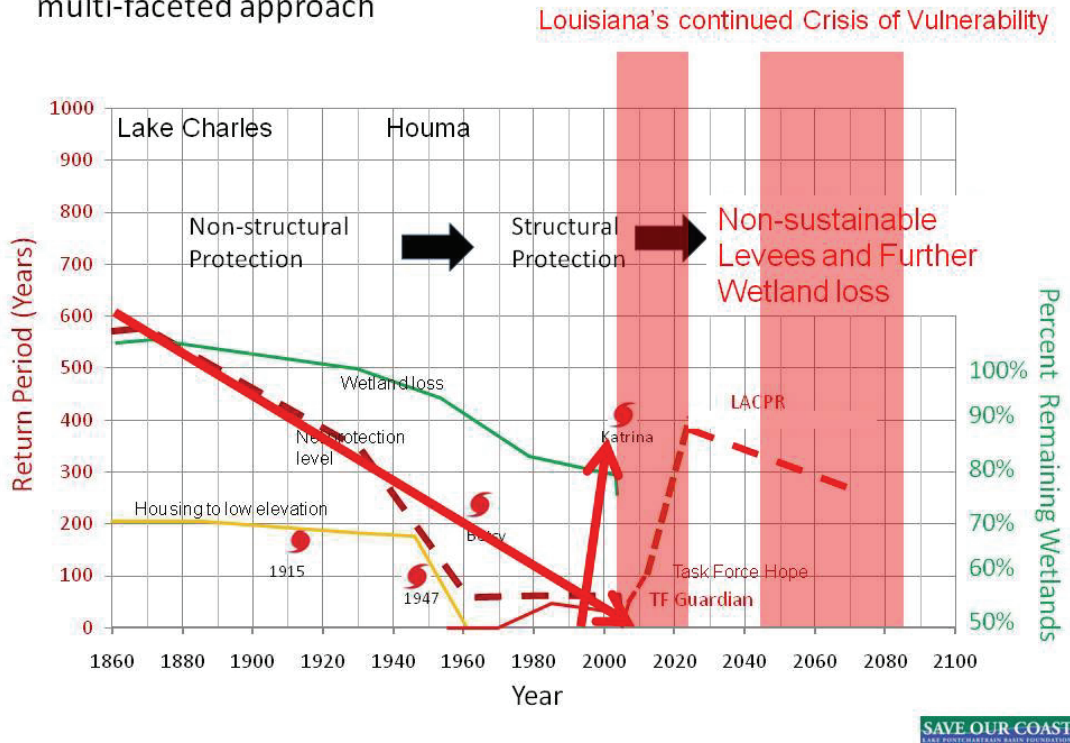
- Storms will continue to threaten lives, livelihoods, and the cultural traditions of south Louisiana
- Costly storm-driven retreat from the coast will continue

### **Greater New Orleans region**

- 100 year level of protection may not be reached by 2011
- New Orleans Draft Master Plan aggressively supports elevating homes within the city, but this will require significant funding

The figure below depicts the unfortunate, but more likely future of efforts to address Louisiana’s Crisis of Vulnerability. It will take extraordinary measures to overcome the physical and institutional challenge for Louisiana to emerge from this crisis. At this time, the LACPR embodies the federal planning response to Hurricane Katrina which is symptomatic of this crisis. It is clear that any comprehensive solution requires more than the Corps of Engineers. True implementation of the Multiple Lines of Defense Strategy requires multi-institutional engagement which is often beyond the scope, capacity and tradition of the Corps. Therefore, the LACPR must become a catalyst for the institutional changes required for success.

History of New Orleans Hurricane Flood Protection requires a new multi-faceted approach





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July 24, 2009

Mr. Tim Axtman, PM-OR  
USACE New Orleans District  
P.O. Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160

Dear Mr. Axtman:

Thank you for the opportunity to submit our comments on the Louisiana Coastal Protection & Restoration Final Technical Report. Attached please find summary policy comments, a copy of our comments on the Draft Technical Report to the National Research Council (NRC), and a copy of our comments on the Draft Final Technical Report to the NRC. We would be happy to expand on any of the comments laid out in the attached documents upon request.

Regards,

Coalition to Restore Coastal Louisiana  
Environmental Defense Fund  
Lake Pontchartrain Basin Foundation  
National Audubon Society  
National Wildlife Federation

## LaCPR Final Technical Report: NGO Review and Recommendations

### Background

To protect the communities, infrastructure, and environment of coastal Louisiana, all levels of government must take multi-faceted action in three areas: (1) design levees to protect major urban communities without fostering new development in wetland areas; (2) support individual and community efforts to adapt and increase resilience to ecosystem changes; and (3) reconnect the delta system to enable the River to build and restore coastal wetlands and barrier islands.

Congress has required that the Army Corps of Engineers (the Corps) develop this type of multi-faceted approach in the Louisiana Coastal Protection and Restoration plan (LaCPR), which analyzes storm risk reduction and must integrate the comprehensive coastal restoration plan required by WRDA 2007, § 7002. When authorizing the LaCPR, Congress required that the Corps consider a full range of flood control, coastal restoration, and hurricane protection measures. The LaCPR does partially provide necessary analysis to allow the Corps, Congress, and agencies at the local, state, and federal efforts to move forward with some elements of hurricane protection and ecosystem restoration. Unfortunately, the LaCPR does not provide a comprehensive analysis of how to integrate these measures nor does it provide a prioritization for different projects or measures. Because of these flaws, the LaCPR cannot serve as the necessary comprehensive planning document that is needed by communities, all levels of government, and the Congress.

The Final Technical Report released by the Corps has 107 alternatives. The majority of the alternatives do not analyze the full suite of risk reduction options needed to protect Louisiana's communities and economic infrastructure, including essential elements of non-structural, coastal restoration, and structural measures. Without developing and analyzing alternatives that include all of the elements necessary, the LaCPR is incomplete and cannot serve as a planning tool for storm protection for coastal Louisiana. With respect to coastal restoration, the LaCPR is largely limited to analyzing the authorized Louisiana Coastal Area (LCA) projects. While the LCA projects are a starting point to move forward on coastal restoration, they are not sufficient and the Corps must consider modifying them as required by WRDA and also analyze additional large-scale projects.

Despite the LaCPR's limitations, the LaCPR contains analysis that supports the need to quickly move ahead with large-scale coastal restoration projects and an aggressive nonstructural program.

**The Organizations Submitting These Comments Make the Following Recommendations to the Corps and Local, State, and Federal Governments and Agencies to Protect Louisiana's Coastal Communities, Economic Infrastructure, and Environment.**

- 1. The White House, through the Council on Environmental Quality, must convene the "Coastal Louisiana Ecosystem Protection and Restoration Task Force" that Congress established in the Water Resources Development Act of 2007 § 7004.*

Congress established the “Coastal Louisiana Ecosystem Protection and Restoration Task Force” in WRDA § 7004. Task Force members include the Secretary of the Army, the Secretary of the Interior, the Secretary of Commerce, the Administrator of Environmental Protection Agency (EPA), the Secretary of Agriculture, the Secretary of Transportation, the Secretary of Energy, the Administrator of Federal Emergency Management Agency (FEMA), the Commandant of Coast Guard, the Chair of the Coastal Protection and Restoration Authority of Louisiana, and two representatives of the State of Louisiana selected by the Governor. Because this broad group of agencies have incredible responsibilities and authorities for sustainability of the vast national resource of coastal Louisiana, this Task Force is uniquely qualified to move coastal restoration forward. The Task Force, however, has failed to meet and assume their Congressional charge. We recommend that the White House, through the Council on Environmental Quality (CEQ), convene this Task Force for the first time.

At stake in coastal Louisiana is the sustainability of a vast national environmental and economic complex. Within this ecosystem are abundant interests and values, as evidenced by the array of federal agencies that Congress felt necessary to include on the Task Force. White House level attention is required to balance those values, interests and goals. The Task Force is also necessary to provide leadership and guidance to ensure the LaCPR provides the mandated plan in a realistic and timely manner. Thus, CEQ is the right entity to lead and guide it and to help figure out what the key federal agencies - the Corps, EPA, Interior, the Department of Energy and Commerce, can and should do, what their competence and authorities are and what overall budget is needed for the federal task force to do its job. The White House, through CEQ should oversee coordination of this federal role with the responsibility of outlining a strategy that reflects the state emergency that has resulted from coastal Louisiana deterioration.

We recommend that CEQ charge the Task Force with several immediate actions including 1) oversee the initiation and completion of the § 7002 study consistent with WRDA’s requirements and make recommendations on what must be included in that study; 2) identify basic gaps in data regarding coastal Louisiana contained in the LaCPR and assign federal agencies with relevant expertise to fill in those gaps; 3) assess the responsibilities, authorities and expertise of the federal agencies in coastal Louisiana and assign those agencies clearly defined roles and obligations; and 4) set goals, timelines, and deadlines for the coastal restoration program in coastal Louisiana.

CEQ and the President’s Science and Technology Office must investigate geologic conditions at the mouth of the Mississippi River and their implications for making basic changes in the navigation system and for large-scale River realignment. They should also accelerate critical research to quantify the surge and wave attenuation provided by existing and restored wetlands in order to more effectively integrate wetlands with protection. A comprehensive sediment budget must also be developed. The investigations should include DOI, EPA, and the State of Louisiana. These findings, along with recommendations based on these findings, should be completed within one year.

2. *Congress must appropriate the funds for and the Corps must complete the comprehensive coastal restoration study required by WRDA 2007, § 7002 on an expedited timeframe and integrate with LaCPR to have a comprehensive, scientifically sound planning document.*

WRDA 2007, § 7002 requires the Corps to prepare a comprehensive, integrated plan for coastal restoration and integrate that plan with the LaCPR. The comprehensive plan must include proposed projects in order of priority determined by their potential to contribute to creation of coastal wetlands and flood protection. This plan will provide the necessary comprehensive planning document to guide storm risk reduction and coastal restoration in a holistic, efficient manner. Because this type of plan is urgently needed, Congress must immediately appropriate the necessary funds to the Corps to complete the plan and then the Corps must expedite its completion and integration with the LaCPR to allow for a comprehensive, prioritized plan for hurricane protection and coastal restoration.

In completing the comprehensive restoration study, the Corps must consult with the Federal Coastal Restoration Task Force established in WRDA 2007 as well as other federal agencies that have significant legal and policy responsibilities for coastal Louisiana wetlands and the sustainability of urban communities, infrastructure and ecosystem resources.

In addition, the Corps must incorporate into the comprehensive plan assumptions about regional land subsidence and about sea level rise through the year 2100 contained or referenced in the U.S. Global Change Research Program's June 2009 report, *Global Climate Change Impacts in the United States*. In completing the 7002 study, the Corps 1) must assess and identify the areas within coastal Louisiana where large-scale water and sediment reintroduction projects would be most effective in counteracting wetland loss associated with the combined effects of sea level rise and subsidence (relative sea level rise) anticipated through the year 2100; 2) assess and identify areas within coastal Louisiana where anticipated relative sea level rise through the year 2100 combined with insufficient sediment supply is likely to render restoration efforts ineffective; and 3) target restoration on "critical landscape features" identified in the LACPR, which are known to reduce storm surge. In addition, the Corps must include a description of proposed projects in order of priority as determined by contribution to creation of coastal wetlands and protection of communities, as required in WRDA §. 7002 (d)(5), as well their likely effectiveness in adapting to anticipated sea level rise through the year 2100, given options for managing delivery of sediments from the Mississippi and Atchafalaya rivers.

3. *Congress must appropriate the necessary funds for the LCA and non-LCA restoration projects authorized in WRDA 2007 and the Corps and other federal agencies must expedite construction of these projects and hold oversight hearings on the Corps' progress, or lack thereof, on the LCA projects.*

The LaCPR's analysis and modeling supports the need for the coastal restoration projects already authorized by Congress in WRDA 2007, including the LCA projects of the Myrtle Grove Diversion, the Hope Canal Diversion, Bayou LaFourche Reintroduction, the Barataria Basin Barrier Shoreline Project, Beneficial Use of Dredged Material, and Mississippi River Gulf Outlet restoration as well as the non-LCA project of the Violet

Diversion. The LCA projects and the Violet Diversion are ready in concept and authorized. Congress must provide the investment in and commitment to restoration by funding these projects to allow accelerated engineering, design, and construction.

In addition, Congress should hold oversight hearings to find out about the status of the LCA restoration diversion projects, concerns and issues, schedules for addressing them and steps to accelerate their design, readiness for construction, and actual construction.

#### ***4. All Levels of Government Must Invest in a Robust Non-Structural Program***

In order to attain the risk reduction called for in LaCPR in a cost-effective and timely manner, a comprehensive non-structural program must be incorporated. A robust non-structural program should include preventing new development in flood-prone areas, expanded programs to elevate homes and businesses both outside and inside of levees (such as in New Orleans), pursuing buy-outs in high risk areas where other non-structural or hurricane protection levee costs are very high, assessing the quantitative impact of those measures on risk-reduction, and incorporating alternative non-structural measures into comprehensive alternatives.

Nonstructural flood protection is a much more expedient solution than levee construction or other structural measures. The Corps recognizes this and in the LACPR even recommends implementing non-structural measures inside structural measures *prior* to the completion of structural protection because non-structural solutions can be completed quicker. However, the analysis in LaCPR estimates nonstructural measures to take 15 years to complete where structural components are estimated to be completed in 6-16 years. This bias-- that assumes 100% completion of non structural before risk reduction is achieved -- discounts non-structural and will lead to levee construction over non-structural.

There are currently three federal agencies that have a role in non-structural flood protection, FEMA, HUD and the Corps, in addition to the Louisiana Recovery Authority and the various other state and local actors. FEMA through the Hazard Mitigation Programs, HUD through CDBG and other disaster recovery funds and the Corps through its flood protection role are all making large investments in the region, but these efforts are often uncoordinated and don't always contribute to the strategic goal of risk reduction. This large federal investment should be guided and coordinated by CEQ/the White House to be sure an aggressive non-structural program is implemented that protects the communities of southern Louisiana.



April 11, 2008

Dr. Jeffrey Jacobs  
Senior Staff Office  
Water Science and Technology Board  
The National Academies of Science  
500 5<sup>th</sup> Street NW, Keck 651  
Washington, DC 20001

Dear Dr. Jacobs,

The U.S. Congress directed the U. S. Army Corps of Engineers to conduct the appropriate studies and summarize the results in a technical report that contains “comprehensive hurricane protection analysis and design...to develop and present a full range of flood control, coastal restoration and hurricane protection measures... for comprehensive Category 5 protection.” Since the beginning of this process, the Coalition to Restore Coastal Louisiana, Lake Pontchartrain Basin Foundation, National Audubon Society, National Wildlife Federation and Environmental Defense Fund have been extremely involved in the LaCPR process. We have assisted in hosting four technical workshops on the LaCPR over the past year and are regularly engaged with LaCPR project leaders.

The Draft Technical Report was released to the National Research Council and to the public in March 2008. Since that time, we have been reviewing the contents of this extraordinary effort, as we know the Council has as well. We realize the tight timeframe in which the Council is working to respond with comments to the USACE and we hope that the attached comments will be useful to your evaluation. Please understand that this is a preliminary review of the documents as we have not been able to fully evaluate all of the appendices thoroughly.

We appreciate the opportunity to submit these comments to the National Research Council. We would be happy to expand on any of the comments laid out in the attached document upon request. If you would like to request additional input, please contact Natalie Snider at (225) 767-4181.

Regards,

Coalition to Restore Coastal Louisiana  
Environmental Defense Fund  
Lake Pontchartrain Basin Foundation  
National Audubon Society  
National Wildlife Federation

**Louisiana Coastal Protection and Restoration (LaCPR)**  
**Draft Technical Report**  
**Comments to the National Review Council of the National Academy of Sciences**

**Submitted by:**  
**Coalition to Restore Coastal Louisiana**  
**Environmental Defense Fund**  
**Lake Pontchartrain Basin Foundation**  
**National Audubon Society**  
**National Wildlife Federation**

In submitting these comments, the organizations mentioned above would like to recognize the U. S. Army Corps of Engineers (USACE) for the huge amount of work that has gone into their efforts to respond to the Congressional directive to study and present measures to achieve comprehensive Category 5 protection. We recognize that, in order to respond to this directive, USACE engineers and scientists have assembled huge amounts of data, have incorporated a wide range of issues, and have been forced to create new models, measures, and tools in their effort to be truly “comprehensive.”

We appreciate the instances in which the USACE has “pushed the envelope,” even when we believe those efforts could be further improved. For instance, the development of models to replicate hurricane surges and predict hurricane frequencies at specific locations is a significant step forward. The effort to study how comprehensive alternative plans will protect communities is developing as envisioned for many years, with more plan formulation needed in order for the structural, non-structural and restoration features to complement each other. The Multi-Criteria Decision Making Analysis, while we hold some skepticism about its implementation, represents a worthy effort to make choices and set priorities using clear criteria that have been quantified by stakeholders.

We also think that the LaCPR staff should be commended for their hard work in making the report text accessible. This report is a unique opportunity to educate the public on the challenges and opportunities facing coastal Louisiana, and thus it is critical that it be comprehensible by those outside the science and engineering community.

We question, however, whether the LaCPR effort has yet achieved the true breadth and scope that was intended by Congress when it directed the USACE to study and present “a full range of flood, coastal and hurricane protection measures exclusive of normal policy considerations for south Louisiana.” In fact, the Draft Technical Report remains comfortably within the Corps’ normal policy considerations in several key aspects.

First, there is no comprehensive consideration of a wide range of policy considerations that fall outside of the Corps’ jurisdiction. For example, consideration of land use planning, zoning,



implementation of building codes, and other measures that should be considered in concert with levees and wetland restoration to increase redundancy and reliability, are absent from the Draft Technical Report. While a reluctance to plan for actions that are outside USACE jurisdiction may be understandable, these areas should still be noted as being important but excluded from the study.

Second, the Corps has not even integrated into the plan many authorities that are within its jurisdiction. For instance, consideration of how the Corps' navigational jurisdiction could be brought to bear is notably absent from the report. (The report does note, however, potential difficulties in allocating freshwater for diversions given considerations of navigational channel operation and shoaling maintenance.) As another example, the USACE administers an entire wetland regulation program (Section 404 permitting) through which "maintaining approximately the present landscape configuration – a "key component of a comprehensive storm risk reduction strategy" – could be creatively administered. Yet this regulatory function is not a part of the planning in the current report.

Congress's directive for the USACE to conduct a process "exclusive of normal policy considerations" also implies exclusive of normal political considerations. In key instances, the plan advances for consideration plans that, while politically popular, are of questionable viability and merit. On the other hand, the plan dismisses as "beyond the scope of the current effort" other ideas that show great promise and potential. We believe that Congress wanted to see the best possible comprehensive plan first, and deal with political implications later.

The Committee is aware, we are sure, that it is only through the kind of integration recommended here that Louisiana – and the Nation – will ever get effective hurricane protection at an affordable price.

#### Integration of Coastal Protection and Restoration

The USACE was directed by Congress to conduct the appropriate studies and summarize the results in a technical report that contains "comprehensive hurricane protection analysis and design...to develop and present a full range of flood control, coastal restoration and hurricane protection measures... for comprehensive Category 5 protection." The LaCPR recognized the need to maintain a comprehensive system focus (pg. 136).

Building a (comprehensive) system requires that components behave or perform in complementary ways that produce cumulative outputs to achieve a stated purpose....When a hurricane and storm damage reduction system functions across multiple purposes, this constitutes a form of horizontal integration. At times, project purposes will compete for priority. Knowing the tradeoffs necessary to meet multiple purposes is necessary for horizontal integration.

This section of the report provides one of the best statements of purpose in the Draft Technical Report, though it does not occur until more than 100 pages into the document. With the adoption of the Multiple Lines of Defense strategy, the LaCPR study also showed signs of integrating the

natural landscape and manmade protection features to provide the best protection for the citizens of Louisiana. We feel the LaCPR attempted to integrate structural, non-structural and restoration alternatives in spirit with the focus on the comprehensive system. Unfortunately, the LaCPR study falls short of full integration.

- The Habitat Evaluation Team (HET) is apparently an ad hoc effort, which was not adequately resourced to address the magnitude and seriousness of the restoration goals of the LaCPR. Integration of flood protection with coastal restoration should have appropriate levels of evaluation and analysis. The coastal restoration evaluation within the LaCPR was conducted on a shorter timeframe and disproportional budget than was allowed for the flood protection and storm surge analysis. The work of the HET, which is made up of members of other state and federal agencies with other responsibilities outside of the LaCPR, is not considered to be on-going in the LaCPR Path Ahead section of the report. Evaluation of structural flood protection measures and storm surge modeling is expected to continue into the future. In order for the restoration features to have the same level of analysis, this work needs to be a top priority with a stronger program emphasis, increased budget and staff dedicated to this analysis.
- The evaluation of the structural, non-structural and restoration alternatives was conducted by three different groups of experts with no indication of the scope or results of the other three groups. In order to fully integrate this study, there has to be an integration of staff on each of the three planning teams.
- The HET was tasked with analysis of the Coastal Restoration aspects of the report, but conducted their analysis absent of ANY flood protection measures, both natural and man-made. Their analysis only addressed maintaining the current landscape, and did not consider the geographic priorities that may suggest some areas should be allowed to continue to lose land while other areas are sustained or actually increased. Locations of municipalities, levees, highways were all ignored in the HET analysis.
- There are several oblique statements early in the Draft Technical Report that seem to associate coastal wetland loss with increased risk associated with hurricane surge and waves, (pg.7 beginning at line 852). But if one looks carefully, the explicit connection between land loss and increased risk is never analyzed or discussed in detail, suggesting that the “harmful effects” of coastal land loss are limited to the “ecosystem” and “economy,” without mentioning public safety (pg. 8, line 866). This is a major hole in the conceptualization of the study and presentation of results. Without making this link, coastal land loss and restoration appear to be a non-sequitur in the discussion of hurricane flood prevention measures.

- The fundamental technical question of integrating hurricane protection with coastal restoration is whether the relationships are sufficiently understood to be incorporated in a verifiable way into the Risk-Based Hurricane Frequency Simulation. The new restoration alternatives developed by HET (R1 and R2) were not used in the surge modeling. This is a fundamental breakdown in the integration process. It remains unclear at this point to what extent, and how satisfactorily, this technical problem has been addressed by LACPR. The potential role of wetlands to mitigate against storm surge does not seem to be fully evaluated.
- As risk reduction evaluation anticipates cost, it is appropriate to point out that relying solely on structural may yield a skewed cost benefit analysis. Residual benefits of restoration including and beyond protection must be a part of the analysis.

#### Lessons Learned from 2005 Hurricanes

The lessons described in this section of the report are ambiguous and stated in a non-introspective manner that minimizes agency responsibility. The affected population must fully comprehend how lessons learned will effect changes in the future so that commitments made can be relied upon. In *Dispelling Hurricane Myths*, the report discusses the “myth” of Category 5 protection, while at the same time reinforcing an old “myth” of 1 in 100 year protection and instilling a new “myth” of 1 in 400 or 1 in 1000 year protection. Hurricane Camille and Hurricane Katrina were both 1 in 400 year storms which occurred within less than 40 years. The use of a statistical analysis to speculate on the chances for a storm of these strengths to occur in any given year based on only sixty years of data that is questionable, at best, is misleading and possibly inappropriate. Does the USACE truly understand the risk and have they adequately educated the residents of south Louisiana?

#### Comprehensive Alternatives

A major flaw in the alternative analysis was the limited use of non-structural approaches. Non-structural approaches were considered as a protection measure in lieu of structural protection and not as a complement to structural protection. For instance, the USACE did not analyze a 400 year protection system as one that consisted of an overtoppable 100 year protection levee and elevated homes inside the levee system. The two features, a levee and non-structural, would work together to provide a 400 year level of protection. The key element not proposed or evaluated by LACPR was the role of non-structural measures inside of levee protection. Elevation of housing behind levees removes significant residual risk, which is noted as significant in the structural alternatives of LACPR. Failure to include this effective alternative unfairly portrays the prospect for success of the overall LACPR goals.

We were pleased to see the importance of the restoration alternatives, as they were included in every comprehensive alternative plan. However, every comprehensive plan had the same restoration alternative – maintain the current landscape. We believe we need to evaluate other restoration

alternatives within the comprehensive alternative plans to determine which restoration projects would offer the best protection.

### Structural Protection Alternatives

In PU 3a, alternative levee alignments to the Morganza to the Gulf alignment (proposed in the Environmental Impact Statement in 2002) were not evaluated. This levee alignment has been criticized (see MLODS report), and alternatives need to be evaluated. Due to an increase in the cost estimate, the USACE is now re-evaluating the Morganza to the Gulf study and including other alternatives previously evaluated in the EIS. However, analysis of these alternatives is lacking in the LaCPR study.

The LaCPR study states there is an acceptable rate of overtopping of all proposed levees. This overtopping rate is 0.1 cubic feet per second (cfs) per linear foot, essentially a rate that is negligible. Any rate higher than that would have a greater risk of failure, however failure of the levee systems was not taken into account. This is key component of keeping communities behind levees safe.

### Coastal Restoration Plan Component Appendix

The Habitat Evaluation Team (HET) established that maintaining the present landscape configuration would be a key component of a comprehensive storm risk reduction strategy. The HET did not evaluate any of the coastal restoration features in terms of storm surge reduction, but strictly as maintaining the current landscape distribution. The configuration of our current landscape is NOT sustainable. We should be moving towards a system that is as self-sustaining as possible and this suggests some areas will continue to lose and some areas must see gain. The areas of gain can be driven by need or simply the capacity by proximity to river resources. HET did not consider these critical nuances.

In spite of the ubiquitous use of the term “coastal restoration” in the LACPR, the HET team did not establish historical benchmarks for successful restoration. A “Restoration Paradigm” would suggest restoring to a historically sustainable condition. In Louisiana, the coast was self-sustaining in the early 1900’s. Historical wetland habitat distribution is an appropriate proxy for a restoration alternative. Regardless of the basis for establishment, it is very useful to establish wetland habitat goals in order to ensure synergy between restoration and protection projects. Establishing the targeted wetland habitat regime, and then optimally managing to achieve these habitat types, puts all the natural resources and resource managers on the same page with a unified biological and natural resource vision. It also ensures integration of coastal restoration and protection projects which must work together to establish and maintain these wetland habitat goals. The HET team not did not propose habitat goals or consider historical benchmarks.

The analysis completed by the HET was completed on a tight timeframe with a very small budget; therefore, some essential analysis was not completed as a part of the LaCPR study. Five alternatives were proposed for each Planning Unit. However, once the alternatives went through a preliminary

screening, some of the planning units were left with only 1 alternative. The LCA alternative and the State Master Plan were eliminated from evaluation in numerous Planning Units. It was noted within the Appendix (pg 38) that the “LCA study did not explicitly include the hurricane risk reduction goals that are part of the LaCPR effort.” We argue that although risk reduction was a goal of the overall LaCPR study, it was not a goal or guiding principle of the HET evaluation. There is no indication that the HET alternatives would offer any additional flood protection than the LCA or State Master Plan alternatives. In many cases, the HET alternatives may offer less protection as it does not constrict or block many of our coastal channels which could usher the storm surge into our communities.

The State Master Plan and the LCA alternatives include a multitude of restoration techniques that have been evaluated and presented within numerous venues as the best alternative for a particular region. The HET alternatives evaluated 4 techniques: (1) marsh creation, (2) diversions, (3) shoreline protection, and (4) ridge restoration. Additional restoration techniques (such as reef restoration and channel constrictions) were not properly evaluated within the Coastal Restoration Appendix.

We commend the HET for the aggressive use of diversions of various scales to sustain our coastal landscape, with between 153,000 cfs and 525,650 cfs of the Mississippi River being diverted in any given year. For Planning Units 1 and 2, we agree that the resources of the Mississippi River should be utilized aggressively with medium and large-scale diversions due to the proximity to the sediment and water resources.

Marsh creation was relied on heavily within all of the Planning Units. However, relative cost and lifecycle maintenance issues were not addressed. For example, without natural system function restoration, or preventive measures such as salinity control structures, any mechanically-rebuilt marsh will be subject to the same forces that led to loss of the original marsh. The HET did not fully evaluate the resources available to complete the level of marsh creation proposed by the alternatives. The assumptions about sediment resources, funding resources, and engineering ability for the next 100 years are unrealistic and do not seem to be supported by objective data. This analysis has a way to go before being able to lend itself to on-the-ground restoration projects that can achieve the goals and objectives of the LaCPR study as directed by Congress.

Another issue that may impact the accurateness of the data and alternative plan evaluation is that the HET utilized a linear trend analysis for recent land loss rates and projected these to estimate the wetland loss rates for the next 100 years. Previous assessments of future land loss (i.e., for LCA in Barras et al., 2003) have used a compounded approach to projecting rates (i.e., land loss rates decrease over time). The difference in these approaches and the impact on the overall results are unknown but the results will be very different from those used in previous studies. In addition, the CLEAR modeling, which was used as the base model for the storm surge analysis, is based on a

compounded wetland land loss analysis while the HET used a linear land loss analysis. This discrepancy could drastically change the outcome of the LaCPR analysis.

The study did not evaluate or consider the need for a sixth alternative involving a possible major realignment of the lower Mississippi River or its passes. This alternative was considered to be “beyond the scope” of the LaCPR effort. However, in order to fully integrate coastal restoration with flood protection, we must evaluate optimizing the sediment and freshwater resources of the Atchafalaya and Mississippi Rivers while integrating navigational and social issues. A comprehensive, robust coastal wetland restoration program therefore has to fully explore strategies and techniques for replicating natural riverine processes that both build and maintain coastal wetlands.

One of the goals of the HET analysis was to examine the potential for tradeoffs associated with various restoration alternatives. In the past, the tradeoffs of over-freshening the basins versus full restoration potential were superficially evaluated when analyzing freshwater or sediment diversion capacities. This ultimately resulted in diversions, such as Caernarvon and Davis Pond, being operated at an extremely low rate (500 cfs) of discharge for 4 to 5 years at a time. In the LaCPR this pattern of tradeoff analysis is continued. Since the HET did not evaluate flood protection benefits adding marshes, the trade-offs are not fully evaluated under the directive of Congress. The information on tradeoffs needs to be more explicit and thorough, as there needs to be a direct statement that reducing diversion sizes based on fisheries impact will reduce the river’s ability to build land and offer long-term sustainability to our communities.

### Storm Surge Modeling

The engineering sections and appendices of the Draft Technical Report do not appear to incorporate wetlands in any meaningful way. Key word searches on “wetlands” in the critical engineering appendices show no effort to quantify landscape effects attached to wetlands restoration that would allow the engineers to integrate restoration and flood protection. While we do not wish to see adoption of “rule-of-thumb” assumptions, eliminating wetlands from the engineering design process is unacceptable when they clearly have an impact on surge height, wave propagation, as well as levee resiliency and reliability raises methodological reliability issues.

The effects of wetlands on Hurricane Rita surge (September 24, 2005), for example, excellent USGS gage (USGS 2006; <http://pubs.usgs.gov/ds/2006/220/>) and FEMA high water mark data (FEMA 2006; [http://www.fema.gov/pdf/hazard/flood/recoverydata/rita/rita\\_la\\_hwm\\_public.pdf](http://www.fema.gov/pdf/hazard/flood/recoverydata/rita/rita_la_hwm_public.pdf)) show a profound “wetland effect.” In Southwest Louisiana, there are 20 to 25 miles of wetlands separating the coast from a higher terrace where most people live. At the time of the storm, ADCIRC did a reasonable job of predicting the 15 foot surge at the coast, but replicated only about 15 percent of the attenuation observed moving inland ([hurricane.lsu.edu/floodprediction](http://hurricane.lsu.edu/floodprediction)). It is stated in the Draft Technical Report that ADCIRC was calibrated to Rita (H&H appendix, p. 14, line 564), presumably using landscape dependent drag coefficients for both wind and water, but this critical validation step is not described anywhere else in the report or appendices. Incorporation of new drag or Manning’s

coefficients in the ADCIRC model is ground-breaking work that deserves some discussion, particularly in the context of the Rita observations. More importantly, this is apparently the only nexus within the study through which wetland effects, either existing or restored, can affect the design process. The incorporation of wetland effects on waves is also not addressed significantly except to say that the STWAVE analysis was apparently unsatisfactory, leading to large uncertainties associated with whether or not friction was incorporated. We recommend that the USACE investigate using the SWAN model which the Dutch have calibrated for wetland effects.

The report does not provide all of the surge maps. Surge difference maps are provided and are useful, but should not be in lieu of the actual surge elevation maps.

These comments were authored by Natalie Snider, Paul Kemp, Maura Wood, John Lopez, Steven Peyronnin and Paul Harrison



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# NGO Review and Assessment of the LaCPR Draft Final Technical Report

Louisiana Coastal Protection and Restoration (LaCPR)  
Draft Final Technical Report

Comments to the National Review Council  
of the National Academy of Sciences

Submitted by:  
Coalition to Restore Coastal Louisiana  
Lake Pontchartrain Basin Foundation  
Environmental Defense Fund  
National Audubon Society  
National Wildlife Federation

May 1, 2009



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## *Policy Recommendations*

### **Institutional Process for Coastal Restoration**

Scoping out, designing and implementing an integrated coastal Louisiana hurricane protection, coastal restoration and non-structural program will require closely coordinated leadership from the United States Army Corps of Engineers (USACE) and the State of Louisiana. This is absolutely key to concerted forward movement. At the same time – as the LaCPR summary report makes clear - the challenges of achieving sustainability of urban communities, the oil and gas industry, Gulf fisheries and navigation in the context of coastal restoration, as well as making trade-offs and marshalling resources, necessitate a much broader federal agency and White House response. A coordinated federal commitment is vital to obtaining the necessary appropriations from Congress and support for a new framework for managing the resources of the river and restoring coastal Louisiana, if new legislative authority is needed.

Other federal agencies have significant legal and policy responsibilities for coastal Louisiana wetlands and the sustainability of urban communities, infrastructure and ecosystem resources. They include Environmental Protection Agency (EPA), multiple agencies within the Department of Interior (DOI), National Oceanic and Atmospheric Administration (NOAA), US Department of Commerce, and FEMA. They are identified as members of the Federal Coastal Restoration Task Force that Congress has ordained in WRDA 2007. Because of the breadth of their respective responsibilities and authorities for restoration and urban and infrastructure sustainability, a White House entity such as the Council on Environmental Quality (CEQ) could oversee coordination of this federal role with the responsibility of outlining a strategy that reflects the state emergency that has resulted from the deterioration of coastal Louisiana.

It is clear today that federal navigation, flood control, energy and regulatory policies have had and are continuing to have, the unintended consequence of contributing to coastal collapse. Now that we understand the consequence of these policies, the five agencies under the aegis of CEQ are uniquely positioned to fashion an emergency response to reverse coastal collapse.

EPA, DOI, NOAA and FEMA have the following responsibilities and capabilities:

- EPA has overall responsibility for the restoration of the physical, chemical and biological integrity of the Nation's waters under the Clean Water Act and to protect coastal waters from pollution under the Marine Protection Planning and Sanctuaries Act. It has significant regulatory authority under both statutes. The quality of water in the Louisiana coastal area and in the Gulf is being degraded - biologically, physically, and chemically - as this world-class deltaic wetland ecosystem collapses. If on-going lower river navigation maintenance policies are contributing to coastal wetland loss, EPA has the authority, together with the other federal resource agencies, to bring this to CEQ's attention. There is no way that EPA and EPA-approved water quality standards for coastal Louisiana and the Gulf can be

attained without coastal Louisiana wetland restoration. EPA therefore has a responsibility to help shape an emergency coastal restoration response.

- The Department of Interior has major legal and policy responsibilities for coastal Louisiana through US Geological Survey (USGS), the US Fish and Wildlife Service (USFWS), the National Park Service (NPS) and the Mineral Management Service (MMS). Geology is the core science at the heart of what is transpiring in coastal Louisiana, and USGS is the pre-eminent federal science center for assessing geological impacts of and conditions associated with other federal actions, including management of the lower Mississippi River and Atchafalaya River sediment. The USFWS oversees national wildlife refuges in coastal Louisiana that are deteriorating and is responsible for implementation of the Endangered Species Act. It has legal and policy responsibilities to pursue actions to protect its federal land resources and habitat of threatened and endangered species that other federal actions and policies are compromising. The USFWS is empowered to pursue changes in federal actions, including on-going management of the Mississippi River navigation system and federal energy policies that are contributing to continuing collapse of the coastal Louisiana deltaic ecosystem. The National Park Service has similar responsibilities stemming from its management of national parks in coastal Louisiana. The MMS has responsibilities to manage operation of Gulf oil and gas resources and infrastructure in a manner consistent with coastal wetland protection and restoration. The key to fulfilling these multiple responsibilities is a coastal restoration program that ignites the sediment conveyance potential of the Mississippi and Atchafalaya Rivers.
- NOAA has legal and policy responsibilities for the fisheries of much of coastal Louisiana and the Gulf. The historic and continuing collapse of the Mississippi Deltaic ecosystem is undermining the sustainability of these fisheries that are highly dependent on this ecosystem. Furthermore, the dead zone in the Gulf results in part from the funneling of the Mississippi River to the Gulf confined by navigation and flood control levees in coastal Louisiana that prevent intermediation of River sediment and nutrients by deltaic wetlands. NOAA can only fulfill these responsibilities by helping to fashion a federal strategy that stops coastal collapse and begins the process of restoration through massive sediment reintroduction.
- FEMA has legal and policy responsibilities to prevent development in flood-prone areas, to publish flood maps and to support federal actions and policies that protect urban communities and infrastructure from storm and flood damage. As important as urban levees are to flood and storm protection, non-structural measures and coastal wetland restoration are critical to fulfilling these responsibilities.

The White House, through CEQ, has to provide overall leadership for the federal government. It is in the best position to coordinate the legal and policy responsibilities of these four federal agencies jointly with the USACE as they impact on coastal Louisiana, its navigation and energy infrastructure

and urban communities. Through its relationship to OMB, it is in a position to pursue joint federal agency strategies and budgets commensurate with the national emergency that is unfolding from coastal collapse. Further, on-going federal navigation, energy and land resource actions are having continuing impacts on this nationally vital coastal ecosystem that could and should be best addressed in a CEQ-coordinated NEPA response that frames the overall federal coastal restoration strategy.

Such a coordinated federal government response will be necessary to shape a new systemic framework for managing the resources of the lower Mississippi River and Atchafalaya River and, with the State, designing and implementing on an accelerated scale an integrated coastal restoration, navigation, flood protection and non-structural program. This new framework will have to re-orient lower River and coastal management fundamentally away from the last century's primary focus on navigation and flood control with attendant deltaic collapse towards a new framework with Mississippi Delta ecosystem restoration, so vital to the long-term sustainability of the coast's navigation, energy and transportation infrastructure, Gulf fisheries, urban communities and the region's unique culture, at its core.

### **Navigation and Restoration/Protection**

We are gradually coming to recognize that the USACE's thinking about coastal restoration is hindered by its 20<sup>th</sup> century vision of the Mississippi River and its navigation system premised on levees that shunt the river to the Gulf and thus deprive the deltaic ecosystem of those sediments. Thinking about coastal restoration, not in terms of a series of small freshwater diversions or marsh creation, but conveying large volumes of Mississippi and Atchafalaya River sediment into the sediment-starved deltaic landscape, requires rethinking the management of the River and its navigation system. This system is increasingly non-sustainable as the mouth of the River sinks and the wetland system that provides protection for that navigation system withers away.

The 2005 Congressional directive for the LaCPR report said nothing about the lower Mississippi River navigation system. Since 2005, the linkages between the navigation system, coastal wetland loss, coastal protection and restoration have become clearer. For decades, the levees and jetties of the lower river navigation system have helped to shunt river sediments deep off the continental shelf. Current dredging practices and policies result in most of the 54 million cubic yards of material dredged annually from the River, mostly near to or in the mouth, disposed of as a waste instead of being used beneficially as land building sediment. Current disposal practices are based on the USACE interpretation of federal navigation dredging policy in 33 U.S.C. 335.4. This interpretation holds that disposing of this dredged material at an off-shore site in the Gulf that EPA designated more than 20 years ago under the Marine Protection Research and Sanctuary Act, in open water river areas at Pass a Loutre, and through resuspension with reliance on the flow of the River to carry this material into the Gulf is "least costly" and "consistent with engineering and environmental requirements."

If these practices were assessed in the context of coastal restoration, they could not be considered “consistent with engineering and environmental requirements,” including Clean Water Act Section 404 and NEPA requirements. Nor could they be considered “consistent” with State Coastal Zone Management Act consistency mandates. The LaCPR report does not consider revisions to these disposal practices despite their direct contradiction to sound environmental restoration policy. As such, the LaCPR report has not considered the “full range” of coastal restoration measures and thus hurricane protection and flood control measures as the Congress directed in P.L. 109-103 and 109-148.

Another reason to bring navigation into the hurricane protection, flood control and coastal restoration mix is that the mouth of the Mississippi River is geologically unstable. Dredging costs are escalating as sea level rise pushes the locus of sediment deposition further up the river. Wetland loss also exposes navigation levees to the full brunt of storm surge that could eventually compromise their integrity and elevate surge levels far upstream. In a presentation at the USACE Diversion Summit on March 3, 2009, Dr. Paul Kemp described the factors contributing to the long-term non-sustainability of the current navigation system at the mouth of the river and the linkages between large-scale coastal restoration and the sustainability of the navigation system. In concept, the sustainability of the navigation system and the deltaic ecosystem are intertwined. They share the common objective of removing sediment from the lower River and using that sediment to restore the ecosystem that ultimately protects the integrity of the navigation system.

This suggests that a comprehensive solution to coastal Louisiana’s collapse and the undermining of the navigation and storm protection systems entails real integration of navigation and flood protection goals into a coastal restoration framework. An effective merger of the LCA and LaCPR would be a step in this direction, but the USACE, its federal agency partners, the State and Congress must integrate the River’s navigation function into this overall framework.

### **USACE Regulatory Authorities**

Relatively little information is offered in the LaCPR report to address the degree and extent to which the LaCPR report evaluated any current USACE regulatory or permitting authorities to ensure that all elements under USACE jurisdiction were coordinated with a hurricane risk-reduction system. The LaCPR correctly identifies the role that state, parish and local municipalities must play in developing and enforcing zoning and building codes. However, it does not adequately address the extent to which existing USACE permitting authorities have been coordinated with their respective federal agencies to produce a permitting and regulatory regime consistent with the principles laid out in the LaCPR:

Ensuring Consistency between Programs (p. 199)

*A need exists for assurance that USACE’s civil works projects and regulatory decisions are integrated and consistent with restoration and hurricane risk reduction efforts in Louisiana. In this context, “consistent” means that the wetland benefits from Federal and State coastal restoration activities would not be undercut or*

*otherwise diminished by adverse wetland impacts associated with civil works projects (such as navigation and hurricane damage risk reduction projects) and development activities within the purview of the USACE's regulatory program and that ecosystem restoration projects support civil works and hurricane risk reduction activities.*

*To promote such consistency, the USACE recommended a series of action items in the Louisiana Coastal Area (LCA) Ecosystem Restoration Study (USACE, 2004). The proposed action items cover navigation, regulated development, hurricane damage risk reduction projects, and other USACE projects.*

In reviewing the recommended action items in the LCA (PEIS Chapter 6 Coordination and Compliance) it is clear that in developing a consistency program, the USACE focused on action items that were intended to minimize conflicts with restoration objectives in the pursuit of an objective to achieve no-net loss of wetlands.

#### 6.2.4.1 Regulatory Programs (LCA PEIS 6-14)

*It is important to ensure that regulated activities within the coast do not undermine or run counter to Louisiana coastal restoration efforts. To that end, once an LCA Plan has been selected, the District, working with the state, proposes to:*

- *Continue reviewing permit applications to avoid and minimize potential conflicts with the LCA Plan.*
- *Use best available science tools to assess the environmental effects of the regulatory program*
- *Consider the effects of restoration projects during the review of permit applications*
- *Further enhance the effectiveness of compensatory mitigation*
- *Encourage private mitigation banks that support LCA Plan objectives*
- *Enhance internal coordination*
- *Encourage and support wetland-planning efforts*
- *Expedite regulatory review of public and private activities that are fully consistent with LCA Plan*
- *Review options for increasing protection of vulnerable areas*

Although the LCA effort is to be commended for acknowledging and minimizing potential conflicts associated with a robust and urgent restoration program, the action items envisioned by USACE clearly focus on regulatory programs with a direct impact on restoration efforts. In the context of a far more extensive Hurricane Risk Reduction System, there is a need for a more robust review of USACE permitting and regulatory programs, together with the corresponding jurisdiction of other federal agencies, to ensure that all activities under federal jurisdiction are consistent with deterring development, practices or activities in vulnerable areas that amplify or increase the risk associated with hurricanes. The LaCPR states that it addresses induced development in three ways (p. 25):

- (1) Different levee alignments were evaluated to assess the potential to induce development in wetlands.*
- (2) Levee alignments that minimize the potential for induced development in wetlands were developed.*

- (3) *The coordination and communication approach for comprehensive risk management presented in Section 17 acknowledges that additional actions by other Federal, State, parish, and municipalities are necessary to ensure consistency between coastal restoration efforts, regulatory decisions, and other civil works projects.*

The LaCPR specifically acknowledges concerns associated with induced development but fails to evaluate the regulatory programs under federal jurisdiction that might be enhanced or expanded to minimize induced development; instead the report simply notes the need for additional actions. The USACE has considerable authority to address induced development under its Clean Water Act (CWA) authority. Furthermore, considering the appropriate role of EPA as a recognized federal partner in the development of the LaCPR, the USACE and EPA are properly positioned to exert CWA 404(c) veto authority to designate all wetland areas where Hurricane Risk Reduction Projects might occur as 404(c) no fill areas, reducing the likelihood that induced development in environmentally sensitive areas might occur.

### **The Delay of the Report**

As we consider the utility of the LaCPR report, we are concerned about the delay in its release. Section 5009, the Department of Defense Appropriations Act, 2006 (P.L. 109-148) enacted December 30, 2005 states: *“The Secretary shall submit a preliminary technical report for comprehensive Category 5 protection within 6 months of enactment...and a final technical report for Category 5 protection within 24 months of enactment of this Act.”*

The USACE released the draft final LaCPR technical report to the NRC in March 2009 - 15 months after the directed deadline. With a final version expected to be presented to Congress sometime in 2010, the USACE will have defaulted on the Congressional deadline for the LaCPR report by approximately 2 years.

We understand and appreciate the complexity and scope of work associated with the development of the LaCPR report. However, continued delays of the magnitude seen in the formulation of this purely technical report must be eliminated in future efforts toward feasibility studies, authorization and implementation. The mounting risk associated with lengthy and protracted reports that produce no actionable or authorized projects cannot be considered an acceptable response to the urgent need for hurricane and storm protection, exacerbated by a rapidly deteriorating coastal ecosystem. There simply must be greater accountability for adhering to mandated timelines that simultaneously corrects deficiencies in USACE capacity to meet those timelines.

## ***Planning Process and Risk-Informed Decision Framework***

### **6-Step Planning Process**

Congress directed the US Army Corps of Engineers (USACE) to undertake the LaCPR and consider a full range of flood control, coastal restoration and hurricane protection measures exclusive of normal policy considerations. The LaCPR attempts to put together a 6-Step Planning Process to achieve the final recommendations for South Louisiana. The 6-Step Planning Process includes:

1. Problems/Opportunities
2. Inventory/Forecast
3. Formulate Plans
4. Evaluate
5. Compare
6. Select – Not completed as part of the Draft Final Technical Report

A key criterion for a successful step-wise process is ensuring that all of the previous steps are an accurate and thorough evaluation of the environment in which the analysis is taking place. In numerous instances throughout the 6-Step Process, major assumptions are made that if not validated, could render the entire process unacceptable. The National Research Council (NRC) Committee recognized this and other constraints on the process in the *First Report from the NRC Committee on the Review of the LaCPR Program*. The non-governmental organizations evaluated the NRC's previous comments and the USACE ability to integrate these comments into the process and at which step in the Draft Final Technical Report. A summary of that evaluation is attached. The evaluation found that many of the concerns were occurring in the first three steps of the process. Without correctly addressing each step in the process, we can never expect to produce a product that is usable, acceptable, or achievable.

### **Planning Horizons**

One fundamental concern that carries drastic implications into the future of coastal Louisiana is the planning horizons utilized within the LaCPR report for planning and implementation. The LaCPR effort fails to realize that the measures we impose on the landscape today are the same measures that will be on the landscape for hundreds and thousands of years, not just 50 or 100 years. The New Orleans levee system is a perfect example of how we may not be able to change the measures we put on the landscape today. There is no option to remove the levee system that surrounds New Orleans, as parts of the city have sunk to more than ten feet below sea level. The Netherlands is another example. The polder system began construction in the 1100's, and there are no other options for the Dutch but to maintain this vast, energy-intensive, cost-intensive, and non-sustaining landscape almost 1,000 years later. Although it is imperative to implement something quickly to cease or reduce the increase in risk that occurs every day, the USACE has to be cognizant and aware of potential impacts on a much larger planning horizon. The selected plan will most likely continue to have impacts on the landscape for multiple generations and potentially thousands of years.



Planning horizons vary from 50 to 100 years depending on structural versus coastal restoration measures. The variation in planning horizons for different measures could alter or bias the analysis. Structural measures will continue to depreciate with time, requiring more operations and maintenance costs specifically with rising sea levels. Restoration has the potential to appreciate with time, having larger up-front costs but reduced operations and maintenance costs.

In addition, in the life cycle costs analysis, a zero residual value was assumed at the end of the 50 year period of analysis, which equates to an assumption that the system would have to be rebuilt in 50 years. By these statements, it is assumed that the coastal restoration plans would have to be built twice within the 100 year planning horizon, which is an unnecessary addition of costs. This type of analysis does not allow for the benefits of self-sustaining or long-lasting projects to be comprehensible.

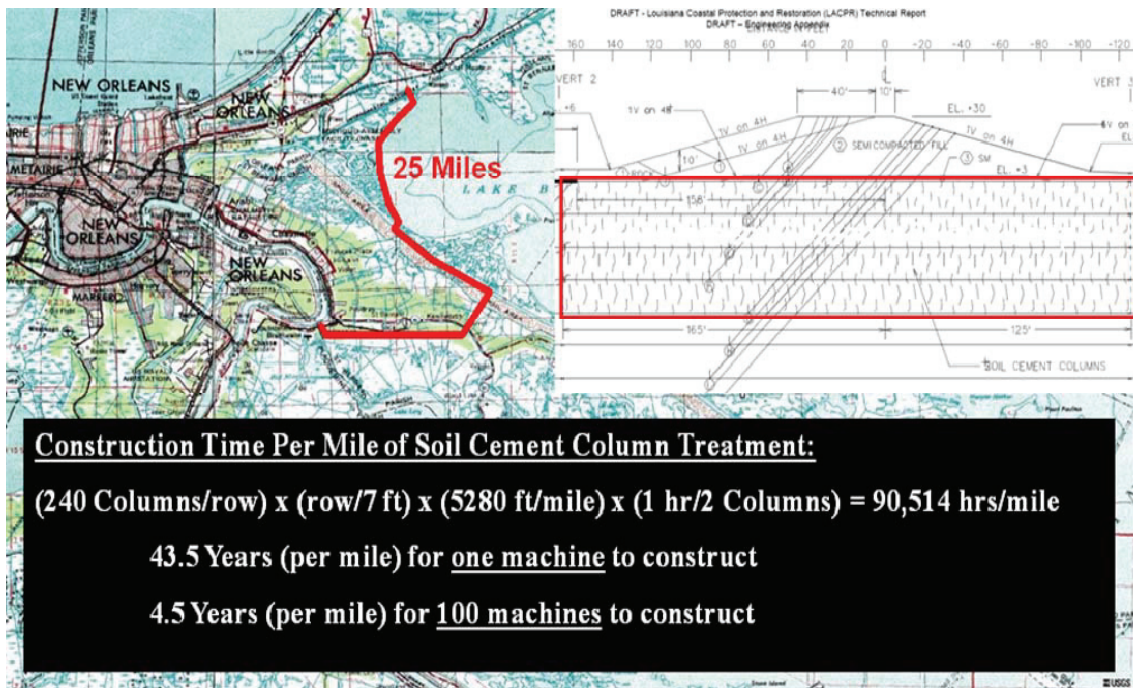
In addition, there is greater discrepancy in the timelines for implementation of plans.

- Structural Measures: As stated in the Draft Technical Report, structural measures can be implemented in 6 to 16 years. However, the Engineering Appendix states that these structures can take up to 40 years to implement (pg 38). Another portion of this appendix (pg 262) states that the initial lift costs were based on a 14 year construction period. Most if not all of the levee systems proposed will require multiple lifts to reach design elevations. The Lake Pontchartrain and Vicinity project was started in 1965 and was not complete when Hurricane Katrina hit the coast in 2005. The project was not complete after 40 years. Since 2005, the USACE has been working to finalize the levee and drainage system to the new 100-year storm surge levels by 2011. Thus, it will take 6 years to build upon a system that was already in place in most instances. Another example is the Morganza to the Gulf levee system. New engineering studies of this levee system by the USACE have determined a construction timeframe of over 37 years for a 100-year level of risk reduction. Therefore, the timeframe (6-16 years) used in the LaCPR report is not a reasonable timeframe to implement structural protection measures for an entire coastal plan. This assumption concerning implementation time is unrealistic and will therefore bias the analysis of when risk reduction can be achieved and damages reduced.
- Coastal Restoration Measures: The USACE Principles and Guidelines stated that “appropriate consideration should be given to environmental factors that extend beyond the period of analysis”; therefore, restoration alternatives were evaluated from 2010 to 2100. The justification for this variance from the structural measures timeframe of 50 years is because “some alternatives were predicted to perform well at the end of the period of analysis but poorly after that point in time.” Construction time for restoration measures was estimated from 5 years (freshwater redistributions) to 25 years (shoreline protection, marsh creation, and ridge restoration). We have several concerns with the planning horizons for coastal

restoration. First, it is unreasonable to assume that a 100-year or greater levee system can be built in 16 years, but a ridge or shoreline protection will take 25 years to build. There is too much inconsistency within the implementation timeframes. Second, if some restoration alternatives were performing well at the end of the analysis, it would mean that these measures were effective for 50+ years. These benefits over the 50-year timeframe are diminished over the 100-year timeframe. How does that analysis compare to structural measures, which are only evaluated on a 50-year timeframe? Lastly, the restoration alternatives were constructed in 15 years and showed benefits after the 50-year timeframe. The LaCPR assumes that salt marsh stabilization could take as long as 50 years, therefore there is no effect on surge or wave reduction. The inconsistencies in the timeframes used throughout the report are confusing and can lead to invalid analysis.

- Nonstructural Measures: The LaCPR Report uses the uniform construction period of 15 years for nonstructural measures. Even though we feel that nonstructural measures could be implemented on a much quicker timeframe, we applaud the USACE for incorporating incremental implementation and the accrual of pre-base year benefits. Non-structural flood protection is generally regarded as a much more expedient solution than levee construction or other structural measures. The LaCPR report, in its *Redundancy* section, recommends implementing non-structural measures inside structural measures *prior* to the completion of structural protection because non-structural solutions can be completed quicker. Both timeframes are skewed (non-structural slower and structural faster) in a manner that seems to favor structural solutions.
- Timeline to Address Uncertainties: One of the keys to the implementation schedule is addressing uncertainties to a level comfortable for the funding entity and the general public. Some of the uncertainties presented in the LaCPR will take numerous years to analyze. For instance, one of the concerns of the NRC Committee was the availability of sediment to complete all the measures being proposed. The Draft Final Technical Report states that they assume the sediment will be available; however the Regional Sediment Budgets will not be complete until 2010.

In addition, some of the excellent concepts presented in the Engineering Appendix of the LaCPR report will also have uncertainties in implementation. Specifically, the construction timeframes proposed do not seem feasible. One concept is to construct levees to elevation +30 feet using soil cement columns as a means to achieve the stability for the target design elevations. The time to construct the foundations for these levees is not addressed. Due to the large spatial extent of the proposed levees, it would take over 40 years for one deep soil mixing machine to complete one mile of soil columns. It would take 100 machines 4.5 years to complete one mile of soil columns. For a 25-mile levee alignment, it would take 100 machines over 100 years to install the columns. Clearly, this is not feasible from a cost standpoint or a timing and schedule standpoint.



Relative sea level rise (RSLR) is another uncertainty that could impact the risk reduction measures for hundreds of years. RSLR was evaluated over the next 50 years with three scenarios of change. It is imperative that we fully address the impacts of RSLR. Two of the most impressive engineered structures of the Dutch system, the Oosterschelde and Maeslantkering Storm Surge Barriers, which were completed in 1986 and 1997 respectively, will be insufficient for protection with a sea level rise of 50 centimeters. The Dutch anticipate a 50 centimeter rise in sea level in the next 40 years. It is imperative to evaluate the impacts of RSLR on the risk reduction measures over a long timeframe, but it is also important to understand the measures, specifically restoration measures, that could combat RSLR and increase the risk reduction ability of these measures over time.

### **Risk Informed Decision Framework**

We continue to applaud the USACE for their use of a decision process outside of the normal policy considerations. The traditional cost-benefit analysis would not incorporate the complexities of South Louisiana's landscape or the full benefits (economically, environmentally, or culturally) of this region. Unfortunately, the basis (Step 1 and 2) of the Risk Informed Decision Framework (RIDF) is flawed. Since the release of the Draft Technical Report, the lessons learned to improve the deterministic elements of the RIDF and the Multiple Criteria Decision Analysis (MCDA) have not been incorporated. Without proper development and utilization of the RIDF and MCDA, the tools can become manipulated and biased toward the certain outcomes dictated by the users. In other words, the decisions will not be transparent and open results of a stakeholder process but masked decisions of the USACE or other agency hidden within the tool itself. This potential manipulation of the RIDF and MCDA is of great concern in its continued development.

### Performance Metrics

The Draft Final Technical Report states that the selection of performance metrics was established to satisfy the planning objectives and reflects a combination of input from the technical team and stakeholders. We argue that this is not the case. The metrics were developed by the USACE and may have been modified through input from stakeholders, but the metrics were not developed by stakeholders, which is a fundamental problem with the MCDA. The USACE used an example of buying a car to explain to stakeholders the process of value and weightings. The family was asked to identify the most important criteria and the example suggested that the family selected gas mileage, safety, color. The USACE fails to realize that none of the criteria the Corps proposes in the LaCPR may be the most important to the stakeholders. Unless the metrics are developed by the stakeholders including the general public, then the results of the MCDA may not capture the true priorities.

### *Exclusion of Key Metrics*

The development of the performance metrics appear to incorporate only those items which the USACE is required to evaluate by law - specifically those metrics dealing with social, environmental, and economic issues. The only social impact metrics included were historic properties protected, historic districts protected, and archeological sites. These are completely inadequate to fulfill the objective to “sustain the unique heritage of coastal Louisiana by protecting historic sites and supporting traditional cultures.” That objective does not even include basic sustainability of coastal communities and there is no mention of unique cultures, people, diversity, ties to land or sense of place being factored into the metrics. We encourage the NRC to closely examine and adopt the recommendations of Dr. Shirley Laska and Dr. Robert Gramling included in the Economics Appendix titled *Expanding the Identification and Measurement of the Human Consequences of Disastrous Flooding: Toward the Refinement of the “Other Social Effects” Account*.

The environmental metrics included direct wetland loss and indirect loss from structural measures aimed to meet the objective to “promote a sustainable coastal ecosystem.” These two metrics are required to be evaluated under NEPA. Additional metrics were included within the first version of the MCDA, however further refinement has occurred as a result of some major assumptions, mainly maintaining the current landscape. As a result of including only one alternative for coastal restoration, it resulted in nullification of two environmental metrics.

*Two [environmental metrics] were dropped from the multi-criteria decision analysis because they had no affect on the outcome of the rankings (i.e. results were the same with or without the metric). The two metrics dropped were wetlands sustained/restored and spatial integrity. These two environmental metrics were used to prioritize and identify restoration plans.*

It should also be noted that wetlands sustained/restored was the top priority of stakeholders in the first round of weightings, as reported by the 2007 Draft Report.

The alteration of the MCDA based on this large-scale assumption is another example of ensuring that the initial steps in the 6-Step Process are completed correctly in order to move on to the next step with confidence and accuracy. It is inevitable that the LaCPR Program will have to explore various restoration alternatives in the future, and that including only one restoration alternative does not qualify within the alternatives analysis framework of the National Environmental Policy Act (NEPA). At the time, the LaCPR moves forward to an EIS and alternatives have to be incorporated, the MCDA will be irrelevant because it does not incorporate a method for analysis of those alternatives based on stakeholder priorities.

### Informing Stakeholders

The Draft Final Technical Report states the “MCDA has been a successful means to inform tradeoffs and is an effective means of communicating the wide spectrum of risks to stakeholders.” This is not the case. First, the stakeholders were included by invitation and only 500 stakeholders were invited to attend. Although these individuals also represented larger constituents or industries, they were not inclusive of the large breadth of stakeholders in the 23,273 square mile project area and did not include the general public. The public was not made aware of these meeting through any advertisement. Therefore, the outreach effort performed by the USACE to inform stakeholders about risk and tradeoffs was minimal considering the area of impact.

Secondly, many of the NGOs represented here attended the stakeholder meetings to provide values and weightings for the MCDA. The values and weights were collected on computers, but the program developed by the USACE was complicated and most of the participants did not understand which criteria were most important to them or how tradeoffs were being calculated. In addition, many of the criteria had changing scales. For instance, a high value and weighting for many metrics, such as employment impacted or construction time, meant a goal to minimize these criteria. Yet for other metrics, a high value or weighting meant a goal of maximizing the criteria, such as indirect environmental impact score and historic properties protected. These changing scales also led to confusion among the stakeholders. After attending these meetings and discussions with its participants, we have little confidence that the current values and weightings within the MCDA have any relevance to stakeholder priorities.

### Recommendation for the MCDA

1. All stakeholders, including the general public, establish an objectives hierarchy to fully and uniquely characterize the important outcomes of each decision alternative;
2. A set of outcome measures of performance (or metrics) is developed by stakeholders to represent the performance of each alternative in terms of achieving each of the planning objectives exclusive of normal policy considerations;

3. The outcomes of the alternative plans are modeled and, to the extent there are uncertainties present that may significantly affect performance outcomes, this evaluation of plans is replicated over a set of scenarios that represents a range of possible conditions during the performance phase;
4. Once all the evaluations are complete, a multi-attribute utility function is developed (based on stakeholder assigned values for performance metrics) to assess the overall utility of each plan given its performance in terms of achieving the objectives;
5. Ranking plans based on their individual utility scores is used to provide an indication of stakeholder preference of plan options available; and
6. The RIDF procedure utilizes outputs of evaluations of other decision objectives (i.e. cost efficiencies and project effectiveness) to contrast with stakeholder preferences to identify a final array of alternatives (or top performing plans across all decision objective considerations) and to display tradeoffs among these alternatives for decision makers in a transparent and open process.

## *Alternatives*

The stated goal of the LaCPR study, following the direction of the Congress, has been to consider a full range of flood control/hurricane protection, coastal wetland protection and restoration and non-structural/risk-reducing measures that will reduce the level of storm damage risk to a prescribed level. This is a very ambitious goal, which was not achieved in the current Draft Final Report.

### **Robustness of Alternatives**

The array of 107 alternatives is misleading since more than 56 of these are not comprehensive alternatives. It is only the comprehensive alternatives that are minimally qualified to be considered a Multiple Lines of Defense (MLOD) approach. Any other narrower alternative defies common sense. The non-comprehensive alternatives do not have minimal inclusion of essential elements of non-structural, coastal restoration or structural measures. The non-comprehensive alternative analysis provides insight into the decision process but the alternatives are not by themselves viable alternatives. Therefore the only realistic alternatives for implementation are the comprehensive alternatives.

Examination of the comprehensive alternatives illustrates a lack of robustness, leading to narrower choices. In PU3a, for example, the Morganza to the Gulf levee alignment is the only alternative alignment in any of the comprehensive alternatives. This recommendation is in spite of the LaCPR's description that induced development will be addressed by considering alternative alignments. It is also disturbing that for all planning units, only one restoration plan was considered for all the comprehensive alternatives for each planning unit. For example in Planning Unit 2, thirteen comprehensive alternatives of levees, non-structural elements are included but all alternatives have the same restoration plan (R2).

### **LaCPR Does Not Use All Restoration Methods**

The LaCPR report includes very few options for restoring our coastal wetlands beyond LCA, including many coastal restoration projects identified in the State Master Plan and authorized in 2007 WRDA. The report also fails to use newly elevated land and restored wetlands, including restored cypress swamps, as a key flood risk reduction strategy. Even restoration techniques that have been proposed for years were eliminated from this evaluation.

In Planning Unit 4, restoration relies solely on marsh creation and shoreline protection. Without natural system function restoration, or preventive measures such as salinity control structures, any mechanically-rebuilt marsh will be subject to the same forces that led to loss of the original marsh. The HET did not fully evaluate the resources available to complete the level of marsh creation proposed by the alternatives. The assumptions about sediment resources, funding resources, and engineering ability for the next 100 years are unrealistic and do not seem to be supported by objective data. This analysis has a way to go before being able to lend itself to on-the-ground restoration projects that can achieve the objectives of ecosystem sustainability.

The LaCPR report must consider and incorporate large-scale diversions or potential modifications/realignment of the Mississippi River in order to convey large volumes of Mississippi and Atchafalaya River sediment into the sediment-starved deltaic landscape. This will require the USACE to re-think the management of the river and its navigation system, a system that is increasingly non-sustainable as the mouth of the river sinks. The USACE will have to consider the wetland system as a means of protection for these navigation systems. If adopted, this new framework for managing navigation for flood control and restoration purposes could play an increasingly important role in storm risk reduction.

#### Lack of Proposals to Manage the Mississippi River

The proposed diversions in most of the alternatives require significant re-allocation of Mississippi River discharge into wetlands via various large and small river diversions. The cumulative impacts to the river hydrology sediment transport and ecology are significant.

The LaCPR states:

*“It should be noted that the LaCPR team has not determined the cumulative impacts that multiple diversions may cause on the system. Nor has the team quantified the impacts on navigation or flood control on the Mississippi River. In addition, technical issues for freshwater diversions persist, particularly for the larger scale diversions. These issues include how well the measures may actually perform, how they should be operated, and the tradeoffs that will be required such as over-freshening of marsh areas and displacement of associated fisheries and wildlife. These proposed measures would be expected to evolve over time and be further studied as the USACE looks to improve its understanding of large-scale diversions.” LaCPR p 219*

This tepid approach suggests there is a lack of serious commitment to address the larger issue of re-managing the river for traditional uses and coastal restoration even when it benefits flood protection. Proposals such as the MLODS report proposal to close selected passes on the lower river while maintaining one channel for deep-draft navigation need to be evaluated.

#### **Alternative Hurricane Protection Structures and Levee Alignments**

The USACE deserves credit for the advances it has made in modeling the impact of different kinds of storm events (LaCPR Summary Report p. 10). As a result of this work, we have much better tools than we did a few years ago to model the impact of alternative hurricane protection projects.

However, it seems the major focus of the USACE’s LaCPR-related work over the last 3 ½ years has been looking at alternative levee-type measures. The time and effort that has gone into the structural component of hurricane protection is enormous. The major policy question with the assessment of various hurricane levee alignment proposals is the inertial tendency within the USACE to pursue cross-basin levees, such as the Donaldsonville to the Gulf - GIWW levee



alignment rather than the Ridge alignment that incorporates major features of the swamp alignment leaving the Basin open to storm surge allowing for its dissipation.

### **Analyze All Potentially Useful Non-Structural Measures**

Perhaps the most creative and unanticipated part of the LaCPR report has been the work addressing the contribution of non-structural measures to risk reduction. Such measures include preventing new development in flood-prone areas, pursuing buy-outs in high risk areas where other non-structural or hurricane protection levee costs are very high, raising building elevations, assessing the quantitative impact of those measures on risk-reduction and incorporating alternative non-structural measures into comprehensive alternatives. The USACE has the necessary authority to implement these measures, but, almost four years after Katrina and Rita, has not exercised its authority. The USACE is missing an opportunity to take the lead in non-structural implementation and influence rebuilding efforts. The LaCPR contains numerous potential non-structural pilot projects that should be implemented as soon as possible. The USACE should be leading the effort on non-structural. The LaCPR does well to acknowledge other Federal and State non-structural efforts and should, as it suggests, coordinate with these efforts, but should not sit on the sidelines. The USACE could exert much more influence over the design and implementation of a non-structural program by making it a condition of significant federal hurricane protection investments that could induce development in low-lying, flood-prone areas.

### **Incorporating Evacuation Alternatives**

The LaCPR report provides an overview of planning considerations including the following problem statement describing the nature of risk to the planning area:

#### *Problem Statement*

*The people, economy, environment, and culture of South Louisiana, as well as the Nation, are at risk from severe and catastrophic hurricane storm events as manifested by:*

- *Increasing risk to people and property from catastrophic hurricane storm events.*

#### *Objectives*

*The following planning objectives were established to help solve the problems defined above and to develop the full range of flood damage reduction, coastal restoration, and hurricane risk reduction measures:*

- *Reduce risk to public health and safety from catastrophic storm inundation. (p.30)*

In addressing the risk to people, public health and safety, the LaCPR report further distinguishes between two categories of risk reduction:

*In general, within the LaCPR planning area, authorized hurricane risk reduction projects fall into two categories of risk reduction. The first category applies a Standard Project Hurricane design standard for urban areas. The Standard Project Hurricane was established as the design storm to be used for highly populated areas where there is a chance for loss of life and great economic impact due to loss of property. A second category of risk reduction*

*has been applied to less developed areas where property protection was the primary emphasis and loss of life was addressed by imposing mandatory evacuation of residents; (p. 59)*

We agree that it is extremely difficult to achieve 100% evacuation for less developed areas and exponentially more difficult to achieve 100% evacuation for highly populated urban areas even under mandatory evacuation scenarios. But despite this acknowledgement, we are concerned that the LaCPR report does not place stronger emphasis on evacuation as the primary risk reduction measure designed to protect human life and public safety in both less developed and highly populated urban areas. Additionally we are greatly concerned that risk reduction measures associated with a Standard Project Hurricane do not place a strong emphasis on evacuation as the primary risk reduction measure for protecting people in highly populated areas.

The Multi Criteria Decision-Making Analysis (MCDA) further embraces this implication by titling one criteria “Population Impacted.” We recognize that a population can be impacted due to flood damage or wind damage to their assets, infrastructure, houses and buildings without actual risk to lives or public safety, but there is a clear implication, repeated in the MCDA summary that “Population Impacted” refers to the protecting people rather than more specifically protecting assets.

*For the LaCPR participants, protecting population was most frequently the most important attribute followed by the reduction of direct and indirect environmental impacts. (p. 136)*

If the LaCPR continues to emphasize protection of human life as a significant planning objective and stakeholders are led to believe that their input reflects a desire for higher personal safety, then a substantially more robust evacuation component must be incorporated into all proposed alternatives. While we understand that evacuation planning and execution fall outside the USACE’s authority, the cooperation and partnership between the State and USACE should have produced a clearly evident and well articulated evacuation component designed to achieve a substantial, cost-effective reduction in risk to human life and public safety.

### **LaCPR’s Presumption of First-Guess Alternatives are Best**

The classic Corps’ planning process (LaCPR Figure 1.1) develops alternatives, evaluates alternatives and selects an alternative. There is an assumption that a priori alternatives based on limited analysis will include an alternative that is actually the best of all possible alternatives. This works for many projects of much less complexity, uncertainty and less technical analysis. This is not the case for LaCPR report. The plan formulation process for the LaCPR did not have the benefit of massive amounts of critical data regarding surge, ecologic and cultural impacts. The LaCPR and future extension of the LaCPR process should not be rigidly confined to the current LaCPR alternatives. It is very likely that alternative refinement or alternative hybrids are likely to produce significant benefits.

## ***Use of the Multiple Lines of Defense Strategy and Coastal Restoration***

Congress directed the Corps to undertake the LaCPR and consider a full range of flood protection measures including coastal restoration. To achieve this, the Corps adopted the Multiple Lines of Defense Strategy (MLODS) (Lopez 2006; Lopez JCR draft, 2009). This strategy is a proposed method to integrate the natural landscape and traditional flood protection such as levees into a single, sustainable flood protection system. The state of Louisiana also adopted this strategy in their State Master Plan. The LaCPR provides significant data that supports the MLODS but falls short of fully applying MLODS to the formulation process and alternatives evaluated.

### **Critical Landforms Features (CLF), Critically Important Landform Features (CILF) and Lines of Defense**

Some of LaCPR's evidence supporting the MLODS is the general pattern of attenuated surge along the coast, but also the identification through the surge models demonstrating the presence of "Critical Landform Features" (CLF), which beneficially reduce surge attack along the coast by slowing surge movement during a storm event. The CLFs identified in the LaCPR (p 78) are land bridges, ridges and other types of landforms proposed by MLODS as "lines of defense". The CLFs are actually an important subset of Lines of Defense, and most of those identified by LaCPR were previously proposed in the NGO report *Comprehensive Recommendations Supporting the Use of the Multiple Lines of Defense Strategy to Sustain Coastal Louisiana* (MLODS draft report, 2007 draft and MLODS Version I report, 2008). In the LaCPR report, the CLF's were identified considering surge only, and do not capture other important Lines of Defense. Presumably due to the lateness in the LaCPR study process to identify the CLFs, it is clear that the CLFs were not applied to the alternatives or incorporated into the study. Furthermore, not all of the potential CLFs that affect surge were identified (e.g. Marsh Island) in the LaCPR. Many of the CLFs are clearly in need of restoration. For example, the Maurepas land bridge is described as a relic (dying) forest by local researchers.

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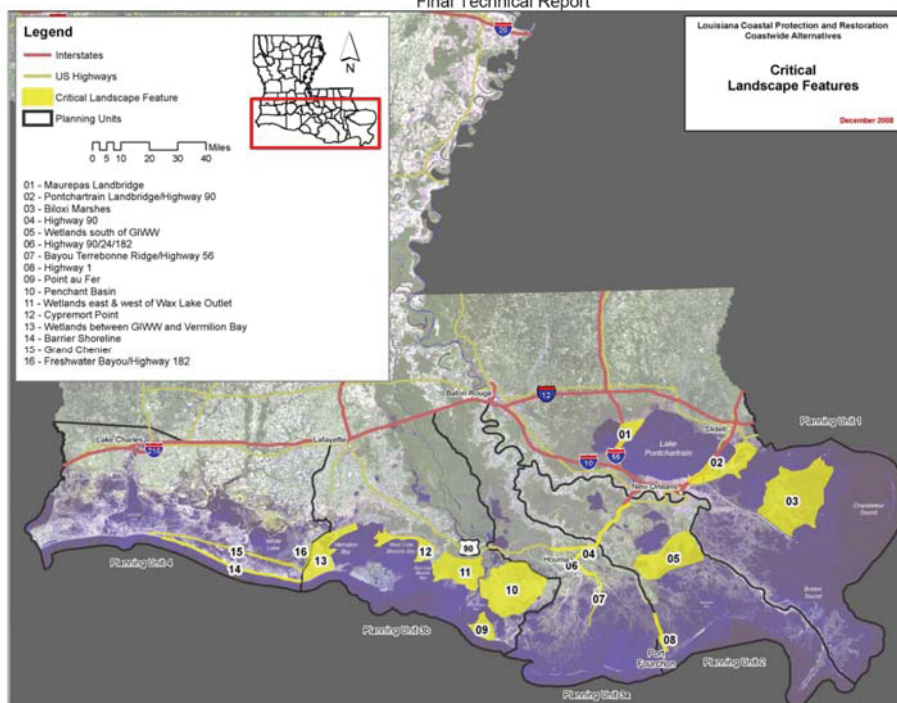


Figure 7-19. Critical landscape features.

Critical Landscape Feature identified in LaCPR by “stacking” of surge (lines of defense), but were not integrated into alternatives.

Further evidence in the LaCPR report supporting MLODS is the identification by the Habitat Evaluation Team (HET) of “Critically Important Landform Features” (CILF). In the LaCPR, the CLFs and CILFs were derived separately but both represent lines of defense.

The HET describes their consideration as follows:

- Coastal restoration strategies that contribute to sustainable hurricane risk reduction;
- Individual measures of varying sizes to restore and maintain landscape features and essential wetland maintenance processes;
- Combinations of individual measures which provide ecosystem-level synergistic benefits;
- Alternative plans that achieve or exceed no net loss of coastal wetlands;
- The potential for trade-offs associated with various restoration alternatives (e.g. near term protection vs. long-term sustainability and fisheries changes vs. deltaic processes).”

The HET was not consistent in applying these considerations and also did not benefit from all the surge information early in the study process. The HET team, while having many years of experience in coastal Louisiana and knowing the landscape well, is composed of coastal restoration specialists and not surge modelers or storm dynamics specialists. Therefore, the CILFs identified by HET are driven more from an organic or coastal integrity standpoint.

The CLFs and the CILFs both represent lines of defense, but from two disciplinary perspectives (surge modelers and coastal restoration specialists). The LaCPR report does not integrate the CLFs and CILFs even though it is apparent that they are both ‘critical’ and need to be considered through all aspects of the LaCPR. When the CLFs and the CILFs are combined on a map it is apparent that there is dual identification of some lines of defense but also that these features complement each other, that is, the combined map of CLF and CILF is a very good template for restoration in total. The combined map is very similar to the proposed features in the MLODS reports (2007 and 2008, and also the priority features described by the NGOs as the Louisiana Coastal Lines of Defense”). These features are also very similar to those included in the State Master Plan (SMP). Therefore, the culmination of major planning by NGOs, the State, and the Corps has caused strong convergence on a particular set of landscape features for flood protection and coastal integrity, which can be referred to as Lines of Defense. Unfortunately in the LaCPR, these key features were not entirely captured in the comprehensive alternative analyses.

### **Priority Lines of Defense NOT Included in LaCPR Comprehensive Alternatives**

#### Planning Unit 1

- Only R2 Restoration in Comprehensive Alternatives
- Missing 5 Lines of Defense
  - Maurepas Land Bridge (LaCPR CLF and MLODS report, but no restoration plan in LaCPR)
  - Chandeleur Islands (MLODS report)
  - Bayou la Loutre Ridge (SMP alternative and MLODS report)
  - MRGO Lake Borgne LB (SMP alternative and MLODS report)
  - Lake Pontchartrain Shoreline (MLODS report)
- High Level alternative and Lake Pontchartrain Barrier alternative rankings reversed in MCDA manipulation
- Top structural alternatives conflict with restoration

#### Planning Unit 2

- Only R2 Restoration in the Comprehensive Alternatives
- Missing 2 Lines of Defense
  - Buras Delta building diversion (MLODS report only)
  - Marsh creation on Barataria Basin Land Bridge (LaCPR CLF and MLODS report)

#### Planning Unit 3a

- Only R1 Restoration in the Comprehensive Alternatives
- All Lines of Defense included
- Morganza to Gulf levee in all alternatives

### Planning Unit 3b

- Only R1 Restoration Alternative
- All Lines of Defense included

### Planning Unit 4

- Only R1 Restoration Alternative
- Missing 2 Lines of Defense
  - Chenier Ridges (LaCPR CLF and MLODS report )
  - Salinity control structures on Calcasieu Ship Channel, Sabine and GIWW at Gum Cove
- Sustainability threat due to saltwater intrusion not addresses and conflicts with Calcasieu Ship Channel enlargement.

It is also necessary to point out that some types of Lines of Defense were not addressed at all or not considered sufficiently. Evacuation is a critical element in risk reduction, and it may be the only line of defense that actually addresses risk reduction to loss of life. Evacuation is not included in any alternatives. Evacuation is addressed in the State Master Plan. The LaCPR report suggests that evacuation routes might be treated as “critical infrastructure” but entirely misses the opportunity to alter or design alternatives considering existing, improved or new evacuation routes. The State of Louisiana has an official evacuation plan and routes, but these apparently did not influence the LaCPR alternatives or the analysis. This is a glaring systemic oversight with very real specific negative consequences. For example, the Interstate 10 bridge being constructed over Lake Pontchartrain (to replace the bridge damaged by Hurricane Katrina) is being built at +30 feet MSL (well above surge heights), but the bridge’s south shore landing is at about 7 feet MSL where it is exposed to storm surge. This short stretch of Interstate 10 is very vulnerable to inundation and is the eastern evacuation and re-entry route for the Greater New Orleans Region and St. Bernard Parish. This is an extremely weak link in evacuation for southeast Louisiana.

### **LaCPR Recommendations Detrimental to Surge Management**

Some components of alternative plans may actually increase risk or at least seriously challenge the management of storm surge. These could be considered “Anti-Lines of Defense”. These are levee alignments or other significant coastal elements that influence surge detrimentally. Some examples are the Morganza to the Gulf Levee, which was included in all comprehensive alternatives for Planning Unit 3a. The proposed levee creates a sharp angle with the existing Larose to Golden Meadow levee. This creates a new “funnel” twice the size of the infamous MRGO funnel. Another problem levee is along the GIWW in Barataria Basin (Planning Unit 2). This levee dramatically reduces the storage capacity of the Barataria Basin and creates small funnel geometries on either side of the basin. Surge height is artificially increased over 100% by the levee alignment. This type of levee has a doubly-negative effect in regard to the coast: (1) Wetlands inside the levee are not able to influence surge (attenuation and storage) and (2) wetlands outside of the levee are less effective because of the higher surge levels. Another example of an “Anti-Line of Defense” is the

Calcasieu Ship Channel, which is already a conduit for storm surge and saltwater intrusion. The ship channel is being considered for significant enlargement, which could potentially increase wetland loss and storm surge heights into Lake Charles. The proposed enlargement is not addressed in the LaCPR report.

### **LaCPR Recommendations Detrimental to Coastal Wetlands and Sustainability**

Four levee alignments in the alternatives evaluated cross major hydrologic basins (PU 1- LP barrier plan, PU 2 GIWW levee; PU 3a Morganza to the Gulf; PU 4 GIWW levee). These levees are described as “leaky levees” which would in theory allow some hydrologic function for the benefit of the estuary. The HET qualitatively evaluated the indirect effect of these cross basin levees, and generally rated them as -7 or -8 on a scale of +8 (best) to -8 (worse). What the report fails to describe is the quantitative scale of the potential impact of these levees. The estuarine area of marsh, lakes, etc. included behind these four levee alternatives is more than 2,500 square miles. Combined, the levees could impound more than 1/3 of the remaining coastal wetlands in Louisiana. Considering Louisiana has lost more than a third of historic wetlands (2,100 square miles), to place such a large wetlands area (over 1,000 square miles) under further threat is a major issue that is not seriously evaluated in the LaCPR report. The LaCPR did not model the hydrology under fair weather conditions to assess the daily hydrology much less the larger biological issues of migration of aquatic estuarine species, sediment transport, nutrient or water quality etc.

### **LaCPR Lacks Wetland Habitat Goals**

The Multiple Lines of Defense Strategy proposes that wetland habitat goals need to be established to assure that the cacophony of coastal projects still result in a functioning estuary with the best chance of being sustainable. Diversions that are proposed in the LaCPR are based on sustaining or rebuilding emergent wetlands. This is vital, but the performance of the diversions and the effect on the estuary needs to be evaluated beyond conceptually. The inevitable interaction of levees, flood gates, barriers, weirs, leaky levees oyster reefs, with diversions is blithely ignored. Habitat goals should be proposed to force the issue that all these projects must consider the ebb and flow, and biological function of the estuary. The goal is not just to avoid conflicting project but to find reinforcing aspects of coastal projects.

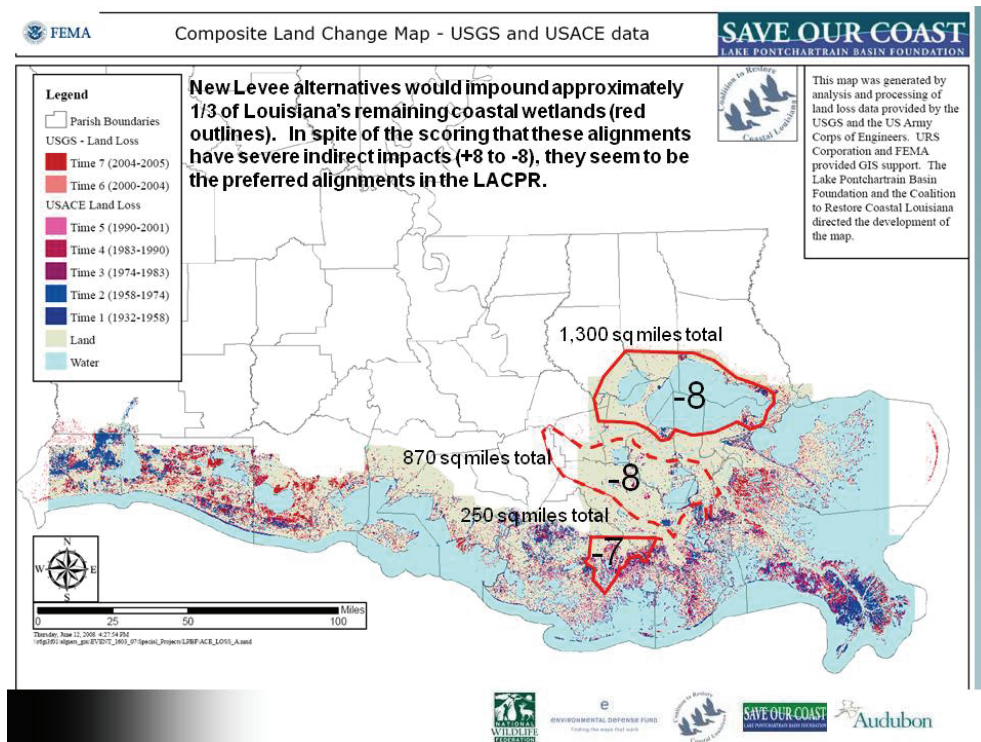
### **Critique of the LaCPR’s “Top Performing Coastwide Plan” (CP-7)**

As would be expected, the end result of the LaCPR’s “top performing” coastwide plan is based on the entire LaCPR body of work, and so it has the cumulative good and bad of the LaCPR analysis. It is positive that the top performing plan (CP-7) is a comprehensive alternative that includes many types of Lines of Defense. Not all the Lines of Defense were included, however, and evacuation was notably absent.. In addition, the top performing plan includes at least two anti-lines of defense (the Morganza to Gulf funnel geometry and an unaddressed Calcasieu Ship Channel). The resulting wetland landscape is entirely undefined since there are no habitat goals. Non-structural solutions are limited to the traditional Corps attitude that home elevation is only necessary when levee protection is unavailable. No home elevation is included in CP-7 for any area inside of a levee. This

is in spite of the fact the New Orleans is currently proposing a Master Plan for the city with aggressive home elevation for long term sustainability of the region. CP-7 also includes two levee alignments that have significant wetland extent inside the levees (PU 1 and PU 3a). The CP-7 is probably not the very best of the alternatives evaluated and is certainly not the best possible alternative (because of the limited robustness of the comprehensive alternatives).

### Barrier Levee Emphasis

It is becoming clear that the Corps is placing a heavy reliance of alleged risk reduction on large levees low on the coast with minimal coastal buffers. This bias is evident now in Planning Unit 1, 2 and 3a, where by limiting alternatives or altering the evaluation metrics, the big cross basin levees are pushed toward the top of ranking. The cross-basin alignments within these planning units could place as much as 1/3 of Louisiana remaining wetlands behind levees.



In all three cases, the levees significantly amplify surge placing an additional huge dependence on the levee in each basin. This approach, when coupled with lack of elevation and evacuation inside the levees, is more aptly described as a “One Line of Defense” strategy, and should not be described as a Multiple Lines of Defense approach. More importantly, the One Line of Defense strategy creates high stakes risk while actually causing a more dangerous surge elevation. An approach that keeps surge elevations lower and widely dispersed, coupled with redundancies of non-structural measures, lowers risk to immobile assets. Evacuation further reduces in risk to health and safety of local residents.



## *Non-Structural Solutions*

The USACE has the necessary authority to implement a non-structural program, but, almost four years after Katrina and Rita, has not exercised its authority. The program could include such measures as preventing new development in flood-prone areas, pursuing buy-outs in high risk areas where other non-structural or hurricane protection levee costs are very high, raising building elevations, assessing the quantitative impact of those measures on risk-reduction and incorporating alternative non-structural measures into comprehensive alternatives. The USACE is missing an opportunity to take the lead in implementing these measures and influencing rebuilding efforts. In fact, the LaCPR contains numerous potential non-structural pilot projects that the USACE should implement as soon as possible. Further, the USACE must, as the LaCPR suggests, coordinate the other federal and state non-structural efforts.

The Corps starts well in its narrative praise of nonstructural flood protection, but their analysis quickly reverts back to the dogma of structural solutions. Language in the Draft Final Technical Report narrative sections surrounding nonstructural are strong in principle and seem to give weight to nonstructural as an important, and cost-effective flood protection measure, but the analysis of actual implementable solutions abandons these words and handicaps nonstructural.

Though the report strongly encourages the use of nonstructural in the *Redundant Measures* and *Complementary/Comprehensive measures* sections (p. 112), application in the alternatives is lacking. Elevation of housing behind levees removes significant residual risk, which is noted as significant in the structural alternatives of LaCPR. Only one alternative (Planning Unit 1) has a truly redundant or comprehensive mix of structural and nonstructural (within levees). Other planning units are considered “comprehensive” with nonstructural outside of levees. Using redundant measures is the best way for the USACE to obtain the high level of protection it has been tasked with designing.

Another disadvantage to non-structural within the analysis is its relative construction time. Nonstructural protection is estimated, by the LaCPR, to take 15 years to complete where structural components are estimated to be completed in 6-16 years (p. 123). This seems to be an outrageous claim, one that even this report does not factor for. Nonstructural flood protection is generally regarded as a much more expedient solution than levee construction or other structural measures. The LaCPR, in its *Redundancy* section, recommends implementing nonstructural measures inside structural measures *prior* to the completion of structural protection because nonstructural solutions can be completed quicker (p. 112). In the discussion of a potential nonstructural program the Corps states it again: “Less time may be required to incrementally implement nonstructural measures as compared with implementation of large-scale structural measures since the benefits of nonstructural measures are realized immediately upon implementation to each structure affected” (p. 197). Both timeframes are skewed (nonstructural slower and structural faster) in a manner that seems to favor structural solutions.

There also seems to be a subtle bias towards structural in the discussion of implementation of nonstructural. This bias manifests itself in a defeatist attitude in the LaCPR in quotes like the following: “while this nonstructural alternative is the most cost-effective and greatest risk reducer it would require 80% participation” (p.180). In the analysis of structural measures, there is no indication that while this levee will reduce risk, building it to a designated height could prove difficult. While both statements are true, the USACE is biased against the non-structural component. This may come from the USACE’s lack of capacity to implement a full nonstructural program or the lack of familiarity or previous projects that focused on non-structural. The USACE needs to work to give equal weight to nonstructural solutions and the quick implementation of nonstructural which can be a much more cost-effective, environmentally sound, and risk reducing flood control strategy.

The proposed nonstructural program (p. 197) should be pursued by the USACE. The LaCPR acknowledges the large task of implementing nonstructural flood protection in Louisiana, but is probably ill equipped especially relative to structural flood protection in staffing, funding and other resources. Any program should take bold initiative to make nonstructural a vital part of a comprehensive flood control system. It should work to implement nonstructural inside of existing levees, put forward innovative plans to increase protection for vulnerable communities and ensure a healthy coast.

A first order of business for nonstructural should be ramping up proposed demonstration projects (p. 198 and appendix). Whether through a nonstructural program or not, the USACE should be spearheading the efforts to use nonstructural protection and become a leader in Louisiana and in other coastal and flood prone communities. Rebuilding has and is happening. Many opportunities to ensure that rebuilding is done safer have been lost in the years since Katrina and Rita, but there are still countless communities that are looking to rebuild. The sooner the USACE can engage these communities, the sooner flood protection will reach the high standards necessary in Louisiana and will prevent future flood related losses. The USACE’s recommendations for demonstration projects and a possible nonstructural program are positive and should be encouraged.

## *Economic Assessment of Restoration Alternatives*

The LaCPR cost numbers for coastal restoration are enormous. Most of them are for marsh creation projects, not diversion projects. Thus, it would be fair to characterize the LaCPR coastal restoration program as a marsh creation program over the next 50 to 100 years. The number of cubic yards of material involved in the marsh creation program in all PUs on an annual basis (if we assume that the program described is for 100 years) is comparable to the number of cubic yards of material that the Corps dredges annually in the lower River, mostly at the mouth.

The total coastal restoration plan component cost numbers by PU as shown in Annex 1 (Coastal Restoration Features) are as follows:

|      |                    |
|------|--------------------|
| PU1  | \$36,217.4 million |
| PU2  | \$10,058.4 million |
| PU3a | \$66,720.7 million |
| PU3b | \$8,299.3 million  |
| PU4  | \$2,328.1 million  |

Since the costs of the comprehensive alternative plans combining non-structural, hurricane protection structure and coastal restoration features average range from \$69.5 to \$115.4 billion (Tables 16-2 and 16-3, Final Technical Report), not all of these coastal restoration features make it to the final cut.

The stated goal of the coastal restoration alternative plans "is to sustain the current coastline to maintain the current level of hurricane and storm damage risk reduction". In other words, whatever the existing wetland system does in terms of storm damage risk reduction, it will continue to do. The Habitat Evaluation Team developed the group of coastal restoration measures. One of the alternative coastal restoration plans was selected as a representative plan for use in the MCDA.

A total of 17 river diversions were selected and placed at various locations along the Mississippi River between RM 161.9 and 16. The list of the 17 diversions appears at p. 9 in Annex 1. Table 2 at pp. 6-7 of Annex 1 shows the HET proposed diversion capacities. The table includes average and high flows for a low flow year and for a high flow year - hence four columns of diversion capacities. For example, for Myrtle Grove, for a low flow year the diversion capacity is 5,240 and 9,589 cfs, and for a high flow year, 64,830 and 118,639 cfs. The other highest diversion capacities for high flow years are 175,680 cfs for Bayou Bienvenue; 115,290 cfs for Bayou LaLoutre and 88,801 cfs for Caernarvon. In addition, we have not been able to find information about acreages created/maintained for each of the 17 diversion projects for each flow regime.

The costs of the individual projects are summarized in Table 5 pp. 33-36.

- In Table 5 in PU1, the total cost of the restoration projects is \$36,217.4 million. However, of that amount, \$10,726.4 million is for Biloxi Marshes Marsh Creation; \$20,928.9 million is for the

Breton Sound Strategic Land Bridge; and \$1,851.2 million is for the East New Orleans Land Bridge Marsh Creation. These three marsh creation/land bridge projects cost \$33,506.5 million. Thus, the total amount of diversions and other non-marsh creation measures comes to \$2,710.9 million. In other words, well over 90% of the coastal restoration costs for PU 1 are for marsh creation by borrowing, piping and barge transporting.

- For PU2, of the total restoration costs of \$10,058.4 million, \$8,079.7 million is for strategic marsh creation in the Lower Basin (\$1,675.6M) and the North Bay Rim Marsh Creation/Protection (\$6,404.1M). That leaves \$1,978.7 million for diversions.
- In PU3a, of the total \$66,720.7 million, \$53,965.2 million is for pipeline conveyance marsh creation, 3,493.9 million for North Terrebonne Bay Rim Marsh Creation and \$3,767.1 million for DuLarge to Grand Caillou Landbridge Marsh Creation. These three marsh creation project costs total \$61,226.2 million. That leaves \$5,494.5 million for diversion projects and barrier island restoration projects. Of the diversion projects, the dominant one is Upper Lake Boudreaux Basin Mississippi River Diversion for \$4,296.5 million. The Isles Dernieres and Timbalier Islands Restoration projects cost \$818.0 million.
- In PU 3b where total restoration project costs are \$8,299.3 million, marsh creation projects constitute 84% of the total
- In PU 4, with total restoration costs of \$15,570.5 million, marsh creation projects constitute 88.6 percent. The marsh creation projects are dominant and do not address the cause of land loss in this region.

Thus, in terms of coastal restoration resource allocation, this representative plan that was analyzed in Annex 1 is overwhelmingly a marsh creation plan, with diversions playing a minor role in cost. Although marsh creation provides benefits quickly, it is important to recognize the underlying processes that lead to land loss may be unaltered and still unsustainable while diversion are dynamic and may be more self-sustaining.

The marsh creation "borrow requirements" and acreage created by these projects are shown in Table 3 on pp. 14-15 of Annex 1. Summary information is:

|      | <u>Acreage</u> | <u>Borrow requirements (cubic yards)</u> |
|------|----------------|------------------------------------------|
| PU1  | 228,900        | 1,483,552,000                            |
| PU2  | 52,385         | 146,000,000                              |
| PU3a | 187,020        | 1,961,095,500                            |
| PU3b | 33,203         | 268,000,000                              |
| PU4  | 106,163        | 1,404,958,948                            |

The total borrow requirements exceed 5.2 billion cubic yards (cy). The total number of acres of marsh created is approximately 607,671. Whatever the number of acres of wetlands that would have to be "created" or "restored" to keep the number of acres of wetlands in the coastal system constant, one suspects that most would come from marsh creation, not water conveyance of sediments via diversions. If one envisions using all of the sediments dredged in the coastal system on an average annual basis, namely, 61 million cy, with 54 million of those dredged in the lower River, predominantly at the mouth, this could satisfy the borrow requirements if the coastal marsh creation were to take 100 years. After all, 54 million times 100 is 5.4 billion cy. However, the LaCPR report does not indicate that river dredged material would be the primary source of borrow material. The sources of borrowing could be off-shore or upland sites in the Mississippi Basin.

The coastal restoration analysis does not envision any large-scale river diversions or potential river realignment, nor does it consider any major new Atchafalaya Basin diversion. The restoration plan does not address the threats to sustainability. This is certainly not a coastal restoration focused on the replication of natural processes.

The LaCPR report should provide estimates of resource needs, time lines for implementation and some sense of priorities for action. For example, if some measure could not be effectively implemented for 30 or 50 years or more, its contribution to reducing the level of storm damage risk would be quite different from a measure that could be implemented within five to ten years. The LaCPR needs to include more transparency of costs, including base unit costs, and codify costs in one place. In the current draft, the various costs are presented in various appendices including Engineering, Economics, and Evaluation Results.

## *Additional Technical Concerns*

### **The Lack of a Sediment Budget and the Implications**

A key part of maintaining the navigation and flood control system has been construction of the vast levee system in coastal Louisiana. The construction and management of this system has deprived this deltaic ecosystem of the sediments that used to wash over it during high River periods and built the coast of Louisiana over the last 7000 years. Navigational dredging, particularly at the mouth of the River has been a necessary component of managing this system. The USACE certainly knows how much dredging in the lower River it has to do every year to maintain the navigation channel close to and through its mouth at prescribed dimensions. Driven by its focus to maintain this system for navigation, the USACE is primarily concerned with limiting the amount of sediment in the River and preventing deposition of sediment in the navigation channel.

Until recently, the USACE had no institutional mission that required a sediment budget for coastal wetland restoration purposes. However, with the publication of COAST 2050 in 1998, adopted by the USACE as a reconnaissance-level study for the LCA, the USACE should have had serious interest in the availability of River sediment for restoration purposes and consequently seen a need for acquiring sediment data. More specifically, this interest should have been triggered even earlier by Congressional passage of the Coastal Wetland Planning Protection and Restoration Act (CWPPRA – the Breaux Act) in 1990 and should have intensified as it undertook the LCA study in 2002.

The USACE, USGS and the State, together, are making up for this deficiency, but this effort comes far too late for the LaCPR report. In the absence of such a sediment budget, one way to estimate the land-building potential of the Mississippi River is to look at the quantity of material that the USACE dredges in the lower River below Baton Rouge each year. In a presentation entitled “Enhancing Consistency with the Master Plan and Improving the Coastal Use Permit Program – Promoting the Beneficial Use of Dredged Material” (presented April 2, 2009 at the Louisiana Governor’s Commission on Coastal Protection, Restoration and Conservation) the Louisiana Office of Coastal Protection and Restoration (OCPR) disclosed that each year an average of 61 million cubic yards of sediment is dredged from water bottoms of the Louisiana Coastal Zone (all but 7 million cubic yards for federal navigation channel maintenance purposes). This amount “is enough material to fill shallow water that is 3 feet deep with enough material to create more than 18 square miles of wetlands” per year if it could all be used productively – “that’s about two-third of what is lost each year.”

In addition, a comparable amount of sediment disappears from the coastal system each year as the levees and jetties in the navigation system convey it into the Gulf of Mexico beyond the continental shelf where it is effectively lost from the coastal system. Furthermore, while the Atchafalaya River is building two deltas and nourishing wetlands east and west, a significant portion of the sediment resources of the Atchafalaya River have built extensive land in the inland areas of the interior

Basin—a land-building process that cannot go on forever and could be redirected—and even more Atchafalaya River sediment flows into deeper waters. While over 80% of Mississippi River sediment volume may be silts and clays and not suitable for barrier island restoration, these smaller grain-sized sediments can play a useful role in restoring wetlands when conveyed into coastal basins high enough in the coastal system.

All of this suggests that the sediment resources of the Mississippi River have the potential to preserve the coastal landscape and build net land if our focus is on figuring out how to take maximum, feasible advantage of the sediment resources of the Mississippi River, consistent with navigation and flood control, as the Congress has directed for consideration in 2007 WRDA section 7002. In addition, we clearly know enough about the sediment resources of the Mississippi River so that any delay in moving ahead on the most rapid time scale possible with authorized restoration projects is totally unwarranted.

### **Potential of Wetlands to Reduce Storm Surge**

One hundred years ago, New Orleans and other coastal urban communities were buffered by 7000 square miles of deltaic wetlands. But coinciding with more rapid and extensive land loss, Greater New Orleans and other coastal urban communities have a seen progressively higher and more widespread inundation associated with tropical storms and hurricanes. This would suggest an imperative to determine, with as much precision as possible, what role both existing and restored wetlands could play in reducing storm surge and wave height. This would particularly be the case for swamp forests.

From a technical standpoint, the LaCPR does little to point the way forward on integrating wetlands with protection. A choice was made early on to treat wetlands in wave models simply as frictionless intertidal mudflats, and while it was known that the no-friction approach would lead to erroneous results, no effort has been made to accelerate critical research to reduce the error introduced by this assumption.

The USACE claims that it lacks good field data to make these measurements with enough precision, (at least with respect to restored coastal marshes and swamps in wave attenuation) to incorporate the storm buffering capacity of restored wetlands as a component of flood risk reduction calculations. As such, the LaCPR report provides little or no data that would allow the USACE, other federal agencies, the State, or the environmental community to advocate for major federal investments in coastal restoration via sediment diversions, pipelines and beneficial use of dredged material based on quantitative flood risk reduction benefits.

LaCPR Technical Report (page 48, lines 1862 – 1971):

*“Careful review of simulated wave heights at some locations of inshore of coastal marsh areas indicates that the with-friction STWAVE results may underestimate the wave height. In the interest of conservatism and in the absence of field-verified values for friction coefficients due to bottom and vegetation interaction, the design*

*process applied STWAVE simulations without frictional dissipation...Future planned efforts to obtain the necessary field data along with more accurate estimates of future wetland conditions should provide improved quantitative estimates of friction coefficients suitable for design purposes.”*

LaCPR Technical Report (page 216, lines 5364 – 5369):

*“The effect of vegetation on water levels and waves remains difficult to estimate. This effect, however, has a direct impact on the hydraulic design parameters for infrastructure, and hence the costs and reliability of that infrastructure. Therefore, the Dutch team highly recommends that priority studies be undertaken to address the effect of different types of wetlands on surge, wave, and wind reduction.”*

The LaCPR report includes passing references to ITR and EPR processes that apparently addressed this issue, but the credentials of those who participated in these reviews, discussion of the evidence relied upon and discussion of specific conclusions is not included in the LaCPR Final Draft Report. Clearly, an issue that is so critical to the policies of the state and federal governments moving forward deserved something more than the superficial treatment provided.

The LaCPR must determine, with as much precision as possible, what role both existing and restores wetlands play in reducing storm surge and wave attenuation. Then, the LaCPR must point the way forward for integrating wetlands with protection. The USACE must accelerate critical research to reduce the uncertainty associated with the interaction between storm-induced waves and damping effects of wetland and swamp vegetation.

### **Sediment Resources in the Atchafalaya Basin**

The Atchafalaya River carries 30% of the combined flows of the Red and Mississippi Rivers. It therefore carries a significant portion of the sediment of the combined rivers. A flood and storm surge reduction assessment should also consider the potential of these sediment volumes to maintain the existing coastal landscape. Beyond simply maintaining the existing coastal landscape, these sediment volumes could contribute to net wetland restoration. This sediment could be extremely beneficial both east and west of the Atchafalaya if transported via the GIWW and through new outlets designed to deliver sediments higher in the system and further away from where sediment is currently delivered into the Atchafalaya Bay via the Lower Atchafalaya River (LAR) and Wax Lake Outlet (WLO).

A significant portion of Atchafalaya River sediment, particularly during high flow periods, has raised elevations and built land in the Basin. While some portion of the sands that have reached the Atchafalaya Bay via the LAR and WLO have increased land elevations in the Bay and the visible deltas, much of the sediment flows into deep Gulf waters. A coastal restoration program must consider how to use these significant sediment resources to reach, protect and restore wetlands in areas, including the central Terrebonne Basin.



In providing for a comprehensive restoration plan for coastal Louisiana in 2007 WRDA, Congress directed the Secretary of the Army to consider all techniques for taking maximum, feasible advantage of the sediments of both the Mississippi and Atchafalaya Rivers for environmental restoration, consistent with navigation and flood control. This was a Congressional directive in 2007 WRDA and not specifically in the 2005 LaCPR (Public Laws 109-103 and 109-148) directive. However, without looking at the coastal restoration potential of the Atchafalaya system, the USACE has not satisfied the directive in Section 5009, Department of Defense Appropriations Act, 2006 (P.L. 109-148) 30 December 2005 stating, *“the Secretary of the Army, acting through the Chief of Engineers is directed to conduct a comprehensive hurricane protection analysis and design at full federal expense to develop and present a full range of flood control, coastal restoration, and hurricane protection measures exclusive of normal policy considerations for South Louisiana,”*

In the Water Resources Development Act of 2007, Congress called on the Corps to develop a comprehensive plan for protecting, preserving, and restoration the coastal Louisiana ecosystem, with an initial report due to Congress November 2008. Further, the Corps is to integrate the restoration plan into the LaCPR. (Public Law 110-114, Title VII, Section 7002) We encourage the NRC to inquire as to the status of the comprehensive plan and how it has been incorporated into the LaCPR.

**ATTACHMENT A**

**Review of USACE Response to National Research Council Review Comments**

**Review of USACE Response to National Research Council Review Comments - DRAFT**

| National Research Council Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | USACE 6-Step Planning Process |                           |                       |             |            |           | Comment Addressed |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|-----------------------|-------------|------------|-----------|-------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1) Problems/<br>Opportunities | 2) Inventory/<br>Forecast | 3) Formulate<br>Plans | 4) Evaluate | 5) Compare | 6) Select |                   |
| Future versions of the LACPR study should include more explicit explanation of the evolving science of possible changes in future hurricane patterns, and how this might affect planning. (Page 7)                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               | ✘                         |                       |             |            |           | No                |
| Future versions of the LACPR report should include additional, more explicit, information on cost estimates for alternative projects. Future versions of the LACPR report will be of greater value to the extent that they identify projects of higher priority that promise to yield greater and more immediate benefits in terms of flood risk reduction and ecosystem restoration. (Page 8)                                                                                                                                                                                                                                      |                               |                           | ✔                     | ✔           |            |           | Partially         |
| Future versions of the LACPR report should identify and present clearly, in a single section early in the report, the major assumptions that were made, the scientific basis for the choices that were made, and give some indication of the consequences if the assumptions turn out not to be valid. (Page 8)                                                                                                                                                                                                                                                                                                                     | ✔                             | ✔                         | ✔                     | ✔           |            |           | Partially         |
| The LACPR study team should develop sediment budgets for the wetlands of coastal Louisiana to determine the feasibility of maintaining coastal Louisiana in roughly its present condition. A sediment budget should be developed for each LACPR study planning unit. Options for reducing losses of sediment also should be explored. If the results show that it is infeasible to maintain the current coastal landscape, then the LACPR will need to reassess the role of the proposed structural and nonstructural designs that are based on the assumption that the current coastal configuration will be maintained. (Page 10) | ✘                             | ✘                         |                       | ✘           |            |           | No                |
| An evaluation of how a major realignment of the lower Mississippi River mouth may affect sediment capture and diversion should be conducted. (Page 12)                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                               | ✘                         |                       | ✘           |            |           | No                |
| The evaluation of the coastal restoration measures should be more fully explained, including source of material, and the local sediment budget needs to be determined. Coastal restoration models should be clearly discussed and their validity demonstrated. (Page 12)                                                                                                                                                                                                                                                                                                                                                            |                               | ✘                         | ✘                     | ✘           |            |           | No                |
| Some sections of the LACPR draft technical report—especially those that consider future redevelopment scenarios and increases in population growth—are written with a limited appreciation of the fact that the region's coastal areas are experiencing rapid rates of degradation and subsidence and are in fact disappearing. These scenarios of redevelopment thus may be inconsistent with the report's stated objectives of reducing risks to public health and safety, and reducing damages from catastrophic storm inundation. (Page 14)                                                                                     |                               | ✘                         |                       |             |            |           | No                |
| The LACPR draft report gives insufficient attention to the need to counter the phenomenon of induced development behind levees and to preventing the future development of high-hazard areas not protected by levees. (Page 14)                                                                                                                                                                                                                                                                                                                                                                                                     | ✘                             | ✘                         | ✘                     |             |            |           | No                |
| In its future reports, the LACPR team is encouraged to present an integrated set of measures that can limit future development in low-lying, flood prone areas. (Page 14)                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ✔                             | ✔                         | ✔                     |             |            |           | Partially         |
| The LACPR report should consistently refer to relative levels of protection from hurricanes and storm surge, and make it clear that absolute protection is not possible. Future analyses should explicitly include probabilities of failure or inadequate performance, and should also consider possible effects of human actions such as improper operations during an emergency. (Page 15)                                                                                                                                                                                                                                        | ✘                             | ✘                         | ✘                     | ✘           |            |           | No                |

**Review of USACE Response to National Research Council Review Comments - DRAFT**

| National Research Council Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | USACE 6-Step Planning Process |                           |                       |             |            |           | Comment Addressed |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|-----------------------|-------------|------------|-----------|-------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1) Problems/<br>Opportunities | 2) Inventory/<br>Forecast | 3) Formulate<br>Plans | 4) Evaluate | 5) Compare | 6) Select |                   |
| Given the considerable economic, cultural, and other values of the City of New Orleans, and a congressional mandate to produce a design for Category 5 protection, the LACPR report should focus on producing designs and plans based on storms with return intervals associated with Category 5 storms. (Page 15)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ✓                             | ✓                         | ✓                     |             |            |           | <b>Partially</b>  |
| The LACPR draft technical report properly includes discussion of many of these nonstructural strategies, and the LACPR team should be credited for evaluating such measures. The report lacks a systematic analysis of the obstacles that limit local government, households, and businesses from adopting these nonstructural measures, and it fails to identify an adequate suite of remedies that could help address these obstacles. The LACPR team is encouraged to more carefully identify and discuss these challenges and obstacles in its final report. (Page 16)                                                                                                                                                                                                                                                                                        | ✗                             | ✗                         | ✗                     |             |            |           | <b>No</b>         |
| The LACPR technical report's "Findings to Date" section importantly concludes that "...relocation or removal of assets from a flood affected zone...can significantly and reliably reduce risks." The relocation option often provides an excellent means for improving safety and reducing potential damages. It is a promising alternative and, as the report also points out, should be considered via "collaboration between Federal, State and local agencies." (Page 16)                                                                                                                                                                                                                                                                                                                                                                                    | ✓                             | ✓                         | ✓                     |             |            |           | <b>Partially</b>  |
| The LACPR study team is encouraged to extend the scope of these types of demonstration projects in its final report. The LACPR study team, along with relevant state and local administrative entities, is encouraged to move ahead quickly with these demonstration projects. The LACPR report will be strengthened to the extent it provides additional information about the necessary steps to move to a more active nonstructural flood damage reduction program that includes buyouts and floodproofing measures. (Page 17)                                                                                                                                                                                                                                                                                                                                 | ✓                             |                           | ✓                     |             |            |           | <b>Partially</b>  |
| Future versions of the LACPR report should more explicitly explain plans for using monitoring and related strategies to strengthen scientific knowledge and to learn from the processes of restoration, structural, and nonstructural project implementation. (Page 18)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                               | ✗                         | ✗                     |             |            |           | <b>No</b>         |
| The LACPR draft report provides little discussion of the details of the federal-State-Local cooperation that will be necessary to fully implement nonstructural measures of the integrated Multiple Lines of Defense Strategy proposed in the technical report. The LACPR study team, working with the State of Louisiana and parish- and other local-level entities, is encouraged to explore further the institutional and administrative needs regarding effective implementation of nonstructural (and other) measures for hurricane protection, and how state, local, and other bodies can complement the roles of the LACPR and Corps of Engineers. All parties involved are encouraged to consider implementation of restoration, structural, and nonstructural measures as part of a systematic and integrated program of hurricane protection. (Page 19) | ✗                             |                           | ✗                     |             |            |           | <b>No</b>         |

**Review of USACE Response to National Research Council Review Comments - DRAFT**

| National Research Council Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | USACE 6-Step Planning Process |                           |                       |             |            |           | Comment Addressed |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|-----------------------|-------------|------------|-----------|-------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1) Problems/<br>Opportunities | 2) Inventory/<br>Forecast | 3) Formulate<br>Plans | 4) Evaluate | 5) Compare | 6) Select |                   |
| The plan formulation process organizes a large number of potential measures, screens out inferior or infeasible choices, and assembles the remainder into 109 alternative plans distributed over five planning units. However, as reported, the process contains a critical embedded assumption: all plans include the coastal restoration alternative, which is said to preserve 100 percent of the coastal landscape. If this assumption were feasible, including it in all alternative plans precludes any evaluation of its efficacy. If the assumption is not feasible, efforts to elicit stakeholder preferences will not provide information suitable for use in the plan evaluation process. (Page 20) |                               | ✘                         | ✘                     | ✘           |            |           | <b>No</b>         |
| The process of plan evaluation should be better documented within the LACPR report. One critical step within plan evaluation—the computation of value scores—is barely mentioned. The fact that rescaling metrics to produce value scores, in itself, represents a form of weighting is not acknowledged in the report, and may not have been explained to the stakeholders. In this case, stakeholders were asked to assign weights to metrics without understanding that the evaluation process has already implicitly weighted these metrics in various ways, which greatly diminishes the value of this exercise. (Page 21-22)                                                                             |                               |                           |                       | ✔           |            |           | <b>Partially</b>  |
| The kind of MCDM approach taken in the LACPR draft report generally is a feasible and appropriate way to rank the kinds of alternative plans under consideration. In fact, the LACPR is to be commended for taking this approach, despite the learning curve created by the need to embed this evaluation method in traditional Corps planning. But it will be necessary to repeat the plan evaluation process using a different weighting paradigm, such as swing weighting. It should be noted that the LACPR study team has stated its intention to take this step. (Page 22)                                                                                                                               |                               |                           |                       |             | ✔          |           | <b>Partially</b>  |
| The LACPR team also is encouraged to more clearly present and discuss trade-offs among various planning combinations and alternatives. The LACPR team has correctly integrated restoration, structural, and nonstructural dimensions of hurricane protection in its study. The LACPR team is encouraged to continue to identify and evaluate the connections between these three approaches. (Page 22)                                                                                                                                                                                                                                                                                                         | ✔                             | ✔                         | ✔                     | ✔           |            |           | <b>Partially</b>  |

# Attachment CA-4 Public Comments

### Attachment CA-4 – Public Comments Received by Mail or Email

Approximately 1,640 public comments were received during the public review period. The majority of the comments (1,553) were based on one of three form letters (A, B, or C). Since so many form letters were received and could not be fully reproduced for this document, only unique comments or the unique portions of the form letters are included in this attachment. All comments are on file at the District. The table shown below summarizes the themes presented in each of the comments.

| Question/Comment Related to:<br>(theme key words in bold)                                                                                              | No. of Occurrences |        |        |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|--------|--------|
|                                                                                                                                                        | Unique             | Form A | Form B | Form C |
| Desire for “ <b>Cat 5</b> ” risk reduction                                                                                                             | 12                 | 53     | 1      |        |
| Support for <b>lines of defense</b> strategy                                                                                                           | 3                  |        | 1183   |        |
| <b>Barrier-weir plan support</b> (or support for any plan that reduces surge in Lake Pontchartrain)                                                    | 30                 |        |        |        |
| <b>Barrier-weir plan opposition</b>                                                                                                                    | 9                  |        |        | 317    |
| <b>Barrier-weir plan specifics (benefits, impacts, cost, funding, design &amp; operation, history, etc)</b>                                            | 9                  |        |        |        |
| <b>Dissatisfaction with study process/time</b> it takes to implement risk reduction plans                                                              | 18                 | 53     | 1183   |        |
| <b>Induced flooding and/or equitable risk reduction</b> concerns (between states or between the north shore and the south shore of Lake Pontchartrain) | 8                  |        | 1      | 317    |
| <b>Nonstructural measures - More information on buyouts</b> desired                                                                                    | 0                  |        |        |        |
| <b>Nonstructural measures - Would consider buyouts</b>                                                                                                 | 0                  |        |        |        |
| <b>Nonstructural measures - Would oppose buyouts</b>                                                                                                   | 2                  |        |        |        |
| <b>Other nonstructural</b> approaches such as zoning, building codes, and/or raise in place                                                            | 3                  |        | 1183   |        |
| <b>Structural measures</b> in addition to or in place of the barrier-weir plan                                                                         | 7                  |        | 1183   |        |
| <b>Plans for specific areas</b> (e.g. Slidell, Mandeville, Madisonville, Lacombe, Eden Isles, Palm Lake, Quail Ridge, etc.)                            | 7                  |        |        |        |
| <b>Improve communication</b> , e.g. through better outreach, <b>maps</b> , and/or <b>computer models</b>                                               | 3                  |        |        |        |
| <b>Coastal restoration</b> (wetlands, diversions, barrier islands, etc) or other <b>environmental concerns</b>                                         | 25                 | 1      | 1183   |        |
| <b>Planning and decision process</b>                                                                                                                   | 4                  |        |        |        |
| Seeking <b>international and/or external expertise</b> (e.g. from the Dutch) is important                                                              | 1                  |        |        |        |
| General <b>lack of trust</b> in the Corps and/or federal government                                                                                    | 2                  |        |        |        |
| <b>Miscellaneous</b> comments (not captured by themes above)                                                                                           | 7                  |        | 3      |        |
| <b>Other</b> comments not specifically related to LACPR (e.g. pump to the river)                                                                       | 7                  | 1      |        |        |

## Form Letters

The three form letters (which are referred to as A, B, and C throughout this document) are transcribed below followed by the themes in each.

### Form Letter A:

---

We are writing to ask you to demand that the Corp submit a specific plan that could be adopted and built right away for Category 5 Protection. It is unacceptable to waste more time in offering alternatives for protection. We need a detailed list of specific project recommendations to approve and implement. We need no more discussion of options, but rather specific recommendations for immediate action. We cannot afford to waste more valuable time and leave this vital region defenseless.

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**Form Letter A Themes:** Cat 5; dissatisfaction with study process/time

### Form Letter B:

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Subject: Please listen to your critics, and provide a clear path for a sustainable coast

To whom it may concern,

I am writing to express my disappointment with the LACPR Report that is currently out for public comment. This Report fails to comply with the clear direction provided by Congress that the Report provide recommendations for comprehensive storm protection of coastal Louisiana. We cannot afford to wait for more studies.

I am also concerned that the LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps.

Specifically, the current LACPR Report

- The LACPR report supports the Coastal Lines of Defense strategy but falls short of applying it to the formulation process and alternatives evaluated. We ask the Corps to incorporate the Multiple Lines of Defense strategy into the analysis.
- The LACPR does not consider the full range of coastal restoration measures, such as using sediment from the Mississippi River, rebuilding barrier islands, restoring cypress swamps and natural ridges, etc.
- Some of the LACPR's levee alternatives could significantly increase storm surge and rely almost exclusively on levees that would enclose almost 1/4 of Louisiana's remaining wetlands. Wetlands behind levees cannot provide protection or a buffer for the levee system and communities inside. The Corps should focus on leaving wetlands outside of the levee systems to act as storm surge buffers.



## LACPR Final Technical Report Comment Addendum

- Nonstructural solutions (elevating homes, flood-proofing, etc.) are downplayed, despite the fact that they can be implemented quickly and provide cost-effective, environmentally sound risk reduction. The Corps should consider non-structural solutions more seriously.
- Evacuation is a critical element in keeping our communities safe and saving lives, but is not included in any alternatives. The Corps should incorporate evacuation, and all of the lines of defense into their analysis.
- The inevitable interaction of levees, flood gates, barriers, weirs, and leaky levees with diversions is not addressed. Habitat goals for a sustainable coast should be proposed so that the natural function of the estuary is supported.

I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. The citizens of Louisiana deserve true comprehensive storm protection that can only be provided through the application of an approach that incorporate multiple coastal lines of defense both man-made and natural. Please add my e-mail comments to the official public record.

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**Form Letter B Themes:** Dissatisfaction with study process/time; structural; other nonstructural; coastal restoration/environmental issues; lines of defense

### **Form Letter C:**

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To whom it may Concern,

I am writing this letter to formerly [sic] protest the thought or intention of the U.S. Army Corps of Engineers intent to construct Levee's [sic] that will adversely affect my community and especially my home. I think the Corps would be derelict in their duties and totally irresponsible to the environment to construct flood protection devises [sic] that would damage or destroy adjacent properties in Mississippi to protect Louisiana residents.

I also feel this is a direct violation of the United States Clean Water Act and unless a study was conducted, and proven that all of the 6 coastal counties and counties north along the Pearl Rivers would be subject to no adverse impacts and that the proper advertisements and public hearings were held in those areas to inform the general public.

Thank you for your consideration,

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**Form Letter C Themes:** Barrier-weir plan opposition; induced flooding

The unique comments or comments based on form letters with additions, deletions, or variations are listed in four tables:

- Comments based on Form Letter A with variations
- Comments based on Form Letter B with variations

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- Comments sent by email (primarily through the website except where an email header is shown)
- Comments sent to the District in the form of a letter

Form Letter C comments are not shown since none of the 317 form letters was changed.

### Comments Based on Form Letter A with Variations

53 comments were based on Form Letter A. Only the 12 comments with additions or variations to the form letter are included in the following table. The remaining comments based on Form Letter A are on file at the District.

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Themes                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Bonnie Rabe</b> – This is VERY important for the US citizens living in costal Louisiana! (July 22, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | See Form Letter A themes                            |
| <b>Michele Mire</b> - Please consider the "pump to the river" option. I know it more costly, but in the long run will be much more efficient and better protect our lives and property. (July 21, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | See Form Letter A themes; other                     |
| <b>Raymond Serpas</b> - Please perform the job we pay you to do. (July 19, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See Form Letter A themes                            |
| <b>L.F. Roussel</b> - It has been almost 4 years since the Corps' mistakes devistated the city of New Orleans. (July 19, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | See Form Letter A themes                            |
| <b>Bruce Gallassero</b> - This is not the time to simply offer alternatives. It is imperative that the public sees a detailed list of specific recommendations to approve and implement. Now is the time for immediate action. (July 19, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | See Form Letter A themes                            |
| <b>Coy M. LaSister</b> – I am writing to ask the US Army Corps of Engineers to submit a specific plan to Congress and American people that could be adopted and built right away for Category 5 Protection for the City of New Orleans and the Gulf Coast Region. As a homeowner and small business owner in New Orleans affected by the hurricane and floodwaters of Katrina, I find it is unacceptable to waste more time in offering alternatives for protection. We the residents of New Orleans and the American people need a detailed list of specific project recommendations to be approved and implemented now to avoid what happen during Katrina and lack of response from the Federal Government to protect American citizens. We certainly do not need more discussion of options, but rather specific recommendations for immediate action. The US Army Corps of Engineers cannot afford to waste more valuable time and leave this vital region defenseless. Thank you for your time and attention to this matter. Your response will be greatly appreciated. (July 19, 2009) | See Form Letter A themes                            |
| <b>Arthur Sterbcow</b> - Such a plan MUST provide for gates at the Riglets and Chef Pass. Anything less its totally unacceptable. (July 18, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | See Form Letter A themes; barrier-weir plan support |

## LACPR Final Technical Report Comment Addendum

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                        |
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| <b>Julie Kyle</b> - We are writing to ask you to demand that the Corp submit a specific plan that could be adopted and built right away for Category 5 Protection (July 18, 2009)                                                                                                                                                                                                                                                                                                                        | See Form Letter A themes                      |
| <b>Louis Bernard</b> - It is unacceptable to waste more time in offering alternatives for protection. I cannot live through another storm like Katrina. (July 18, 2009)                                                                                                                                                                                                                                                                                                                                  | See Form Letter A themes                      |
| <b>C. Mason</b> - Our protective wetlands are disappearing at a rapid rate! (July 18, 2009)                                                                                                                                                                                                                                                                                                                                                                                                              | See Form Letter A themes; coastal restoration |
| <b>Lorene Holbrook</b> - I write today to demand that the Corp submit a specific plan for Category 5 protection to be adopted and built correctly beginning immediately. The waste of time and taxpayers money to study more alternatives is unacceptable. The public needs a detailed list of specific project recommendations to approve and implement. More discussion of options is wasteful, unacceptably expensive, and irresponsible. Do not leave this vital region defenseless. (July 18, 2009) | See Form Letter A themes                      |
| <b>Daniel Falk</b> - This is important!!! (July 18, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                | See Form Letter A themes                      |

### Comments Based on Form Letter B with Variations

1183 comments were based on Form Letter B. Only the 50 comments with additions or variations to the form letter are included in the following table. The remaining comments based on Form Letter B are on file at the District.

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Themes                   |
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| <b>David Kunian</b> - My name is David Kunian. I know you are getting some, maybe a lot of these letters. Please consider ALL measures to preserve New Orleans and prevent storm surge and flooding. It is a task that requires you to have vision and think big. Please find your vision and think big. If the Dutch can do it, we can do it. It just takes vision and will. Please (July 21, 2009)                                                                                                                                                                                                                                                                                                   | See Form Letter B themes |
| <b>Gary J. Moore</b> - As a frequent visitor to New Orleans since 1977 and someone who was married there in 1995 and been back twice since Hurricane Katrina, I am writing to express my disappointment with the LACPR Report that is currently out for public comment. This Report fails to comply with the clear direction provided by Congress that the Report provide recommendations for comprehensive storm protection of coastal Louisiana. We cannot afford to wait for more studies.<br><br>I am also concerned that the LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, | See Form Letter B themes |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                   |
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| with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. (July 21, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <b>Todd Williams-</b> In January 2006, my family relocated to Fairhope AL from Raleigh NC. We have been engaged with a number of recovery and renewal efforts. (July 21, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | See Form Letter B themes |
| <b>David Dow-</b> As a former resident of Slidell, La. which was badly damaged by Hurricane Katrina, I feel that the U.S. Army Corps of Engineers (COE) has been derelict in its responsibility to produce the LACPR report in a timely fashion. When I lived in Slidell, my place of residence was only 20 feet above sea level and was one of the higher places in town. You can imagine the damage when the town was hit by a 17 foot storm surge associated with the hurricane. The media blamed environmentalists because there were no storm barriers in place at the entrances to Lake Pontchartrain, but it was the COE that abandoned this project. We need a more holistic strategy that utilizes natural and manmade buffers/barriers in order to prevent a re-occurrence of this problem in the future. (July 21, 2009)                                                                   | See Form Letter B themes |
| <b>Jeff Hawkins-</b> We need to take advantage of all resources to help mitigate future storm surge scenarios from wrecking havoc again. (July 21, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See Form Letter B themes |
| <b>Elisabeth Kavanaugh-</b> As a resident of the Gulf Coast area (in New Orleans which is STILL extremely susceptible to levee failuer and flooding in storms), (July 21, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | See Form Letter B themes |
| <b>Christopher Vaughan-</b> DO NOT FORGET the enormous loss of life, property and culture as a result of the recent hurricanes. REALIZE that the solution must be comprehensive, not stopgap. COMMIT the necessary resources and support to get the job done!<br><br>I grew up on the Louisiana and Texas Gulf Coast and my opinion, based upon firsthand observations, is that the Lines of Defense recommendations represent the broadest and most accurate course of remedial action. The time is NOW to solve these issues before another devastating hurricane occurs. A well thought-out plan will save thousands of lives, will restore precious beautiful wetlands, and will save billions of dollars in mitigated catastrophe damages. Purely "artificial" answers to the problem will fail. Restoration of the natural coastal protections is paramount. DO WHAT IS RIGHT!! (July 20, 2009) | See Form Letter B themes |
| <b>Evelyn Merz-</b> I am a native of New Orleans and I am frustrated that the COE has chosen the path of tunnel vision in providing protection to the Louisiana coast.<br><br>It is incomprehensible that the LACPR Report is taking the same                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | See Form Letter B themes |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <p>old solution of levees and nothing but levees. The COE needs to adopt a multi-layered solution, including elevation of vulnerable structures, restoration of marshes, barrier islands, and swamps, and making sure that Mississippi River sediment is used to fortify the coastal marshes instead of dropping off the continental shelf.</p> <p>Total reliance upon levees is a foolhardy approach. The safest long-term solution will use natural marsh, wetlands, and barrier island systems as the first line of coastal defense.</p> <p>Please add my e-mail comments to the official public record.<br/>(July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                   |
| <p><b>John Begeron</b>- The fragmented approach being followed by the Corps is going to either disadvantage Louisiana or Mississippi. The Barrier and levee plan will raise water levels along the Mississippi Coast. The only solution for both areas is wetlands and barrier island re-constriction. The land loss in the Biloxi Marsh in St. Bernard parish os only exceeded by the loses to the Mississippi Barrier islands and Chandeleur. Please take a step back and solve both problems WITH ACTION NOW!</p> <p>Wetland and barrier Island restoration is critical to both Louisiana and Mississippi. Barriers alone will not do the job and will be rightfully fought by Mississippi. the Vicksburg and Mobile Offices of the Corps need to show that they can work better together to take a wholistic appo]roach to the problem. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                       | <p>See Form Letter B themes; induced flooding</p> |
| <p><b>Nancy Meredith</b>- I am dismayed to see that the LACPR report, now available for public comment, falls quite short of the directive set by Congress for COMPREHENSIVE storm protection recommendations for coastal Louisiana.</p> <p>In my opinion the Corps needs to incorporate the multiple lines of defense strategy into its analysis of all alternatives evaluated and considered. For example, non-structural elements can be quickly implemented, are both cost-effective and environmentally sound and yet, the LACPR Report fails to take these measures seriously. Additionally, the full range of restoration measures are not included - such as sediment from the Mississippi River, the restoration of cypress swamps and barrier islands - measures crucial for the protection and viability of coastal Louisiana. Further, clarification of the wetlands role is much needed here -only wetlands outside the levees can act as storm surge buffers. Inside the levee system they can make things far worse. Lastly, after the tragic debacle of Katrina and its aftermath, should we really need to stress the imperative of evacuation ??? Again, insufficiently addressed by the Corps!</p> | <p>See Form Letter B themes</p>                   |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Themes                          |
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| <p>I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. The citizens of Louisiana deserve true comprehensive storm protection that can only be provided through the application of an approach that integrates multiple coastal lines of defense both man-made and natural. Please add my e-mail comments to the official public record. (July 23, 2009)</p>                                                                                                                   |                                 |
| <p><b>Andrea Baty</b>- I am a Louisiana native, and am currently studying sustainability at Arizona State University. we studied Louisiana's coast and the impacts from Katrina in one of our classes. We learned all about natural defenses such as barrier islands and cypress swamps. I am extremely disappointed that the common sense to utilize natural defenses is not being clearly focused on in the recommendations. (July 23, 2009)</p>                                                                                      | <p>See Form Letter B themes</p> |
| <p><b>Byron Viles</b>- While I am using the following words provided for me by the Gulf Restoration Network, know that I am behind them 100 percent. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                | <p>See Form Letter B themes</p> |
| <p><b>Karina Veaudry</b>- Restore natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. Stop repeating the same mistakes and build an invite people to live in areas that will eventually flood again.</p> <p>I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. Through the application of an approach that incorporates natural coastal lines of defense. Please add my e-mail comments to the official public record. (July 23, 2009)</p> | <p>See Form Letter B themes</p> |
| <p><b>Kathleen Rippey</b>- I am Hurricane Katrina evacuee now living in Northern California. I lost my housing, my job and was unable to return to New Orelans because I also lost my medical care for several chronic health issues. (July 23, 2009)</p>                                                                                                                                                                                                                                                                               | <p>See Form Letter B themes</p> |
| <p><b>Audrey Evans</b>- Having worked for two decades on environmental &amp; energy issues in Louisiana, it is clear to me that levees are by no means enough for storm protection in S. Louisiana. Thank you for your consideration of the comments of the non-profit environmental organizations representing the public interest on these issues. (July 23, 2009)</p>                                                                                                                                                                | <p>See Form Letter B themes</p> |
| <p><b>Reece Walker</b>- The LACPR was a big disappointment to me.</p> <p>Any solution to our long term coastal problem has to combine structural and non-structural.</p> <p>We cannot continue to repeat the errors that led to the devastation of Katrina. Now that an incompetent and indifferent administration is</p>                                                                                                                                                                                                               | <p>See Form Letter B themes</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <p>finally gone, now is the time to adopt the right strategy for Louisiana and the Gulf South. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 |
| <p><b>Linda Rigamer Lirette-</b> In the Corps of Engineers' own report on the levee system's role during Hurricane Katrina, the corps wrote that their system was "a system in name only." Although their latest report is overdue, we cannot accept anything less than a true system, comprehensive storm protection plan for coastal Louisiana. Levees are not enough and can often be detrimental to our coasts, diminishing wetlands and their ability to act as a buffer against storm surge.</p> <p>I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. The citizens of Louisiana deserve true comprehensive storm protection that can only be provided through the application of an approach that incorporate multiple coastal lines of defense both man-made and natural.</p> <p>In planning the future of Louisiana's storm protection, this report will plan the future of Louisiana. I cannot stand behind the current LACPR report, and when I return from school, I do not want to buy a home and raise a family behind the inadequate protection the current report proposes.</p> <p>If the Corps accepts the constructive criticism provided by the Multiple Lines of Defense strategy and other interest groups, they will protect the interest of every Louisianian. Please add my e-mail comments to the official public record.<br/>(July 23, 2009)</p> | <p>See Form Letter B themes</p> |
| <p><b>Roz Foy-</b> I have lived in England, Saudi Arabia, the northeast U.S. and have traveled the world. There is no place like New Orleans. Please heed the requests below. This political fighting has been going on since the early part of the twentieth century. Please don't let this unique city perish. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>See Form Letter B themes</p> |
| <p><b>Hunter Coates-</b> We all know how important the marshes are to our protection. We also all know that the marshes were maintained throughout geologic time through seasonal flooding of the Mississippi River and the sediment load that went along with it. The corps currently has in place a system of locks up and down the MS river and in particular in the lower regions. With some strategic modifications to the locks and surrounding levee systems, the locks could be left open when the river is above flood stage providing some of the sediment and fresh water the marsh systems need to survive. The Empire lock is a good example of this. It may not be possible for all of them, but it is a "low hanging fruit" solution to aid in rebuilding and protecting our coast. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>See Form Letter B themes</p> |
| <p><b>Michael Ridgeway-</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>See Form Letter B</p>        |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Themes                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <p>I manage a large LA business unit for a global fortune 500 company- Stryker Corporation. We conduct a significant amount of business in LA and this has economic impact. I made a decision to keep our headquarters in New Orleans despite our branch flooding during Katrina. In short, if we see any degree of similar flooding, we will leave the area for good, causing a large negative economic impact to the area.</p> <p>As you know, this is an important and strategic geographic location for the US that we must support. Our area's oil, gas, and port business (to name a few) are critical to the US and businesses like mine help support the community and healthcare of it's citizens. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>themes;<br/>miscellaneous<br/>(economic<br/>impacts)</p> |
| <p><b>Barry Kohl-</b> The Louisiana Audubon Council is concerned that the LACPR Report does not adopt an approach, such as the Louisiana Multiple Lines of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>See Form Letter B<br/>themes</p>                         |
| <p><b>Sharon Pauli-</b> In considering the LACPR Report that is currently out for public comment, I believe the Corps has taken too narrow a view of its role. Congress and all of us need the Corps to be more than a provider of structural protection, we need you as consultants who look at and recommend a full range of elements to insure coastal protection. For example, when I look at basic security for my home, I don't stop at an alarm system. I look at the perimeter of my property and beyond, such as supporting neighborhood security programs. As I look at my example, the Corps would be trying to sell me an alarm system when I am asking for a full security assessment and recommendation.</p> <p>Indeed, Congress' direction was that the Report provide recommendations for comprehensive storm protection of coastal Louisiana. Given that direction, I am concerned that the LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. (July 23, 2009)</p> | <p>See Form Letter B<br/>themes</p>                         |
| <p><b>Elizabeth Ungar-</b> I realize the complex nature of flood control and the difficulty of the corps's task in addressing the issue. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>See Form Letter B<br/>themes</p>                         |
| <p><b>Diane Moore-</b> It was my parent's home on Bellaire Drive in New</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>See Form Letter B</p>                                    |



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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Themes                                                              |
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| Orleans that the news showed being flooded when the levee broke that awful day following Katrina's landfall. I grew up on that canal and know what could have been done to protect the city - and the Gulf - in a much better way. (July 23, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                              | themes                                                              |
| <b>Angela Lane-</b> We moved to Texas after losing our house in Katrina. I miss the Gulf Coast and would like to move back, but I'm worried about building back. The coast is a very valuable land mass of the United States and NOW is the time to get it right. Please help us protect our beautiful land & natural resources. (July 23, 2009)                                                                                                                                                                                                                                                                                                                                | See Form Letter B themes                                            |
| <b>Maxine Ramsay-</b> The LACPR Report has not addressed all the problems and concerns with only a bandaid solution to the protection of homes, levees and to the environment. It does not cover the full scope of coastal restoration. (July 23, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                         | See Form Letter B themes                                            |
| <b>Charels Morton-</b> Do it right or don't do it at all! Actually is makes no sense to continue to build below sea level. I say abandon New Orleans and let the water go where God wants it to. (July 23, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                | See Form Letter B themes;<br>miscellaneous<br>(abandon New Orleans) |
| <b>Casey Roberts-</b> I am outraged by the LACPR Report that is currently out for public comment. (July 22, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | See Form Letter B themes                                            |
| <b>Mandy Moore-</b> It's time to bring the A game people! GET ER DONE Y'ALL. Seriously. We cannot wait. We are vulnerable. (July 22, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | See Form Letter B themes                                            |
| <b>Bonnie Lewis-</b> Lake Pontchartrain Basin Foundation is the best source of expertise on protecting our coast in an efficient and effective way and their recommendations should be adhered to every step of the way. (July 22, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                        | See Form Letter B themes                                            |
| <b>Daryl Kimball-</b> As a former resident of Mid-City in NOLA with extended family in St. Bernard, Orleans, and East Jefferson parishes, I am writing to express my disappointment with the LACPR Report that is currently out for public comment. (July 22, 2009)                                                                                                                                                                                                                                                                                                                                                                                                             | See Form Letter B themes                                            |
| <b>Claire Waggenpack-</b> Please broaden and deepen your LACPR report to fulfill its mandate.<br><br>Could it be true that the LACPR Report does not adopt the Louisiana Coastal Line of Defense strategy? As I understand it, this strategy combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes. It also employs all our natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. proposes alternatives that could significantly increase storm surge and rely almost exclusively on levees that would enclose almost 1/4 of Louisiana's remaining wetlands. | See Form Letter B themes                                            |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Themes                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <p>o Ignores the fact that wetlands behind levees cannot provide protection or a buffer for the levee system and communities inside. The Corps should focus on leaving wetlands outside of the levee systems to act as storm surge buffers.</p> <p>? Downplays nonstructural solutions (elevating homes, flood-proofing, etc.), despite the fact that they can be implemented quickly and provide cost-effective, environmentally sound risk reduction. The Corps should consider non-structural solutions more seriously.</p> <p>? Neglects evacuation realities. Evacuation is a critical element in keeping our communities safe and saving lives, but is not included in any alternatives. The Corps should incorporate evacuation, and all of the lines of defense into their analysis.</p> <p>? Fails to address the inevitable interaction of levees, flood gates, barriers, weirs, and leaky levees with diversions.</p> <p>o Fails to address habitat goals for a sustainable coast so that the natural function of the estuary is supported.<br/>(July 21, 2009)</p> |                          |
| <p><b>Patrick O'Meara</b>- Get this right! You are going to have to do it again and again in other locations in the coastal areas.<br/>(July 21, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | See Form Letter B themes |
| <p><b>John Clark</b>- all paragraphs deleted and added:</p> <p>For coastal restoration, the ACOE needs to look at "how" and "where" the "Mississippi River Delta Lobes were historically formed, and then begin taking steps to reintroduce water down those historical waterways where feasible. The first historic lobe that I believe should be considered for a freshwater reintroduction is the "Cocodrie Lobe" beginning at Morganza, flowing down Bayou Grosse Tete, Grand River, Belle River, Lake Verret, Lake Palourde, and to the Lower Terrebonne Basin. (July 21, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | See Form Letter B themes |
| <p><b>Rebecca Falkenberry</b>- I am a travel agent with a focus on ecotourism and nature travel. The wild unspoiled coast of several southern states offer fabulous tourism opportunities. But only if they remain protected and in their more natural state. This also compliments the storm protection that is afforded by having such coastlines. (July 21, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | See Form Letter B themes |
| <p><b>Linda Eustis</b>- I am heartsick that it is taking Congress so long to take action to protect the Louisiana coast from storm damage. I share the Gulf Restoration Network's disappointment with the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | See Form Letter B themes |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| LACPR Report that is currently out for public comment. (July 24, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <p><b>Mavis James-</b> all paragraphs deleted and added:</p> <p>The current LACPR Report does not consider the full range of coastal restoration measures, such as using sediment from the Mississippi River, rebuilding barrier islands, restoring cypress swamps and natural ridges, etc.</p> <p>The interaction of levees, flood gates, barriers, weirs, and leaky levees with diversions is not addressed. Habitat goals for a sustainable coast should be proposed so that the natural function of the estuary is supported.</p> <p>Comprehensive storm protection can be provided only through an approach that incorporate multiple coastal lines of defense both man-made and natural. Please add my e-mail comments to the official public record. (July 24, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | See Form Letter B themes |
| <p><b>Deborah Emery-</b> all paragraphs deleted and added:</p> <p>I am writing to express my disappointment with the LACPR Report that is currently out for public comment. This Report fails to comply with the clear direction provided by Congress that the Report provide recommendations for comprehensive storm protection of coastal Louisiana. We cannot afford to wait for more studies.</p> <p>I am also concerned that the LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. In addition, Mississippi needs to be included since the storm actually hit here. The Whole Coastal area needs to be protected.</p> <p>I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. The citizens of Louisiana deserve true comprehensive storm protection that can only be provided through the application of an approach that incorporate multiple coastal lines of defense both man-made and natural. Please add my e-mail comments to the official public record. (July 24, 2009)</p> | See Form Letter B themes |
| <p><b>Philip Massirer-</b> all paragraphs deleted and added:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | See Form Letter B themes |

LACPR Final Technical Report Comment Addendum

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Themes                          |
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| <p>Please listen to and follow the suggestions and recommendations of the Coalition to Restore Coastal Louisiana, the Gulf Restoration Network, and the Lake Pontchartrain Basin Foundation concerning a holistic, integrated approach for protecting Louisiana coastal areas. It is usually much more effective and logical to solve large, complex, and expensive problems by incorporating multiple components that work together as integrated system. Levees along are not enough to protect Louisiana coastal areas. We need an approach such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps. All these components working together will be much more effective than just levees and floodgates, and these multiple components will provide ecological benefits as well as protection of human life and property. Although the Corps has traditionally been an agency that has focused on building levees and floodgates, input from other agencies and organizations is desperately needed to develop an effective solution for protecting Louisiana coastal areas. It is time for the federal government to pull its head out of the sand and wake up to see that other people have lots of good ideas that are much needed. (July 24, 2009)</p> |                                 |
| <p><b>Noelle Marinello-</b> deleted the first two opening paragraphs and added :</p> <p>We need a comprehensive approach to flood protection that recognizes the importance of structural and non-structural elements.</p> <p>The LACPR Report, besides being long overdue, does not go far enough in incorporating the Louisiana Coastal Line of Defense strategy, or propose a comprehensive and effective alternative. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>See Form Letter B themes</p> |
| <p><b>Kathleen Lenk-</b> deleted all paragraphs and added:</p> <p>I am writing to urge you to work to improve the proposed Category 5 plan. We need a strategy that not only provides levees, but also includes restoring barrier islands, marshes, etc. We need to address all aspects of creating a sustainable coast.</p> <p>Louisiana and the rest of the coastal region can be saved with such a multi-prong approach--it will preserve this important area and protect the lives of all in the area. Please add my e-mail comments to the official public record. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>See Form Letter B themes</p> |
| <p><b>Christianne Madona-</b> I am fortunate that i have my life, but myself</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>See Form Letter B</p>        |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Themes                          |
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| <p>and 3 other family members have lost our homes, land and nothing can change that or bring them back. Why does the LACPR not see the urgency and importance of taking each and every precaution that would prevent future devestaion. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>themes</p>                   |
| <p><b>Nell Bolton-</b> deleted first two paragraphs and added:</p> <p>As a person who has spent the past four years working full time to restore our hurricane-damaged communities in south Louisiana, I am writing to express my disappointment with the LACPR Report that is currently out for public comment. A</p> <p>I have been eagerly awaiting a plan that would recognize that our coastline is a living, dynamic ecosystem, and that would propose an appropriately holistic strategy. Yet this Report fails to comply with the clear direction provided by Congress that the Report provide recommendations for comprehensive storm protection of coastal Louisiana. We cannot afford to wait for more studies.</p> <p>I am also concerned that the LACPR Report does not adopt an approach, such as the Louisiana Coastal Line of Defense strategy, that combines structural protection such as levees and flood gates, with non-structural elements such as home-elevation and evacuation routes along with restored natural defenses such as barrier islands, marshes, natural ridges and cypress swamps.</p> <p>Please move to incorporate these concerns; we have only one chance at a viable plan to protect south Louisiana. (July 23, 2009)</p> | <p>See Form Letter B themes</p> |
| <p><b>Linda Bystrak-</b> deleted all paragraphs and added:</p> <p>I understand that the LACPR Report does not adequately endorse replacement of barrier islands or wetland restoration along the Louisiana Coast. It is well documentated that these 2 activities can help protect upland areas if they are large enough, in the right location, and planted in native vegetation.</p> <p>It is also less of an insurance burden on all of us if coastal homes are required to be built on piles, high enough to withsatand 100 year storm events. Other infrastructure changes should also be made to better protect residents against future storms. Protecting drinking water sources and waste disposal facilities from flood by using design changes should have a higher priority.</p> <p>And finally, levees are not the answer to everything, so their use should be very limited, when all other options have been exhausted. The CORPS needs to dig itself out of the past and into the future</p>                                                                                                                                                                                                                                                       | <p>See Form Letter B themes</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Themes                                                             |
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| with more current, and natural methodologies. (July 23, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |
| <p><b>Panny Willgerodt</b>- Levees alone are not enough. A comprehensive plan us needed and this report does not provide one. I realize that the Corps is behind schedule but this is so important it merits taking a step back to ensure that restoration of natural defense systems is secured as part of this report, its recommendations, financing and the implementation plan. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | See Form Letter B themes                                           |
| <p><b>Stacie LeJeune</b>- I cannot think of anything that should be more important to our government officials than preserving our coastline, which will in turn preserve all of our homes and communities for generations to come. Have we grown so arrogant as a people to believe that we can do better than what Mother Nature originally intended? After all, if there is no Louisiana left to speak of, our politicians will have nothing to govern. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | See Form Letter B themes                                           |
| <p><b>Susan Terrebonne</b>- deleted all paragraphs and added:</p> <p>I have/had more than 6 generations of ancestors living in the South Lafourche and Grand Isle area. I have stated at many meetings that ?I have a right to live in the place I call home; my adult children and grandchildren have a right to live in the place they call home.? Furthermore, I want to remind you that this nation would not be where it is without domestic oil and gas. It has provided a certain layer of national security and the people who worked to secure that national security should be respected for both their contribution and their dedication. No one could argue that oil and gas jobs haven?t taken a very disproportionate part of the lives of workers and the resulting loss of time with their loved ones in comparison to those who work Monday to Friday, home every night. The stress of raising families, most of which were/are large, as a single parent is enormous because of the absence of fathers, husbands, brothers, grandfathers, and sibling?s extended absences. No one, who hasn?t been in this situation, can fully realize the hardship of this type of work.</p> <p>The only people who I sympathize with are the families of soldiers whose loved ones serve overseas with their family living independently stateside. For them I would bow down and say thank you for your sacrifice, not only for their loved ones absences and the strain on their families but also for the high risk that their loves one puts himself/herself in for all our benefit. Police, fireman, the medical profession also comes to mind when I think of sacrifices for the good of a nation of people. Would we betray them by saying their sacrifices are not sufficient to protect their homes after a lifetime of dedication. Would we betray them by hiding behind formulas to justify this horrendous act? Would we then use</p> | See Form Letter B themes; Cat 5; miscellaneous (cultural heritage) |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Themes |
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| <p>formula's which does not take into consideration the true value of the communities and its people? I don't know of any business that does not have a valued "good will" component in its asset list. In many businesses the good will can equal or even exceed the physical assets. Why isn't the true value of our community used in the formulas? Our value is not a laundry list of physical assets; it is the value of its people their continued sacrifices, and national security.</p> <p>The reality of your modeling and forced formula's is that you want us to justify our continued existence. This comment period is a prime example of making us justify our right to exist. You know and we know it is a fibrillose waste of our time. A comment period has not now, nor has it ever been used to make a major change in a set direction. No matter what we present, you will not make any substantial changes. However, since you make the rules, no matter how unfair, here are my comments:</p> <p>I have been married nearly 34 years. Out of all those years, I doubt that my husband has been home for 12 of them. I have lost grandparents, a parent and babies, while he was away. I have had surgeries, children ill in the hospital and spent many lonely exhausted days and nights. Oil field worker's days "on" are also lonely for them. They miss large parts of the lives of their parents and siblings in addition to their own families. Worker's days off are filled with trying to catch up on the most urgent needs and a little quality family time.</p> <p>My father also worked in the oilfield; we missed him dearly. He too was hardly ever home as he was a Merchant Marine Officer for over 40 years. Three of my four brothers and many brother-in-laws work in the oil /maritime industry. This story could be told by thousands of people who are my neighbors and friends. Cajun people are very family orientated; this type of work is a very big disruption in the continuity of family life. These are the people that your formulas for cost benefit ratio are failing. These are the people, that funding for on the ground, restoration projects has been wasted administratively on decades of watching us deteriorate (studying) in place of actually combating the coastal erosion problem.</p> <p>This nation, through your offices, for decades has slapped us in the face, and made light of our plight while our natural resourced are raided. We have lost everything, our land, our community spirit, identity, our heritage, our right to exist. Finally, Congress has had enough of your administrative games and directed you to take us and our needs into your calculations. You have outright defied their directives. With two additional years you haven't been able to do it; with 10 additional years you can't do it. You will never get it</p> |        |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Themes                          |
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| <p>done correctly until you start with putting the greatest importance, on us as a people, the coastal communities of Louisiana, United States citizens. Your answer of, 'it can't be done' or telling us that it is too expensive to protect us , despite all our sacrifices is not and never will be acceptable.</p> <p>These Louisiana communities are set to be ignored into extinction because you see what monetary costs could be. A few pennies of additional tax on fuel nationwide and the ability to see and do what can be done instead of focusing on what can't be done is all it takes to get the job done. We need complete protection on all fronts: from barrier islands, natural ridges, to extensive undeveloped marsh and cypress swamps - to cut down on storm surge, levees and floodgates -to combat the remaining surge, offers to elevate and retrofitting homes without homeowner cost -for flooding and wind damage, to multi-lane north/south evacuation routes 'with a first out priority that cannot be over ridden by an overzealous northern parish administrator.</p> <p>Pay building cost once and then maintain as needed for a 500 year plan. The longer you wait the more we lose as a community and a nation. Anything less should not even be considered as it is a betrayal of us and is a disservice to every person in this nation. It is not a 'hard choice.' It is not a 'tough decision.' It is the possible death of thousands of individual's life work and the communities we call home! I hold you accountable for your decision. Is it going to be more excuses or will you and the nation finally do the right thing by us. We have paid the price; we earned it; it is our turn!</p> <p>Please add my e-mail comments to the official public record. (July 23, 2009)</p> |                                 |
| <p><b>Sarah Rosenberg-</b> First, I must state that I have tremendous respect for the armed forces--my boyfriend is training as a naval aviator, my cousin just returned from Afghanistan with the marines, and a few of my childhood friends from up north are in the army or in a ROTC program. I give each and every one of them so much credit for the sacrifices they have made or know they will be making. But now, after spending several years in New Orleans, I need to have the same respect for a particular sector--the Army Corps of Engineers, and now is the critical point at which that respect needs to be earned. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>See Form Letter B themes</p> |
| <p><b>Kevin Ruttley-</b> The corp allowed the digging of canals for oil exploration but did not controll or maintain the passes between Venice and Grand Isle . It is in my opinion therefore that they take responsibility for their neglegence and fix the coast with dredging and bring it back to it's original structure which will stop flood and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>See Form Letter B themes</p> |



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| <p>salt waters from ruining the Great Barataria Basin before it is completely gone . (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| <p><b>Laura Sever-</b> deleted all paragraphs and added:</p> <p>I am writing to express my disappointment with the LACPR Report that is currently out for public comment. This Report fails to provide comprehensive storm protection recommendations for coastal Louisiana.</p> <p>I am concerned that it places too little emphasis on wetland restoration (barrier islands, marshes, natural ridges and cypress swamps), and in fact, could further endanger our natural defenses by enclosing wetlands behind levees.</p> <p>We need our investment to hold up over the long-term. Therefore, any storm protection plan must place equal emphasis on restoring natural barriers as well as creating man-made ones.</p> <p>It would be prudent to incorporate metrics into the plan which make the health of the wetlands more apparent. A plan that emphasizes long-term sustainability might propose some habitat goals as well, as recommended in the Louisiana Coastal Line of Defense strategy.</p> <p>Specifically,</p> <p>? The LACPR does not consider the full range of coastal restoration measures, such as using sediment from the Mississippi River, rebuilding barrier islands, restoring cypress swamps and natural ridges, etc.</p> <p>? Some of the LACPR's levee alternatives could <b>**significantly increase**</b> storm surge and rely almost exclusively on levees that would enclose almost 1/4 of Louisiana's remaining wetlands. Wetlands behind levees cannot provide protection or a buffer for the levee system and communities inside. The Corps should focus on leaving wetlands outside of the levee systems to act as storm surge buffers.</p> <p>? The inevitable interaction of levees, flood gates, barriers, weirs, and leaky levees with diversions is not addressed. Habitat goals for a sustainable coast should be proposed so that the natural function of the estuary is supported.</p> <p>? The LACPR report supports the Coastal Lines of Defense strategy but falls short of applying it to the alternatives evaluated.</p> | <p>See Form Letter B themes</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                           | Themes |
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| <p>We ask that the Corps incorporate the Multiple Lines of Defense strategy in its analysis.</p> <p>I request that the Corps address these concerns in the final LACPR Report before it is presented to Congress. The revised version should incorporate multiple coastal lines of defense both man-made and natural.</p> <p>Please add my e-mail comments to the official public record.<br/>(July 23, 2009)</p> |        |

### Individual Comments Sent via the Website or by Email

75 comments were sent to the USACE by email or through the LACPR website at [www.lacpr.usace.army.mil](http://www.lacpr.usace.army.mil). For comments longer than a page, the first paragraph is included in the table below and the comment is presented in its entirety after the table.

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Themes                                                                                                                          |
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| <p><b>Sandra Slifer</b> – I've reviewed the Executive Summary and the National Academy of Sciences report and have attended a public hearing in Slidell, LA and the St. Tammany Parish Council meeting and listened carefully to the presenters. While I appreciate the time and effort that has gone into the report, and I certainly am more informed than when I started, I feel that there is still more work to do before this report is sent to Washington, D.C...<i>The complete comment is provided following this table.</i> (July 24, 2009)</p> | <p>Barrier-weir plan;<br/>other<br/>nonstructural;<br/>coastal restoration<br/>planning and<br/>decision process;<br/>time</p>  |
| <p><b>Donald A. Olson P.E.</b> - Saffir-Simpson is a joke. It portrays a hurricane as a wind only. I believe that there should be a three part designator...Category 5-B-20. That is Category "5"...a certain wind speed range. Category "B" the width or size of the storm. And category "20" the maximum expected storm surge at landfall... <i>The complete comment is provided following this table.</i> (July 24, 2009)</p>                                                                                                                          | <p>Planning and<br/>decision process;<br/>other<br/>nonstructural;<br/>induced flooding</p>                                     |
| <p><b>Ore Alao</b> - The Equity and Inclusion Campaign has reviewed the findings of the Louisiana Coastal Protection and Restoration (LACPR) Technical Report that was prepared by the United States Army Corps of Engineers (USACE) New Orleans District and find that the LACPR report presents a thorough and comprehensive range of flood control, coastal restoration, and hurricane protection measures... <i>The complete comment is provided following this table.</i> (July 24, 2009)</p>                                                        | <p>Coastal<br/>restoration;<br/>structural; other<br/>nonstructural;<br/>equitable risk<br/>reduction; lines of<br/>defense</p> |
| <p><b>Marie-Alice Rousselle</b>, Metairie 70002 - I support strong comprehensive hurricane and flood protection for Southeast Louisiana that includes: Locks at the Rigolets and Chef Menteur passes to prevent storm surge from entering Lake Pontchartrain, Coastal Restoration, funded by immediate sharing of Outer</p>                                                                                                                                                                                                                               | <p>Barrier-weir plan<br/>support; coastal<br/>restoration; other</p>                                                            |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Themes                                                                                                                                                                                                    |
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| <p>Continental Shelf (OCS) revenues, to rebuild the damage done by coastal erosion and protect us against future storms, and Strengthening of the interior canals at 17th Street and Orleans and London Avenues, comprised of Option 2A which includes the "Pump to the River" plan. (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                           |
| <p><b>Deborah M. Settoon/Kim Carver</b> - The Pachyderm Club would like to voice strong support for the Category Five Hurricane Protection proposal to use floodgates at the Chef Menteur and Rigolets Passes to block storm surge from Lake Pontchartrain... <i>The complete comment is provided following this table.</i> (July 23, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Cat 5; barrier-weir plan support and history; environmental issues; nonstructural measures; oppose buyout</p>                                                                                          |
| <p><b>Kim L Harvey</b> - The Corps must provide Congress with specific project recommendations on Category 5 protection so that it can begin working to authorize and fund the projects. The projects must entail a coordinated system that includes marsh areas, breakwaters, and levees, along with robust populated area drainage systems to manage the hurricane rainfall events. For instance, the barrier weir alternative which is one of the options would provide superior protection for both the North and South shores of Lake Pontchartrain. This alternative consists of a surge levee barrier across the mouth of Lake Pontchartrain and storm gates would close the passes at Chef Menteur and the Rigolets. This alternative, combined with a comprehensive coastal protection and restoration plan, would provide superior protection against future storm surges. <i>(See form letter B)</i> (July 23, 2009)</p> | <p>Barrier-weir plan support; coastal restoration; Cat 5; Form Letter B</p>                                                                                                                               |
| <p>From: <b>Kevin Riley</b><br/>           Sent: Thursday, July 23, 2009 1:26 AM<br/>           To: AskTheCorps MVN<br/>           Subject: What is The Corps doing to Restore Louisianans Wetlands?</p> <p>As a member of an important Army Corps of Engineers Oversight committee, I implore you to look into the Corps' Louisiana Coastal Protection and Restoration (LaCPR) study. There are serious flaws with this plan at a crucial time in Louisiana's history. Simply put, the Corps has not followed your directions in producing this plan. In early 2006 Congress directed the Corps to prepare a "Comprehensive Category 5 protection" report with flexible and clear project recommendations for Congress to approve and appropriate funds for. Despite setting a deadline of December 2007, we still do not have a plan in hand.</p> <p>According to the Corps, the report "won't include the specific</p>           | <p>Lines of defense; coastal restoration; time</p> <p>(Note: This email is based on a form letter that was posted on the Gulf Restoration Network's website and was intended to be sent to Congress.)</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Themes                                       |
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| <p>identification of a detailed plan." Instead, you will be receiving a "non-plan" with over two dozen alternatives -- four to five projects per planning district along Louisiana's coast. Clearly, the Corps is supposed to have the expertise to make these decisions. That's why you told them to come up with a plan in the first place. Why should lawmakers have to study and debate hydrology, sedimentation, diversion alternatives, etc?</p> <p>The LaCPR has largely ignored input from Louisiana's congressional leadership. Louisiana officials requested "programmatic authorization," a more streamlined approach than the piecemeal method of choosing projects that the Corps is proposing.</p> <p>In addition, the Corps needs to be responding to a post-Katrina Louisiana. Pre-Katrina projects can't simply be rolled into a post-Katrina protection and restoration plan. Projects that have already been authorized should be re-analyzed to ensure they meet our post-Katrina needs. The Corps should look at Louisiana as a whole and create a single comprehensive plan that includes all protection and restoration projects under the Corps' jurisdiction.</p> <p>In order to ensure the protection of our Louisiana's and the Nation's fisheries, cultural resources, and oil and gas infrastructure, please tell the Corps to ensure that the LaCPR:</p> <ul style="list-style-type: none"> <li>* Actually gives Congress a plan that suggests concrete actions and fully incorporates the Coastal Lines of Defense strategy, including wetland restoration.</li> <li>* Makes the process of authorization simpler and faster.</li> <li>* Meets future Congressional mandated deadlines.</li> <li>* Examines existing Corps projects and suggest alterations or de-authorizations that would protect our natural storm defenses (wetlands, coastal forest, etc.).</li> </ul> <p>Thank you for your time and interest in this very serious issue for all Louisianans and the Nation.</p> <p>Sincerely,<br/>Kevin Riley</p> |                                              |
| <p><b>Raymond Unland</b> - The New Orleans area needs Category 5 protection. This includes new pumping stations at the mouth of the outfall canals, AND "Pump to the River." Nothing less is acceptable. (July 22, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Cat 5; other</p>                          |
| <p><b>Angela R. Sallis</b> - I am deeply concerned that the adoption of the a weir-levee plan for Slidell-St. Tammany Parish will dramatically</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Barrier-weir plan opposition; coastal</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                                                |
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| <p>affect Mississippi, especially Hancock County. It has been evident since Hurricane Katrina that the wetland losses from that storm have had an impact on flooding in Hancock County as subsequent storms have flooded previously undisturbed areas. To consider any plan that does not fully restore the natural barrier that wetlands provide is unwise. To pursue such a plan at the cost of Mississippi is folly. (July 21, 2009)</p>                                                                                                                                                                                                                                                                                           | <p>restoration;<br/>induced flooding</p>              |
| <p><b>Kerry Nichols</b> - The only true way to protect the parishes east of the river and the northshore of the lake is by closing off the lake to tidal surge during high water events. Keep the lake low to prevent flooding. In addition, much larger diversion projects should be constructed to help restore the natural flow of river water into the surrounding marshes on both the east and westbanks of the river. (July 21, 2009)</p>                                                                                                                                                                                                                                                                                       | <p>Barrier-weir plan support; coastal restoration</p> |
| <p><b>Diane Knapper</b> - I would like to add I am 100% in favor of Sen. Vitter and Scalise proposal of "Pump To The River." Even though this plan is more costly, it will be cheaper in the long run. This plan needs to be implemented immediately. (July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Other</p>                                          |
| <p><b>Diane Knapper</b> - It's time for action, not just another study. Every time our coast gets pummelled with just a tropical storm, more erosion takes place. We need protection NOW. (July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Dissatisfaction with study process; time</p>       |
| <p><b>Angel Theriot</b> - The Corps should do COMPLETE coastal restoration in Terrebonne parish. The parish, which used to be the largest in the state is now second or third largest due to coastal land loss. Even so, we have one of the strongest local economies in the state, perhaps the nation right now. If we don't have the land on which to live, our people, the force that drives our economy, will be forced to leave and go elsewhere. If that happens, more economic strain will be put on communities that are all ready suffering. Louisiana will lose more than just land--it will lose its people and a vital part of its American economy. Use your heads. It's not just land we're losing. (July 20, 2009)</p> | <p>Coastal restoration</p>                            |
| <p><b>Kate Prechter</b> - We need the Corp to profer the "best" comprehensive Category 5 Hurricane protection plan for South Louisiana, putting politics aside. Congressmen are not in a position to "know" what the engineering solution is. That is your job, so please do it well, and with integrity. (July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Cat 5</p>                                          |
| <p><b>Billy Marchal</b> - COMMENTS ON THE LACPR FINAL TECHNICAL REPORT by the Flood Protection Alliance June 23, 2009 <i>The complete comment is provided following this table.</i> (July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Improve communication; maps; models</p>            |
| <p><b>Hirschel Abbott, Jr</b>- Please finalize this LACPR Report to recommend specific Category 5 Hurricane protection including</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Cat 5; time</p>                                    |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Themes                                          |
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| coastal restoration as a part NOW. No more alternative and delays are acceptable or affordable. PLEASE JUST DO IT NOW!! (July 20, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |
| <p><b>Philip Stephenson-</b> To Whom It May Concern:</p> <p>I applaud the effort made in this document to use a "Systems" approach in conducting this analysis. I would however express the following thoughts about attributes of the system that could be better incorporated... <i>The complete comment is provided following this table.</i>(July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Coastal restoration; environmental issues       |
| <p><b>Diane C. Genre-</b> the corps must submit the reports for Hurricane category 5 to congress immediately and forego any additional studies as this is stalling and leaving the new orleans area unprotected!!! (July 20, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cat 5; dissatisfaction with study process; time |
| <p><b>Patricia Whitney</b> - It is totally unacceptable that the plans for Units 3a, 3b and 4 virtually give up on comprehensive coastal restoration and focus on "ecosystem restoration" and "strategic restoration for risk reduction" thereby tolling the end of southern Louisiana and its people and culture. This is not a solution but a surrender, which is NOT acceptable. Instead of giving up or even spending large sums in a scattershot manner, the time is NOW for the United States of America to attack this problem with all of its assets and acknowledge that coastal Louisiana is critically important to the survival of America. Justice delayed is Justice Denied. Restoration delayed is Restoration Denied. Do something NOW and do a LOT!!! (July 20, 2009)</p>                                                                                                                     | Coastal restoration; time                       |
| <p>From: <b>Donna Pullman</b><br/>           To: Jenkins, David G MVD<br/>           Sent: Mon Jul 20 17:59:37 2009<br/>           Subject: Opposition to Louisiana Levee and Wier Plan</p> <p>Mr. Jenkins:</p> <p>We are property owners and residents of Pearlington, MS . The CORPS of Engineers has proposed plans to build levees and gated structures to protect New Orleans, Slidell, and N.O. East which will increase the flood surge on MS Gulf Coast in Hancock Co (Pearlington, Waveland, Bay St. Louis, Clermont Harbor, Lakeshore &amp; Ansley) including the coastal areas of Harrison and Jackson Counties.</p> <p>Stopping the water in Lake Ponchartrain which has about 660 square area miles for water dispersment means that the water will have to go somewhere else---towards the east because of the New Orleans levee system which will flood coastal areas of the MS Gulf Coast.</p> | Barrier-weir plan opposition                    |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Themes                                                                          |
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| <p>Please consider this email as opposition to the LACRP.</p> <p>Rodrick "Rocky" and Donna Pullman<br/>228-533-7056</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |
| <p><b>Mark Lescale</b> - cat 5 levees (July 19, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Cat 5</p>                                                                    |
| <p><b>Janelle Masden</b> - PLEASE act to provide Category 5 Hurricane Protection to the Gulf Coast and specifically the SE Louisiana area NOW! Almost FOUR YEARS have passed since Hurricane Katrina devastated the area, and the Corps still has no cogent and specific plan to provide this much-needed protection. It is long past the time to act. I urge you to work with local and state leaders and decide on specific programs and projects immediately. Once that is done, I hope that the Corps will start work on those projects without delay. This is urgent and imperative! (July 19, 2009)</p> | <p>Cat 5; time</p>                                                              |
| <p><b>Ilene Simoncioni</b> - It is time for the Corps of Engineers to provide Congress with specific project recommendations on Category 5 protection. We want a full commitment from the Corps for specific solutions. We were driven from our homes by Katrina, a situation which is unacceptable in this day and age, and we want results now! (July 18, 2009)</p>                                                                                                                                                                                                                                         | <p>Cat 5; time</p>                                                              |
| <p><b>Marie-Louise Mannina</b> - Please, we do not need "ersatz" protection. We need real Category 5 protection if we are to prosper here. (July 18, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Cat 5</p>                                                                    |
| <p><b>Charles Vodanovich</b> - As someone who lost everything in Katrina and do not want to experience it ever again. I implore you to please provide Congress with specific project recommendations on Cat. 5 protection so that we can begin working to get congress to authorize and fund these projects. I am asking that the Corps make a genuine commitment from the Cop for specific solutions. (July 18, 2009)</p>                                                                                                                                                                                    | <p>Cat 5; time</p>                                                              |
| <p><b>James L. Reynolds, M.D.</b> - Let's get on with it and quickly develop at least plans and biginning implementation of category 5 hurricane protection. The Corps is increasingly losing creditability, professional reputation and is instead being seen as obstructionist. If Congress won't finance, say so out loud, vociferously in the media, repeatedly, and to our congressmen and woman. Be assertive, concerned, persuasive, urgent, credible, protective. (July 18, 2009)</p>                                                                                                                 | <p>Cat 5; time</p>                                                              |
| <p><b>John E.M. Brown</b> - 1. Any levees or weir/dam structures should incorporate walking and/or bicycle paths to add a recreational opportunity. 2. I am building a house at 199 Branch Drive in Slidell. A couple of options shown have graphics that are not very precise. The levee proposed for the Pearl River has options that either run along the river edge or what looks like halfway between Military Road and the river - that is it looks like it could go through my</p>                                                                                                                     | <p>Miscellaneous;<br/>structural<br/>measures; plans<br/>for specific areas</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                                                                |
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| <p>property at 199 Branch Drive. Therefore I am in favor of any levee option that has the Pearl River levee run along the river's edge, NOT along the edge of Magnolia Forest subdivision. Thanks, for the considerable scientific and engineering studies done for this plan. (July 15, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |
| <p><b>Michael Hoggatt</b> - I understood you to have the understanding the council resolution supported a substantial (perhaps non-overtopping?) barrier along the alignment of the State Plan which cuts through the middle of Lake Borne. I noted that press reports had referenced the specific plan PU1-LP-A-100-1. A bystander observed that one must be cautious about press reports. You may recall that I provided copies of pages of the Corps report showing cost and impact comparisons for the "unacceptable" impacts of a Full Barrier alternative on Mississippi. I followed-up to obtain the specific council resolution (which does reference a specific plan) and then reviewed the available public information leading to the resolution....<i>(comment included in its entirety at the end of this document)</i> (July 15, 2009)</p> | <p>Barrier-weir plan design; planning and decision process; improve communication</p> |
| <p><b>Mary Lonero</b> - I would like to state that it is time the Corps stops and review the entire southern part of Louisiana regarding LONG TERM OR PERMANENT ways to best protect Louisiana. We are constantly being asked to comment regarding "bits and parts" or temporary fixeds" which are later changed, dumped, or ineffective. Temporay fixes will never work and a full, comphresive plan should be set up and worked on continually to implement over a period of years and then kept in good condition. (July 15, 2009)</p>                                                                                                                                                                                                                                                                                                                | <p>Miscellaneous</p>                                                                  |
| <p><b>Matt Wetta</b> - LACPR is very well put-together. I greatly appreciate the organization and understanding that the US Army Corps of Engineers has shown within this report. I especially support the multiple lines of defense, and coastal restoration plans. I would also like to note that the private sector bears some responsibility for risk and full protection is not expected but that any effort to reduce damage will be appreciated. (July 14, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                              | <p>Coastal restoration; lines of defense</p>                                          |
| <p><b>Cathy M. Navo</b> - I have great concerns that once the levees are shored up around the Southshore of Lake Pontchatrain, the water pushed into the lake will have no place to go except the entire Northshore. There have already been studies that confirm this. In fact, the conclusion was made that especially after the MRGO is closed, it will put the Northshore at great risk. I lived in St. Bernard parish in 2005 and lost everything to Katrina. I don't want to lose everything again. How can we be assured that the water that no longer floods St. Bernard, Orleans, and Jefferson Parishes will not flood us here in St. Tammany Parish? (July 14, 2009)</p>                                                                                                                                                                      | <p>Induced flooding</p>                                                               |
| <p><b>Harry Shelton</b> - Building a floodgate and preventing or reducing the storm surge that would enter the lake would help protect all of</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Barrier-weir plan support and</p>                                                  |



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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Themes                                                                                      |
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| <p>the lake communities, including New Orleans. Costs associated with building and maintaining levies along the lakefront (including New Orleans) could be diverted to the floodgate plan as a better and more encompassing plan. This certainly seems more sensible than having a patchwork of levies around the lake protecting specific subdivisions. It is a solution that would help protect a large number of residents of multiple parishes without having to have levies blocking our views and access of the lake. (July 13, 2009)</p>                                                                                                                                                                                                                                                                 | <p>funding</p>                                                                              |
| <p><b>Robert &amp; Elsa Baker</b> - We greatly support the plan to build a system of levees and floodgates across the Rigolets and Chef Pass to prevent a hurricane's storm surge from entering Lake Pontchartrain. We need the protection. Please support this proposal. (July 13, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Barrier-weir plan support</p>                                                            |
| <p><b>Gary Kelly</b> - I strongly urge the corps to build a surge levee barrier across the mouth of Lake Pontchartrain with storm gates that would close the passes at the Rigolets and Chef Menteur. Combined with coastal protection and restoration, the barrier and gate system provides the best protection for not only my city of Slidell but also all the areas bordering Lake Pontchartrain. I am concerned that the plans for Louisiana and Mississippi were developed by different corps offices. St. Tammany Parish, which borders Mississippi, requires a single coordinated plan. (July 13, 2009)</p>                                                                                                                                                                                             | <p>Barrier-weir plan support</p>                                                            |
| <p><b>Walter Organ</b> - The Lake Pontchartrain barrier-weir (structural) should be at the core of the Unit 1 plan. If the Corp and Congress would make an honest assessment and not play to the democate political base in Orleans parish, a barrier that reduces flood risk for all of the Lake Pontchartrain basin is the obvious solution. Levees and pumping stations on the Orleans and Jefferson Parish lakefront and out flow canals could be scaled back and that money spent on a barrier-weir that would protect all the people and there property in Orleans, Jefferson, St. Tammany, St. Johns and Tangipahoa Parishes vs. what's been done since 2005 to protect Orleans and Jefferson Parishes alone. (July 11, 2009)</p>                                                                        | <p>Barrier-weir plan support and funding; equitable risk reduction</p>                      |
| <p><b>Darryl Stoltz</b> - I do not know if USACE in New Orleans is interfacing with USACE in Mobile to coordinate efforts in Planning area 1. If not, the Corp need to work with Mobile to protect Planning area 1 AND the Mississippi coast at the same time. I feel the best solution for us in S.E. La. AND the MS. coast is to have a comprehensive barrier and flood gates paralleling the Railroad tracks, but to have it extend into Mississippi, at least up to Bay St. Louis. Instead of expensive, huge pump systems at the New Orleans outfall canals, use some of that money to install pumps at the Pearl River crossings could keep water from building up in the River. This would protect MANY more people in the region and help us to increase property values and our economy. (July 10,</p> | <p>Equitable risk reduction; barrier-weir plan support and funding; structural measures</p> |

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| 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                  |
| <p><b>Luke Bolar</b> - Pursue option 2a (July 10, 2009)</p> <p>From: <b>Betty Baxter</b><br/>           Sent: Friday, July 10, 2009 2:42 PM<br/>           To: Jenkins, David G MVD<br/>           Subject: Hancock County Area of Concern</p> <p>Mr. Jenkins:</p> <p>My husband and I are property owners in Pearlinton, MS. Hancock County and Logtown, Hancock County, MS.</p> <p>It has been called to our attention that the CORP has proposed plans to protect Louisiana from flood damage by building levees and floodgates to provide surge protection for Louisiana residents while creating additional surge impact to Mississippi Gulf Coast.</p> <p>I wish to express my concern that this would place Pearlinton, Waveland, and Bay St. Louis in the position of being sacrificed and extremely vulnerable to repeated destruction and flooding.</p> <p>Sincerely,</p> <p>Robert and Betty Baxter<br/>           P O Box 40<br/>           Pearlinton, MS 39572</p> | <p>Other</p> <p>Barrier-weir plan opposition</p> |
| <p><b>Anthony Kalcic</b> - I have long imagined locks at he Rigolets and Chef Pass. Now Congressman Steve Scalise has mentioned to me that this could be a reality. If you can build it, build it. I think it's a good idea. I live in the 70124 zip code area and feel very uneasy every hurricae season. I still have some of my belongings on top of the kitchen cabinets since last years Gustov. (July 9, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Barrier-weir plan support</p>                 |
| <p><b>Chere B. Keller</b> - please consider the lack of protection our area in La. had during Katrina and realize that the residents need to be protected better for future storms. The country can not afford the losses we all have had for the last 4 years. I am speaking from the view point of a mother who knows that sometimes spending a little more for quality items is smarter than junk that will break . please look at the facts and the risks of not doing a solid quality job. Why put anyone at risk of losing a loveone because someone didn't think about doing the RIGHT THING? so much money was wasted the first time on failed design and lack of proper implementation . Why ,with all the brilliant minds, in the richest country in the world,has it taken 4 years to figure this out? Look at what you would do to protect your child standing on the other side of a levee or sleeping</p>                                                          | <p>Time</p>                                      |

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| in his crib at home a few miles from one. (July 9, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |
| <b>B.H. Aguilar</b> - "Katrina" changed my entire life at 67. My company moved me to Houston and, if I want a job, I have to stay. I support any and everything that can be done to prohibit another catastrophe such as "Katrina". (July 9, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Miscellaneous                                  |
| <b>Lisa Velez</b> - Please stop storm surge into Lake Ponchartrain. I bought a home in St. Tammany Parish, Slidell in 2000 and was told it had only flooded once. It has flooded in 2002, 2004, 2005, 2008. We raised our house after the storm in 2004 and spent a lot of money that we were not prepared for. The constant flooding cost us money after money which begins to become a financial burden. Although we are raised, the repeated damage to the earth, foundation, support columns from the constant water intrusion is a continuing problem. We are the lucky ones to have raised. Just imagine all those that just keep flooding and flooding. But if the houses even raised houses cannot withstand the constant flooding. (July 9, 2009)                                                                                                                                                                                                                                                                                                                                               | Barrier-weir plan support                      |
| <b>Edward Massett</b> - I am strongly in favor of the barrier weir alternative plan for hurricane protection and coastal restoration. I urge your support! (July 9, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Barrier-weir plan support                      |
| <b>Waarren &amp; Kathy Berault</b> - We support a comprehensive plan that would include a weir at the entrance of the Rigolets that would impede water from coming into the Lake in the event of an intense hurricane. This would save the heavily populated areas of New Orleans, Jefferson, and St. Tammany parishes without individual levees being constructed. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Barrier-weir plan support                      |
| <b>Duncan Quaid</b> - We must have locks at the Rigolets and Chef Menteur Pass! Also pumping for extreme emergencies in Jefferson Parish directly into the Mississippi river. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Barrier-weir plan support; other               |
| <b>Brian Bourgeois</b> - The Mississippi river continues to be a mainstay of U.S. trade and thus is vital to its economic power. Furthermore, the coast of Louisiana is critical to the nation's energy needs. Without New Orleans these critical capabilities cannot be economically supported. New Orleans provides education, housing and jobs to a large population, a great portion of which is involved directly or indirectly in energy or shipping. It is vital that New Orleans and the surrounding area be protected from future hurricane devastation. I was one of several hundred thousand that live many miles inland and whose home was flooded as a result of Katrina. I am very proud of my community's resilience and determination to rebuild this historic and culturally rich area. But through the sharing of our traumatic stories with others in the community, I also know that these courageous folks won't put their families through this a 2nd time. If this area is not protected, the population will move, and the workforce will no longer exist to support the port of | Barrier-weir plan support; coastal restoration |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Themes                                                                                                                      |
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| <p>New Orleans and the oil field work in the Gulf of Mexico. I support Congressman Saclise's recommendation of recommendations on Category 5 protection, including the barrier weir alternative which is one of the options would provide superior protection for both the North and South shores of Lake Pontchartrain. This alternative consists of a surge levee barrier across the mouth of Lake Pontchartrain and storm gates that would close the passes at Chef Menteur and the Rigolets. This alternative, combined with a comprehensive coastal protection and restoration plan, would provide superior protection against future storm surges. (July 8, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                             |
| <p><b>Barbara Dorris</b> - Reading the LACPR report is extremely confusing; there is so much text and repetition. As a resident of Mandeville, LA, south of I-12, the following is my input. If storm surge water is kept out of the lake all land, development &amp; life - regardless of parish - surrounding the lake will be safer with less chance of unthinkable damage to development &amp; the eco-system as well as less possibility for the loss of life be it human or animal. I think the proposal for buyouts in many of the areas around the lake, as noted on the various maps in pink, will only push the problems further inland as eventual development will happen in what are essentially "wetlands" / storm surge areas. After time people forget why development was moved back, or something catastrophic hasn't happened in such a long time it may be thought it is again okay to develop. Before you know it development occurs in these protective areas - wetlands - that allow for drainage and surges.</p> <p>I do favor a system similar to what is used in the Netherlands - a system where the plan is to stop the North Sea from coming in and causing catastrophic damage &amp; death. I believe what I've written above is in agreement with what Mr. Scalise has stated below: "For instance, the barrier weir alternative which is one of the options would provide superior protection for both the North and South shores of Lake Pontchartrain. This alternative consists of a surge levee barrier across the mouth of Lake Pontchartrain and storm gates would close the passes at Chef Menteur and the Rigolets. This alternative, combined with a comprehensive coastal protection and restoration plan, would provide superior protection against future storm surges." (July 8, 2009)</p> | <p>Barrier-weir plan support;<br/>nonstructural measures; oppose buyouts;<br/>environmental issues; coastal restoration</p> |
| <p><b>Robert V. Beck</b> - Build the gates at the Rigolets and Chef Menteur passes plus the levies that go with the gates as proposed and approved in past proposals and never funded. Save all the communities anywhere on the lake. (July 8, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Barrier-weir plan support</p>                                                                                            |
| <p><b>Jim Kidwell</b> - I am glad to see some good ideas. The locks to help protect north and south shores and the pump-to-the river just sound</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Barrier-weir plan support</p>                                                                                            |

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| good. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |
| <b>Anthony Scalco</b> - I agree with the recommendations of Congressman Steve Scalise and I recommended these, before he was in Washington and Pumping Stations at the 17th Canal and the London canal and blocking Mr Go. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Barrier-weir plan support                             |
| <b>Blake E. Harveston, Jr</b> - I support the alternative remedies proposed by Congressman Steve Scalise which would afford protection for both the Northshore and Southshore areas of Laake Pontchartrain. I further support the immediate funding of the offshore royalty sharing to assist in paying for the coastal wetlands conservation projects. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Barrier-weir plan support; coastal restoration        |
| <b>Frank L. Cox</b> - The resulting analysis from the Dutch engineer representatives stated that locks should be placed at the Rigolets Gulf outlets and Chef Menteur Pass. I believe that should be a primary goal of the Corp of Engineers. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Barrier-weir plan support                             |
| <b>David M. Jacobs</b> - I support comprehensive hurricane and flood protection for New Orleans that includes locks at the Rigolets and Chef Menteur passes to prevent storm surge from entering Lake Pontchartrain, Coastal Restoration, and the "Pump to the River" plan. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Barrier-weir plan support; coastal restoration; other |
| <b>Fred Litchliter</b> - I attended the corps get together on the northshore where approx 1000 people had 400 chairs and the \$23MM study was outlined with poor speakers and the slides were not in order. I am disappointed and have no hope of hurricane protection being installed in my lifetime though I amy pay for it. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Improve communication; lack of trust                  |
| <b>T ur</b> - More work needs to be done in saving wetlands as soon as possible. without these, southern louisiana does not stand a chance to survive again. Yes, canals are important to those who live here - but please focus on the long term effects of our wetlands. (July 8, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Coastal restoration                                   |
| <b>Stan LaFaver</b> - Sir, I have read the outline for hurricane and flood protection, and one aspect of it seems a complete waste of time and tax dollars (unless that is the whole point). A lock at the Rigoletes and Chef Pass would do very little to stop a storm surge from entering Lake Pontchartrain. I have spent my life on the lake and surrounding water ways and know from experience that there are innumerable paths that a surge of water could take to flood the lake. The entire length of Hwy. 90 between Pearlington, MS and Chef Pass is, for the most part, one huge marsh on both sides. In addition, Hwy. 90 is very low in elevation and certainly doesn't double as a levee. It seems that anybody would be able to see that a storm surge of even moderate size would simply circumvent locks at the two proposed locations. Unless there are comprehensive plans for a levee system along Hwy. 90, along with locks at the five Pearl River crossings along Hwy 90, I can only assume this is another | Barrier-weir plan opposition, design, and cost        |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Themes                                                                         |
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| <p>useless pork barrel project to enrich some at the expense of the masses. (July 8, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |
| <p><b>Eirleen Brown</b> - I live in Slidell, LA on a small lake which connects via bayous to Lake Ponchartrain. My property's flooding is related to the storm surge in the Lake. I have owned property there since 1985 and had no problems with flooding until around 1999 or 2000. Since then, it has flooded to some extent almost every year. My property is almost worthless, and I have my entire life's investments in my property. I am almost 62 and am too old to start over. Yet, I see no plans to keep the water from flooding when the water comes from the west, which means we would be in the "southeast" section, traditionally the section that gets hit hardest. There should be some plans to handle that. In addition, I fail to see how keeping the water from going south to N.O. won't push it north to the northshore, specifically my neighborhood. I was told at the meeting that it wouldn't, but the water will have to go somewhere, so if not south, then north. (July 8, 2009)</p>                                                                                                                                                                                | <p>Plans for specific areas; induced flooding</p>                              |
| <p><b>Robyn Olivier</b> - As a resident of Slidell, LA, whose home flooded in Hurricane Katrina due to storm surge, I completely support the Flood protection plan of installing Locks at the Rioglets &amp; Chef Pass to prevent future storm surges into Lake Ponchartrain. (July 8, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Barrier-weir plan support</p>                                               |
| <p><b>Terry Theriot</b> - Please start the work..We live in Lakeshore Estates, love the water and the area...only you can make it better. Help protect our property and our life style. The people of Louisiana deserve to be protected with our tax dollars. (July 5, 2009).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Time; plans for specific areas</p>                                          |
| <p><b>Stephen &amp; Gail Valenti</b> - PLEASE approve, fund and build the weir/levee/storm gate project for eastern Lake Pontchartrain as depicted in PU1-LP-a-100-1. A similar plan was approved and funded over 40 years ago. Had it been built then, BILLIONS of dollars and thousands of lives would have been saved. Why can't you people understand that if this plan were built, it would protect ALL of the parishes that contact Lake Pontchartrain?? Millions of dollars could have been saved or re-directed from some of the recent projects in St. Bernard, Plaquemines, Orleans and Jefferson parishes had this plan been implemented several years ago. My wife &amp; I are in our late 60's. We will probably not live long enough to see this plan fully constructed based on past history of the Corps of Engineers getting things done in a timely manner. That being said, at least if this plan is built the many following generations of residents of the Lake Pontchartrain basin will not have to endure the threat of the massive flooding and ensuing supreme efforts to rebuild the area after a Katrina like event. PLEASE.....STOP TALKING AND STUDYING AND START</p> | <p>Barrier-weir plan support;<br/>Dissatisfaction with study process; time</p> |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Themes                                                                            |
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| BUILDING.....NOW!! (July 4, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                   |
| <b>John Crosby</b> - As the developer and homeowner association president of The Sanctuary subdivision representing 350 property owners in Mandeville, LA, we are fully supportive of plan PU1-LP-A-100-1. This type of plan is the only practical means of providing storm surge protection for the north shore of Lake Pontchartrain. It will also have an added benefit for the south shore and the entire lake shore line. (June 26, 2009).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Barrier-weir plan support                                                         |
| <b>Michael Hoggatt</b> - I would like to see 400 year storm surge protection instead of a weir barrier system to close the Rigolets and Chef Passes from. I understand the cost is more but levees for the North Shore would not be needed. Nothing has been done to protect the North Shore since Katrina. (June 23, 2009).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Plans for specific areas; barrier-weir plan opposition; structural measures; time |
| <b>Ezra Boyd</b> - The US Army Corps of Engineers is incapable of fulfilling this important mission. Instead of impartially investigating and admitting to their mistakes of the past, they have chosen to waste millions of dollars on propaganda and lies. Nearly four years have past since the levees failed, and the Corps has demonstrated conclusively that it is incapable of admitting to and learning from their mistakes. The best thing for the Corps to do is to leave Louisiana. Instead of wasting more millions of taxpayers dollars on incompetence, Congress needs to ensure that that money is given to the scientists and engineers in Louisiana. Unlike the Corps, we know how to get the job done and protect American citizens and infrastructure. I also think that Attorney General Holder needs to open an criminal investigation in the Corps ongoing attempts to decieve the American people. (June 23, 2009) | Lack of trust                                                                     |
| <b>Anonymous</b> - How will you respond to or consider each comment? (June 18, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Miscellaneous                                                                     |
| <b>Ellen Manieri</b> - How can I view the different plans presented at the harbor center on June 16th at the harbor center? (June 18, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Plans for specific areas                                                          |
| <b>Dale Shockley</b> - DO NOTHING. LET MOTHER NATURE DO HER OWN THING. WE ALL CHOSE TOO LIVE HERE. LET IT BE (June 17, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Miscellaneous                                                                     |
| <b>David P. Lovett</b> - I support alternative # 7 for the project named: St Tammany Parish SELA Schneider Canal Hurrricane Protection Project. Much has changed in the Slidell Area since the May 10, 1995 Flood and this alternative is the best solution for Slidell as it is today 2009. I also support the PU1 LP-a-100-1 plan that is supported by the St Tammany Parish Government. (June 16, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Barrier-weir plan support; other; structural measures                             |
| <b>Cynthia Daigle</b> - STOP the studies. Enough already! Start rocking our barrier islands. It's our first line of defense. No rocks? Make some with cement like Progresso, Mexico. Quit making excuses, stop the studies, stop wasting designated monies, start dropping rocks around our barrier islands. If it works for Texas, it should                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Dissatisfaction with study process; coastal restoration                           |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Themes                                                                          |
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| work for us. (June 15, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                 |
| <p><b>Ronnie Filce-</b> We need barrier islands rebuilt now. We don't have ten years and millions more for you to study. It's just plain common sense. It's what mother nature gave us to break storm surges in the past. You know, knock it down before it gets inland to our marshes and levees. Is it that hard to understand? (June 15, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Dissatisfaction with study process; coastal restoration</p>                  |
| <p><b>Captain Daniel A. Lyons-</b> Area: Southern Terrebonne Parish<br/>                     Levees are great to control rivers that flow over their banks and at times they even fail at that job. So how is one to believe or expect a levee to control the Gulf of Mexico, much less a storm surge of twenty to thirty feet. A reality I must add, that will face the Southern most levees of this Levee system called Morganza Sr or Jr. in Southern Terrebonne. After the daily abuse the Wetlands and Barrier islands (what remains of them) endure on a daily basis and for every storm that passes to our west, completely washes out what remains outside the levee system. Barrier Islands for Storm surge protection for Terrebonne as a whole, Barrier Islands for the protection of the remaining wetlands, what was once the wetlands natural barrier against the Gulf. The only way this part of the Louisiana Coast will be saved is in three parts.<br/>                     1). Barrier Islands for storm surge protection.<br/>                     2). Levees for water rise behind the surge breakers.<br/>                     3). Get the Gulf out of Terrebonne Parish and the combination of things that are talked about may just work.<br/>                     4). Of course getting our fresh water back from Donaldsonville &amp; Thibodaux would help out big time..<br/>                     If you had a garden in your backyard. Would you build a fence behind your home seperating you from the garden or would you have a fence along the woods to keep harm out? (June 15, 2009)</p> | <p>Coastal restoration; structural measures</p>                                 |
| <p><b>Thomas E. Hassell -</b> As a resident of Lafitte who lives outside of the existing levee system, I anxiously await any type of work pertaining to the restoration, or creation of storm surge barriers, more freshwater diversion projects to nourish our marsh, and for work to begin on the project proposed to protect the communities of Crown Point and Lafitte. I would like to stay where I'm at, but rebuilding my house every time it floods is getting harder as I get older. (June 12, 2009)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>Plans for specific areas; coastal restoration; structural measures; time</p> |
| <p><b>Dr. Pat Fitzpatrick -</b> I have read the report in detail, and have a PhD in meteorology. I have participated in storm surge research as well as ADCIRC modeling at Mississippi State University. I am also a native of New Orleans and have fished the Louisiana marsh all my life. I believe the concepts and science here are sound. Politicians will have to make some tough decisions, and they need to be done quickly. My main criticism is in the assumptions used for marsh restoration. Much of it seems to rely on freshwater</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Planning and decision process; coastal restoration</p>                       |



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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Themes                                                                    |
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| <p>diversions, which is not an effective solution to marsh erosion. It just maintains lower salinity in some locations that may preserve freshwater vegetation, and may in fact enhance marsh loss in hurricanes, as recently witnessed in Delacroix from our last 4 hurricanes. Indeed, there is little emphasis on marsh creation using Mississippi River sediment, sediment pipes or active replanting. The report assumes marginal restoration in Delacroix and the Biloxi marsh, for example. It flippantly mentions a pilot program used by the Dutch to restore marsh. I find this very disturbing. Adding marsh buffers and ridge lines will protect Louisiana from weaker storms and indirect hits. I'll freely admit the marsh has little reduction in major hurricanes, and is why a multi-tiered effort is needed. But why does the Corps continuously not taking marsh creation seriously to protect us from non-major events and to protect our economically and culturally valuable wetlands? (June 11, 2009)</p> |                                                                           |
| <p><b>Linda Taylor-</b> This report is 347 pages long. The corps needs to stop reviweing and start protecting the coast line of Louisiana. Talk is cheap start doing. The monies that has been spent for all of the specs out there could have been used for the actual protection. Enough talk lets see action being taken before another hurricane comes and finishes the coast of Louisiana. Please lets stop trying to figure out who and what and where will the protection be for the low lying area communities. We all need to be protected not just the city of Houma. All the parishes in lower Terrebonne and Lafourche should be top priority we all pay taxes just like the Houma residents. (June 11, 2009)</p>                                                                                                                                                                                                                                                                                                    | <p>Dissatisfaction with study process; time; plans for specific areas</p> |
| <p><b>Ed Gaines-</b> Very optimistic report. Example: "Pumping for each drainage area has been considered as a fixed rate of outflow. The pumping rates were obtained from the Corps for those locations where pumps were thought to exist." Assumes all pumps working; actually some pumps are not working at any given time plus breakdowns under heavy use. Assumes fixed rate outflow; pumps are high volume, low pressure and are very sensitive to back pressure. Backpressure increases with surge height. Could not find factoring in of global warming on the storm intensity. All data based on uniform history without trending. Is LACPR/USACE still in denial? (June 11, 2009)</p>                                                                                                                                                                                                                                                                                                                                  | <p>Miscellaneous</p>                                                      |
| <p><b>Roy Halford-</b> the government should buy old tanker ships, freighters, what ever they can get to sink offshore in an appropriate depth to stop coastal erosion, they could get them worldwide, it would help with erosion and recreational fishermen would love it. other states have done it just for the scuba divers. they could also have a program to collect riprap, old broken up concrete from construction sites to set along the coast or any kind of demolition</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Coastal restoration; structural measures</p>                           |

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| Comment                                         | Themes |
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| material that would be suitable (June 10, 2009) |        |

**Sandra Slifer comment in its entirety:** I've reviewed the Executive Summary and the National Academy of Sciences report and have attended a public hearing in Slidell, LA and the St. Tammany Parish Council meeting and listened carefully to the presenters. While I appreciate the time and effort that has gone into the report, and I certainly am more informed than when I started, I feel that there is still more work to do before this report is sent to Washington, D.C.

I am concerned that the report that the Corps has prepared is insufficient to meet the task of defining specific steps that are needed. While I agree with statements made by Corps' employees and I have stated that the citizens of Louisiana need to make some tough decisions, I do not think this report provides us with the tools to make these decisions. It would have been helpful if the plans had been prioritized as to effectiveness, time-frame to complete, rough cost estimates, risk assessments, and alternative strategies.

It seems unlikely that we (Congress, US taxpayers) can protect the Louisiana coast as it now is. I agree with the NAS report when they said that the environmental costs and the financial costs of providing the level of sediment required may be too costly.

I am disturbed by the reaction of St. Tammany Parish politicians in their immediate embrace of the weir option in the Rigolets as "the solution". It was painful to watch so many people parade into the municipalities and the parish and receive building permits to rebuild structures that had been flooded up to their roof-lines and yet were deemed less than 50% damaged. I think that a carrot/stick approach is required in order to mandate the behavioral and the political change that is needed to reduce development and redevelopment in those areas that are at risk for storm surge. Some of these structures have been placed in former wetlands and marsh. Clearly, the permitting actions of the Corps of Engineers has directly contributed to the problems we are all now faced with coming up with solutions for. Induced development behind flood control structures (weir, levees, walls, etc) is a serious problem and more attention must be made to address it.

I would like for you to consider the NAS recommendations regarding the authorization process. The restoration and protection projects that will be required here in Louisiana are at least as complicated as those faced by the State of Florida and the Corps of Engineers in the Everglades. The probabilities are very high that you will encounter natural, political, and financial difficulties in implementing your strategy. It makes sense to seek an authorization patterned after the Everglades Restoration.

Lastly, I am concerned that if you continue on this path, I fear that there will be conflicts and delays between the state, the Corps, and the stakeholders that could be minimized if you delayed the report and presented a consensus report before the end of the year.

I believe that it would be very wise for you to extend the comment period so that the Corps report, the State of Louisiana, NAS, and citizens were able to come together and present a unified voice to Congress. The LACPRA is conducting meetings next week that will engage

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many citizens in a discussion about the status and operations of the Corps in south Louisiana. It would seem that more time is required to reach cooperation on these and the multitude of other questions that remain unanswered. (July 24, 2009)

**Donald A. Olson P.E. comment in its entirety:** Saffir-Simpson is a joke. It portrays a hurricane as a wind only. I believe that there should be a three part designator...Category 5-B-20. That is Category "5"...a certain wind speed range. Category "B" the width or size of the storm. And category "20" the maximum expected storm surge at landfall. Thus a 2-B-10 can be a less fearful storm than a 1-B-20 because a 20 foot storm does more damage than category 2 winds do. But note that for some far enough inland the "10" or "20" designation is not a significant decision factor, but the cat 2 winds may then be more significant than cat 1 winds. The size of the storm, A, B, C, D, F could relate the width of the wind speed and hence the cross-section of the coast threatened by the storm. The width factor helps interpret the common "track" normally distributed by news services. Maybe Katrina was a Category 5-F-30!, but it matters little if it was ONLY a 3-F-30!

Having participated in the MCDA, I find it to have been too vague to be helpful and its effect should be minimized. While it is useful for non-technical citizens to express their priorities when it comes to preserving life, environment and history, there were too few interactive priority relationships given that might have helped with quantification of the trade-offs. I say "Nice effort and listen up, but be cautious in applying civilian priorities to engineering problems." You might need a horse and end up with a camel.

While evacuation remains the top process for reducing risk to human life, it is becoming impractical as the population grows. Yes, we achieved high efficiencies in the face of a killer storm, but the practicality of large scale movements is decreasing, the expense is less able to be absorbed by certain income groups, and there is a real threat that "evacuation fatigue" will impair the expected effectiveness in the long run. As a child living in Planning Unit 1, we NEVER considered evacuation as a viable alternative in advance of a storm. Today, it almost mandatory, allowing for the threats of charges of child abuse or reckless endangerment, to evacuate even for the most minor of storms. I believe that the costly economics and practicalities of evacuation need to be reconsidered. It cannot be our primary line of defense.

While "Regional tradeoffs across state boundaries must be considered," the delay of solutions for one state to allow another state to plan its future will be politically suicidal and could sink the entire process and ruin many careers and still not solve the problem. In particular, solutions which benefit Louisiana and, at the same time, "increase the risk" to Mississippi should not be deferred or down graded. After one state has decided what to ask for, pay for and install, an adjacent state must then plan its own solution around. The argument that Plan A solves the LA problem but increases the MS problem and therefore LA must accept less of a solution will NOT HOLD WATER (pun intended) politically. The knowledgeable engineer will avoid completely such references to solutions that affect different areas differently. Play down those differences or answer to the people!

Thank you for the opportunity to respond.  
(July 24, 2009)

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**Ore Alao comment in its entirety:** The Equity and Inclusion Campaign has reviewed the findings of the Louisiana Coastal Protection and Restoration (LACPR) Technical Report that was prepared by the United States Army Corps of Engineers (USACE) New Orleans District and find that the LACPR report presents a thorough and comprehensive range of flood control, coastal restoration, and hurricane protection measures.

The array of options put forth by the USACE New Orleans District are an important initial step in ensuring that the Gulf Coast region is well-protected from the inevitable threat of future tropical storms and hurricanes. Our main priority now is ensuring there is immediate action taken to restore our coast using all known lines of defense.

### Equity and Inclusion Campaign

The Equity and Inclusion Campaign is a nonpartisan policy advocacy and public messaging campaign advocating for fulfillment of the federal commitment to confront persistent poverty and inequity during the Gulf Coast recovery and rebuilding process. The vision for the Equity and Inclusion Campaign is to establish sustainable Gulf Coast communities characterized by economic, social and environmental fairness. The Campaign is working to effect systemic change so that all people are included, valued and empowered.

### Coastal Land Loss Impacts in Louisiana

Coastal land loss and erosion is a daily reality for many of those who live on the Louisiana coast. The unprecedented rate of unnatural land loss affects people's homes (many of them have flooded more than once), their hopes, goals and outlooks on their own lives. For many living on the coast, the daily reality of unnatural land loss and erosion means either living in a repetitive state of recovery and/or anticipating the next flood, be it from tropical storms, hurricanes or even high tides.

The disastrous and sometimes fatal effects of coastal land loss and erosion are exceptionally heightened in Louisiana. Coastal Louisiana has always experienced natural wetland loss in the abandoned delta as the Mississippi river changed course; however, until recently the loss was always more than offset by the creation of wetlands in the new delta. Unlike wetland loss elsewhere, which mostly results from private actions, the coastal wetland loss in Louisiana results primarily from activities conducted or authorized by government agencies. Human activities have disrupted the natural delta-building cycle. Among these activities are levee projects, channelization, canals, draining and filling of land, and human modification of drainage patterns.

### Recommendations

Equity and Inclusion Campaign applauds the presentation of viable options put forward in the LACPR report, which explore and identify the various actions needed to fully restore and protect the coast. The thorough and comprehensive investigation is apparent in the product.

While Equity and Inclusion welcomes the findings of the report, the following comments are offered to strengthen the report's impact as decisions are made about funding, and to protect the lives of Americans from future disasters:

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? Implement a multi-pronged strategy and prioritize long-term solutions, such as the restoration of wetlands and barrier islands for flood protection over a short-term focus on levee construction

. There should be comprehensive restoration and protection through three lines of defense - island enhancement, marsh restoration and hurricane protection systems- for all existing communities along coastal Louisiana, not just some that have been affected by coastal land loss and erosion.

. Our main priority is ensuring there is immediate action to restore our barrier islands and wetlands. Healthy barrier islands are the first line of defense against tropical storms and hurricanes. They break up the storm and reduce its intensity. Marshes are the second line of defense. For every 2.7 miles of marshes, 1 foot of storm surge is absorbed. Coastal Louisianians are being forced to rely on their third line of defense, levees. The solutions to this problem have been well-studied and are well-known. The LACPR report presents numerous options. What we need is a comprehensive plan of action, one that takes into account all options put forward in the report and ensures the greatest risk reduction.

? Comprehensive restoration and protection should include rural and urban communities alike that are affected by coastal land loss and erosion

. Congress should make funds available to the USACE to implement a full scale approach to protect all communities.

. While the coast is being restored, home elevation assistance should be provided to those communities that are in the most low-lying areas.

The challenge we have with current projects is that while they have an optimistic outlook, they are being carried out on a small scale. We are coming to this critical point now, and believe the USACE must take quick action and on a large scale. We are aware Congress has to determine what they will pay for; we are advocating that they approve projects that are carried out in a systemic manner and that repair barrier islands and the wetlands. The focus must be on achieving long lasting success, thus projects must be carried out efficiently, and not haphazardly, with no focus on their sustainability and impact.

As USACE continues to coordinate with the State of Louisiana to further develop options and priorities in each planning unit, the USACE must take a stand by articulating significant recommendations; by presenting numerous options to Congress, there is a possibility that Congress will approve only what is low cost, and not necessarily what is most effective and needed.

A long-term focus on restoration of wetlands and barrier islands, not just the short-term emphasis on levees, is critical to the sustainability of our region. State and federal leaders focus on levees for flood protection; however, issues of long-term sustainability must incorporate all three lines of defense. We can make great progress if Congress funded the USACE to prioritize these lines of defense on a large scale.

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A final note - Louisiana is a high need area. Assessments of the benefits of protecting the wetlands should not only focus narrowly on immediate "bottom line" cost estimates.

. Resources should be allocated adequately to reconstruct some of what has been lost.

. Measures should be taken to restore the coast' former ability to keep pace with subsidence and sea level rise through sedimentation and other processes.

The Louisiana coast has been studied for years and many coastal restoration plans have already been engineered and are ready for the implementation. What we need now is for the federal government to adequately fund these plans to protect this cultural asset and economic contributor from future storms. (July 24, 2009)

### **Deborah M. Settoon/Kim Carver comment in its entirety:**

- The Pachyderm Club would like to voice strong support for the Category Five Hurricane Protection proposal to use floodgates at the Chef Menteur and Rigolets Passes to block storm surge from Lake Pontchartrain. We are a conservative group of New Orleans area residents who suffered through various recovery experiences after Hurricane Katrina and want to prevent a reoccurrence. These simple floodgates were identified as the best common sense protection for the roughly 1.2 million people in the Greater New Orleans area in the 1970s, then again right after Hurricane Katrina, and should be built without further delay.

The Corps, with its military expertise, should look at past history to see that the early defenders of this area built fortifications at both passes to protect our area against waterborne enemies. Our current enemy, storm surge, takes the same path through the two passes into Lake Pontchartrain, where it threatens drainage canal floodwalls and backflows into pumping stations. Just as in the past, concentrating our defenses at key entry points can protect 7 parishes surrounding the lake.

Steel truss gates can easily be designed using a weir concept that could block the brunt of the 28' maximum storm surge and still allow limited overflow into the lake, using its vast expanse as a reservoir. The relatively minor Hurricane Gustav last year caused many Northshore businesses and residents to experience flooding that could have easily been prevented by closed floodgates.

The proposed floodgates could remain open except during hurricanes and can be designed to alleviate environmental concerns by allowing for 95% of the normal tidal flow. If the Corps had not been sued by environmental groups in the 1970s when this project was first proposed, the impact from Hurricane Katrina would have been lessened substantially.

A properly done environmental study must include the project's reduction of loss of life, a factor not included in the Corps' current multi-criteria decision matrix. As for the political objections from our good neighbors in Mississippi--that the floodgates may deflect the surge into their area--there is no measurable impact as Corps official Karen Durham-Aguilera has stated publically.

The alternative concept, raising over 300,000 homes is impractical and will likely result in a shrinking metropolitan area. Just as we know many residents will not come back to rebuild a second time, many will not tolerate another major construction experience in their lives.

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Please accept our support for the Lake Pontchartrain floodgates and let us know what else we can do to further their construction.

Sincerely,  
Kim Carver  
President, Pachyderm Club (July 23, 2009)

**Billy Marchal comment in its entirety:** COMMENTS ON THE LACPR FINAL TECHNICAL REPORT by the Flood Protection Alliance June 23, 2009 The following comments are based on a review of the LACPR Final Technical Report released on June 9, 2009, and work performed by Haskoning, Inc. under contract to the Flood Protection Alliance, using data provided by the Corps of Engineers under the Freedom of Information Act filed on November 17, 2008.

1. Referring to Vol. 3, Evaluation Results, of the LACPR Report, there are major discrepancies in the inundation maps for Planning Unit 1 due to the fact that the LACPR modeling assumed a solid boundary between parishes, and did not allow for water to flow from one parish into another. This is most obvious in the case of 400- and 1,000-year events where the surge would overtop levees in St. Charles parish resulting in water elevations of 15-16 feet in the parish all the way to the Mississippi River levee.

Given the low terrain between Airline Hwy. and the Mississippi River south of the airport, it is obvious that the water in St. Charles parish would flow into Jefferson until equilibrium was reached resulting in a water surface elevation of approximately plus four feet in both parishes based on the storage curves for Jefferson and St. Charles parishes provided by the Corps.

Referring to the following map, the water surface elevations shown in Jefferson parish have been changed from the LACPR values to reflect the new modeling, while the other numbers are unchanged from the LACPR version. The red '+4' in the square reflects the equilibrium water surface elevation.

In summary, the LACPR maps should be updated to correctly reflect the actual situation, and not give the public, and Congress, a false sense of security.

LACPR Water Surface Elevations 400 - Year Event, 2010 Base conditions, page 6 of PU-1, Vol. 3.

A copy of the report on the work performed by Haskoning, Inc. is attached for reference.

2. There are appreciable differences between the IPET 500-year event inundation map and the LACPR 400-year event maps with the LACPR maps showing much more water, specifically in St. Charles parish. While it is understood that the IPET maps show a 'mean' water surface elevation while the LACPR maps reflect a 90% confidence level, a fact which accounts for most of the difference, the general public, and probably also Congress for whom the report is intended, will not understand this level of detail without some explanation. The IPET map tends to lead to a false sense

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of security because the viewer does not understand that there is a 50% chance that the flooding could be much more severe. (July 20, 2009)

### **Philip Stephenson comment in its entirety:**

To Whom It May Concern:

I applaud the effort made in this document to use a "Systems" approach in conducting this analysis. I would however express the following thoughts about attributes of the system that could be better incorporated:

1. Structural solutions must be compared to non-structural and coastal restoration in terms of their long term viability and cost. A diverted river, or rather a previously diverted river that is now allowed to run its natural path, will continue to restore the coast indefinitely and not require the kind of maintenance that levees and weir may require. In addition, we avoid the risk of bad governance and engineering that were a critical element in the levee failures of Katrina.
2. The advantages of coastal restoration accrue to national objectives beyond those specifically listed in this particular legislation. Ecological benefits of coastal restoration for protecting wetlands, endangered species, etc MUST be taken into account if a true systems approach is being used. Similarly, the national security implications of the oil refining capacity as well as one of the nation's largest and most strategic ports must be considered as benefits in the cost-benefit calculation of protected wetlands.
3. Perhaps the single greatest lesson of attempts of the last 100 years to control and guide the Mississippi is that we are generally unaware of many of the SYSTEM-impacts that will result from changing the natural environment. This X factor should be taken into account when giving relative weight to structural vs. coastal restoration efforts. Coastal restoration efforts that RESTORE natural features and especially waterways are less likely to result in unintended or unPREDICTED consequences that could negatively affect flood protection or the ecology of the area.
4. In analyzing the costs associated with structural elements, the cost of and delays associated with preparing studies of environmental impacts as well as those impacts themselves must be weighed. This should include potential legal battles if attempts are made to put up structures that destroy sensitive ecosystems or habitat for endangered species.

In addition to these practical concerns, I would suggest that all Louisianans and Americans benefit from a long-term, sustainable solution that works with nature (coastal restoration) than short-sighted attempts that continue to over-power it (structural solutions). Structural solutions are useful as short-term mechanisms to protect the state while natural mechanisms are restored that will provide long-term piece of mind to all who live in and appreciate having a South Louisiana. (July 20, 2009)



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### **Michael Hoggatt comment in its entirety:**

I understood you to have the understanding the council resolution supported a substantial (perhaps non-overtopping?) barrier along the alignment of the State Plan which cuts through the middle of Lake Borne. I noted that press reports had referenced the specific plan PU1-LP-A-100-1. A bystander observed that one must be cautious about press reports. You may recall that I provided copies of pages of the Corps report showing cost and impact comparisons for the "unacceptable" impacts of a Full Barrier alternative on Mississippi. I followed-up to obtain the specific council resolution (which does reference a specific plan) and then reviewed the available public information leading to the resolution. The subject resolution was adopted as an off the floor item as part of the brief 3-4 minute segment toward the end of the lengthy June 4th meeting dominated by the video bingo issue. There was little discussion other than a reference to the May 29th presentation by the Corps to some portion of the council and the staff. Despite my obvious interest in the issue, I am not aware of any substantial public presentation and discussion of the key assessments and tradeoffs involved in the USACE study. Notwithstanding the substance supporting any recommended option, in light of my current information, I question whether it appropriate informed process and decisionmaking has been applied by the Corps in coming to its views or the Parish Council in adopting the resolution. Accordingly, at the suggestion of Ken Burkhalter -- with whom I summarized some of my concerns at the June 16th meeting -- I prepared the resolution attached to the e-mail forwarded herewith. This resolution is directed toward more fully informing the public on the key options, issues, and tradeoffs so that public understanding and opinion can be more fully informed and the judgments can be made by those officials elected to make such tradeoffs. I am concerned that the USACE is making decisions and tradeoffs in the context of its technical study that should not be in its purview of engineering description and design. I am concerned that St. Tammany citizens are not being informed and provided a meaningful opportunity for input to matters of critical long run interest. I have noted with concern that you have in your Parish President letter continued to support specific USACE alternative that provides for only a 12.5 ft wier barrier and no protective levees on the Northshore including Slidell, i.e. the PU1-LP-A-100-1 option presented by the Corp after it rejected for more detailed analysis all "Full Barrier" options. While I appreciate that there may be some practical resource availability and political reasoning that could lead to support for a particular option, the public information and process should make clear such an assessment along with the tradeoffs and judgments involved. Your leadership is important in this regard so that the people of St. Tammany understand from a fully informed viewpoint the technical and political judgments necessary. Following further review of the subject resolution, I had occasion to visit informally with some of the Parish technical staff on the USACE study. This was productive for understanding some of the technical details and becoming more informed about the cost-effectiveness of the "wier barrier" approach. However, that input caused me to be even more concerned that the public does not understand the proposal and the tradeoffs even though such understanding can be developed with appropriate public information and presentations. Moreover, it was clear tha the LACPR consultants for the USACE study did not substantially engage at a formative point in the study knowlegable technical personnel with respect to detailed alternatives prospects for various parts of St. Tammany parish. For example, alternative levels for a Wier Barrier for the 12.5 ft reference proposed by the Corp were not evaluated even though the height of the weir directly impacts the number of storms that over-top any wier barrier and the level/extent of flooding in areas of the northshore that chose not to bear the fiscal, environmental, and aesthetic costs of levees. For example, some sort of ring levee

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for Slidell may be necessary to protect the core of Slidell from any storm that over-tops any "Wier-barrier" and the people of Slidell might prefer such a levee, even if the people of Mandeville would prefer to avoid the impacts of the levees required to protect them from a major storm. The data to inform the public of such tradeoffs could be prepared and help the public understand the cost-design-risk impacts. This has not yet been done, but could be important to mobilizing public understanding and the effectiveness of support for a well-considered plan. It was further suggested at the June 16th meeting that there will be additional opportunities for meaningful and formative public input. Given the experience with the "Pump to the River" issue, this seems to be a risky strategy. The sooner there is a well-informed and well-grounded decision made by informed representatives, the sooner detailed work can focus on an option that enjoys broad support. While I expect that this is one motivation for your support a specific option, I am not sure that the groundwork of public review, understanding, and input has yet been established. This is particularly the case as the most common public understanding of Rigolets gates is a "Full Barrier" concept. (I doubt that the people of Slidell understand that the "12.5 foot WIER barrier" allows some 7 feet more water in the Slidell area in a 400 year storm such as Katrina than the "Full Barrier" common concept.) This is a long term problem with enormous implications for St. Tammany communities. Our leadership should insist on the time to build public understanding and commitment to an approach. If this takes a few more weeks or months in the context of the USACE study that is already some 30 months late, then our leadership should seek the time and process to build informed public understanding and commitment. I would appreciate an opportunity to meet with you to review these concerns and perspectives. In the meantime, I hope that you will be supportive of the draft resolution that I have prepared with such modest modifications as may be appropriate. I am hopeful that the thoughtful engineering department of the Parish will have a greater chance to input to the USACE and inform the public and its representatives while major options are still on the table.

One immediate problem that should be promptly correctable is that the St. Tammany Parish Council on June 4th approved a resolution supporting the Corps preferred "12.5 ft. Wier Barrier" plan. I am not certain the Council understood the implications of the action that was recommended by the Engineering department, nor had the public had a chance to review, understand, and comment on alternatives. Specifically, the resolution states that the Parish review "determined that the maximum Hurricane Protection benefits for St. Tammany Parish will result from implementation of . . . a Wier-Barrier ..." This "determination" by the Parish Engineering department is simply incorrect if the criterion is "maximum Hurricane protection benefits" (i.e. without reference to costs). The Corps Hydraulics and Hydrology Appendix states the following on page 40 (page 129 of the 389 page PDF file on the <http://lacpr.usace.army.mil/> website): Full blockage (East A) when compared to a 100-year surge level weir (East B) shows additional reductions in 100-year surge level within the lake of between 3.1 ft close to the weir to 0.1-0.2 ft on the far side of the lake. The differences are shown on Figure 2.46. Outside of the barrier levels are raised by at least 1 ft for an area from St. Bernard Parish across to the Mississippi coast. Differences are greater for the 1000-year storm where the full closure makes a larger impact on levels in the lake, reducing maximum surge levels by up to 7 ft over the weir alternative, shown in Figure 2.47. "Close to the Wier" means Slidell. For a 100 year storm the 12 Foot Wier barrier allows some 3 foot greater water levels near Slidell than a Full Barrier. For a 1000 year storm, the Full Closure alternative reduces water levels (as compared to the Wier Barrier alternative) by 7 feet in the Slidell area, 4-5 in Lacombe, and 3-4

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feet in Mandeville/Madisonville. Katrina associates with approximately a 400 year storm surge (according to the Corps report) so the differences between a Full Barrier and "12- ft. Wier barrier" for a storm that we have actually experienced are substantial relative to the effects on Mississippi and Plaquemines that seem to motivate the "wier barrier" alternative and preference. I recall that 2 days before landfall of Gustav (before it shifted west by 75 miles) Kevin Davis and other emergency planners were looking at projections showing something like 20 feet of water in Mandeville.

I do not yet understand why on June 4th the St. Tammany Parish Council-- in response to the last minute (it was not on the agenda) Engineering Department recommendation and without any real informed public discourse -- chose to "fully support" the specific plan for 100 year protection (PU1-LP-A-100-1) which is a 12 ft wier barrier only and did not consider/request more complete analysis of the Full Barrier options that provide more protection to the northshore and all of the communities around the lake including New Orleans and Jefferson parish. The opinion of the Parish Council of the most impacted area should carry weight and should be developed with appropriate public input and understanding of the alternatives. For example, how many structures in Slidell and Mandeville would have been flooded and to what extent if a Katrina level event were blocked by a "Full Barrier" as compared to a Wier Barrier? This is an analysis the Corps should be able to provide.

In addition to local leadership, we also need to get our state representatives to understand the report and its key assumptions/conclusions before establishing preferences for recommendations to the Federal government where the funding must be mobilized. The Corps keeps talking about responding to public input, but, as the Pump to the River situation illustrates, the sooner our communities make their informed and reasoned preferences known, the sooner we can get projects that provide an agreed level of long run protection and confidence for investing in our communities. This planning phase has taken entirely too long largely because of the Corps delays. We have had the Corps assessment for only a few weeks and we need to get this multi-decade hurricane protection investment right by taking the necessary time now with all due urgency. Please ask your friends and neighbors to request that the Parish Council rescind its resolution of support for the limited option presented by the Corps and engage both the Corp and the public in an informed dialogue of the costs and tradeoffs. This can be done by calling or e-mailing your parish council person and/or Kevin Davis' office. The state of Louisiana should also engage this terrain as they have the technical resources, staff, and position to cause an appropriate informed assessment.

The St. Tammany Parish resolution (see attachment) was adopted as an last-minute off the floor resolution recommended by the Engineering Department where there was little opportunity for public input. There was only a few (3-4) minutes discussion leading to the adoption of a resolution throwing the weight of one of Louisiana's most populous, asset rich, and critically impacted parishes behind a particular option in the USACE study. While there was a 2+ hour presentation by the Corps to some sub-set of the Parish Council the previous Friday (May 29th), it is not clear whether key issues and tradeoffs in the study were brought to the attention of the representatives at that presentation, nor was there public input based on understanding. Why should such a resolution be adopted before the public has understood the technical assessments, alternatives and trade-offs, and options? The June 16th public presentation -- which was the

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event driving the fast track council resolution -- was the initial public discussion of the plan and left many attendees confused and unhappy. The presentation did not call out tradeoffs for key options. It did not make clear that the "barrier wier" was only 12.5 feet high based on the judgement by the USACE that a full barrier had unacceptable impacts on Mississippi and was not cost-effective. Considerations for this judgment -- even if correct -- were not described in the public meeting presentation. The Lake Ponchartrain barrier design and plan is a critical hurricane protection decision for St. Tammany parish and the public should have reasonable opportunity to understand and input to the tradeoffs and decisions. This has not yet been done and key St. Tammany communities have not had an opportunity for meaningful understanding and input into this critical matter. While getting on with protection is important, this project requires 10-15 years to construct (according to the report) and will have multi-decade implications for development and physical infrastructure security in St. Tammany parish. The USACE is over 2 years late providing the draft review; it is unrealistic to require public input be completed within such a short period of time after the initial draft assessments have been completed. We should take the few months required to inform the public and make informed tradeoffs rather than just accept one of the limited option deemed adequately cost-effective in the long delayed USACE study. Now that we have the first pass from the USACE, let's get the input and make an informed collective recommendation and request to the Congress. This may or may not be one of the USACE options, but let the process leading to the recommendation and request by one of the most impacted communities (St. Tammany) be properly informed and reasonably adopted. The June 4th Parish Council resolution mistakenly asserts that the "wier-barrier" provides "maximum" protection for St. Tammany when multiple sections of the USACE note that the "FULL Barrier" provides greater protection by limiting northshore flooding impacts to the water naturally in Lake Ponchartrain during a storm. Absent levees on the Northshore, some flooding will occur even with a Full Barrier, but the amounts are notably less (7 feet in Slidell as compare to the Wier Barrier, and 3-4 feet in Mandeville).. However, the results from the LACPR study are not called out clearly and were not part of the public presentation. I do not know if the presentation by the Corps on May 29th to the Council made this clear or the assessment of the St. Tammany engineering department in this regard regarding "maximum protection." Given the added costs of the Full Barrier compared to the 12.5 ft Wier-Barrier, such a conclusion regarding "maximum" protection might well have a dimension of political rather than technical feasibility, but such assessments and judgments should be fully informed, communicated, and made by appropriate elements of government. The USACE study looks only at a 12.5 ft-Wier barrier compared to a 30-36 ft "Full barrier." It does not provide engineering details supporting the differential cost estimates. The study does not provide detailed impact analysis comparisons for the alternatives because the Full Barrier was screen out early because of costs, constructability (if you aren't sure who to build it; how do you estimate the cost?), and "unacceptable" impacts of a full barrier on Mississippi. Intermediate heights of "Wier-barriers" were not evaluated even though the study does not explain the basis for the 12.5 feet design height chosen and the fact that the number of storms and amount of water allowed to over-top a wier barrier and enter Lake Ponchartrain is a direct function of the height of the "Wier-Barrier". For a decision of this importance to St. Tammany parish, the technical assessments supporting a particular design recommendation should be clearly described and communicated and include some evaluation of the basis for recommended approaches.

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The proposed resolution attached seeks to start the process of addressing some of the concerns for both substance and process noted above. It withdraws formal support for a particular action pending improved public communication, input, and discussion (at a minimum) and requests that the USACE provide more information explaining the basis and tradeoffs required. It also requests that the public input process be more informative and timely even if this requires a modest delay in the LACPR timely and it seeks to formalize some effort for citizen review and input supported by local technical inputs. Hopefully, the proposed resolution can be adopted at the next meeting in order to begin a more satisfactory process that might even improve the outcome for what is recommended to the Congress for funding for the critical investment to protect our communities. We should take a few extra weeks or months to get the process and substance more correct given the length of time we have waited for the Corps long delayed initial study. please time is running out. Thanks P.S. Please pass along to all of your friends. (July 15, 2009)

### Comments Sent by Mail to the New Orleans or Mobile Districts

In addition to the comments received by email, 11 letters were mailed to the New Orleans or Mobile districts. The letters are included at the end of this document (attachments to the letters are on file at the New Orleans District).

| Name (Date)                                                                                                                                                                                                                                              | Themes                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| James K. Harlan (July 24, 2009)                                                                                                                                                                                                                          | Barrier-weir plan (disagrees with rationale for screening out full barrier plan)          |
| Aaron Viles, Campaign Director of the Gulf Restoration Network; Steven Peyronnin, Executive Director of the Coalition to Restore Coastal Louisiana; and Carlton Dufrechou, Executive Director of the Lake Pontchartrain Basin Foundation (July 24, 2009) | Coastal restoration (cover letter summarizes 2,883 public comments)                       |
| John Lopez (July 24, 2009)                                                                                                                                                                                                                               | Cover letter to list of Hurricane Katrina fatalities                                      |
| Rocky Pullman, President of Hancock County Board of Supervisors (July 23, 2009)                                                                                                                                                                          | Cover letter to hundreds of form letters opposing the barrier-weir plan (Form Letter C)   |
| William Jennings (July 20, 2009)                                                                                                                                                                                                                         | Barrier-weir plan support and history                                                     |
| Janet Austill & David Long (July 17, 2009)                                                                                                                                                                                                               | Barrier-weir plan opposition; coastal restoration; environmental issues; induced flooding |
| Virginia Dodge (July 14, 2009)                                                                                                                                                                                                                           | Barrier-weir plan opposition                                                              |
| Sam Scandalianto (July 13, 2009)                                                                                                                                                                                                                         | External expertise                                                                        |
| Robert & Betty Baxter (July 11, 2009)                                                                                                                                                                                                                    | Barrier-weir plan opposition                                                              |
| George Dunbar (June 15, 2009)                                                                                                                                                                                                                            | Barrier-weir plan support                                                                 |
| Amilcar Correa (June 15, 2009)                                                                                                                                                                                                                           | Barrier-weir plan support                                                                 |

James K. Harlan  
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Covington, Louisiana 70433

USACE New Orleans District  
P.O. Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160  
Attn: Tim Axtman, PM-OR

July 24, 2009

Re: Comments on Draft LACPR

This letter presents a range of comments based on my detailed review of the LAPCR technical report and related appendices. As an engineer with a PhD in Public Policy, I am familiar with a broad range of both the technical, economic, and policy techniques and considerations involved with the LACPR study. I appreciate the difficulty of the task and think that the overall approach, many of the techniques, some of the analysis, and the presentation have many positive attributes.

However, my review also raises many questions and concerns that I will detail in this comment letter. I am long time resident of the communities on the northshore of Lake Ponchartrain whose campaign for Congress in 2008 was motivated by and focused on the need to accelerate hurricane protection infrastructure investments. Accordingly, my review has focused on the Planning Unit 1 assessments and plans rather than issues for other planning units in the state. However, some of the process concerns that I will not may relate to other planning units.

My primary concerns relate to the choice made in the report not to present detailed information on the analysis and considerations, or to describe decision making process and criteria leading to the exclusion of Full Barrier options for the barrier at the mouth of Lake Ponchartrain. The exclusion of the Full Barrier option is a major decision that eliminates what is a common concept for very many residents for protection from major storms. The screening out of the Full Barrier option with limited explanation or involvement of communities and their leadership is a serious deficiency in both substance and process.

**Effects on Mississippi.** The primary reasoning noted in the study for the elimination of a Full Barrier option was stated as effects on Mississippi, constructability, and cost issues. While the study does present information on the differential effects between a Full Barrier option (36 feet high) and the 12.5 foot “weir-barrier”, the basis and decision making process whereby the Corps made the decision that Full Barrier involved “unacceptable” costs and impacts is not clearly described in the study despite the critical importance of that judgment.

Several key questions and concerns with respect to Mississippi impacts include:

1. The table showing the increase in surge levels from a 400 year storm (e.g. Hurricane Katrina) along the Mississippi Gulf coast between the 12 ft weir barrier and the Full Barrier (Table 6, in Hydraulics and Hydrology Appendix) indicates that the difference between the Full Barrier and the 12 ft weir barrier is on average 15 inches at the Pearl River border, 5 inches at Waveland and Bay St. Louis, 3 inches at Gulfport, and 1-2 inches at Biloxi. These increases are over-above surges that we 20-25 feet in those areas for Hurricane Katrina and are projected to be substantial for any storm striking southeast Louisiana.<sup>i</sup>
2. The report states that the modeling accuracy is approximately 1-2 feet (see page 15 of Hydraulics and Hydrology Appendix). The “Regional Considerations Appendix” states that storm surge modeling is accuracy is about +/- 1 foot.<sup>ii</sup>

3. The report states that average tidal variation in the southeast Louisiana and Mississippi are in the 1-foot range.
4. The “Regional Considerations” Appendix notes that water levels projected by Mississippi focused models were higher than those for Louisiana focused models and a “smoothing algorithm” was necessarily applied to align projections. This suggests some inherent uncertainty in the projected water levels.
5. The increase in surge levels for the Full Barrier option (as described for in the “EA Grid” of the Hydrology Annex of Hydraulics and Hydrology Appendix, page 6) is less than 1 foot (see table below) on top of a surge of 20-24 feet. The increase is less than 5% of the surge projected in many cases for Mississippi.
6. The “EA Grid” analysis of the Full Barrier or non-overtopping barrier at the mouth of Lake Ponchartrain “prevents the increase in mean lake levels” and decreases surge levels by 2 to 7 feet in the Mandeville-Lacombe area. For Slidell, the map in Figure A-4.2 shows reductions in water levels from 13-17 feet (for a 400 year storm like Katrina) to a “no flooding” situation.
7. The economics section of the report notes that the economic value of reduced flooding in the Lake Ponchartrain basin is some 75 times greater than the costs for small increases in flooding levels in Mississippi over and above those that occur with most storms. See the Appendix. <sup>iii</sup> This common sense result tracks with the larger populations and assets located in the Lake Ponchartrain basin as compared to the areas of the Mississippi Gulf coast where increases above the naturally large surges are only a few inches in the more populated areas.

I have included in endnotes to this letter to provide additional detail and references relative to these and other observations regarding this LACPR study.

The LACPR study’s own observations indicate that:

1. The impacts in the more heavily populated areas of the Mississippi Gulf coast from a Full Barrier compared to a the 12 ft. foot weir are measured in a few inches in the context of 15-25 foot storm surges expected for the Mississippi Gulf coast of any storm making landfall near the Lake Ponchartrain basin;
2. These differences are less than the modeling accuracy or tidal variation that might apply for the area.
3. The Full Barrier “closure *along US90 and GIWW (Model grid EA)* . . . would represent the maximum reduction in water levels achievable in the lake since the non-overtopping levee blocks all inflow from Lake Borgne regardless of storm strength. . .” (from in the Hydraulics and Hydrology Appendix, Volume II, Results, or page 99 of 389 page PDF file of LACPR draft study.)
4. The Full Barrier reduces water levels in the Lake Ponchartrain by significant amounts -- some 2-7 feet near Mandeville, 15-20 feet near Slidell, and 2-3 feet along the southshore. The result is that water and flooding levels in the Lake Ponchartrain basin for a severe storm with a Full Barrier are not significantly different from those in a Category 1 storm.
5. The economic savings from reduced flooding in the Lake Ponchartrain basin are some 75 times greater than the costs from modestly increased flooding along the Mississippi Gulf Coast.

Notwithstanding these assessments within the LACPR study itself, somehow the LACPR study reaches a judgment that the impacts of a Full Barrier option (which has impacts only modestly

larger as shown by the table below) would have “unacceptable” impacts on Mississippi and should be eliminated at the second screening step. The decision-making considerations and those making the decision are not explained in the report despite the importance of this judgment for regional and Congressional decision makers. ***This is a major deficiency and that should be addressed with full information and participation of interested communities and their leadership.***

The judgment to remove the Full Barrier option from further assessment at the second screening point in the study methodology reduced the analysis and explication of the Full Barrier option as compared to the over-topping weir barrier. *As a result, more detailed cost estimates and analysis of the flood risk reduction performance of a Full Barrier for specific areas was not provided in the study despite the common public understanding of the Lake Ponchartrain barrier with gates would be a full barrier rather than a levee that is expected to be over-topped by a major storm.* Because the 12-foot weir-barrier was the only barrier option carried beyond the second screening level, the study presents detailed community-by-community assessments of the reduction in flooding for various options. Indeed, one has to look at the “Hydrodynamics Results” Annex of the 390 page Hydraulics and Hydrology Appendix of the study to understand the differential performance for water levels and of a Full Barrier option vs. the 12-foot weir barrier option.

**Table A.**

**Difference in Projected Surge Levels in Mississippi for Full Barrier Compared to 12.5-foot Weir Surge Barrier**

*(Table based on Table 6, From “Structural Plan Component Appendix”, page 11, with reformatted with feet converted to inches.)*

| Distance from State Border (miles) | Area            | Average Surge Increase for 12 ft weir barrier (inches) | Average Surge increase for Full Barrier (inches) | Difference (inches) | Maximum Surge Increase for 12 ft weir barrier (inches) | Maximum Surge increase for Full Barrier (inches) | Difference (inches) |
|------------------------------------|-----------------|--------------------------------------------------------|--------------------------------------------------|---------------------|--------------------------------------------------------|--------------------------------------------------|---------------------|
| 0                                  | Pearl River     | 28                                                     | 43                                               | 15                  | 38                                                     | 65                                               | 27                  |
| 18                                 | Clermont Harbor | 8                                                      | 13                                               | 5                   | 11                                                     | 24                                               | 13                  |
| 26                                 | Bay St. Louis   | 7                                                      | 12                                               | 5                   | 11                                                     | 23                                               | 12                  |
| 49                                 | Gulfport        | 2                                                      | 5                                                | 3                   | 6                                                      | 14                                               | 8                   |
| 70                                 | Biloxi          | 2                                                      | 4                                                | 2                   | 5                                                      | 12                                               | 7                   |

**Cost Considerations.** The other reasons offered by the study for eliminating the Full Barrier option for further detailed evaluation was “cost and constructability” issues. The LACPR study does provide cost estimates for a Full Barrier compared to a 12.5 ft. “weir” barrier in Table 7 on page 11 of the Structural Component Measures Appendix. This table is shown below with the “Soil Mix” option for the full barrier eliminated for simplification.

Several observations and concerns illustrated by this table include:

1. The difference between the “alignments” or options at the top of the table and those below can be roughly evaluated as the cost of levees on the northshore (other than the levee along the eastern edge of Slidell and Pearl River). The need to estimate the costs of levees in this differential basis is a serious drawback for the LACPR study. There is no explanation of the cost of structures by major elements so that individual communities can understand the costs associated with structural protections elements of particular interest to them. This makes it more difficult for communities to understand cost



tradeoffs and is an un-necessary exclusion of information that should exist and be readily provided.

Table B.

**Design Elevations and Costs for Full Barrier vs. Weir Barrier Option**

(Based on Table 7 From Structural Plan Component Appendix, page 11, reformatted to eliminate column with Soil Mix option and estimate cost of northshore levees)

| Alignment                  | Design Level | Full Barrier |            | Over-topping Weir Barrier |               | Difference (Full Barrier less Weir   |                |                                                     |
|----------------------------|--------------|--------------|------------|---------------------------|---------------|--------------------------------------|----------------|-----------------------------------------------------|
|                            | Storm years  | Ht. (ft)     | Cost (\$B) | Cost (\$B)                | Height (feet) | Cost Difference Full less Weir (\$B) | Ht. Difference | Cost Difference per foot of height difference (\$B) |
| Barrier without NS levees  | 100          | 25           | \$7.0      | \$4.5                     | 12.5          | \$2.5                                | 12.5           | \$0.20                                              |
| Barrier without NS levees  | 400          | 32           | \$18.5     | \$12.8                    | 12.5          | \$5.7                                | 19.5           | \$0.29                                              |
| Barrier without NS levees  | 1000         | 36           | \$22.4     | \$16.1                    | 12.5          | \$6.3                                | 23.5           | \$0.27                                              |
| Barrier with NS levees     | 100          | 25           | \$12.6     | \$10.6                    | 12.5          | \$2.0                                | 12.5           | \$0.16                                              |
| Barrier with NS levees     | 400          | 32           | \$27.2     | \$22.4                    | 12.5          | \$4.8                                | 19.5           | \$0.25                                              |
| Barrier with NS levees     | 1000         | 36           | \$32.2     | \$27.3                    | 12.5          | \$4.9                                | 23.5           | \$0.21                                              |
| <b>Estimated/inferred:</b> |              |              |            |                           |               |                                      |                |                                                     |
| Northshore levee cost      | 100          |              | \$5.6      | \$6.1                     |               | (\$0.5)                              |                |                                                     |
| Northshore levee cost      | 400          |              | \$8.7      | \$9.6                     |               | (\$0.9)                              |                |                                                     |
| Northshore levee cost      | 1000         |              | \$9.8      | \$11.2                    |               | (\$1.4)                              |                |                                                     |

2. The estimated cost of northshore levees is about \$6 Billion for 100-year storm design level. It increases by about \$3 Billion for a 400-year design level (a Katrina type storm surge) and increases another \$1-2 billion if 1000-year storm design heights are built.
3. The total cost of a Full Barrier without northshore levees of \$7 Billion (for the 100 year level) is about the same as the cost of northshore levees (\$6 Billion). The incremental cost for a Full Barrier compared to the 12.5-foot weir barrier is \$2.5 Billion, which is about one-third of the cost for northshore levees. Broad community sentiment generally opposes extensive levees on the northshore (except areas of Slidell,) but supports keeping storm surge out of Lake Ponchartrain.
4. A Full Barrier would reduce water levels in Lake Ponchartrain and reduce the cost of northshore levees by \$0.5 Billion for 100-year storm design reference. The reduction in water levels in the lake would reduce the areas of the Lake Ponchartrain basin subject to flooding risk and the extent of any flooding.
5. The hydrology analyses do indicate that even a Full Barrier system would expose low-lying areas (especially along or adjacent to Mandeville) near the shore to wind driven

surge (from lake water only not increased by ocean water.) However, those analyses suggest the height of surge for lake-only water would – even for a 400-1000 year storm – not exceed flooding levels in those same neighborhoods for Category 1 hurricane without any barrier.

6. The LACPR study is charged with presenting options for Category 5 protection that have acceptable impact on communities. Because of wind driven surge of lake-only water, Category 5 protection requires levees and the attendant costs of some \$6 billion. However, I believe that if informed of the tradeoffs the impacted communities (Mandeville and Slidell) would prefer to avoid the costs and risks of a system of levees and accept the risk of lake water only storm surge that might – in an extreme storm -- reach the lower lying areas. The structural system that provides this outcome is a Full Barrier. **The cost of the full barrier system at the 100-year level is less than the cost of northshore levees that received detailed evaluation, yet the Full Barrier option was deemed “too costly” and not evaluated in detail.**
7. The incremental cost of a Full Barrier – while some \$2.5 billion more than the 12-foot weir barrier system per the estimates for the 100-year level should be viewed in the context of the overall cost of a hurricane protection system. Table 28 in the Engineering Appendix shows that the full cost of the only weir alternative (100 year design level) without northshore levees in the “final array” is some \$75 Billion. In this context and given the uncertainty of the cost estimates, a decision to eliminate a Full Barrier from further consideration based on cost considerations does not seem to be well supported.
8. The table indicates that increasing the Full Barrier system from 25 feet (100-year storm) to 32 feet (400-year storm, e.g. Katrina) increases estimated cost by \$11.5 Billion. This is some \$1.6 Billion per each foot of additional barrier height. The same table indicates that increasing the height from the 32-foot (400-year level) to 36 foot (1000-year level) requires additional cost of \$3.9 Billion, or some \$1 Billion for each foot of additional barrier height. These are substantial costs for increasing height, but the study does not provide engineering detail or explanation regarding these high costs of increasing barrier height. The cost per foot of height of the 25-foot Full Barrier is \$0.28 Billion. However the increasing the barrier by seven feet to the 32-foot level roughly doubles cost per foot of barrier height to \$0.58 Billion. This greatly increasing cost per foot of height is counter-intuitive as economies of scale apply to many engineering and construction systems. The LACPR report does not provide the technical and cost data to explain these counter-intuitive cost observations.<sup>iv</sup> This does not support confidence in the related estimates given the importance of barrier height to the frequency and scope of hurricane flooding in the Lake Ponchartrain basin.
9. The accuracy of cost estimates themselves may not support decisions on major structural alternatives including elimination of a Full Barrier option on cost considerations relative to the cost for a weir barrier. While simple common sense suggests that higher barriers cost more, the Engineering Appendix to the LACPR study suggests that cost estimates are interpolated from levee designs of 25, 30, and 40 feet. A review of the Engineering Appendix does not indicate the basis for the large increase in cost per height for either the 12-foot weir barrier or various heights for Full Barrier options. Indeed the Engineering Appendix states that the Full Barrier option did not receive detailed engineering assessment because (Engineering Appendix, page 4):

*“Based on preliminary analysis it was determined that non-overtopping barrier alternatives would be removed from further consideration because of their higher cost in relation to benefits over those provided by the overtopping barrier alternatives. Details of this preliminary analysis can be found in the Structural Plan Component Appendix. Since only barrier alternatives with overtopping barriers were considered in detail these are the only design results shown.”*

This suggests that the engineering and costs for a Full Barrier or any options other than the 12.5 weir barrier did not receive substantial technical and cost attention despite the fact that “cost and constructability” issues are noted as another reason to eliminate Full Barriers (or even other heights for a over-topping weir barrier) from further detailed consideration. The assertion in the statement quoted above that the removal of the Full Barrier option from detailed consideration is not based on a cost-benefit analysis available in the LAPCR report. Only options that made it past Tier 2 screening – which the Full Barrier option did not – received detailed cost benefit analysis in the “Economics Appendix” or engineering specification in the “Engineering Appendix”.<sup>v</sup>

***If the LAPCR study is to eliminate major options base on “cost and construction feasibility,” the details of those assessments should be explained and supported. This has not been done in the material presented heretofore.*** There are no details in the Engineering Appendix or the Structural Plan Component Appendix that present reasonably detailed engineering or costs assessments upon which the costs are based or conclusions regarding “constructability” drawn. *Given the recent experience in southeastern Louisiana with quality and adequacy of Corps engineering and design work, our communities and their leaders should find it difficult to accept summarized costs and engineering conclusions without an opportunity for independent review.* The LAPCR study does not present information or provide comfort in this regard despite the critical long-run importance of the judgments and plans being based on the study.

**Why a 1.5 Foot Weir vs. Some Other Height?** Even if one accepts the a judgment that a Full Barrier is too high and/or too costly, the LAPCR provides no analysis to support assessments of the cost and flooding reduction performance of over-topping barriers various heights. The LAPCR study adopts the 12.5-foot height for the over-topping weir barrier with little explanation or support for that choice other than a reference to the height of a Category 1 surge in the area. However, the height of an over-topping weir barrier has a direct relationship with both the (1) number/strength of storms for which over-topping will occur, and (2) the amount of storm surge water that enters Lake Ponchartrain and the flooding levels that will occur as a result. Water depth in the lake also affects wave heights – deeper means higher waves. Thus, the height of an over-topping weir has broad implications for risk levels from hurricanes.

The Hydraulics and Hydrology assessment evaluated a “Full Barrier” 36-foot level and the weir barrier at the 12.5-foot level. The height difference is substantial, but no intermediate heights were evaluated. The study provides no explanation on whether there were material cost and constructability issues for an over-topping weir of other heights – say 16, 20, or 24 feet.

The failure to evaluate alternative weir heights could be due to limited resources for the \$23 million study. However, the LAPCR study consumes analysis time and resources to assess a number of options that – while conceivable – are likely to be “non-starters.” For example, the “coastal only” options provide for reduced storms surge only as marsh, wetlands, and barrier island are restored over a period of decades. Even then, a large storm could over-come these restored coastal features. Since our communities are seeking confidence of physical protection (or, more properly, risk reduction) measures, the time spent on “coastal only” options is relatively un-productive. Similarly, the “non-structural” options require raising or abandoning tens of thousands of existing homes including much of the city of Slidell.<sup>vi</sup> Nonetheless, time and resources were applied to analyzing those options. As noted above, time and resources were expended refining designs, costs, and hydrology assessments for a system of northshore levees that are likely to be resisted by local communities given the difficulties of combining such levees with established bayous and drainage features to say nothing of the aesthetic impacts and land acquisition issues.

The limitation of the analysis to only one height (12 feet) for the weir barrier (and the elimination of the Full Barrier for detailed analysis) reflects misplaced resources and priorities. While we cannot undo the waste of time and money inherent in detailing “non-starters” or “unlikely to be accepted” approaches, a decision of this importance to the region should be supported by more substantial evaluation of major design elements for the barrier system. The analysis of alternative alignments for the barrier looked at five different alignments and came to reasonably explained and supported conclusions. However, the Full Barrier was eliminated and only one height for the over-topping weir barrier was evaluated. **The LACPR study should take the time to address alternative heights (say 15, 20, 25) for a weir barrier (and a Full Barrier at the 400 year level) in detail with information developed to show specific neighborhoods how their risks and levels of flooding are affected.** Well grounded and explained, cost estimates should also be prepared so that impacted communities can appreciate the tradeoffs. If this cannot be completed before a specific option is recommended as part of the LACPR, the recommendation should specifically provide for subsequent evaluation of the height of the barrier.

**Assuming a 12 Ft Weir Barrier, The Study Does Not Make Clear the Continuing Risk to the Northshore From Strong Storms or Need For A Slidell Ring Levee.** The LACPR discussion fails to call out for appropriate attention important analytic results for the barriers option that could inform public and decision maker understanding and attitudes. Some major concerns and observations along these lines are:

1. The reason a weir-barrier provides almost as much protection as a full barrier for the Mandeville and adjacent areas of the northshore is not explained well. People understand how a dam or levee works fairly easily. However, an over-topping weir requires more explanation than is provided in the LACPR report. If I understand the hydrology correctly, a weir can be effective because peak hurricane storm surge lasts only a few hours and the amount of water that can flow over a weir during the limited duration of peak surge is less than the full height of surge. Stated simply, the lake cannot fill-up that fast and the weir reduces the driving force of the ocean water behind the surge. **The LACPR report does not explain this in simple terms despite the fact the public is being asked to accept the effectiveness of the weir system and rely on the correct modeling of the flooding risk.** As one objective of hurricane protection is greater confidence in regional futures, this deficiency should be corrected.
2. Local communities have adopted resolutions of support for the 12-foot weir barrier because it is the only option presented that includes a barrier and gates. However, the continuing risk during a strong storm inherent in the PU1-LP-A-100-1 plan has received little discussion. Table C is based on tables in the “Evaluation Results Appendix” for Planning Unit 1 show the following for Mandeville and Slidell as changes in water level with and without the 12 foot weir barrier.<sup>vii</sup>

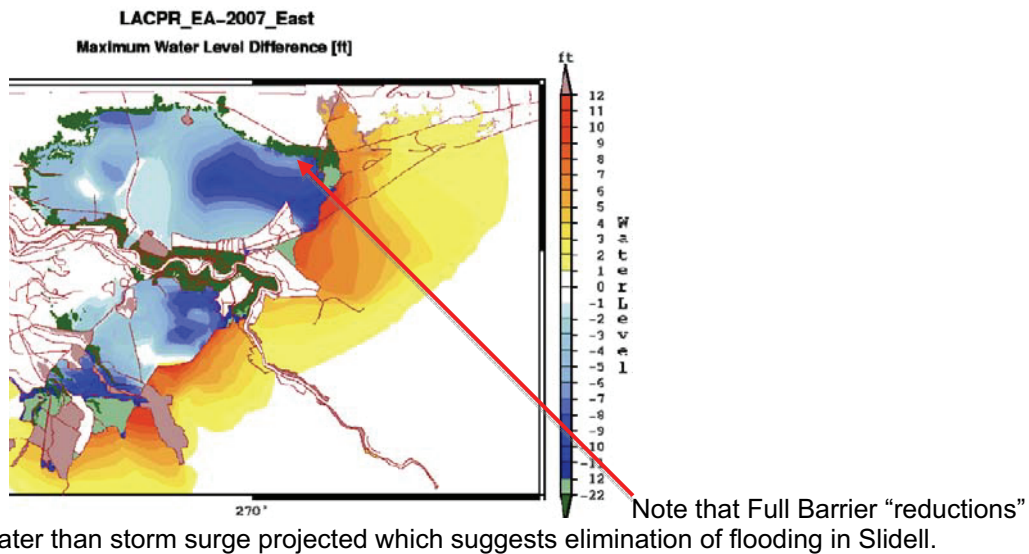
Table C. Water Surface Levels With and without Weir Barrier (No Northshore Levees)

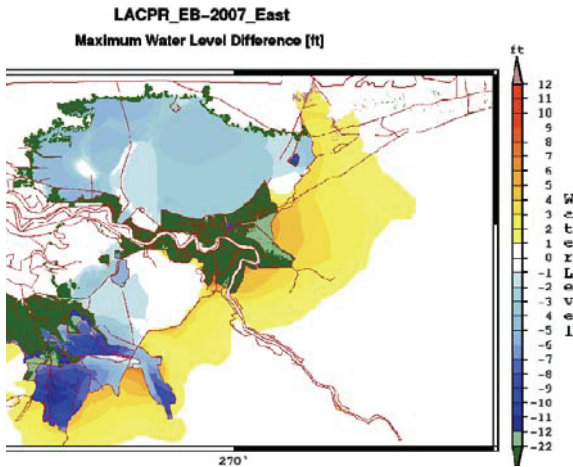
| Project    | Water Surface Levels Projected (feet) |           |        |                |           |        |                 |           |        |
|------------|---------------------------------------|-----------|--------|----------------|-----------|--------|-----------------|-----------|--------|
|            | 100 Year Storm                        |           |        | 400 year Storm |           |        | 1000 year Storm |           |        |
|            | Current                               | With weir | Change | Current        | With weir | Change | Current         | With weir | Change |
| Mandeville | 11.0                                  | 11.5      | 0.5    | 13.1           | 12.5      | (0.6)  | 14.3            | 13.3      | (1.0)  |
| Slidell    | 14.1                                  | 10.0      | (4.1)  | 18.3           | 16.4      | (1.9)  | 20.4            | 22.2      | 1.8    |

This table raises a number of questions that are not addressed in the LACPR discussion. Based on these projections, the weir barrier: (1) makes little difference in water levels in

- Mandeville (recall surge modeling is only accurate to 1-2 feet); and (2) for Slidell, reduces water levels by only 4 feet during a 100 year strength event, 2 feet for a 400 year (Katrina level) event, but increases levels for a 1000 year storm. Except for the 100-year event, the investment in the weir barrier seems not to be materially reducing water levels for northshore communities from the levels without the weir. Unfortunately, as detailed above, similar information with community level detail for a Full Barrier (or high intermediate heights) is not available because a Full Barrier option was eliminated mid-way in the option screening process and only one weir height has been considered for the LACPR. In addition, the small reductions and increases for large storms do not instill confidence in the modeling, as some results seem to suggest only small flood level reduction benefits and/or disadvantages (higher water levels) from the investment in the weir barrier.
4. For the northshore, the Slidell community was most strongly affected by Katrina and will be most strongly affected by decisions regarding the design of any barrier system. Because a weir does not keep the water from entering the lake, but rather slows down the rate water levels near Slidell are most strongly affected by the height of the any weir barrier. Figure 1 below shows the reductions from the 13-17 feet water levels projected for Slidell for a Full Barrier option based on the graphical only data available in the Hydraulics and Hydrology Appendix. This figure indicates that a Full Barrier would keep Slidell from flooding.

**Figure 1. Full Barrier Water Level Reductions**





**Figure 2. Weir barrier water level reductions**

The water levels reduction for a weir barrier is less than the base flooding projected of 13-17 feet for Slidell in a 400-year storm. This suggests that a weir barrier would continue substantial flooding risk to Slidell in the event of a strong storm that over-topped a 12-foot weir barrier.

This situation suggests a ring levee may be necessary to reduce risk to Slidell as a complement to the 12 foot weir barrier that only reduces surge levels near Slidell in an overtopping storm by a few feet (as suggested in Figure 2 above). The ring levee for Slidell option is labeled “PU1-LP-a-100-3” (i.e. ending in “3” rather than “1” which is the no northshore levees option). Table D shows the reductions in water levels for this option that includes a Slidell ring levee.<sup>viii</sup>

**Table D. Water Surface Levels With and without Weir Barrier & Slidell Ring Levee**

| Project    | Water Surface Levels Projected (feet) |           |        |                |           |        |                 |           |        |
|------------|---------------------------------------|-----------|--------|----------------|-----------|--------|-----------------|-----------|--------|
|            | 100 Year Storm                        |           |        | 400 year Storm |           |        | 1000 year Storm |           |        |
|            | Current                               | With weir | Change | Current        | With weir | Change | Current         | With weir | Change |
| Mandeville | 11.0                                  | 11.5      | 0.5    | 13.1           | 12.5      | (0.6)  | 14.3            | 13.3      | (1.0)  |
| Slidell    | 14.1                                  | 6.2       | (7.9)  | 18.3           | 13.9      | (4.4)  | 20.4            | 16.4      | (4.0)  |

Water levels projected in Mandeville are unaffected by the Slidell Ring levee, but the reduction from the weir barrier is small as noted previously. However, the ring levee substantially reduces water levels for a 100-year storm while modestly reducing levels for larger storms.

The relatively modest reductions in water levels in Slidell suggest consideration of the 400-year height ring levee for Slidell. Water level reductions are shown in Table E.

**Table E. Water Surface Levels With and without Weir Barrier & Slidell Ring Levee at 400 yr**

| Project         | <b>Water Surface Levels Projected (feet)</b>                                      |           |        |                       |           |        |                        |           |        |
|-----------------|-----------------------------------------------------------------------------------|-----------|--------|-----------------------|-----------|--------|------------------------|-----------|--------|
|                 | 12 foot weir barrier, with Slidell ring levees at 400 year level (PU1-LP-b-400-3) |           |        |                       |           |        |                        |           |        |
|                 | <b>100 Year Storm</b>                                                             |           |        | <b>400 year Storm</b> |           |        | <b>1000 year Storm</b> |           |        |
| <b>Location</b> | Current                                                                           | With weir | Change | Current               | With weir | Change | Current                | With weir | Change |
|                 | Mandeville                                                                        | 11.0      | 11.5   | 0.5                   | 13.1      | 12.5   | (0.6)                  | 14.3      | 13.3   |
| Slidell         | 14.1                                                                              | 6.2       | (7.9)  | 18.3                  | 6.2       | (12.1) | 20.4                   | 6.2       | (14.2) |

This suggests that substantial risk reduction for protection of Slidell from a 400-year event or higher can be materially increased by moving to a 400-year levee height. However, again the LACPR report does not make it easy to consider the cost and timing implications of the particular elements of the protection system.

- The results noted above suggest that a ring levee for Slidell combined with East Slidell and Pearl River levees that are necessary irrespective of the particular design of a Lake Ponchartrain barrier (weir of height “x” or Full) could provide a substantial reduction in Slidell flooding risk. Although the designs for such levees have some interaction with the weir design, such levees could be built relatively quickly and with some flexibility to adjust to weir design heights. A western ring levee for Slidell might not be necessary if a Full height barrier were adopted, but the acceleration might be worthwhile providing some interim protection until a weir barrier of some height were completed.
- The “Hydraulics and Hydrology” or (“H&H”) Appendix explains in detailed technical terms the basis for over-topping projections. While I have not tried to understand the technical equations, as an engineer, I hope that the science supports application of formulas for low levels of levee overtopping – usually a few feet – to the situation for a large and rising storm surge that might overtop the weir barrier by amounts that are more than twice the height of the weir. *In order to build confidence in the projections, it would be helpful to confirm that the estimates for low overtopping are correct for major overtopping situations.*

These comments illustrate some of the reasoning that is possible with the LACPR study data, but which is not presented as clearly as would be helpful for understanding the critical tradeoffs for this enormous investments necessary to reduce hurricane risk in Southeast Louisiana. Other reviewers – notably the National Academy of Sciences – have faulted the LACPR study for failing to provide indications of priorities among various system options and individual elements. These comments base on a lay review of limited information are intended to suggest that it is possible to provide more interpretation of the results and to focus attention on key issues in order to assist citizens and their leadership to make technically informed tradeoffs and decisions. The LACPR study needs substantial improvement in this regard. The LACPR report is nearly two years late already, but the information and direction of the analysis and recommendations has only recently been made available for public review. The projects envisioned require years or decades to complete. The Congressional review, authorization, and appropriation process will require time and diligent attention where the inputs from the LACPR study and local governments should weigh heavily.

Rather than rush the LACPR study to completion without accommodating public review and input, priority effort should be given over the next several weeks and months to refining the study to better support recommendations to Congress and to frame and inform key tradeoffs, projects

priorities, and timelines. This may require a few weeks or months of additional work, but a responsible and responsive effort should help build the understanding and support for a set of plans and priorities that can actually accelerate hurricane risk reduction investments in Southeast Louisiana.

I have additional more detailed comments that I may provide separately once I confirm that you have received and noted these comments. Regrettably, I have submitted written questions to Corps of Engineers meetings on two occasions (May in Lakeview regarding New Orleans outfall canal matters, and June in Slidell regarding the LACPR presentation) for which I have yet to receive any response. I am available to meet with the project team at our mutual convenience to work toward improving both the substance and communications regarding these matters that are critical to the long run security of our homes and communities.

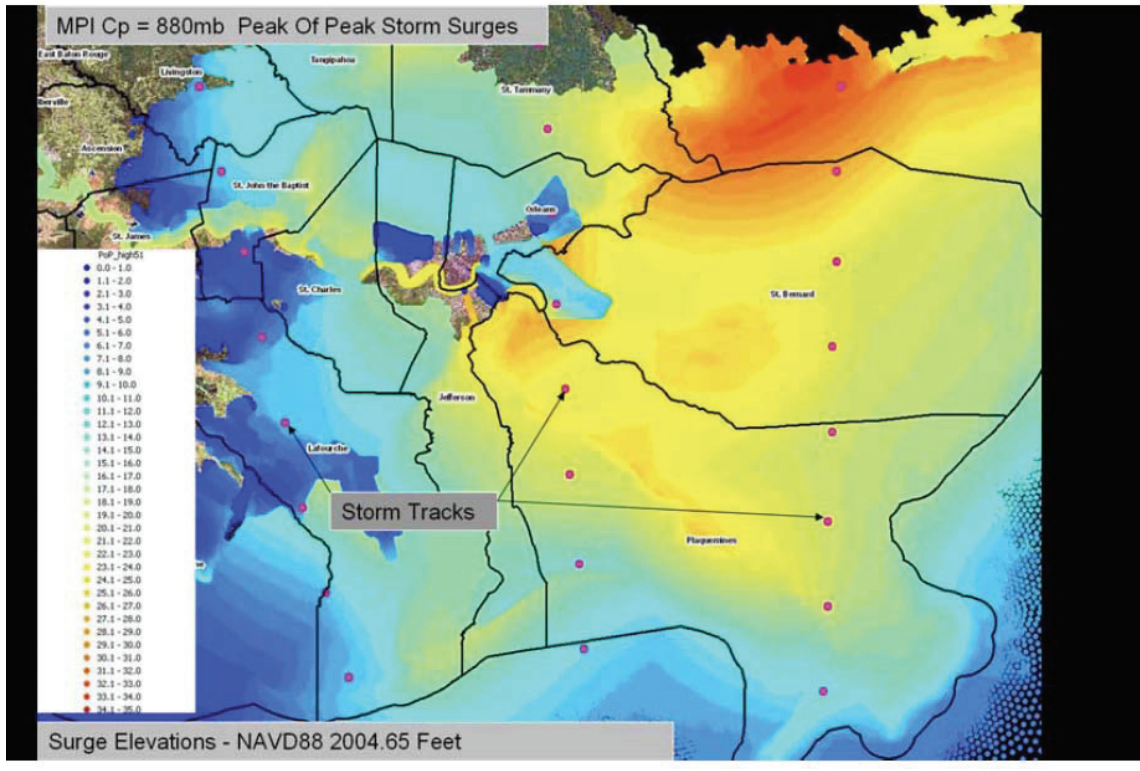
Yours truly,

James K. Harlan



## ENDNOTES

<sup>i</sup> The expectation of large storm surges along the Mississippi coast for major hurricanes in the southeast Louisiana area is well known. The Corps own modeling as detailed in the Hydraulics and Hydrology Appendix indicates that surge levels along the Mississippi coast for exceed 20 feet. The graphic below from that appendix illustrates:



<sup>ii</sup>The Regional Considerations Appendix includes the following statement on page 8:

*The vast majority of storm surge-frequency curves computed by USACE and the FEMA contractor were within +/- 1 ft across the Mississippi coast, which is within the level of accuracy expected from these types of storm surge simulation models.*

If modeling accuracy has such a +/- 1-foot range, why should an assessment that shows differential impacts on only a few inches lead to a conclusion that incremental impacts – as between a Full Barrier (36 feet) and weir-Barrier (12 ft) – are “unacceptable”?

The Hydraulics and Hydrology (H&H) Appendix suggests that the modeling accuracy is even less than that noted in the “Regional Considerations” Appendix cited above. The following from page 15 of the so called “H&H” appendix suggests accuracy is more in the two foot range:

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For the surge model, maximum surge levels were compared to between 80 and 204 open water and inland HWM's. Estimated model errors are based on these comparisons and the estimated accuracy of the HWM's themselves. As an example, **Figure 2.7** presents a comparison between the HWM's and the ADCIRC results for Katrina. The resulting modeling system error standard deviations, which include inaccuracies in the kinematic wind models, air-sea momentum transfer, wave radiation forcing, system definition and the hydrodynamic model itself, are estimated to be 1.47 ft (IPET HWM for Katrina), 1.36 ft (FEMA HWM for Katrina), and 1.21 ft (FEMA HWM for Rita). This indicates that about 68% of the predictions can be expected to be within 1.3 ft and 95% of the predictions can be expected to be within 2.6 ft of accuracy.

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iii The Corps own analysis speaks to the differential economics impacts is in the Draft Summary report. Evaluations considered the 12.5 foot weir-barrier compared to base condition of no barriers at the mouth of Lake Ponchartrain. The weir barrier is projected to induce modest increments in surge levels in Mississippi as shown in Table 6 of the Structural Plan Component Appendix (page 11). The ratio of Louisiana flood cost savings to Mississippi increased impacts costs is some 75 to 1 as shown below in the quoted text of the Draft Summary Report.

*LACPR Draft Summary Report, page 37-38.*

**Regional tradeoffs across state boundaries must be considered.** *A regional analysis conducted for Louisiana and Mississippi identified potential impacts and tradeoffs for each state. For example, the Pontchartrain barrier-weir plan (LP-a-100-1 and C-LP-a-100-1), which is included in the final array for Planning Unit 1, has a potential to raise water levels in Mississippi resulting in economic, environmental, and cultural impacts. The estimated additional annual impact of \$5 million would represent an approximately 6 percent increase in potential damages over the Mississippi base condition. Conversely, these potential impacts to Mississippi correspond to a little over one percent of the expected annual damage reduction in Louisiana (approximately \$375 million annual benefits). The significance of those relative impacts should be weighed against the benefits achieved on a regional scale. Further analysis would be required if the Pontchartrain barrier-weir plan were to proceed into engineering and design. The Pontchartrain barrier-weir plan could potentially be optimized to minimize adverse impacts with any remaining impacts mitigated*

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iv It may be that the increase in total cost for higher barriers relates to the requirement for higher levees in St. Bernard and Plaquemines parishes and the necessary increases in levee heights in eastern Slidell and along the Pearl River. However, the LACPRR study does not provide information to understand the elements of the added costs despite the fact such information must already exist to support the cost estimate. Given that the LACPR study is already more that 2000 pages adding the detail on elements of cost would not seem a major increase in length. Such cost by specific structural element information could help users of the study better understand issues and tradeoffs regarding costs and design considerations.

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<sup>v</sup> The elimination of the Full Barrier (non-overtopping) was based on the “preliminary analysis” of the “Structural Plan Component Appendix”, but there is little formal cost-benefit analysis in that document or others for any Full Barrier option. Specific language from the Engineering Appendix is noted below from page 4:

**A determination was made as to which of the previously described levee sections fell into each hydraulic reach. Based on preliminary analysis it was determined that non-overtopping barrier alternatives would be removed from further consideration because of their higher cost in relation to benefits over those provided by the overtopping barrier alternatives. Details of this preliminary analysis can be found in the Structural Plan Component Appendix. Since only barrier alternatives with overtopping barriers were considered in detail these are the only design results shown. Tables 1 to 4 below show the design levee heights for the base**

<sup>vi</sup> The scope of the buyouts required is illustrated in the graphic below where areas in pink show areas to be bought out at a cost of some \$6 Billion. This graphic is drawn from the results appendix. Notwithstanding the effective abandonment of Slidell and some parts of Mandeville implied by this “option,” the LACPR expended time and resources detailing this option, but not the Full Barrier option.



vii Table C is based on the table on page 63 of the Evaluation Results Appendix for Planning Unit 1. The entire table is copied below to show changes for other locations.

**Alternative: PU1-LP-a-100-1**  
**Water Surface Elevations (feet - NAVD88 2004.65)**

| Planning Sub Unit     | 2010 (Base) Conditions          |              |                 |              |                 |              | 2060 (Future) Conditions |              |                   |              |                 |              |
|-----------------------|---------------------------------|--------------|-----------------|--------------|-----------------|--------------|--------------------------|--------------|-------------------|--------------|-----------------|--------------|
|                       | 100-yr Event                    |              | 400-year Event  |              | 1,000-yr Event  |              | 100-yr Event             |              | 400-year Event    |              | 1,000-yr Event  |              |
|                       | Without Project                 | With Project | Without Project | With Project | Without Project | With Project | Without Project          | With Project | Without Project   | With Project | Without Project | With Project |
| East_Jefferson        | -5.1                            | -5.3         | -1.3            | -4.7         | 4.4             | -2.1         | -2.6                     | -5.3         | 16.0              | -4.7         | 16.0            | -2.1         |
| East_Lacombe_2        | 10.9                            | 7.2          | 14.3            | 11.1         | 15.9            | 13.2         | 17.3                     | 9.8          | 21.7              | 13.7         | 23.6            | 15.8         |
| Laplace1              | 9.4                             | 6.1          | 12.2            | 10.5         | 14.0            | 13.6         | 12.4                     | 8.7          | 15.0              | 13.1         | 16.8            | 16.2         |
| Laplace2              | 8.5                             | 9.4          | 11.0            | 11.9         | 12.8            | 13.4         | 11.2                     | 12.0         | 14.3              | 14.5         | 16.2            | 16.0         |
| LIVI_6                | 7.3                             | 4.1          | 9.7             | 5.2          | 11.1            | 6.1          | 10.3                     | 6.7          | 12.8              | 7.8          | 13.9            | 8.7          |
| LIVI_7                | 7.5                             | 5.5          | 9.7             | 6.9          | 10.9            | 7.8          | 11.0                     | 8.1          | 13.1              | 9.5          | 14.4            | 10.4         |
| Madi_to_Mande         | 11.0                            | 11.5         | 13.1            | 12.5         | 14.3            | 13.3         | 13.8                     | 14.1         | 16.7              | 15.1         | 18.3            | 15.9         |
| Madisonville_1        | 11.7                            | 10.1         | 14.6            | 14.9         | 16.1            | 27.3         | 13.5                     | 12.7         | 15.8              | 17.5         | 16.9            | 29.9         |
| Mandeville_1          | 11.0                            | 11.5         | 13.1            | 12.5         | 14.3            | 13.3         | 14.9                     | 14.1         | 19.1              | 15.1         | 21.4            | 15.9         |
| NOE                   | -5.8                            | -5.9         | 0.5             | -4.0         | 10.9            | -0.2         | -0.1                     | -5.9         | 16.0              | -4.0         | 16.0            | -0.2         |
| NOE_Metro             | -5.1                            | -5.2         | -4.8            | -5.1         | -3.0            | -5.1         | -5.0                     | -5.2         | 16.0              | -5.1         | 16.0            | -5.1         |
| ORLE_13a              | 14.6                            | 16.4         | 17.8            | 21.8         | 19.4            | 26.5         | 17.9                     | 19.0         | 21.5              | 24.4         | 23.8            | 29.1         |
| PLAQ_16s              | 19.2                            | 17.8         | 25.3            | 25.7         | 30.0            | 29.9         | 21.4                     | 20.4         | 27.8              | 28.3         | 31.8            | 32.5         |
| Slide1_3              | 11.5                            | 8.5          | 15.1            | 12.8         | 16.8            | 14.9         | 13.4                     | 11.1         | 16.8              | 15.4         | 18.5            | 17.5         |
| Slide1_4              | 14.1                            | 10.0         | 18.3            | 16.4         | 20.4            | 22.2         | 20.5                     | 12.6         | 24.3              | 19.0         | 26.5            | 24.8         |
| St_Bernard_developed  | -0.1                            | -0.1         | 4.3             | 4.8          | 10.6            | 12.5         | 2.3                      | -0.1         | 16.0              | 4.8          | 16.0            | 12.5         |
| St_Bernard_wetland    | 2.4                             | 2.4          | 5.2             | 5.4          | 10.6            | 12.5         | 4.5                      | 2.4          | 16.0              | 5.4          | 16.0            | 12.5         |
| St_Charles_Norco      | 4.4                             | 3.4          | 16.0            | 4.6          | 16.0            | 16.0         | 11.5                     | 3.4          | 17.3              | 4.6          | 18.6            | 16.0         |
| St_Charles_rest       | 2.1                             | 1.9          | 16.0            | 4.6          | 16.0            | 16.0         | 11.5                     | 1.9          | 17.3              | 4.6          | 18.6            | 16.0         |
| STJO_10b              | 10.6                            | 8.9          | 12.9            | 11.4         | 14.1            | 12.8         | 13.3                     | 11.5         | 15.6              | 14.0         | 16.7            | 15.4         |
| STJO_8c               | 9.4                             | 6.1          | 12.2            | 10.5         | 14.0            | 13.6         | 12.7                     | 8.7          | 15.4              | 13.1         | 17.2            | 16.2         |
| STTA_10e              | 12.2                            | 8.8          | 16.2            | 13.1         | 18.2            | 15.3         | 13.3                     | 11.4         | 16.7              | 15.7         | 18.6            | 17.9         |
| STTA_9a               | 10.4                            | 8.0          | 12.7            | 9.4          | 14.0            | 10.4         | 13.2                     | 10.6         | 15.6              | 12.0         | 17.5            | 13.0         |
| TANG_10b              | 11.0                            | 7.7          | 13.6            | 10.6         | 15.0            | 12.1         | 13.7                     | 10.3         | 16.3              | 13.2         | 17.8            | 14.7         |
| West_Lacombe_2        | 10.5                            | 7.4          | 13.5            | 10.0         | 15.0            | 11.5         | 13.2                     | 10.0         | 15.8              | 12.6         | 17.3            | 14.1         |
| Evaluation Parameters | Confidence Level:               |              | 90%             |              |                 |              | Levee Design:            |              | No Friction Waves |              |                 |              |
|                       | Future Relative Sea Level Rise: |              | 2.6 feet        |              |                 |              | Levee Overtopping:       |              | No Friction Waves |              |                 |              |

viii Detail for other locations for the Slidell ring levee alternatives is show in the table below taken from the evaluation results

**Alternative: PU1-LP-a-100-3**  
**Water Surface Elevations (feet - NAVD88 2004.65)**

| Planning Sub Unit     | 2010 (Base) Conditions          |              |                 |              |                 |              | 2060 (Future) Conditions |              |                   |              |                 |              |
|-----------------------|---------------------------------|--------------|-----------------|--------------|-----------------|--------------|--------------------------|--------------|-------------------|--------------|-----------------|--------------|
|                       | 100-yr Event                    |              | 400-year Event  |              | 1,000-yr Event  |              | 100-yr Event             |              | 400-year Event    |              | 1,000-yr Event  |              |
|                       | Without Project                 | With Project | Without Project | With Project | Without Project | With Project | Without Project          | With Project | Without Project   | With Project | Without Project | With Project |
| East Jefferson        | -5.1                            | -5.3         | -1.3            | -4.7         | 4.4             | -2.1         | -2.6                     | -5.3         | 16.0              | -4.7         | 16.0            | -2.1         |
| East Lacombe 2        | 10.9                            | 7.2          | 14.3            | 11.1         | 15.9            | 13.2         | 17.3                     | 9.8          | 21.7              | 13.7         | 23.6            | 15.8         |
| Laplace1              | 9.4                             | 4.6          | 12.2            | 9.0          | 14.0            | 10.9         | 12.4                     | 4.6          | 15.0              | 9.0          | 16.8            | 10.9         |
| Laplace2              | 8.5                             | 4.6          | 11.0            | 9.0          | 12.8            | 10.9         | 11.2                     | 4.6          | 14.3              | 9.0          | 16.2            | 10.9         |
| LIVI_6                | 7.3                             | 4.1          | 9.7             | 5.2          | 11.1            | 6.1          | 10.3                     | 6.7          | 12.8              | 7.8          | 13.9            | 8.7          |
| LIVI_7                | 7.5                             | 5.5          | 9.7             | 6.9          | 10.9            | 7.8          | 11.0                     | 8.1          | 13.1              | 9.5          | 14.4            | 10.4         |
| Madi_to Mande         | 11.0                            | 11.5         | 13.1            | 12.5         | 14.3            | 13.3         | 13.8                     | 14.1         | 16.7              | 15.1         | 18.3            | 15.9         |
| Madisonville_1        | 11.7                            | 10.1         | 14.6            | 14.9         | 16.1            | 27.3         | 13.5                     | 12.7         | 15.8              | 17.5         | 16.9            | 29.9         |
| Mandeville_1          | 11.0                            | 11.5         | 13.1            | 12.5         | 14.3            | 13.3         | 14.9                     | 14.1         | 19.1              | 15.1         | 21.4            | 15.9         |
| NOE                   | -5.8                            | -5.9         | 0.5             | -4.0         | 10.9            | -0.2         | -0.1                     | -5.9         | 16.0              | -4.0         | 16.0            | -0.2         |
| NOE Metro             | -5.1                            | -5.2         | -4.8            | -5.1         | -3.0            | -5.1         | -5.0                     | -5.2         | 16.0              | -5.1         | 16.0            | -5.1         |
| ORLE_13a              | 14.6                            | 16.4         | 17.8            | 21.8         | 19.4            | 26.5         | 17.9                     | 19.0         | 21.5              | 24.4         | 23.8            | 29.1         |
| PLAQ_16s              | 19.2                            | 0.5          | 25.3            | 16.4         | 30.0            | 18.0         | 21.4                     | 0.5          | 27.8              | 16.4         | 31.8            | 18.0         |
| Slidell_3             | 11.5                            | 4.5          | 15.1            | 13.9         | 16.8            | 16.4         | 13.4                     | 4.5          | 16.8              | 13.9         | 18.5            | 16.4         |
| Slidell_4             | 14.1                            | 6.2          | 18.3            | 13.9         | 20.4            | 16.4         | 20.5                     | 6.2          | 24.3              | 13.9         | 26.5            | 16.4         |
| St Bernard_developed  | -0.1                            | -0.1         | 4.3             | 4.8          | 10.6            | 12.5         | 2.3                      | -0.1         | 16.0              | 4.8          | 16.0            | 12.5         |
| St Bernard_wetland    | 2.4                             | 2.4          | 5.2             | 5.4          | 10.6            | 12.5         | 4.5                      | 2.4          | 16.0              | 5.4          | 16.0            | 12.5         |
| St Charles_Norco      | 4.4                             | 3.4          | 16.0            | 4.6          | 16.0            | 16.0         | 11.5                     | 3.4          | 17.3              | 4.6          | 18.6            | 16.0         |
| St Charles_rest       | 2.1                             | 1.9          | 16.0            | 4.6          | 16.0            | 16.0         | 11.5                     | 1.9          | 17.3              | 4.6          | 18.6            | 16.0         |
| STJO_10b              | 10.6                            | 8.9          | 12.9            | 11.4         | 14.1            | 12.8         | 13.3                     | 11.5         | 15.6              | 14.0         | 16.7            | 15.4         |
| STJO_8c               | 9.4                             | 4.6          | 12.2            | 9.0          | 14.0            | 10.9         | 12.7                     | 4.6          | 15.4              | 9.0          | 17.2            | 10.9         |
| STTA_10e              | 12.2                            | 4.5          | 16.2            | 13.9         | 18.2            | 16.4         | 13.3                     | 4.5          | 16.7              | 13.9         | 18.6            | 16.4         |
| STTA_9a               | 10.4                            | 8.0          | 12.7            | 9.4          | 14.0            | 10.4         | 13.2                     | 10.6         | 15.6              | 12.0         | 17.5            | 13.0         |
| TANG_10b              | 11.0                            | 7.7          | 13.6            | 10.6         | 15.0            | 12.1         | 13.7                     | 10.3         | 16.3              | 13.2         | 17.8            | 14.7         |
| West Lacombe_2        | 10.5                            | 7.4          | 13.5            | 10.0         | 15.0            | 11.5         | 13.2                     | 10.0         | 15.8              | 12.6         | 17.3            | 14.1         |
| Evaluation Parameters | Confidence Level:               |              | 90%             |              |                 |              | Levee Design:            |              | No Friction Waves |              |                 |              |
|                       | Future Relative Sea Level Rise: |              | 2.6 feet        |              |                 |              | Levee Overtopping:       |              | No Friction Waves |              |                 |              |



July 24, 2009

To: U.S. Army Corps of Engineers  
Att: Tim Axtman  
New Orleans District  
Hand delivered

Re: Submittal of Comments for LACPR

Mr. Axtman:

Enclosed please find public comments supporting the Louisiana Coastal Lines of Defense strategy. The Coalition to Restore Coastal Louisiana, Gulf Restoration Network and the Lake Pontchartrain Basin Foundation worked jointly to engage the public on this issue, and the 807 copies of signed postcards are testimony to the public's awareness that levees alone are not enough to protect our communities. In addition, we have included 1,612 names of those who have signed the same postcard for a total of 2,419 people supporting this comprehensive approach to storm protection.

We are also enclosing copies of 464 hand written letters, collected by the Gulf Restoration Network. You will find the sentiments contained in these letters mirrors that of the postcard, and is in support of the prioritization of the protection and restoration of our coastal lines of defense in your agencies plans and projects.

Please accept these documents as comments for the LACPR Draft Final technical report.

Regards,



Aaron Viles  
Campaign Director  
Gulf Restoration Network

Steven Peyronnin  
Executive Director  
Coalition to Restore Coastal Louisiana

Carlton Dufrechou  
Executive Director  
Lake Pontchartrain Basin Foundation

enc:

July 24, 2009

To: U.S. Army Corps of Engineers  
Att: Tim Axtman  
New Orleans District  
Sent via email

Re: Submittal of Comments for LACPR – List of Deceased

Mr. Axtman:

Attached is the most complete and credible list identified of those that perished during the Hurricane Katrina disaster. We cannot forget them and for that reason alone I submit this list as comment to the LACPR.

Dr. John Lopez  
387 Carr dr.  
Slidell, La. 70458



## **BOARD OF SUPERVISORS**

### **HANCOCK COUNTY**

3068 Longfellow Drive, Unit #3

Bay St, Louis, MS 39520

Telephone (228) 467-0172

Fax (228) 466-5994

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813 View Street

Waveland, MS 39576

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*President*

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Pearlington, MS 39572

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**Timothy A. (Tim) Kellar**

Chancery Clerk

15180 Alsobrooks Road

Picayune, MS 39466

July 23, 2009

Mr. Tom Smith

U.S. Army Corp of Engineers

Mobile District

109 St. Josephs Street

Mobile, AL 36602

Dear Mr. Smith:

Enclosed are protest letters concerning the intent to construct Levee's in Louisiana that will adversely affect Mississippi Coastal Counties. We ask that the U.S. Army Corps of Engineers please consider our concerns.

Sincerely,

Rocky Pullman

President

Hancock County Board of Supervisors



2809 Sells Street  
Metairie LA 70003  
July 20, 2009

USACE New Orleans District  
P.O. Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160  
Attn: Tim Axtman, PM-OR

Subject: Comments to [LACPR Final Technical Report](#) draft dated June 9, 2009

Dear Mr. Axtman:

On June 9, the LACPR team released the [LACPR Final Technical Report](#) for review by other Federal agencies, the State of Louisiana, non-governmental organizations, and the public. The following comments are offered to the LACPR Team as guidance in preparing your final report.

I am extremely disappointed that the USACE continues to study while the people of United States and in particular the residents of the Lake Ponchartrain Basin region suffer with proven inadequate hurricane protection. The USACE has known since 1965 that massive flood gate structures are needed at the Rigolets and Chef Passes to keep storm surges out of Lake Ponchartrain. We continue to accumulate data such as the 10 foot tide in Lake Ponchartrain during Katrina which poured into and decimated the city of New Orleans after breaching the 17<sup>th</sup> Street Outfall "levee" in 2005.

The draft [LACPR Final Technical Report](#) is another chapter in a continuing sorry story. We persist in spending billions to band aid a failed idea. Outfall drainage canals were never meant to be hurricane protection levees. Not enough right-of-way, poor soils, too many weak spots to protect, etc. It is well past time to rejuvenate the 44-year old Lake Ponchartrain Barrier plan.

Please refer to the June 2007 Letter to the Editor of the New Orleans Times Picayune from Elvin R. "Vlad" Helberg III, Lieutenant General US Army (retired), copy attached. General Helberg served as head of the USACE and as commander of the USACE New Orleans District during the evolution of the Lake Ponchartrain Barrier Plan. In his letter he states that his decision to stop fighting for the barrier plan was the biggest mistake during his 35 years as an Army officer.

We cannot turn back the clock on Katrina. The damage is done although the pain and suffering will live with us for many, many years. Fortunately, we still have a chance to get it right. We have a choice. We can fight the hurricanes with substantial concrete and steel floodgates at the Rigolets and Chef Pass or we can continue to fight the storm surges along the 100-mile plus Lake Ponchartrain shoreline with numerous Bayous, Bays, and outfall canals. The choice is in our hands. The LACPR Team can do their part by endorsing the Lake Ponchartrain Barrier Plan as the centerpiece of the Cat 5 Hurricane Protection plan for the Lake Ponchartrain basin.

Thank you for accepting and considering my comments.

Very Truly Yours,



William A. Jennings MBA, PE (retired)

cc: Congressman Scalise, Senator Landrieu, Senator Vitter, Governor Jindahl

*Susan Pees*

July 17, 2009

District Engineer  
U.S. Army Corps of Engineers  
Mobile District  
Attention: CESAM-PD  
Post Office Box 2288  
Mobile, AL 36628-0001

To whom it may Concern:

We are writing this letter to protest the intention of the U.S. Army Corps of Engineers to construct a levee system around Lake Ponchatrain and St. Tammany Parish, LA, which would protect the City of New Orleans and the eastern portion of St. Tammany Parish LA during hurricanes and tropical storms.

As residents of south Hancock County MS, we are concerned how this levee system would affect our home and property and the Mississippi coastline. I understand the Corps of Engineers and the Louisiana Congressional delegation wish to protect the residents of Louisiana; however, it should not be done at the expense of residents in another State.

We have lived in Pearlinton, MS for the past 28 years and Hurricane Katrina was the first time we had water on our property and in our home. Since Hurricane Katrina, we have had water on our property twice - both times during 2008 when Hurricane Gustav and Ike passed south of the Mississippi coastline. (Thankfully, we did not have water in our home during these storms.) Our concern is if the new levee system is built, it will only increase the likelihood that south Mississippi will receive increased surges from tropical storms and hurricanes as water will go somewhere.

We would like to know if studies have been done regarding the impact this levee system would have along the Mississippi coastline. Also, have studies been done on how the levee system would affect our wetlands. We have already destroyed much of our wetlands by not looking at how a project may affect wetlands 20 to 30 years from now. If studies have been done, do you plan on having public meetings in Mississippi regarding the proposed levee system and how it will affect the Mississippi coastline.

In closing, we would like to say we love living in south Mississippi and we understand the area we live in is prone to tidal surges during hurricanes and we accept that risk. However, another State should not have the right to increase our risk to surges. As taxpayers, we would prefer to see our federal taxes spent restoring the wetlands and the barrier islands then to build a extensive levee system, which would only jeopardize south Mississippi's economic well being.

Thank you for your consideration of this important matter.

Sincerely,

*Janet Austill*

Janet Austill  
P. O. Box 86  
Pearlington, MS 39572

*David Long*

David Long

cc:

Governor Haley Barbour  
State of Mississippi  
P. O. Box 139  
Jackson, MS 39205

Senator Thad Cochran  
State of Mississippi  
113 Dirksen Senate Office Bldg.  
Washington, D.C. 20510

Senator Roger F. Wicker  
State of Mississippi  
555 Dirksen Senate Office Bldg.  
Washington, D.C. 20510

Representative Gene Taylor  
2424 14<sup>th</sup> Street  
Gulfport, MS 39501

Received July 17, 2009

Virginia N. Dodge  
353 Broadway  
New Orleans, LA 70118  
and  
The Old Gin  
Pearlington, MS 39572

USACE New Orleans District  
P O Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160  
Attn: Tim Axtman, PM-OR

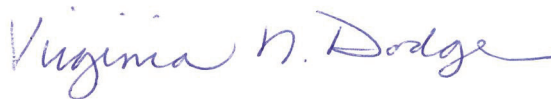
Dear Sir:

This letter is to express my personal outrage and our family's strong objections to construction of any levees structures in Louisiana that would adversely affect the Mississippi Gulf Coast and more specifically make Hancock County a sacrificial lamb for Louisiana.

Hurricane Katrina was a devastating blow to Hancock County and the Mississippi Gulf Coast as well as a disaster for New Orleans and equal consideration should be given to the impact of such actions on the Mississippi Gulf Coast.

We are property owners in Pearlington, MS, Hancock County which is located on the MS/LA state line on East Pearl River and construction of levees as proposed would only increase flooding to our area and the MS Gulf Coast.

Sincerely,



Virginia N. Dodge

VND/s

**S. Z. S. CONSULTANTS, INC.**  
ENGINEERS \* ENVIRONMENTALISTS \* SURVEYORS  
616 BARRONE ST. \* SUITE 302 \* NEW ORLEANS, LA 70113  
PHONE (504) 561-5724 \* FAX (504) 561-5726  
E-MAIL: [SAMZSCAN@BELLSOUTH.NET](mailto:SAMZSCAN@BELLSOUTH.NET)

July 13, 2009

USACE New Orleans District  
P. O. Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160  
Attn: Tim Axtman, PM-OR

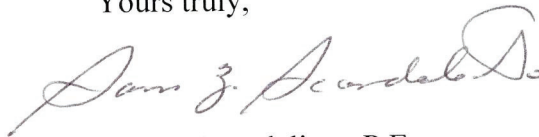
Re: LACPR Final Technical Report

Dear Mr. Axtman:

Upon reading the Summary of Referenced Report, I feel compelled to ask that the following statement be included somewhere in this voluminous document, so that the Citizens of Louisiana can be assured the best possible technical advice when deciding how to protect them for devastating hurricanes:

**“It shall become the duty and responsibility of the U.S. Army Corps of Engineers to investigate independent outside sources for various methods of risk reduction levee systems from Hurricane force winds and surges. Special consideration will be placed on those systems that have been previously tested and analyzed by third parties which indicate more cost effective, more efficient, faster to install, and stronger than existing flood protection methods currently used. Further, investigation of alternative systems and public input must be completed before actual design of a project begins, so that all good viable input data by outside sources can be considered and implemented up front.”**

Yours truly,



Sam Z. Scandaliato, P.E.

Received July 11, 2009

Robert H and Betty Baxter  
P O Box 40  
Pearlington, MS 39572

USACE New Orleans District  
P O Box 60267  
Protection and Restoration Office  
Coastal Restoration Branch  
New Orleans, LA 70160  
Attn: Tim Axtman, PM-OR

Dear Sir:

This letter is to express our objections to construction of any levees structures in Louisiana that would adversely affect the Mississippi Gulf Coast and more specifically make Hancock County a sacrificial lamb for Louisiana.

Hurricane Katrina was a devastating blow to Hancock County and the Mississippi Gulf Coast as well as a disaster for New Orleans and equal consideration should be given to the impact of such actions on the Mississippi Gulf Coast.

We are property owners in Pearlington, MS, Hancock County which is located on the MS/LA state line on East Pearl River and construction of levees as proposed would only increase flooding to our area and the MS Gulf Coast.

Sincerely,

  
Robert & Betty Baxter

**GEORGE B. DUNBAR**  
**P.O. BOX 1336**  
**SLIDELL, LA 70459**  
**985-641-2404**

June 15, 2009

Army Corps of Engineers  
CEMVN-TA  
P.O. Box 60267  
New Orleans, LA 70160-0267

Gentlemen,

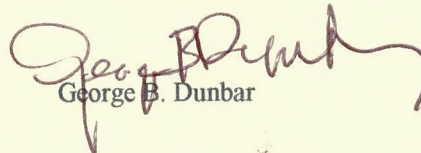
I have been a developer of waterfront property since 1960, and a lifetime resident of Slidell and even though I am not a hydrologist, flood prevention for the Pontchartrain Basin is very simple.

With a prevailing southeasterly wind, whether storm driven or not, large quantities of water are funneled into the Pontchartrain Basin through the Rigolets and the Chef Pass. Once the winds change to a Northerly or Westerly direction, that water piles up on the East end of the Lake because it cannot leave the Lake fast enough through those same two inlets, which causes flooding on the Northshore. The fact that the Westbound lane of the Twin Span Bridges incurred more damage than the Eastbound lane after Katrina, is proof enough.

Thirty Five years ago the Army Corps of Engineers proposed the construction of gates in the Rigolets and the Chef Pass similar to those used in Holland, with gates being closed for storm events and opened after the threat is over and the winds change to the North or West. Those flood gates are past due.

Construction of flood gates is clearly the answer to prevent declining assessed values of property and disappearing tax bases.

Cordially,

  
George B. Dunbar

**Amilcar J. E. Correa, M. D., F.A.C.S.**

*Mailing address: P O Box 7661*

*Slidell, LA 70469*

*Residence: 225 Coin du Lestin Estates*

**Telephone: (985) 646-0970**

**Facsimile: (985) 646-0971**

June 15, 2009

U. S. Corps. of Engineers  
Hand-delivered

RE: Coastal and Neighborhood flooding

Dear Sirs:

Unfortunately I will not be able to attend the scheduled meeting on June 16, 2009 regarding Hurricane protection for the St. Tammany Parish area. However, I want to emphasize my support to your previous plan of constructing flood gates that will be able to prevent future disasters like the one we suffered from Hurricane Katrina that devastated this region.

Sincerely yours,



Amilcar J. E. Correa, M. D., .F.A.C.S.

AJEC/lhc



**Attachment CA-5**  
**Comments from the Public Meeting in**  
**St. Tammany Parish**

## Attachment CA-5 - Comments from the June 16, 2009 Meeting in St. Tammany Parish

Approximately 141 comment cards related to LACPR were received as a result of the St. Tammany Parish meeting. Comment cards addressed one or more themes which are tabulated below.

| Question/Comment Related to:<br>(theme key words in bold)                                                                                              | No. of Occurrences |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Desire for " <b>Cat 5</b> " risk reduction                                                                                                             | 0                  |
| Support for <b>lines of defense</b> strategy                                                                                                           | 0                  |
| <b>Barrier-weir plan support</b> (or support for any plan that reduces surge in Lake Pontchartrain)                                                    | 22                 |
| <b>Barrier-weir plan opposition</b>                                                                                                                    | 0                  |
| <b>Barrier-weir plan</b> specifics ( <b>benefits, impacts, cost, funding, design &amp; operation, history</b> , etc)                                   | 36                 |
| <b>Dissatisfaction with study process/time</b> it takes to implement risk reduction plans                                                              | 35                 |
| <b>Induced flooding and/or equitable risk reduction</b> concerns (between states or between the north shore and the south shore of Lake Pontchartrain) | 22                 |
| <b>Nonstructural measures - More information on buyouts</b> desired                                                                                    | 15                 |
| <b>Nonstructural measures - Would consider buyouts</b>                                                                                                 | 3                  |
| <b>Nonstructural measures - Would oppose buyouts</b>                                                                                                   | 0                  |
| <b>Other nonstructural</b> approaches such as zoning, building codes, and/or raise in place                                                            | 3                  |
| <b>Structural measures</b> in addition to or in place of the barrier-weir plan                                                                         | 15                 |
| <b>Plans for specific areas</b> (e.g. Slidell, Mandeville, Madisonville, Lacombe, Eden Isles, Palm Lake, Quail Ridge, etc.)                            | 23                 |
| <b>Improve communication</b> , e.g. through better outreach, <b>maps</b> , and/or <b>computer models</b>                                               | 14                 |
| <b>Coastal restoration</b> (wetlands, diversions, barrier islands, etc) or other <b>environmental concerns</b>                                         | 11                 |
| <b>Planning and decision process</b>                                                                                                                   | 10                 |
| Seeking <b>international and/or external expertise</b> (e.g. from the Dutch) is important                                                              | 5                  |
| General <b>lack of trust</b> in the Corps and/or federal government                                                                                    | 2                  |
| <b>Miscellaneous</b> comments (not captured by themes above)                                                                                           | 3                  |
| <b>Other</b> comments not specifically related to LACPR (e.g. pump to the river)                                                                       | 5                  |

**Comments primarily concerned with the barrier-weir plan**

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Jacquelyn Armstrong:</b> What plans are being made to protect St. Tammany, mainly the Slidell area flooded by Katrina? I see nothing in your brochures about the St. Tammany (Slidell) area!! What about plans to keep the water (surge) out of the lake, which would help both the north and south shores!!                                                                                                                                                                                                                                                                                       | plans for specific areas; barrier-weir plan                                           |
| <b>David Hall:</b> Flood Gates at East Pearl, Rigolets at Lake Borgne - ( <i>illegible</i> ) Rigolets – unknown pass Millers Ditch, Chef Pass - Intracoastal at Industrial Canal? Why not? Would that take care of our problem?                                                                                                                                                                                                                                                                                                                                                                       | barrier-weir plan benefits                                                            |
| <b>Elizabeth Hoffmann:</b> Why can't flood gates and/or barriers be attached to the Rigolets and chef bridges to slow surge? Train bridges, eg. Floodgates at Spillway. What can we do to speed this process? Please be specific!                                                                                                                                                                                                                                                                                                                                                                     | barrier-weir plan time                                                                |
| <b>Ernest Burguieres:</b> 1. It has been stated there are a series of drain outfalls that are below water level that pass through the sea wall on the Mandeville lakefront. These drain outfalls reportedly have no closure devices. Doesn't this increase flooding potential and wouldn't doors alleviate this? If it would what would the cost/time be and why wasn't this done? 2. Would a floodgate at the Rigolets protect the whole Lake Pontchartrain area? Can you estimate the benefit? i.e. what would have happened in Katrina if there had been floodgates- cost estimate? Time estimate? | barrier-weir plan benefits, time, cost                                                |
| <b>Dart Volz:</b> What happened to level 5 protection that was approved after Betsy?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | barrier-weir plan history                                                             |
| <b>Normand Pizza:</b> 1. After the 1970s, J. Schwarz, federal injunction was ordered, why didn't the Corps of Engineers attempt to cure the defects in the plan and planning discussed by the federal judge as his reason for issuing the injunction? 2. Some follow up planning was done what result was reached?                                                                                                                                                                                                                                                                                    | barrier-weir plan history                                                             |
| <b>Normand Pizza:</b> 1. Why are there no plans to Levee South Slidell, Mandeville and Madisonville and Lacombe? 2. If gates are built at the Rigolets and Chef Pass would it not protect New Orleans and the Northshore? A) Can't that be done with limited harm to the Gulf Coast? B) It seems so obvious, keep water out of the Lake, protect the surrounding communities, why is it not the first plan?                                                                                                                                                                                           | structural measures; plans for specific areas; barrier-weir plan benefits and impacts |
| <b>Mike Hoggatt:</b> What has been done to reduce the storm surge potential for the Slidell area. Wouldn't it be beneficial to all parishes bordering the lake to keep storm surge out of the Lake. Why can't flood gates be built at the Rigolets and Chef Pass. Any plans to restore the barrier islands at chandeleur sound and breton sound and the Biloxi marsh. When?                                                                                                                                                                                                                           | plans for specific areas; barrier-weir plan benefits                                  |
| <b>Alan Hodges:</b> How long would it take to construct LP-a-100-1 surge reduction plan. How much will it cost?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | barrier-weir plan time and cost                                                       |
| <b>Barbara M. Arthur:</b> What is: Cost for building weir and gates at Chef Pass and Rigolets? Cost for study? How long will study take for above? Cost to take land for above? Per lot? Cost for buyout of land between                                                                                                                                                                                                                                                                                                                                                                              | barrier-weir plan time, cost, benefits, impacts                                       |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Themes                                                 |
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| <p>Chef bridge and Rigolets bridge under voluntary buyout now? Did you consider value of everything in every Parish around Lake as protecting it with the weir and gates plan above with respect to what Mississippi is saying they have as value to loss?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                        |
| <p><b>Paul Titus, Sr.:</b> Are there <u>now</u> any consideration for blocking storm surges coming from Lake Borgne through the Chef Pass and Rigolets? Can one (2 gates weirs) be built, will it, can it encompass the CSX railroad bed or US- 90 highway? What time frame could it be built in? How much would the cost be? Will the Corps do it? Can the City of New Orleans and Jefferson Parish pump to the river rather than into the lake?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>barrier-weir plan design, time, and cost, other</p> |
| <p><b>Jim Harlan:</b> What is the modeling certainty amount for the estimating of effects of alternative Lake Pontchartrain Barriers? Fill 12.5 ft. weir to levels induced for various points in Mississippi. Where is the analysis of differential economic impacts for the added effect of 1 inch to 1 foot of surge in the areas of Mississippi that would see slightly higher surge levels as a resulted the Full Barrier alternative as compared to weir barrier a high level plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>barrier-weir plan impacts</p>                       |
| <p><b>Will Dekemel:</b> How and when would the barrier be closed and reopened? The Rigolets is about 30’ deep and ¾ mile wide at the bridge, how big would the opening be?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>barrier-weir plan design</p>                        |
| <p><b>Charles H. Sclafani:</b> 1. If you put locks at the Chef and Rigolets will the current be so strong that it will be hard to navigate through the locks. 2. If the locks at the Chef and Rigolets hold the water long in the lake causing flooding in the low lying areas.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>barrier-weir impacts</p>                            |
| <p><b>Tom Laug:</b> If the weir project goes forward it appears as if the levee system directly on the southshore of the Lake is not necessary (with the closing of rigolets, chef pass and MRGO) is this correct? And, if so, why could they not direct funds from the levee to the weirs in order to accelerate that project?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>barrier-weir time and funding</p>                   |
| <p><b>Ken Diamond:</b> For a duplicate hurricane what reduction in flood levels would the weir project provide.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>barrier-weir benefits</p>                           |
| <p><b>Jim Harlan:</b> A key design decision for alternative is the “full barrier” vs. weir barrier limited to 12 feet. The “full barrier” concept requires a 30 foot barrier plus gates at the mouth of Lake Pontchartrain. This alternative was <u>not</u> evaluated beyond screen 1 because: the added costs- some \$4-5 billion in the context of a \$50 billion project were deemed unacceptable (by who?) and the potential impacts on Mississippi were deemed unacceptable (again by whom pursuant to what process?). Is it correct that the added costs for full barrier vs. 12 ft. weir was \$2.25 billion for 100 year storm, \$5 billion for a 400 year storm (Katrina) and \$5-6 billion for a 1000 year storm surge. See table 6 of structural plan appendix. The added impacts on full barrier on Mississippi are 1 to 2 ft. at border, 0.4 ft at Waveland and Bay St. Louis, and 3 inches in Gulfport. (table 6 structural plan). Who and by what process determined such impacts to be unacceptable?</p> | <p>barrier-weir design, cost, and impacts</p>          |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                                                                                                                       |
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| <p><b>P.G. Wingerter:</b> To finance part of the barrier project why not charge a flat fee beneficial to the fire protection fee in some areas. The fee could be on only flood prone areas or on all area south of I-12. Why does the levee for a barrier have to be of the same material as a levee on the Mississippi which has continued use? A barrier levee only has to hold for a short time even if it broke it would not flood the entire area. This would seem to be a lesser cost.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>barrier-weir plan funding, design, and cost</p>                                                                                           |
| <p><b>Wayne Wild:</b> 1. If the gate at the Rigolets is going be design strong enough for Cat. 5 storm surge (the gate first), higher than 12 feet is needed. 2. How long will this gate/lock and levees going to take in years to build? 3. What if after the storm passes we get 30 to 50 inches of rain to fill lake will the gate be opened before the lake fills too high? 4. Schneider 2<sup>nd</sup> alignment is preferred. 5. Barrier weir please soon! The northshore near lake will be lost without it (Riglets gate/lock). 6. All other needs to be come later to rebuild marsh and barrier island. 7. Community levees to be built later. 8. Government charts cost too much time and money.</p>                                                                                                                                                                                                                                                                                            | <p>barrier-weir plan design, time, impacts, support, other, coastal restoration, structural measures; dissatisfaction with study process</p> |
| <p><b>Anonymous:</b> If you stop the water from going into the lake how much \$ will you save that is now being spent in New Orleans?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>barrier-weir benefits</p>                                                                                                                 |
| <p><b>John Cool:</b> 1. Why do we still use a 1% or 100 year flood as a design basis? The Dutch use 1000 year or greater as design criteria. Numerous subdivision have experienced several 100 year flood experiences over the past 40 years- a home that floods once in a lifetime is unacceptable. 2. It has been 40 years since the weir/barrier floodgates at Chef and Rigolets. Why did the Corps not pursue this project in spite of local political resistance? They knew at that time it was the only feasible solution to Lake Pontchartrain Basin flooding. 3. Throw cost effectiveness out the door- a dry home is priceless- the decision making process is simple- A. implement weir/barrier with Chef/Rigolets Project for 1000 year flood conditions <u>or</u> B. relocate population of entire northshore area south of I-12 to higher ground. 4. What do we have to do (as a population) to make the weir/barrier chef/rigolets project happen? 99% of those in attendance want it.</p> | <p>International expertise; barrier-weir plan history and support; consider buyouts</p>                                                      |
| <p><b>Rex Estorffe:</b> It's obvious the only way to keep water out of the Lake is to construct flood gates at the Rigolets and the Chef this will protect all of the poorly planned SOR-Divisions of the Northshore.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>barrier-weir plan support</p>                                                                                                             |
| <p><b>Marion Fannaly:</b> Build surge barriers now! Katrina, Betsy, etc. have clearly demonstrated the need to limit storm surge in Lake Pontchartrain to protect the surrounding residents.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>barrier-weir plan support</p>                                                                                                             |
| <p><b>Robert Black:</b> What will it take to get the two floodgates put in the Rigolets to protect us on the northshore? As well as St. Bernard Parish? When will construction start?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>barrier-weir plan support and time</p>                                                                                                    |
| <p><b>Barry Bordes:</b> Can we get "Dutch gates" at rigolets and chef pass to restrict hurricane flow that occurs for days before actual storm. This would protect New Orleans, Jefferson, Laplace, Monchak, Ponchatoula, Madisonville, Mandeville, Slidell from "Lake Surge."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>international expertise; barrier-weir plan support</p>                                                                                    |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Themes                                                                                 |
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| <b>Frank Maggio:</b> A barrier at the Rigolets would protect the entire metro area and should be given highest priority.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | barrier-weir plan support                                                              |
| <b>Clayton Stonecypher Jr.:</b> Plan PU1-CLP-a-100-1(?) Rigolets weir plan supported by the St. Tammany Council is the one that I also support. Also support restoration of coast.                                                                                                                                                                                                                                                                                                                                                                                                           | barrier-weir plan support; coastal restoration                                         |
| <b>Fay Stonecypher:</b> Plan PU1-CLP-a-100-1(?) Rigolets weir plan supported by the St. Tammany Council is the one that I am in favor of. Also support restoration of coast.                                                                                                                                                                                                                                                                                                                                                                                                                 | barrier-weir plan support; coastal restoration                                         |
| <b>Mr. &amp; Mrs. Allan Linker:</b> It is your job to protect us, the people. The gates at chef/rigolets sound like they will provide the best protection.                                                                                                                                                                                                                                                                                                                                                                                                                                   | barrier-weir plan support                                                              |
| <b>Nancy Senn:</b> A massive amount of information was conveyed to the public tonight. The audience came poorly informed and the majority of the information missed its target. PUI-C-LP-a-100-1 Plan is best.                                                                                                                                                                                                                                                                                                                                                                               | barrier-weir plan support; improve communication                                       |
| <b>Sandy Heigle:</b> Senator Landrieu and an entourage of public officials have made several trips to the Netherlands and have acknowledged that their system to keep the North Sea out of their homeland works. Why can't we learn from the experts, stop the studies and get on with what works. A damn lock or whatever to keep Lake Pontchartrain out of our backyards at the Rigolets would work on the same principal as the Netherlands. Stop spending money on surveys, studies, trips, etc. and do what will work for the Northshore.                                               | International expertise; dissatisfaction with study process; barrier-weir plan support |
| <b>David Meilleur Jr.:</b> I've read about the possibility of two "weirs" or barriers at the mouth of Lake Pontchartrain which <u>I agree with</u> . After speaking with many of my neighbors, they also feel this is the <u>most likely solution!</u> Why isn't this solution on the "front burner" so to speak? I do not feel the ecological impact or extra surge to Mississippi Gulf Coast is an adequate response.                                                                                                                                                                      | barrier-weir plan support                                                              |
| <b>Roger &amp; Bonnie Benischek:</b> From everything we have read over this entire process it appears that the 320 homes and nearly 800 residents of Venetian Isles are going to be sacrificed and we will have no relief nor protection. Why? We need gates at Rigolets and Chef Pass.                                                                                                                                                                                                                                                                                                      | barrier-weir plan support                                                              |
| <b>Steve Stefancik:</b> As a representative of 16,000 people in St. Tammany Parish, many which live near Lake Pontchartrain, I propose a resolution to the parish council supporting the levee, weir, and gate at the Rigolets alternative. The council passed the resolution on June 4, 2009. We believe this solution provides the best protection for both the north and south shores of Lake Pontchartrain. Although the sloshing of the lake will be present under any scenario, the water level of the lake will be significantly less and slosh levels of the lake should be reduced. | barrier-weir plan support                                                              |
| <b>Pat Baldwin:</b> Slides were hard to see and confusing for the average person. We are interested in protecting our lives and homes. <u>Period</u> . We need gates at the Rigolets and in St. Bernard. Why is the levee protection plan renamed the risk reduction plan?                                                                                                                                                                                                                                                                                                                   | improve communication; barrier-weir plan support                                       |
| <b>M&amp;M Donald Focht:</b> 1. We support the recommendation of the St. Tammany Parish officials. Move forward. 2. Congress needs to ensure the                                                                                                                                                                                                                                                                                                                                                                                                                                             | barrier-weir plan support and                                                          |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Themes                                                           |
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| treatment/funding needs to be consistent across Louisiana and Mississippi. <u>No</u> preferential treatment for Mississippi. 3. Appreciated info regarding impact of Orleans/Jefferson Projects on water levels. Thank you.                                                                                                                                                                                                                                                                                                                                                        | funding; equitable risk reduction                                |
| <b>N. Sovik:</b> Proceed at once with two activities: 1) coastal restoration, Mississippi water diversion projects 2) construction of weir gate at Rigolets.                                                                                                                                                                                                                                                                                                                                                                                                                       | coastal restoration; barrier-weir plan support                   |
| <b>Sheila Thompson:</b> A storm surge barrier on the east end of Lake Pontchartrain projects all the parishes that surround Lake Pontchartrain and Lake Maurepas a population of 1.8 million people and satisfies Congress' mandate to provide protection for the entire gulf coast. There would be no need to spend billions on levees and locks along the lake front or raise the Causeway approaches. Take the money for these projects and build a barrier to keep the surge out of the lake in the first place. This isn't brain surgery or rocket science it's common sense. | barrier-weir plan support and funding                            |
| <b>David P. Lovett:</b> I support alternative #7 for the project named: St. Tammany Parish SELA Schneider Canal Hurricane Protection Project much has changed in the Slidell area since the May 10, 1995 flood and this alternative is the best way to protect Slidell as it is today. I also support LP-a-100-1 plan that the St. Tammany Parish Government is supporting.                                                                                                                                                                                                        | barrier-weir plan support; other                                 |
| <b>Kendall Gaddy:</b> 1. We are aware of no specific plans to improve hurricane protection systems in Slidell. Please confirm this or explain/summarize hurricane protection projects planned during the next 5-10 years. 2. Is there any plan to reduce surge into the lake by way of storm barriers at the Rigolets? 3. What are the plans to upgrade or restore barrier islands east and south of the Rigolets?                                                                                                                                                                 | Plans for specific areas; barrier-weir plan; coastal restoration |
| <b>George Dunbar:</b> If Hwy 90 were raised or a levee built along the intercoastal canal and then flood gates placed at Chef Pass and Rigolets that could prevent water from entering lake and flooding north shore when the winds turn around from the North and West and the water is trying to get out of the lake.                                                                                                                                                                                                                                                            | Barrier-weir plan                                                |
| <b>Matt Dobbins:</b> What is an estimated cost of the weir project?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Barrier-weir plan cost                                           |
| <b>Stephen T. Scanlon:</b> Has a Mock Up Study of the PUI-C-LP-a-100-1 proposal been initiated or concluded?                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Barrier-weir plan                                                |

**Comments primarily concerned with induced flooding and equitable levels of risk reduction**

| Comment                                                                                                                                                                                                        | Themes                                           |
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| <b>Kasie Frisard:</b> I understand that New Orleans received catastrophic damage and New Orleans need better built levees so why does St. Tammany Parish have to ask Congress for a levee. The water has to go | induced flooding and/or equitable risk reduction |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Themes                                                                                 |
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| somewhere. St. Tammany should automatically get a levee when Orleans Parish does.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                        |
| <b>Ken Diamond:</b> What is the plan to reduce storm surge in east St. Tammany? Increasing levee height in New Orleans and St. Bernard will stack up more water to the East.                                                                                                                                                                                                                                                                                                                                                                                 | induced flooding and/or equitable risk reduction                                       |
| <b>Charles Story:</b> 1. All common sense knows that water seeks the lowest level or will break the weakest link. We have no link in Eden Isles, therefore the water must come to us. 2. During the last hurricane that by the way missed us and hit Texas, the new I-10 bridge at landfall at Irish Bayou was substantially underwater and definitely impassible. So with this said when the walls go up in Orleans and St. Bernard how can we believe your elevation charts if our new storm proof federal bridge I-10 goes underwater in a passing storm. | induced flooding and/or equitable risk reduction; lack of trust                        |
| <b>Terri Story:</b> East St. Tammany needs to be protected from storm surge just as New Orleans or St. Bernard. However, we do not need to have surge deflected onto us to protect those below us (to the south). Lake Pontchartrain is beautiful and benefits all of the communities that surround it, but we need protection from storm waters that are being diverted toward the Lake by Corps efforts to protect out neighbors.                                                                                                                          | induced flooding and/or equitable risk reduction                                       |
| <b>Steven Stubenrauch:</b> Late 60's early 70's the levee system in Orleans parish was the railroad track (Hynes Blvd). Why when it's clear water would be displaced to the Northshore did the levees get higher? What kind of plan doesn't take into consideration the surrounding area and the effect of levee systems and pumping stations, dumping more water into Lake Pontch. Do the current studies of increased levee heights in New Orleans take into consideration the water filling into the lake and then how the water then drains out?         | induced flooding and/or equitable risk reduction                                       |
| <b>Eirleen Brown:</b> Sound system was hard to understand.1. Assuming your calculations are correct (based on studies more than 15 years old) and the water level will not increase on the Northshore where is the water that would go to the Southshore go? Explain simply why it won't push the water North. 2. How accurate can the calculations be on studies so old in as much as there have been so many changes since the 1990s. 3. If the Corps calculations are faulty will the Corp reimburse me for damages?                                      | Improve communication; lack of trust; induced flooding and/or equitable risk reduction |
| <b>Lena Chabert:</b> What will you do to keep north from flooding you need to keep water out of the lake so Eden Isles, Oak Harbor don't flood. Also, water from south shore should go into the river and not into the Lake which also floods north shore. I think you need to think of north shore same as you do for south shore!                                                                                                                                                                                                                          | induced flooding and/or equitable risk reduction                                       |
| <b>James Ryan:</b> 1. How will the levees on the southshore affect flooding on the northshore? How did the Corps come up with only a 1" impact? 2. When are plans/designs/construct on planned for St. Tammany Parish? 3. Is there funding for Northshore projects? 4. What is the plan for control gate for the lake ( <i>illegible</i> ) /rigolets? 5. Why are northshore projects so far behind southshore projects; we flooded too. 6. Will St. Tammany get a                                                                                            | induced flooding and/or equitable risk reduction; barrier-weir plan                    |



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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                                                                               |
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| 100 year protection Program?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                      |
| <p><b>Lillian Gauthreaux:</b> On one hand, you say that by adding protection to the southern coast of Lake Pontchartrain to protect New Orleans there will be no negative effects for the Northern coastline. Yet, you say we should not have a levee system in the Rigolets area- high enough to keep water in the lake from getting higher because it will impact the coast of Mississippi. This makes no sense. What was New Orleans assigned risk, what was their trade off. There seemed to be little trade off when it came to the decision to and how to protect New Orleans. Protect coastal St. Tammany the same way. The decision should not be so difficult.</p>                                                                                                                              | <p>induced flooding and/or equitable risk reduction</p>                                              |
| <p><b>Fred Zeile:</b> The Eden Isles/Oak Harbor neighborhoods in Slidell flooded <u>after</u> the passage of Hurricane Katrina. The water level in Lake Pontchartrain slowly increased over a period of several days. Once the storm passed, the combined force of northerly winds and gravity forced the water out of the lake. This sudden outflow was constrained by the south shore levees constructed by the USACE, resulting in significantly higher water levels passing through the rigolets. Question: Since the increased flooding is at least partially the direct result of the USACE, what are your plans to either restrict pre-storm water entry into Lake Pontchartrain or failing that to protect the Eden Isles/Oak Harbor communities? When will you begin/complete construction?</p> | <p>barrier-weir plan time; structural measures; induced flooding and/or equitable risk reduction</p> |
| <p><b>Fred Zeile:</b> Troy Constance provided a preemptive statement quoting studies that indicate current USACE activities have no impact on flooding risk to St. Tammany Parish. This is the wrong question, the issue is the cumulative effect of all previous and current USACE work- all of these levees have significantly increased the post hurricane flooding risk to Eden Isles/Oak Harbor neighborhoods. Who were the “stakeholders” in the MCDA?</p>                                                                                                                                                                                                                                                                                                                                         | <p>induced flooding and/or equitable risk reduction</p>                                              |
| <p><b>Joe Rotolo:</b> Why are you expending all this time, money and labor building protection for St. Bernard, New Orleans East, the 9<sup>th</sup> Ward. When these areas are a long way from total recovery. Please look at southeast St. Tammany. We are recovered. We spent the time and money. But do not have any protection in the works today.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>equitable risk reduction</p>                                                                      |
| <p><b>Thomas Nolan Thompson:</b> The Corps of Engineers has verified that the levees built to the west forces storm surge into Lake Pontchartrain through the Rigolets and Chef Pass. The only point of contention is the amount of additional storm surge. The Corps says impact is small, but an independent study by Dr. Pat Fitzpatrick of Mississippi State University has documented a significant impact. Regardless of which study you believe, forcing ANY additional storm surge into Lake Pontchartrain, affecting 8 parishes and 1.8 million people is an irresponsible (bordering on criminal) form of hurricane protection. Provide protection for the entire Gulf Coast. Keep storm surge out of Lake Pontchartrain and Lake Maurepas!</p>                                                | <p>induced flooding and/or equitable risk reduction</p>                                              |
| <p><b>Joan Faust:</b> If there was no levees to our west would the storm surge be</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>induced flooding</p>                                                                              |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Themes                                                      |
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| the same as with the levees. Reflect on Dr. Pat Fitzpatrick study April 2008.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |
| <b>Naomie Hess:</b> Why has no-one-NO ELECTED OFFICIAL- NO CORPS OFFICIAL- NO FEDERAL OFFICIAL- ever addressed the damages to St. Tammany Parish? There is <u>considerable</u> growth since 2005; therefore a flood is more likely and will cause greater damage both in dollars and in displaced families. We need to have our concerns addressed- THE SOONER- THE BETTER. The cost of protection is CHEAPER than the cost of LIVES! I take no comfort in the knowledge that if my home floods again that it will be only one inch more than Katrina flooding- due to work to protect Orleans and St. Bernard. Protect us too!! We pay taxes and we vote too! | induced flooding and/or equitable risk reduction            |
| <b>Bob Oteri:</b> Comment: Don't tell me anything about New Orleans. I've heard enough. 1 <sup>st</sup> Question: What has the Corps of Engineers done in the past 3 ½ years to protect east and south St. Tammany Parish, particularly the Slidell Area, from a category 3 or 4 storm. 2 <sup>nd</sup> Question: If the answer to my first question is nothing then what do you plan to do to protect us? Thanks for your response, Bob Oteri.                                                                                                                                                                                                                | equitable risk reduction                                    |
| <b>Johnnie E. Verrette:</b> I have lived on Palm Lake 37 years. Flooded in 1985- H. Juan and 1998- H. George- 13 years between flooding. Now we got water almost every year in our yards. In 2008 H. Ike put water in our yard and it stayed for 4 days. 1.) Why are we so unimportant when monies are being dedicated to flood control? All monies seem to be going to every parish but St. Tammany. 2.) Is St. Tammany Parish included in the Master Plan for flood control?                                                                                                                                                                                 | Plans for specific areas; funding; equitable risk reduction |

**Comments primarily concerned with timeframe for obtaining risk reduction**

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Themes                                            |
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| <b>Shawn McManus:</b> I've been very disappointed that after almost 4 years since Katrina, no physical, visible signs of progress have been made to protect my/our home and community. I do not understand millions being spent on pumping stations on the 17 <sup>th</sup> St. Canal which will dump water in the lake, when instead dollars and focus could be spent on prevention of water intrusion into the Lake itself, there by helping both the Northshore and Southshore. | time; equitable risk reduction; barrier-weir plan |
| <b>Randy Calamari:</b> We met at the Slidell Auditorium with the Corps about 2 years ago discussing these same things. What has been done? Nothing. We're still talking about the same exact things. The North shore/Slidell area has had no hurricane protection done and it's 4 years since Katrina. We want results not more rhetoric.                                                                                                                                          | time                                              |
| <b>Gail Ledet:</b> In what lifetime can we expect to see work and not reports?                                                                                                                                                                                                                                                                                                                                                                                                     | time                                              |
| <b>Dwayne Shockley:</b> Why after 4 years since Katrina don't the Corps have a plan in place?                                                                                                                                                                                                                                                                                                                                                                                      | time                                              |
| <b>Jean Bruce:</b> What is time line for next steps- approvals from Congress.                                                                                                                                                                                                                                                                                                                                                                                                      | time                                              |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Themes                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>Frank Abraham:</b> When will all this protection be in place? Congress will never give us the money. Kennedy can get 18 billion for a hole in the ground in Boston, down here we can't get money to save thousands of homes!                                                                                                                                                                                                                                                                                                                                                 | time; funding                                 |
| <b>Bob and Kathy Campo:</b> Is there a time frame for these projects? Does one plan offer a faster time frame?                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | time                                          |
| <b>Julia and William Verret:</b> When will proposed Rigolets weir coastal surge be proposed to Congress- when and how funded? Needed now- not 25 years from now.                                                                                                                                                                                                                                                                                                                                                                                                                | barrier-weir plan; time; funding              |
| <b>Nicholas Gentile:</b> When will work begin for flood gate protection and how long to complete entire project. Safety is first for Saint Tammany Communities. Please support our efforts.                                                                                                                                                                                                                                                                                                                                                                                     | barrier-weir plan time                        |
| <b>Sandy McKibben:</b> What would you start with on that long tie in from the MS. River to Pearl River with the weir in the middle? Which port- or would you start working on the whole thing at once? And this would take 5 years in all? Will there be more of these meetings? When?                                                                                                                                                                                                                                                                                          | barrier-weir plan time                        |
| <b>Sandy McKibben:</b> 1. Oh lord, how long will all this decision making take? How much more damage will be done while studies fritter away people's time and lives? When will it be finished completely built? 2. How much will it all cost? Compared to the damage by storm in the last 45 years? 3. How many miles will the surge come into Slidell with the next Katrina, Betsy, Camille? Betsy to Old Spanish trail; Katrina to Gause in places. Is it going to I-12 next time if there is no barrier? 4. How can we know where to live safely everything keeps changing! | Dissatisfaction with study process; time cost |
| <b>Jim Luiertt:</b> We don't need more studies. We have history and studies with more studies. It time to make decisions and start action. 7-10 years is not acceptable. Your meeting tonight does not give us answers. The presentation was directed towards more delays, more money, fast construction time vs justifying more studies.                                                                                                                                                                                                                                       | Dissatisfaction with study process; time      |
| <b>Paulette Barras:</b> Very disappointing presentation. Katrina was 2005, and we are still talking. Why is government so slow in responding? We don't/did not need more discussion after all of this time we should have a plan in place. I won't live to see any protection for St. Tammany. Talk and study bull!                                                                                                                                                                                                                                                             | Dissatisfaction with study process; time      |
| <b>Anonymous:</b> You have done nothing to help the people feel better after Katrina. This should have been in place since Katrina. If you had not lost everything you owned in Katrina. Hope you can put your head on your pillow at night and sleep well. Four years since our lives have been destroyed! We don't want to wait 10 more years!                                                                                                                                                                                                                                | Time                                          |
| <b>Joan Zimmerle:</b> Why has it taken so long for St. Tammany to get some consideration on flood protection?? The flood gates would make us a lot more comfortable.                                                                                                                                                                                                                                                                                                                                                                                                            | Time; barrier-weir plan support               |
| <b>Richard Reardon:</b> 3 years – 10 mos – Why no studies, planning – community input until today? South Slidell was devastated. No promises, false or otherwise have been issued. No solutions for normal drainage                                                                                                                                                                                                                                                                                                                                                             | Time; plans for specific areas                |

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| Comment                   | Themes |
|---------------------------|--------|
| issues for South Slidell. |        |

**Comments primarily concerned nonstructural measures**

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Themes                                                                        |
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| <b>Bonnie Dekemel:</b> Would the buyout be mandatory for everyone in the buyout area!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Nonstructural measures; more information on buyouts                           |
| <b>Anonymous:</b> Looks to me like most of Slidell is in the Buyout Zone. Is that correct?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nonstructural measures; more information on buyouts                           |
| <b>Anita L. McCune:</b> Would people in the “buyout” areas be forced to leave?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nonstructural measures; more information on buyouts                           |
| <b>Sandra Collier:</b> I am concerned about the Palm Lake area Coin du Lestin and Lacombe- are we going to get support and aid for rebuilding our homes to a higher level and also our business. What about Eden Isles?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Plans for specific areas; Other nonstructural measures                        |
| <b>Jeannine Meeds:</b> Very hard to understand the people speaking! Can’t see the maps of the presentation! Thank you for having this public meeting. I live on a bayou in Lacombe, so I am directly affected by hurricane surge events and rain events. I think that people should not be allowed to build anymore in flood prone areas. The parish should quit issuing building permits or should require that residents build their structures up. No more federal flood insurance if people wish to live in flood prone areas they must bear the cost of that decision themselves. Levees are not dependable and are far too costly for the value received. I do agree in restoring the coast, but not with artificial structures. Let the Mississippi replenish the barrier islands. Buying out people is cheaper than all these structures. | Other nonstructural measures; improve communication; consider buyouts         |
| <b>Anonymous:</b> In regards to tradeoffs that will result in varying levels of risk. It is stated that some communities may have to relocate. Have any of these communities been identified?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Nonstructural measures; more information on buyouts                           |
| <b>Forrest Smith:</b> Is the buyout of eden isles, oak harbor, clipper estates and lakeshore estates subdivisions on all proposals?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Nonstructural measures; more information on buyouts; plans for specific areas |
| <b>Anonymous:</b> Need a better map of buyout area. I’m ok with being bought out. Will levees in Lakeshore funnel more water into Slidell? Does \$61B for giant Rigolets floodgates include maintenance?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Nonstructural measures; more information on buyouts; consider                 |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Themes                                                                                          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | buyouts; induced flooding; barrier-weir cost                                                    |
| <b>Justine E. Mason:</b> How would this effect the Pinehurst subdivision? Is it true that we may face a possible buy out? If so how would the property be appraised?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nonstructural measures; more information on buyouts; plans for specific areas                   |
| <b>Denis Schaff III:</b> Please give us some info about the areas in the buyout zone.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Nonstructural measures; more information on buyouts                                             |
| <b>Bill Laletin:</b> During the presentation I learned that my home in Quail Ridge is within the boundaries of a possible buyout area- how will buy-out values be arrived at if this option is selected?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Nonstructural measures; more information on buyouts; plans for specific areas                   |
| <b>B. Peyroux:</b> The diagram shows buy out on both sides of Eden Isles and Moonraker but nothing for this area. What happens to this area?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Nonstructural measures; more information on buyouts; plans for specific areas                   |
| <b>Mr. &amp; Mrs. Wm. M. Plunkett:</b> It is stated that future plans for LA Coastal Protection and Restoration will include tradeoffs: tradeoffs require giving up some uses to attain a specific level of risk reduction. One of the examples given was that whole communities may need to relocate or structures may need to be raised in place in order to attain the maximum risk reduction for that area. I presently reside in the community of Eden isles. Eden isles is a community south of Sliell, LA and North of Lake Pontchartrain. If I correctly understand the future plans of the Corps and State government, my community lies within a so-called buy-out zone. Please further clarify the meaning of this future plan. Such as time frame impact of buyout, the means of determining values of properties. And whether or not property owners will have the option of elevating our homes above the required 14+ elevation requirement so designated by the government. Sincerely, Wm. M. Plunkett. | Other nonstructural; more information on buyouts; plans for specific areas                      |
| <b>Elizabeth Stoltz:</b> You rushed through the explanation of how the closing of water to the Lake and northshore would affect areas of Old Spanish trail, making some or all of that area a “buyout,” does this include Lakeshore estates? What was the comment made about letting the water still spill back into Lake thus still affecting directly the northshore specifically the old Spanish trail area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Nonstructural measures; more information on buyouts; induced flooding; plans for specific areas |
| <b>Richard R. Dillon:</b> My home in Quail Ridge was flooded (18”) because of storm surge that backed up into the West Pearl River. 1. What is planned to prevent this from happening again and when will the proposed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Plans for specific areas; time; nonstructural                                                   |

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| Comment                                                                                                                                                                                                                                                                                                                                                               | Themes                                |
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| actions take place? 2. I read that one of the proposals being considered is to purchase/raise/demolish up to 300,000 houses. Is this action being considered for the Quail Ridge Subdivision, and if so, when and what are the procedures to apply for your home to be purchased and at what prices? i.e. what will the criteria be for assessing the purchase value? | measures; more information on buyouts |

**Comments primarily concerned with structural measures (but not necessarily the barrier-weir plan)**

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Themes                                       |
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| <b>Joseph Laundry:</b> I think for the short term a levee could be built from the bridge at I-59 thru Magnolia Forest. It would prevent flooding in the area.                                                                                                                                                                                                                                                                                                                                                                                                                                              | Structural measures                          |
| <b>Darryl Stoltz:</b> Instead of building a new levee or weir across the Rigolets and Chef Pass area, could you contract with railroad to build up the existing solid RR. Bed. Floodgates could be designed to open and close using railroad cars and pump stations could keep Lake Pontchartrain levels stable. The railroad knows how to build a solid foundation.                                                                                                                                                                                                                                       | Structural measures                          |
| <b>Denis Schaff III:</b> Did I see a levee across the Eden Isles canal to Lake Pontchartrain?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Structural measures                          |
| <b>Daniel L. Calamari:</b> Is there any plans to use Hesco Bastion to build temporary levee around 1 <sup>st</sup> Baptist church off Hwy 11 to block the Lake water from entering the subdivisions on the South Side of Slidell? Also, Hesco Bastion could be use to block water from passing through Hwy 433 by the I-10. Is there any plans to consider blocking the water at 433 and I-10?                                                                                                                                                                                                             | Structural measures                          |
| <b>Nancy Durham:</b> 1) Inner Harbor Navigation Canal Surge Barrier Project Area- by adding 1.5 miles of floodwall to this area, would that eliminate the existing wetlands to the west of the proposed wall? 2) St Tammany Mandeville Hurricane Protection- with no support for a levee- have you ever thought to propose a system like in Prague, where a wall system is installed? This wall goes up before the storm and is removed afterwards and it doesn't take away from the view or use of the waterfront. You can look this up at <a href="http://www.ekofloodusa.com">www.ekofloodusa.com</a> . | Structural measures; international expertise |
| <b>Craig Monnier:</b> What is being done to protect lower St. Tammany from storm surge? Is there a plan to erect a levee system to protect Slidell? If so, when? At another meeting, it was said that erecting a levee system to protect lower St. Tammany would impact our neighbors to the East (Mississippi). How does that impact the decision to build a levee system to protect lower St. Tammany.                                                                                                                                                                                                   | Structural measures; time; induced flooding  |
| <b>Mary MacCurdy:</b> Dredge Doubloon Bayou where it meets W. Pearl River. It is so shallow. The bayou is higher over time than in years past. This is the main drain for all of East St. Tammany- <b>THANK YOU</b> to those who have paid attention. I saw 607 FEMA employees outside 87 lumber in Waveland, Ms a couple of months after the storm (Katrina 2005). <b>THEY LISTENED.</b> Send a report to Washington one gentleman                                                                                                                                                                        | Structural measures                          |

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| Comment                                                                                                                                                                                                                                                                                                                                                                              | Themes              |
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| said “ you have no idea how many friends and St. Tammany residents tried to tell who could <u>do something</u> that the West Pearl river was blocked and changed course. If it had not been dredged 100’s of houses would have flooded Spring 2006- THANK YOU TO THOSE MEN. I wish I had a name. thank you for listening.                                                            |                     |
| <b>Lee H. Longstreet, Sr.:</b> Consider sinking old “moth balled” ships filled with concrete to create a man made barrier island. This could slow down title waves. Alternative- fill old barges with concrete and sink them to create a sea levee. Finally, follow the lead of Holland make the investment and save billions of dollars, lost property and lives would be lessened. | Structural measures |
| <b>Bonnie Peyroux:</b> Why can’t graveyard ships be placed into Lake Pontchartrain to form a barrier (temporary) until a structure can be created?                                                                                                                                                                                                                                   | Structural measures |
| <b>Donald Andre:</b> Can broken concrete from highway projects throughout the central US be barged down to the Gulf of Mexico and be used to build barriers.                                                                                                                                                                                                                         | structural measures |
| <b>Dede Ricard:</b> What alternatives exist besides levees, which if breached, keep water bottled in longer? Can’t barriers be erected offshore to decrease surge?                                                                                                                                                                                                                   | structural measures |
| <b>Alice Green:</b> Why can’t we have levees and flood gates to protect our homes and property?                                                                                                                                                                                                                                                                                      | structural measures |

### Comments primarily concerned with the planning and decision making process

| Comment                                                                                                                                                                                                                                                                                                          | Themes                               |
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| <b>Jay Jenkins:</b> Why do we believe that a focus group approach to alternative determinations is an acceptable and representative methodology? Why are not key experts from Universities and industry also polled for technical inputs? Seems like we are letting the least qualified make critical decisions? | Planning and decision making process |
| <b>Howard Moreaux:</b> You have studied/surveyed/and analyzed yourself into confusion and indecision. Then you finalized your report by saying you cannot make the final decision. You are the experts, you know what will work. You should tell us what you are going to do.                                    | Planning and decision making process |
| <b>Patricia Mahler:</b> Is there going to be co-operation between all of the parishes surrounding Lake Pontchartrain? WHO made the trade offs decisions on what is being implemented now? How many pages is the whole report?                                                                                    | Planning and decision making process |
| <b>Michelle Douglass:</b> What’s the next step? What should us as residents do?                                                                                                                                                                                                                                  | Planning and decision making process |
| <b>John Foster:</b> What public input was solicited for the LACPR report and its findings?                                                                                                                                                                                                                       | Planning and decision making process |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                                        |
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| <b>Willie Wirlf:</b> The Dutch are long experience in both coastal flood protection restoration and designing. Been there seen the product of their planning and execution including maintenance. Has the Corps sought assistance in planning LA coastal product. If not, why not? Why not put the planning and analysis for world wide experts such as Dutch!!!                                                                                                                                                                                                                                                         | Planning and decision making process; international expertise |
| <b>Craig D. Dooley, PE:</b> At a previous ACOE meeting I attended, no one from the SELFPA was present at that meeting to give the public their opinion of the best solution for all the scenarios proposed by the ACOE. Is SELFPA- East and West actually talking to each other and conveying to the public their best solutions for hurricane protection or are they acting independently from each other? Why hasn't building a floodgate at the Rigolets been a higher priority? I believe if it had been built 30 years ago, 70% of the flooding problems associated with Hurricane Katrina would not have happened. | Planning and decision making process                          |
| <b>George Smith:</b> Do we get to vote on which weir should go in the Rigolets? What is the time frame for the construction of that weir?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Planning and decision making process                          |
| <b>Anonymous:</b> Are we going to vote on what plan is implemented- coastal, structural, etc. Who is going to decide what course we will take?                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Planning and decision making process                          |

**Comments primarily concerned with improving communication (e.g. better computer models and maps)**

| Comment                                                                                                                                                                                                                                                                                                                                                       | Themes                                                |
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| <b>Dale Heintzelman, P.E.:</b> Why didn't you show computer simulations of the effects of each alternative for a 500 year storm? I'm sure coastal reclamation project would have a minor impact compared to the Rigolets Barrier project. The people need to see this to be informed.                                                                         | Improve communication; computer models                |
| <b>Cheryl Kelly:</b> 1) If Slidell is only going to get 1" as stated on TV, of water with raising the levees, why did the flood maps change? (in Orleans parish). 2) Why are you using the 500 year storm model when you should be using a 10 year model? There is less coast so the water is coming up higher than normal? 5" in Venetian Isles for Gustave! | Improve communication; maps; computer models          |
| <b>Gallager:</b> What does the flood plain map look like with the Rigolets barrier installed?                                                                                                                                                                                                                                                                 | Improve communication; maps                           |
| <b>Benischek:</b> Do you or will you show a computer model of how our neighborhood will be affected by storms from either direction? At present we flood on every heavy, persistent east wind.                                                                                                                                                                | Improve communication; computer models                |
| <b>Benischek:</b> At the end of your presentation you had a quote from Mr. Davis that said we had to decide what risk we wanted. How can we make a decision unless you can publicize a computer model of storm surge with and without the changes you are discussing? When might you offer                                                                    | Improve communication; computer models; nonstructural |



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| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Themes                                          |
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| buyouts in Venetian Isles?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | measures; more information on buyouts           |
| <b>Jim Stevenson:</b> 1. Improve your maps! The static maps do little to effectively show the plans. Some kind of online system could be very effectively shown using Google earth or virtual earth to show potential impacts on individual homeowners. Get away from the static maps. 2. What kind of timelines are we looking at to undertake these various alternative plans, how many years could it take to see any of this accomplished? 3. Too many confusing slides and acronyms. It quickly lost the attention of the audience and frustrated them. Keep it short, simple and focused on the northshore. | Improve communication; maps; computer models    |
| <b>Normand Pizza:</b> Why is your map distributed to northshore residents at your June 16, 2009 meeting in Slidell, showing all of the southshore and almost nothing of the northshore, is that not a callous, insensitive act for people who got between 2-11 feet of flooding in their homes?                                                                                                                                                                                                                                                                                                                   | Improve communication; maps and computer models |
| <b>Anonymous:</b> Is there a website that allows the viewer to see where the “new levees and existing levee modifications” levee would sit relative to existing reference points, e.g. streets?                                                                                                                                                                                                                                                                                                                                                                                                                   | Improve communication; maps                     |
| <b>Marlene Ertel:</b> Meeting 6-16-09 Oak Harbor Slidell. 1. Late getting started. 2. Only written questions—one way to screen comments and questions. 3. Very bad body language—the speakers stood on the side with arms folded in a bunch. 4. Felt like sheep—not concern about options.                                                                                                                                                                                                                                                                                                                        | Improve communication                           |

### Comments primarily concerned with plans for specific communities

| Comment                                                                                                                                                                                                                                                                                                                                                      | Themes                         |
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| <b>June Frisard:</b> What is being done for Eden Isles flood control?                                                                                                                                                                                                                                                                                        | Plans for specific areas       |
| <b>Lisa Ruiz:</b> How will the levees protect Eden Isles?                                                                                                                                                                                                                                                                                                    | Plans for specific areas       |
| <b>Gerald Williams:</b> What protection will Eden Isles be given? Can a concrete breakwater be placed to prevent surge?                                                                                                                                                                                                                                      | Plans for specific areas       |
| <b>Anonymous:</b> What are you doing for Oak Harbor and Eden Isles?                                                                                                                                                                                                                                                                                          | Plans for specific areas       |
| <b>Jeanne Parlipiano:</b> What are you going to do in the area of Palm Lake? We have lived here for 25 years and nothing has been done to stop the flooding. Please think about all of us- the people if Palm Lake- and put something in to help with our flooding- we are tired of not knowing each year if we are going to flood.                          | Plans for specific areas; time |
| <b>Neil Rudd:</b> I have attached photos of my neighborhood: pre-katrina, post-katrina, pre-ike. Our neighborhood is located on Lake Pontchartrain 3 miles west of Madisonville. Post Katrina we had dry drained areas surrounding the neighborhood a system of levees protected our neighborhood but the i-2 punch from Gustav/Ike breached the system in a | Plans for specific areas       |

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| Comment                                                                                                                                                                                                                                                                                                                                                   | Themes                   |
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| few locations and seriously undermined the rest of the levee. I've included a 2009 google map that now calls what was once fields are now viewed as lakes. I have requested help from FEMA, the Corps of Engineers, the state of Louisiana, St. Tammany Parish and the save our lake foundation. I'm here today to ask for help again. Thanks, Neil Rudd. |                          |
| <b>Gail Lopez:</b> What is being done to address the "Rising Tide" that floods coastal St Tammany Properties during Hurricanes and events where east winds for 3 or more days causes flooding to property <u>and</u> roads in coastal areas in St. Tammany especially Bayou Lacombe Area.                                                                 | Plans for specific areas |
| <b>John Davis:</b> Is areas like Delacroix Island, Hopedale Shell Beach, left to help themselves with no protection!                                                                                                                                                                                                                                      | Plans for specific areas |
| <b>Andre, Donald:</b> What is the priority of storm surge protection for Slidell. You showed several plans, but did not elaborate.                                                                                                                                                                                                                        | Plans for specific areas |

### Comments primarily concerned with coastal restoration plans or environmental issues

| Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Themes                                                        |
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| <b>Warren Berault:</b> Louisiana is country's energy and seafood coast. The Corps of engineers has been "studying" coastal restoration for over 40 years. Stop the studies and rebuild our barrier islands and coastal wetlands. Slidell has flooded 3 or 4 times in the last 10 years on a falling tide with water pushed into the lake from hurricanes. After you repair our coastline I figure a way to increase Lake capacity by dredging it deeply using Bonnet Carre spillway as a holding pond, or increase the "throat" of the Rigolets. Every time the Corps changes leadership you "throw out" the solutions planned by the previous leadership and start your studies all over. Your agency is worse than FEMA. Rebuild our barrier island and coastlines now and protect the USA's energy and seafood coast. | Dissatisfaction with study process; time; coastal restoration |
| <b>Rick Wilke:</b> I understand that there are houses in St Tammany that did not flood since they were built over 50 years ago that flooded in Katrina, Gustav and Ike. It appears that the loss of wetlands and barrier islands has resulted in this increased surge. To what extent has the Corps investigated restoring these natural defenses in lieu of or in addition to man-made barriers?                                                                                                                                                                                                                                                                                                                                                                                                                        | Coastal restoration                                           |
| <b>Cheryl Kelly:</b> 1. Can we purchase state owned dredges and work with the oil companies for the gas to restore the coast? 2. Would 50' sand dunes on the barrier islands help slow down in the tidal surge? 3. As a comment, my insurance rates are \$6180/year because I am located <u>outside</u> Orleans levee protection!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Coastal restoration                                           |
| <b>Bill Dekemel:</b> Against any reduction of water flow through Chef or Rigolets as it affects pollution and fisheries and property value!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Environmental concerns                                        |
| <b>Sandra Slifer:</b> I am looking forward to reviewing the NAS report. I've reviewed the Executive summary already. If we don't do everything else, the gates or ring levees will not be effective. We need more citizen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Improve communication; coastal restoration                    |

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| Comment                                                                                                                                                                                                                                                                                                                                                                                                               | Themes                 |
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| education and we definitely need to set expectations regarding costs and time frames. Must look at the entire system in the Gulf and recapture the sediment and rebuild the coast and barrier islands. Thanks for coming out.                                                                                                                                                                                         |                        |
| <b>Julie Bosch:</b> 1. Can you provide a detailed view of each of the 6 proposed plans for St. Tammany Parish? 2. The bypass of feasibility studies is one thing, but is an environmental impact study going to be done for each of the 6 proposed plans? 3. Are impact studies going to be done for areas outside the protection system? 4. Which of the 6 proposed plans does St. Tammany Parish currently endorse? | Environmental concerns |

### Miscellaneous Comments

| Comment                                                                                                                                                                                                                                 | Themes        |
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| <b>Wayne A. Collier:</b> How many cubic yards of fill will be needed to build each of the proposed plans?                                                                                                                               | miscellaneous |
| <b>Leslie Paternostro:</b> What is the plan to maintain the storm protection after it is built? Is it a parish, state or Corp of engineer responsibility?                                                                               | miscellaneous |
| <b>Anonymous:</b> Why can't we use the revenue from our offshore oil to pay for our protection?                                                                                                                                         | miscellaneous |
| <b>Tranisha Walker:</b> What will happen to the retention ponds that currently exist? Many of them are overgrown with weeds, debris, and trash. Will this retention pond be cleaned so they can work properly if we have another storm? | Other         |
| <b>Charles S. Woyer:</b> Why does the Corp of Engineers insist on using a lake that become little more than a retention pond when winds are sustained and easterly as the central dumping point for every mega pump in its inventory?   | Other         |