Workshop in Applied Earth Systems ENVP U9230

Title VII
Coastal Louisiana
Implementation Handbook

Water Resources Development Act 2007

Acknowledgements

Project Team:

Dana Coyle, Manager

Kyra Appleby, Deputy Manager

Maha Bahamdoun

Steven Caputo

Molly DeSalle

Ryshelle McCadney

Jessica McHugh

Danielle Ravich

Susie Shuford

Ellie Tang

Alex Varga

Brett Williams

Faculty Advisor:

Dr. Tanya Heikkila

The Title VII Coastal Louisiana team would like to thank our faculty advisor Dr. Tanya Heikkila for her guidance and support. The work was completed as an exercise in Columbia University's MPA program in Environmental Science and Policy. For more information please see www.columbia. edu/cu/mpaenvironment.

Table of Contents

EXECUTIVE SUMMARY

Title VII of the 2007 Water Resources Development Act (WRDA) authorizes the U.S. Army Corps to address the dual challenges of ecosystem decline and hurricane vulnerability in the Louisiana Coastal Area (LCA). This report will address these specific challenges and discuss how Title VII, within the context of our program design and first year implementation plan, can present a long term solution in the region.

Ecosystem decline and hurricane vulnerability in the LCA are largely driven by coastal land loss. Since 1932, the LCA has already lost 1900 square miles of land. This drastic land loss is in part the result of attempts to control the Mississippi River upstream, through levees, canals and dams, which have significantly altered the natural hydrology in the LCA. Where once the Mississippi River and its tributaries flowed through the entire Louisiana Delta and deposited sediments, the control structures reduced the flow and channelized the River, reducing sedimentation. It is this reduced sedimentation, combined with natural subsidence and other climatic factors such as sea level rise, that are the main factors contributing to coastal land loss.

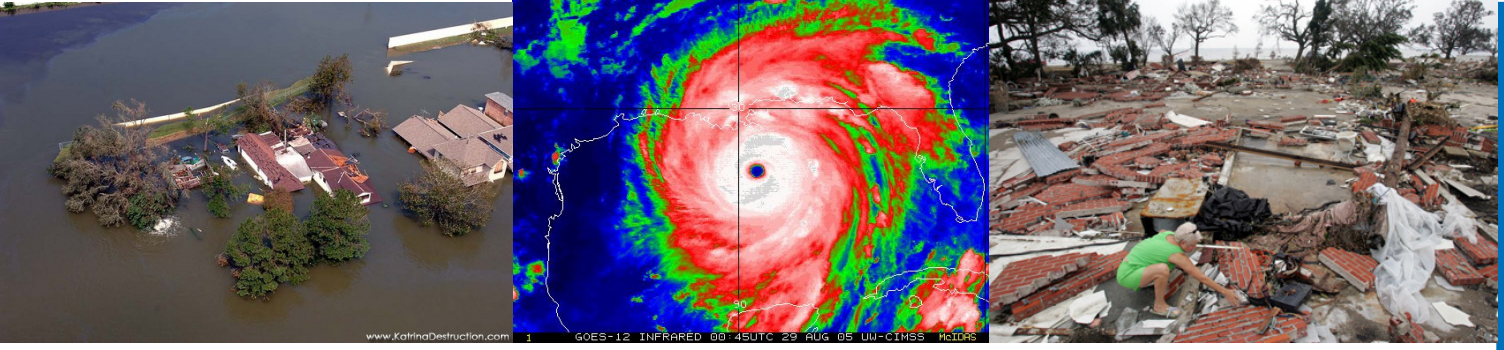
Coastal land loss leads to ecosystem decline through wetland destruction and the diminishing of barrier islands. Not only do these effects degrade the natural integrity of the ecosystem, but they also significantly increase flood and hurricane vulnerability as intact wetland vegetation and barrier islands are vital in buffering incoming coastal storm surges. Given the clear link between these two challenges, the goals of Title VII are both to preserve and restore the coastal ecosystem while protecting local populations by minimizing storm and flood vulnerability. In practice, this means that along with traditional flood control methods such as repairing and improving levees, restorative projects such as rebuilding barrier islands or recreating wetlands using sediment traps will be pursued in tandem. Additionally, the LCA is separated into five geographically distinct regions, with different social, political and ecological conditions. So not only is the goal of Title VII to protect and restore, but also to determine a way to coordinate regional efforts.

To obtain this level of regional coordination, the legislation mandates the creation of an Ecosystem Restoration Task Force. The Task Force is comprised of federal, state and programmatic agencies to advise the U.S. Army Corps and provide oversight and expertise at the regional level. Specifically, the Task Force coordinates the other three major mandates of the Act:

- ***Project Authorizations***: Restoration projects already underway within the five sub-provinces such as the rebuilding of a barrier island

- ***Science and Technology Program***: A program to research the most current restoration information and techniques

- ***Comprehensive Plan***: A document that will serve as the framework for how regional coordination will occur, how the other two mandates will be integrated with the additional components of stakeholder outreach and performance management.



The Task Force will also have Geographic and Programmatic Working Groups. The Geographic Working Group focuses on working with the U.S. Army Corps on project authorizations within five sub-provinces. The Programmatic Working Group coordinates with the Science and Technology Program determining best practices to incorporate back into the project authorizations.

Given that all Task Force and Working Group members are borrowed from other agencies, the implementation design of this program therefore involves hiring a full time Task Force Administration. The Task Force Administration mirrors the structure of the larger Task Force Body, with an Executive Director overseeing both Geographic and Programmatic Deputy Directors. The Deputy Directors work with a team of analysts who collect and compile information from their respective working groups for use in the Comprehensive Plan. An implementation team will also be hired that consists of a Project Coordinator, who will focus on driving progress forward on project authorizations that are already underway, a Performance Management Specialist, who will be in charge of devising performance management criteria, and a Comprehensive Plan Coordinator to collect the necessary information and put together the Comprehensive Plan.

While the Task Force and Administration are charged with balancing all the core mandates of the Act , the Comprehensive Plan is the first year's priority because it serves as the basis for the coordination and integration of the other mandates and must be completed by December 31st, 2009. Within the first year implementation plan, tasks prioritize coordination, information gathering, performance management and conducting stakeholder outreach, as these are the four essential components to ensure that the Comprehensive Plan is of the highest caliber and is on time.

Title VII aims to present a long-term solution to the challenges of ecosystem decline and hurricane vulnerability within the LCA. The Ecosystem Restoration Task Force, through balancing Project Authorizations, the Science and Technology Program and drafting the Comprehensive Plan, sets the basis for regional coordination regarding the protection of vulnerable populations and the preservation and restoration of the coastal ecosystem. The first year of implementation prioritizes the Comprehensive Plan; however, as new projects are authorized and as information on restoration best practices becomes available, the Comprehensive Plan must be continually updated, to ensure that it is a living document that can be adapted. Therefore, the longer-term implications of Title VII and the Comprehensive Plan are that while Louisiana is geographically unique, the call to protect and preserve is not. As we continue to degrade our coastal ecosystems and the effects of climate change become more prevalent, the implementation of TVII may not only serve as a long term solution for ecosystem decline and hurricane vulnerability in Louisiana, but as a model for the restoration of the 1 billion degraded acres of wetlands and the protection of the 2.75 billion people in coastal areas around the world.

Image Reference: www.katrinadestruction.com, www.lightrailnow.org, www.about.com

INTRODUCTION

The Louisiana Coastal Area (LCA) is degrading at an extremely rapid rate, resulting in the vulnerable exposure of an imperiled ecosystem. This ecosystem, once a natural buffer to storm and flooding events, is now leaving the two million people of the area defenseless to further climatic disasters.

Over time, attempts to control the changing course of the Mississippi River upstream, such as building levees and dams to protect the region from flooding, have had unintended consequences downstream in the LCA. The resulting wetland destruction and coastal land loss has had a two-fold impact: ecosystem decline and hurricane vulnerability.

On August 29th, 2005, when Hurricane Katrina made landfall in the LCA, the United States encountered one of the costliest and deadliest hurricanes in the country's history. Close to 1,400 lives were lost as a result of the storm and the country executed its emergency response plan to address immediate economic and social damages of around $71 billion (CPRA, 2007; Bullard, 2007).

While the aforementioned ecosystem well-being and human safety issues have threatened the LCA for decades, the severity of Hurricane Katrina catalyzed the passage of a corresponding legislative solution. Consequently, the United States Congress authorized Title VII of the Water Resources Development Act (WRDA) of 2007 to serve as a future flood control protection and long-term environmental restoration planning policy. Setting the legislative goals of preserving (ecosystems), protecting (human safety), and restoring (coastal and storm protection features), the WRDA provides funding and project authorizations, specifically for the U.S.Army Corps nationwide. This federal agency is primarily responsible for initiating and completing flood and hurricane protective infrastructure, and also restoring many of the natural flood and storm protection features in the region, such as wetlands and barrier islands.

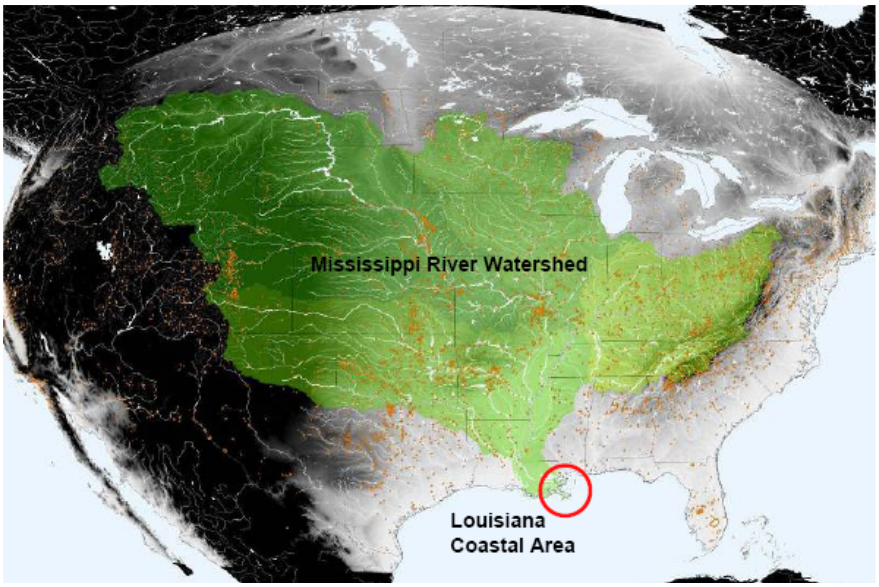


Figure 1. Mississippi River Watershed (Adapted from Rosenzweig, 2007).

To facilitate the restoration effort of the U.S. Army Corps, Title VII mandates the formation of the Coastal Louisiana Ecosystem Restoration Task Force (Task Force)—an inter-agency coordinating committee and advisory body to the U.S. Army Corps. The primary goal of the Task Force is to aid in the development of a **Comprehensive Plan** that will provide coordination between current U.S. Army Corps projects and ensure that planning efforts are conducted on a regional scale. The Comprehensive Plan will be a holistic integration of previous project plans and future project designs.

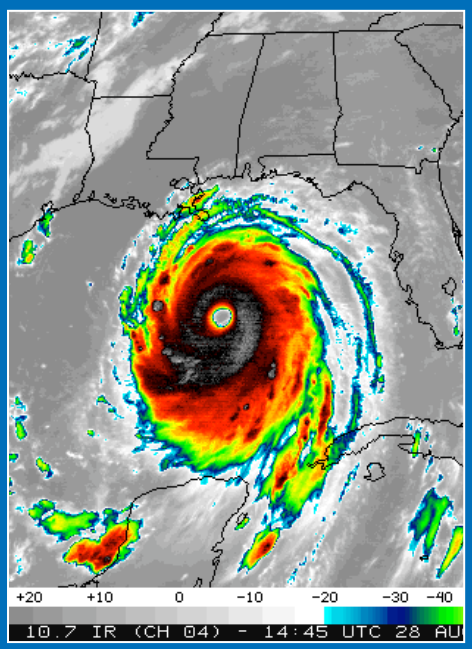
Title VII calls for the Comprehensive Plan to be completed by December 31, 2009. To achieve this, our program design centers on the Task Force, which will prioritize the creation of the Comprehensive Plan during the first year of Title VII implementation. In addition to facilitating the development of the Comprehensive Plan, Title VII requires that the Task Force:

1. Make recommendations to the Secretary of the Army regarding the specific policies, strategies, plans, programs, projects, and activities for addressing conservation, protection, restoration, and maintenance of the coastal Louisiana ecosystem;

2. Include representatives from eleven federal agencies and the State of Louisiana;

3. Recommend avenues of funding and inter-agency support for coastal restoration and protection of the LCA.

The following sections of this report will revisit the issues and corresponding solutions presented in Title VII of the WRDA of 2007 as well as identify challenges facing the first year of implementation. The organizational management component of legislative implementation will be examined in detail to devise an effective and efficient program that balances preservation, protection, and restoration in the LCA.



Hurricane Vulnerability

Ecosystem Decline

ENVIRONMENTAL CHALLENGES

The Louisiana Coastal Area faces complex and interrelated environmental problems that permeate the entire region. The environmental problems in the area affect the entire Mississippi River Basin and disrupt the hydrological cycle of this ecosystem. The hydrological and geographical system of the Mississippi River Basin has been disrupted by a long history of engineering projects as well as by natural factors. It is essential to understand exactly the manner in which the River Basin has been transformed in order to seek accurate and effective remedies to the environmental problems. In the case of Title VII, this understanding will assist the restoration work of the U.S. Army Corps in the region under the advisement of the Task Force.

Geography

As shown in Figure 1, the Mississippi River drains 41 percent (1.25 million square miles) of the continental United States through the LCA and into the Gulf of Mexico (America's Wetland Resources, 2008). The 20,000 square mile LCA (Fig. 2) contains the largest swathe of coastal wetlands in the continental United States and is defined as the area between the Sabine and Pearl Rivers, including the Atchafalaya River basin, the Mississippi River Deltaic Plain and the Chenier Plain (U.S. Army Corps of Engineers, 2006; U.S. Congress, 2007).

Historical Overview

Historically, the Mississippi River and its distributaries naturally meandered and swept across the landscape, forming the large delta where the River meets the Gulf of Mexico. The natural path of the Mississippi River and its distributaries dispersed sediments that built and shifted the landscape, forming marshlands. The elevation in some areas is also altered, causing sediment dispersion into the Gulf to create barrier islands. Ecologically speaking, flooding was an integral part of this process, helping deposit sediments on the floodplain. In terms of human safety, flooding should be prevented. The natural cycle of the Mississippi River was disrupted by the construction of levees and other control structures. This happened as more people settled along the banks of the River and sought to prevent damage to their homes and livelihoods caused during flooding.

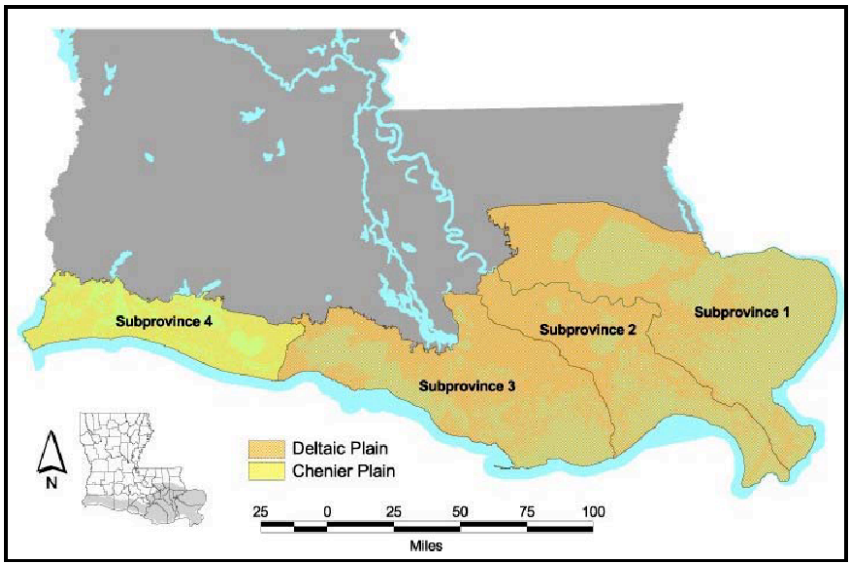


Figure 2. Louisiana Coastal Area (U.S. Army Corps of Engineers, 2004).

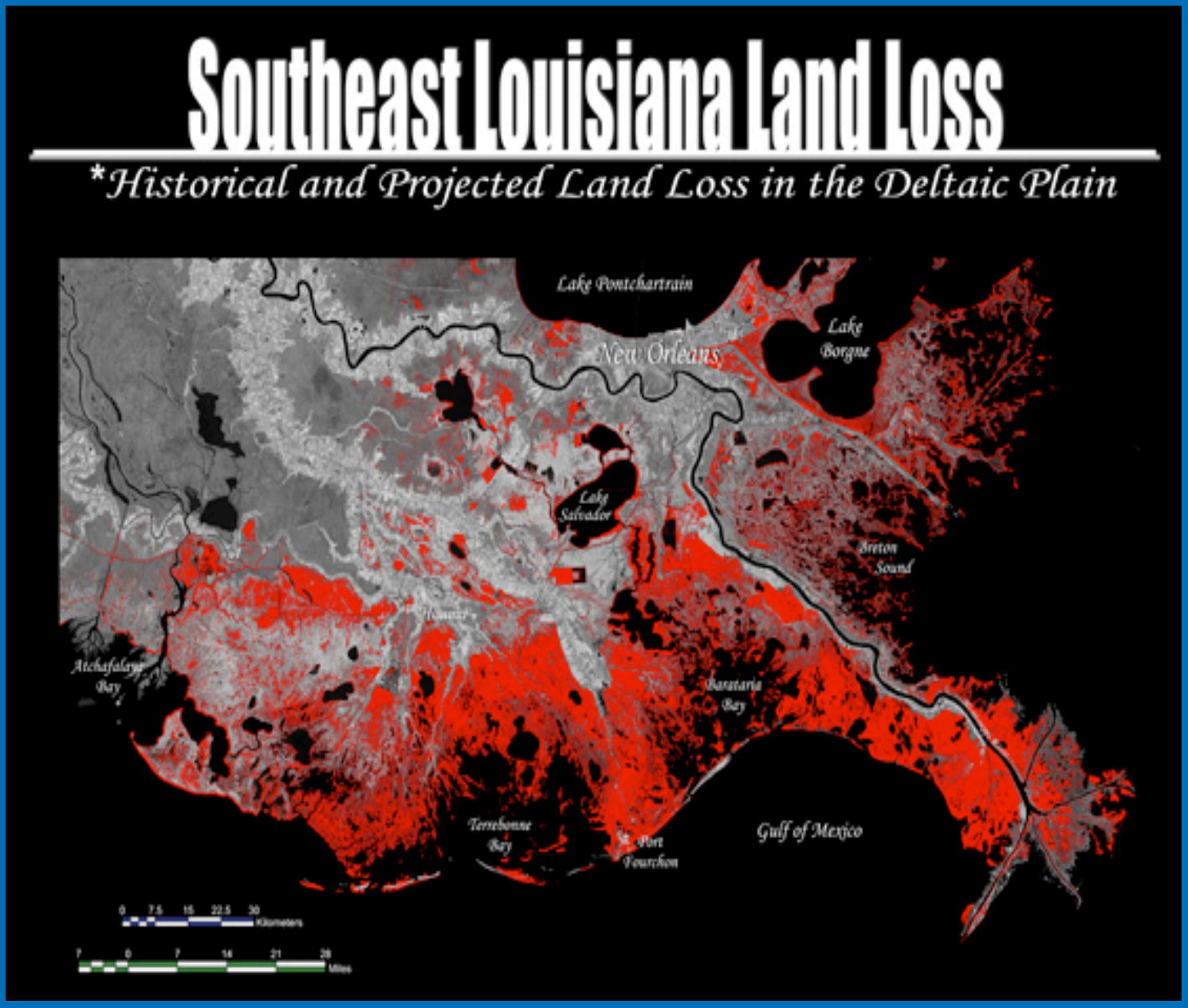


Figure 3. Historic and projected land loss in Southeast Louisiana from 1932 - 2050 (U.S.G.S., 2004).

The alteration of the Mississippi River began as early as the 1700s by European settlers. The LCA, which encompasses the city of New Orleans, became a thriving shipping and trade port center because of its access to the Mississippi River and the Gulf of Mexico. Centuries later the U.S. Army Corps continued development in the region by constructing canals and dams to facilitate the transport of goods and control river flow. **See Case Study 1: Mississippi River-Gulf Outlet for further detail.** The region was further developed for gas and oil extraction. The economically valuable infrastructure in the region, in addition to a growing population, necessitated the need for protection from frequent flooding and storm events.

By the early 20th century, the U.S. Army Corps began levee construction in the region to protect the most heavily populated areas and development centers. Levees provided a sense of security, which further supported increased development and population growth in the region (Wohl, 2000). In 1929, in part because of a massive levee failure in 1927, Congress passed additional acts authorizing the U.S. Army Corps to build additional levees in the area. As a result of these acts, the number of levees built along the Mississippi River steadily increased through the 20th century.

The implications of the large-scale manipulation did not go unnoticed. By the 1970's, scientists realized that human activities were leading to significant negative effects on the natural landscape, namely coastal land loss. In 2005, Hurricanes Katrina and Rita highlighted how the altered hydrology of the natural ecosystem resulted not only in the destruction of the natural landscape, but also in decreased flood protection. Previous efforts to protect the region from upstream flooding have resulted in increased vulnerability to damage from coastal storms. Coastal land loss has thus been seen as a vital threat to regional and national security.

Rapid Loss of Coastal Land

The coasts of Louisiana along the Gulf of Mexico are vanishing. Current land loss rates estimate that the LCA has lost over 1.2 million acres of land since 1930 (Barras et al., 2003; Barras et al., 1994; and Dunbar et al., 1992). In the 1970s, the rate of land loss was as high as 25,200 acres per year, slowing to about 15,300 acres per year between 1990 and 2000. Recent estimates predict that the region will continue to lose land at approximately 6,600 acres per year over the next 50 years, resulting in a total loss of 328,000 acres, approximately 10 percent of Louisiana's remaining coastal wetlands (Barras et al., 2003). Figure 3 shows historic and projected land loss in the region. This loss is significant because wetlands provide habitat for wildlife and serve as storm and flood protection for the human population and infrastructure in the region.

The natural cycle of sediment transport from the Mississippi River is important in the formation of barrier islands. As sediment is deposited at the mouth of the river, a delta forms; ocean currents and wave action distribute this sediment laterally to create beaches. This process continues over geologic time until the river changes course and its channel is abandoned, leaving behind a barrier island that protects the main coast from storm surges (Day et al., 2007; Penland, 1988). Man-made structures have altered this natural cycle, preventing the formation of barrier islands (Day et al., 2000; Penland et al., 1988). **See Case Study 2: Old River Control Structure for further detail.**

The cumulative effects of human and natural activities in the coastal area have severely hampered the deltaic processes. Consequently, the coastal area, which was once in a state of net land building, is now in a state of net land loss.

Natural Causes

Natural causes of land loss include subsidence and sea level rise.

- ***Subsidence***, or land sinking, is the combined effect of geological movement along faults (fractures in the Earth's crust) and the compaction of poorly consolidated sediments. In the Mississippi Delta, sedimentary deposits were not well compacted and has a high water content at the time of deposition. As sediments were deposited and the delta formed over hundreds of years, these poorly compacted sediments have compressed, leading to ongoing subsidence. The areas with the thickest deposition of these sediment types have the highest subsidence rates (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1998).

- ***Sea level rise*** due to climate change exacerbates land loss in the region. Some models predict that sea-level rise along the Gulf Coast to range from one to three feet over the next 100 years (Twilley et al., 2001).

The combined effect of global sea level rise and subsidence results in relative changes between land loss and the elevation of the land and sea. The rate of this relative sea level rise is estimated to be about 0.4 to 0.6 inches per year (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1998).

Anthropogenic Causes

The natural causes of land loss are exacerbated by anthropogenic structures, such as levees, dams and canals. The varied and complex ways these structures contribute to land loss include:

- Marsh conversion;
- Reduced sedimentation
- Salt water intrusion and;
- Changes in sediment transport cycle.

Marshes are characteristically transitional zones between wetlands and upland habitat. Historically, sediments were transported down the Mississippi River into the LCA and were deposited when the river's flood waters flowed over the wetlands. This counterbalanced natural subsidence, helping maintain coastal land area. Today, the flood waters and sediment depositions are restricted by levees, dams and reservoirs on the Mississippi River and its tributaries built in the last 200 years (Day et al., 2000; Penland et al., 1988). Spoil banks also restrict this movement. These are created when excavated material from the dredging of canals is piled along its sides. Figure 4 helps illustrate how manmade structures disrupt sediment transport and hydrologic cycles.

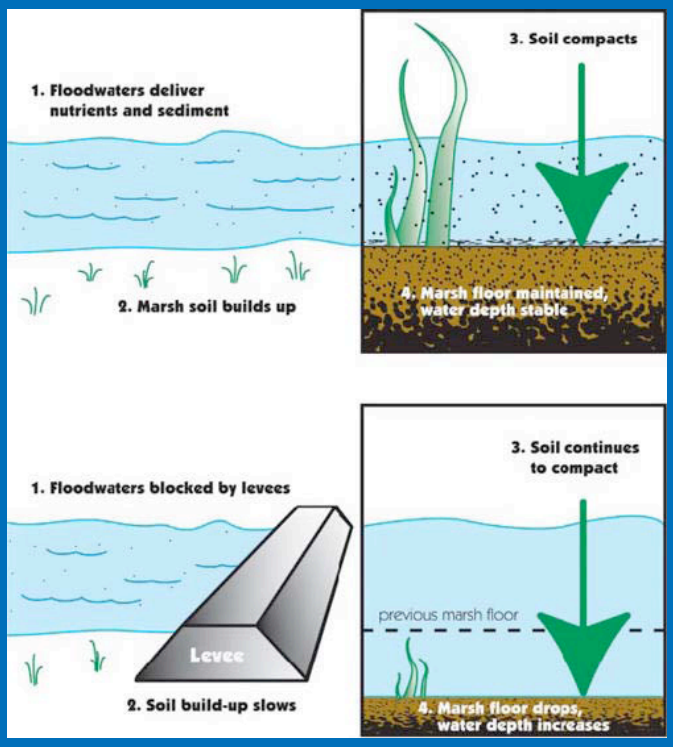


Figure 4. With floodwaters blocked, nutrients and sediment can no longer offset subsidence. (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 2005).

Once marshes lose their supply of sediment and freshwater, they are prone to salt water intrusion from the Gulf, which can kill the marsh, converting it to open water. The effect of manmade structures on the hydrology is shown in figures 5 and 6, which compares historic and existing floodable areas in the region.

Consequences of Land Loss

Coastal land loss leads to increased vulnerability of the natural ecosystems and the coastal population to storm surge and floods by stressing native vegetation and preventing the formation and replenishment of the natural features of the LCA landscape. In recent years, the U.S. Army Corps, along with the Government of the State of Louisiana and regional restoration groups, recognized the severity and implications of this problem and began working to develop regional solutions. These organizations have issued **restoration plans** and hurricane studies that provide a framework for addressing this problem. See Appendix 7 for report descriptions. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) confirms that climate change will increase the intensity of hurricane and storms and damage to ecosystems (IPCC, 2007). Acknowledging the urgency to account for these complex matters, Title VII implementation will concentrate on integrating piecemeal research findings and planning efforts in a more holistic manner.

Figure 5. Historic LCA Floodable Area. (Rosenzweig, 2007)

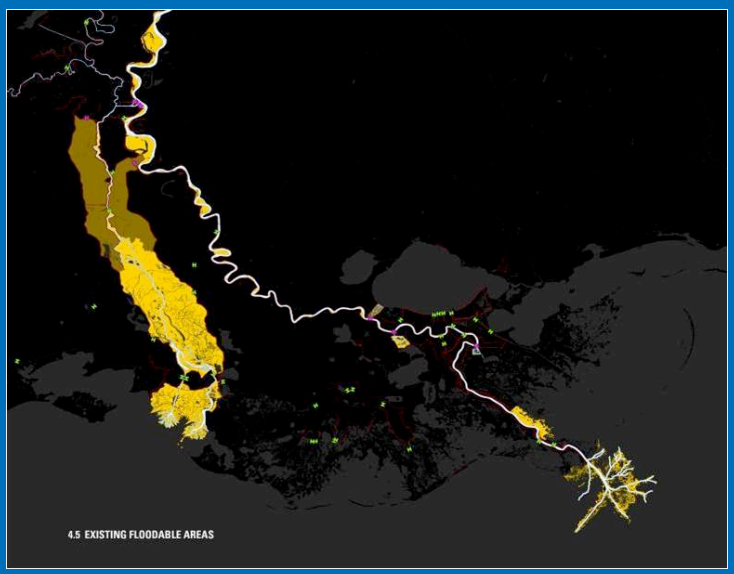


Figure 6. Current LCA Floodable Area. (Rosenzweig, 2007)

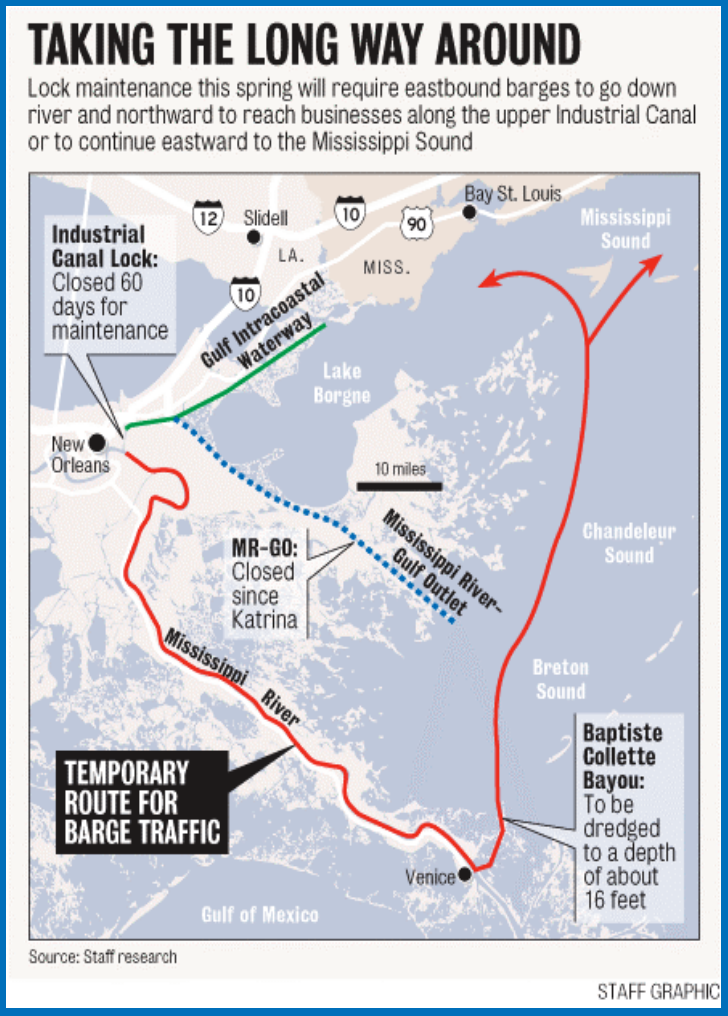
CASE STUDY 1: The Mississippi River-Gulf Outlet

The Mississippi River-Gulf Outlet (MRGO) is a 76-mile long man-made navigation channel connecting the Inner Harbor Navigation Canal near New Orleans to the Gulf of Mexico. Construction began on the channel in 1958. It was originally authorized to provide a safer, shorter route between the Port of New Orleans and the Gulf of Mexico. It later became clear that MRGO was exacerbating land loss in the surrounding marsh and increasing salt water intrusion in Lake Borgne and Lake Pontchartrain. This damaged the ecosystems of the two lakes and surrounding the channel. In response, the U.S. Army Corps released a restoration plan in early 2005, recommending environmental restoration of MRGO to protect critical wetland habitat. On April 6, 2005, the Water Resources Development Act of 2005 was introduced into Congress. It was never enacted, but clearly sought to address the growing concern over the implications of the channel, directing the U.S. Army Corps to develop modification plan for MRGO to prevent the salt water intrusion and coastal land loss.

Following Hurricanes Katrina (August 2005) and Rita (September 2005), a significant amount of sediment was deposited in the channel, decreasing its depth from 36 to 22 feet, creating serious navigational hazards and substantially increasing the cost of dredging. The hurricanes also resulted in levee damage along the channel, with several miles being overtopped and eroded. This resulted in significant damage to surrounding marshland. This post-hurricane political environment gave Congress the opportunity to change their priorities in the WRDA of 2007, explicitly deauthorizing MRGO for shipping in Title VII and directing the U.S. Army Corps to develop and implement a closure plan in addition to the restoration recommended in their 2005 report.

The modifications to MRGO are key components to the solutions given in Title VII. Environmental restoration of the areas affected by the channel is specifically listed in Title VII as an initial project with an authorized budget of $105,300,000 and the closure plan will be carried out in accordance with the Comprehensive Plan. On June 5, 2008, the U.S. Army Corps submitted their decision to completely block the entrance to MRGO, preventing all navigation indefinitely.

References: U.S. Army Corps of Engineers, New Orleans District. Integrated Final Report to Congress and Legislative Environmental Impact Statement for the Mississippi River-Gulf Outlet Deep Draft De-authorization Study. November 2007, revised June 2008.



Graphic showing the location of MRGO. Courtesy of The Times-Picayune, 2-11-08.

CASE STUDY 2: Old River Control Structure

History of the Watershed

The Mississippi River and Red River were once parallel rivers flowing through coastal Louisiana out to the Gulf of Mexico. In approximately the 15th century, the Mississippi River shifted course, as rivers naturally do, and formed a new horseshoe bend. The new horseshoe met up with the Red River and connected the two. The lower portion of the Red River was given a new name – the Atchafalaya River. The Mississippi River had a significantly higher flow of water. Through the new connection of the two rivers, the Atchafalaya became a distributary of the Mississippi, carrying a minimal amount of water down its channel to the Gulf of Mexico.

In 1831, Captain Henry Shreve dug a canal to connect the Mississippi River above and below the horseshoe bend established a shorter navigation route. This canal, known as Shreve's Cut, essentially eliminated the flow of water in the northern portion of the horseshoe, which eventually dwindled. The lower part of the horseshoe was later named the Old River and remained the only connection between the Mississippi and Red Rivers. A log jam between the Red and Atchafalaya Rivers prevented any significant flow of water to the Atchafalaya. Most of Red River flow at this time moved eastward through Old River into the Mississippi.

By 1840, the log jam was burned out and removed, which allowed more water to flow to the Atchafalaya, constantly reshaping it, making it deeper and wider. The Atchafalaya began capturing more of the Mississippi River each year. By 1880, flow in Old River had shifted and was now moving from the Mississippi into the Atchafalaya most of the year. The Atchafalaya was slowly capturing the Mississippi, threatening to become the main stem of the river. This was a likely course for the River to take. The distance to the Gulf of Mexico by way of the Atchafalaya was much shorter than the Mississippi: 142 versus 335 miles, respectively.

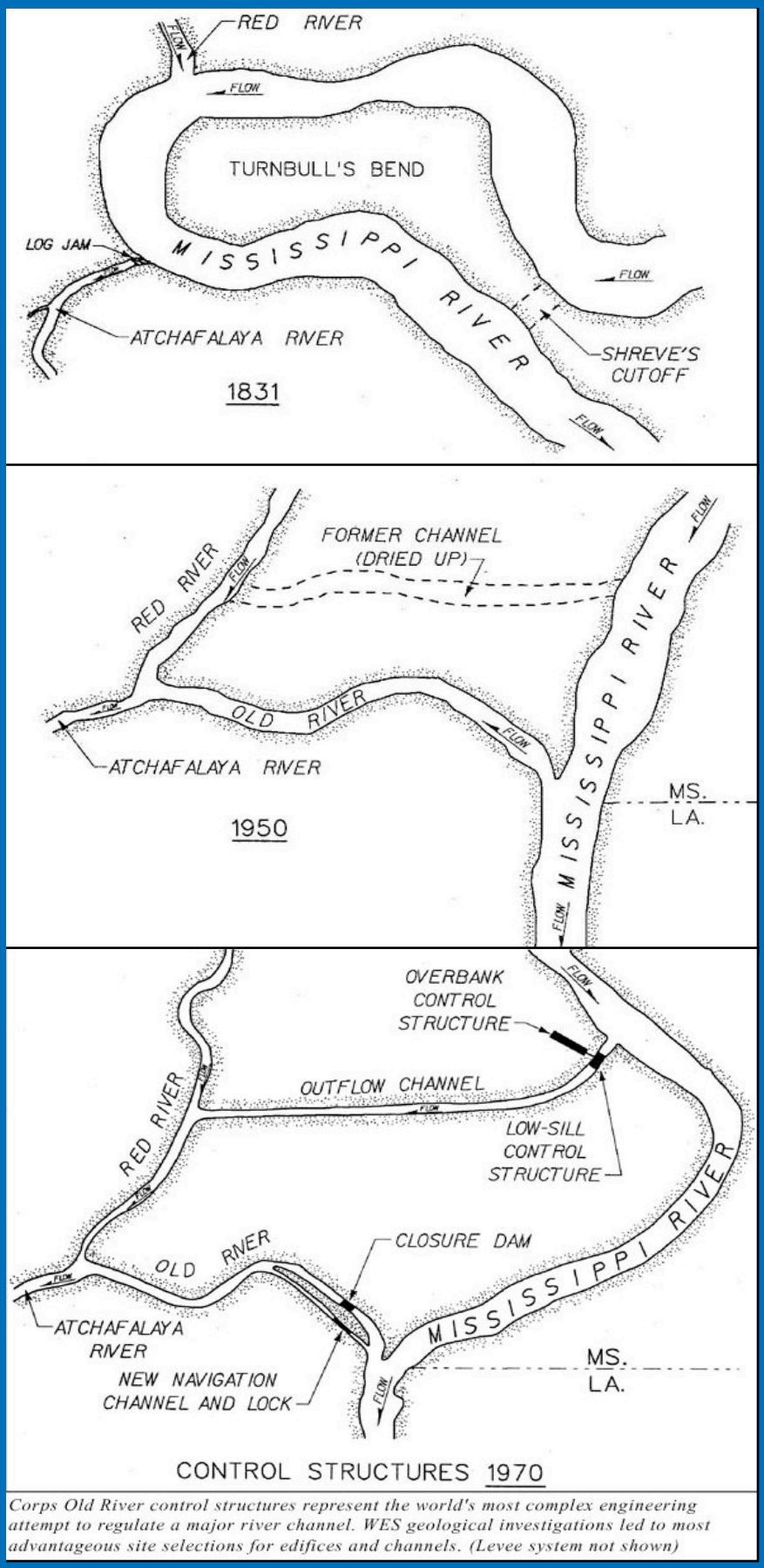
In the 1950s, the U.S. Army Corps concluded that the Mississippi would change its course to the Atchafalaya by 1990 if it were not controlled. Congress felt this was unacceptable because industries and communities had settled along the Mississippi from Baton Rouge to New Orleans and were dependent on the current course of the river. A complete shift to the Atchafalaya River Basin would effectively cut off these communities and economies.

Congress mandated that the flow be maintained at its current ratio of 70 percent to the Mississippi and 30 percent to the Atchafalaya. The U.S. Army Corps began building the Old River Control Structure (ORCS) complex in the early 1960s and has maintained this ratio since that time.

Re-evaluation

The U.S. Army Corps' Restoration Plan from 2005 recommends an Upper Atchafalaya Basin Study as one of six feasibility studies of large-scale and long-term restoration concepts. This study would include an evaluation of alternative operational schemes for the Old River Control Structure and would be funded under the Mississippi River & Tributaries program.

In recent years, previous Governors of Louisiana have requested that the U.S. Army Corps periodically increase the flow into Atchafalaya to improve water quality and aquatic resources in the basin. In 2001, the U.S. Army Corps increased diversion into the Atchafalaya to provide more freshwater to aid the crawfish industry.



Corps Old River control structures represent the world's most complex engineering attempt to regulate a major river channel. WES geological investigations led to most advantageous site selections for edifices and channels. (Levee system not shown)

Title VII of the WRDA 2007 calls for an investigation into the maximum effective use of water and sediment from the Mississippi and Atchafalaya Rivers for coastal restoration purposes. A re-evaluation of the operation of Old River Control Structure is part of this overall investigation.

By law, the Atchafalaya River must only receive 30 percent of the Mississippi River discharge. Re-evaluation could lead to a change in this law at the Federal level. This would provide the U.S. Army Corps flexibility in river management and operation of Old River Control to adapt to future changes in navigational and drinking water requirements. Additional Atchafalaya discharge would prevent increased salt water intrusion in the basin as well as provide sediment for rebuilding wetlands.

References:
McPhee, John. The Control of Nature. New York: Farrar Straus Giroux, 1989.

Image Reference:
Fatherree, Ben H. The History of Geotechnical Engineering at the Waterways Experiment Station 1932-2000. U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi, 2006.

TITLE VII - LOUISIANA COASTAL AREA

Water Resources Development Acts

The political history of the Water Resources Development Act of 2007, under which LCA Ecosystem Restoration Program is authorized, helps frame why and how Title VII emerged onto the national political agenda. The purpose of WRDA's is to provide the U.S. Army Corps with direction on national water resource management issues, such as navigation, flood prevention, and storm damage reduction. The last WRDA was passed in 2000, despite Congressional intent to pass a new one every other year. Previous versions of the WRDA have addressed the coastal Louisiana region, primarily for flood control projects and limited ecosystem restoration planning. The failed 2005 WRDA was notable in its attempt to authorize an ecosystem restoration program in Louisiana prior to Hurricane Katrina. However, the devastation caused by Hurricanes Katrina and Rita to the Gulf Coast in 2005 highlighted the need for an updated WRDA that authorized effective ecosystem restoration and storm protection projects.

Legislative History

Rep. James Oberstar (D-MN) introduced the WRDA of 2007 as H.R. 1495 in March 2007, and secured bipartisan support for the legislation in the House of Representatives. A companion bill in the Senate, S. 1248, was introduced by Sen. Barbara Boxer (D-CA) and also received bipartisan support (Library of Congress, 2008). Justifications for the passage of WRDA varied considerably during the debates on the floor and the senate. Some cited the time lag, since a bill had not been passed in the preceding seven years, others (e.g. Rep. Richard Baker, R-LA) cited the impact of Hurricanes Katrina and Rita, while the rest described it as an obligation to renew the water resources contract. Outside of Congress, supporters of H.R. 1495 included municipal and local governments, agricultural organizations, transportation advocates, and the shipping industry as well as unions.

There was some opposition to the 2007 WRDA, but no specific opposition to Title VII. Mainly, this opposition focused on the a) ballooning cost of the bill and b) weakening of attempts to reform the U.S. Army Corps of Engineers (Library of Congress, 2007). Despite the opposition, WRDA 2007 passed the Senate and House by a large margin in September of 2007. President Bush voiced similar concerns about the cost of the bill and exercised his veto power in November of 2007. However, a 2/3 majority of Congress overrode the veto shortly thereafter (House: 361-54; Senate: 79-14).

Title VII

Title VII focuses on addressing hurricane damage, storm protection and ecosystem restoration in the Louisiana Coastal Area to counteract coastal land loss, similar provisions to the failed 2005 WRDA. Several other state and regional planning efforts had been drafted in the meantime, however, Title VII was included as a means to coordinate the various planning and restoration efforts to develop a comprehensive long-term planning framework for the entire Louisiana Coastal Area.

Goals and Mandates

The goals of Title VII are to protect, preserve and restore the Louisiana Coastal Area. It sets mandates that will guide the decision making process for future flood control, navigation, and restoration projects throughout the region. The following mandates constitute the crux of the bill:

- Authorizing project modifications
- Implementing a science and technology program
- Developing a **Comprehensive Plan** by the end of 2009
- Creating a Coastal Louisiana Ecosystem Protection and Restoration **Task Force**

Project Modifications

Title VII prioritizes specific restoration projects for implementation and modifications. Prioritization criteria include projects that provide one of the following: a critical restoration feature; protection of a major population center; environmental benefit to the coastal Louisiana ecosystem; and the ability to absorb storm surge. Specific examples of these types of projects include raising levee heights to meet the 100-year flood protection, modifying the 17th street canal in New Orleans, reinforcing or replacing floodwalls, and creation of barrier islands and other shoreline features. **Case Study 3: Davis Pond Freshwater Diversion details an example of such project modifications.**

Science and Technology Program

The purpose of this program is to identify uncertainties and improve knowledge relating to the physical, chemical, geological, and biological baseline conditions in the Louisiana coastal ecosystem. This program also aims to identify and develop technologies, models, and methods to carry out this research and to advance and expedite the implementation of the Comprehensive Plan. Ultimately, this program will research best practices in flood control and ecosystem restoration, which will be incorporated into existing and future projects in the region, in accordance with the Comprehensive Plan.

Goals of Title VII:

The goals of Title VII are to **protect**, **preserve** and **restore** the Louisiana Coastal Area. It sets mandates that will guide the decision making process.

The Comprehensive Plan

The Comprehensive Plan will include projects that will be chosen according to their potential to successfully restore ecosystems and provide flood protection to communities, which are ranked according to population density and existing level of protection.

The Comprehensive Plan must integrate findings of the U.S. Army Corps' Louisiana Coastal Area Ecosystem Restoration Study of 2005 and Louisiana's Comprehensive Master Plan for a Sustainable Coast (Louisiana Coastal Protection and Restoration Authority, 2006). In addition, the Comprehensive Plan will be integrated into the Comprehensive Hurricane Protection Study authorized by Title I of the Energy and Water Development Appropriations Act, 2006 (119 Stat. 2247). *See Appendix 7 for additional information on the current projects and plans.*

The legislation delegates the responsibility of writing the Comprehensive Plan to the U.S. Army Corps, which is due by December 31, 2009. However, Title VII also establishes that the Task Force must make recommendations to the Corps regarding the development of the Comprehensive Plan. The Task Force is also mandated to advise the U.S. Army Corps in regard to other policies, strategies and programs for addressing conservation, protection, restoration, and maintenance of the Louisiana coastal ecosystem.

The Task Force

The Task Force will include representatives from eleven state and federal agencies, which are depicted in Figure 7. The Task Force is thus comprised of staff members from specific agencies with expertise in the technical challenges of coastal restoration. The Task Force is given the authority to establish working groups that will provide additional advice in planning, engineering and design. The working groups will provide scientific expertise in coastal ecosystem restoration as it relates specifically to this region.

Funding Authorization and Appropriations for Title VII

Congress has appropriated over $6 billion for projects in the LCA. While Title VII attempts to balance ecosystem restoration and flood and storm protection projects, these appropriations have directed the majority of funding towards traditional flood and storm protection projects. A consolidated appropriations bill (H.R. 2764/ P.L. 110-161) passed by Congress in December 2007 allocated $2.95 million for the continuation of the U.S. Army Corps' Louisiana Coastal Protection and Restoration study. A supplemental bill passed in June of 2008 appropriated an additional $5.76 billion "for necessary expenses related to the consequences of Hurricane Katrina and other hurricanes of the 2005 season". Funding was also allocated to modify and construct new projects that will "provide hurricane, storm and flood damage reduction in the greater New Orleans area" equivalent to the highest standard the U.S. Army Corps will guarantee for storm protection (equivalent to the protection that could be expected for 100 years).

At the writing of this report, the $2.95 million for the Louisiana Coastal Protection and Restoration study is the only specific reference to Title VII provisions. So while funds are available for ecosystem restoration, the Comprehensive Plan is needed to ensure a balance between traditional flood control strategies with ecosystem restoration. This will provide for a more integrated and holistic regional approach to solving the problems of coastal land loss, ecosystem degradation and storm vulnerability. See Appendix 8 for additional information.

Title 7 Water Resources Development Act

Task Force Organization

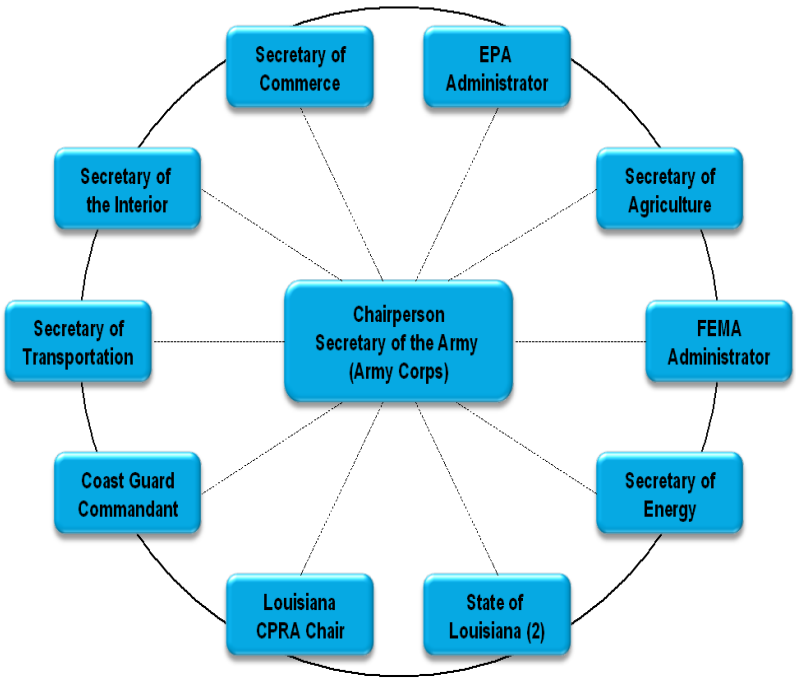


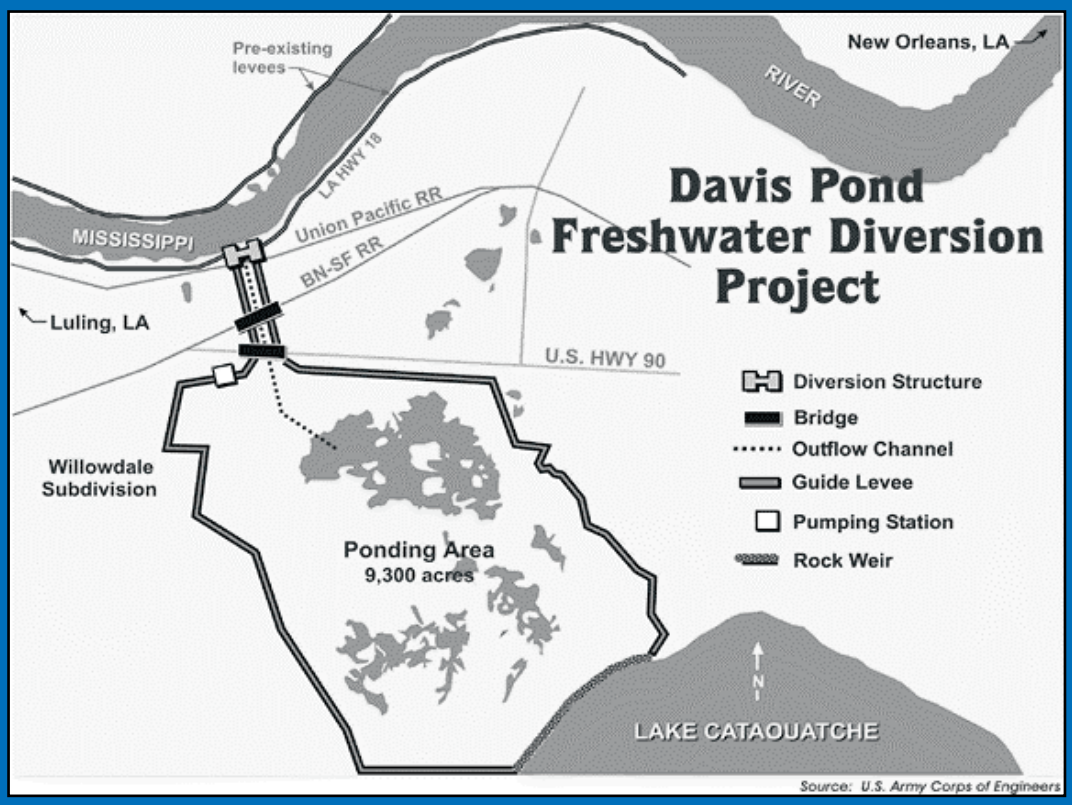
Figure 7. Title VII-WRDA 2007 Task Force Organizational Structure

CASE STUDY 3: Davis Pond Freshwater Diversion

The Davis Pond Freshwater Diversion Structure was expected to restore former ecological conditions by combating land loss, enhancing vegetation, and improving wildlife habitat in the Barataria Bay estuary (project zone pictured below). Davis Pond is meant to imitate historic spring floods, bringing a controlled flow of freshwater from the Mississippi River into the Barataria Bay estuary. The inflow of freshwater is meant to restore marsh conditions by bringing nutrients and sediment into the coastal zone (see project area below). Inflow of freshwater will be directed into the estuary by way of four iron gated – 14' by 14' box culverts built into the Mississippi River levee.

As described by the U.S. Army Corps' website, "An inflow channel 535' long x 85' wide will direct river water into the structure, while an outflow channel more than 11,000' long x 120' wide will extend behind the structure into the pond area, and ultimately into the estuary. The total project area comprises 10,084 acres, including 9200-acre pond area."

Diversion of flow into the estuary is determined by monitoring salinity levels and other ecological measures in the project area.



Davis Pond Freshwater Diversion Project location map.

Davis Pond was expected to preserve 33,000 acres of marsh and benefit 777,000 acres of marshes and bays. These wetland areas support wildlife such as a bountiful oyster crop, shrimp and fish breeding habitat, which are valuable economic resources for the area, and also is an important habitat of migratory waterfowl. These ecological services have been valued at $15 million for fish and wildlife, plus $300,000 for recreation, annually (Davis Pond Freshwater Diversion Structure pictured below).

The Caernarvon Freshwater Diversion Structure is a smaller scale example of a successful ecosystem restoration project in the Louisiana Coastal area, which was used as a model for a large project, Davis Pond. Located 15 miles below New Orleans, Caernarvon was completed in February 1991. The project cost $25.9 million. During the next 50 years, Caernarvon is expected to re-establish favorable salinity conditions in the area, further enhancing fish and wildlife productivity.

According to the U.S. Army Corps website, "Since the Caernarvon Freshwater Diversion Structure began operating, new land and marsh vegetation have appeared and oyster production on the public grounds has more than tripled."

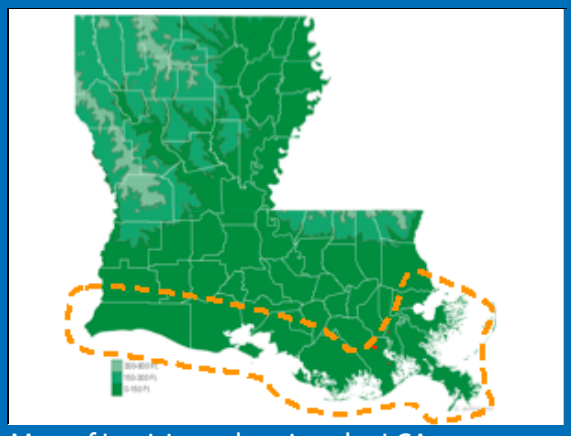
These projects provide examples of the ecosystem restoration structures that will be scaled up and expanded in number according to the Congressional mandate of Title VI of the Water Resources and Development Act of 2007. The figure below attempts to illustrate the relationship between projects like Caernarvon and Davis Pond and how they will be scaled up throughout the LCA.

References:
U.S. Army Corps of Engineers. 2004. Davis Pond Freshwater Diversion Structure. 21 November 2008. [http://www.mvn.usace.army.mil/pao/dpond/davispond.htm]

Image References:
U.S. Army Corps of Engineers. 2004. Davis Pond Freshwater Diversion Structure. 21 November 2008. [http://www.mvn.usace.army.mil/pao/dpond/davispond.htm]

Louisiana Coastal Wetlands Conservation and Restoration Task Force. 2002. Davis Pond Freshwater Diversion Structure. 21 November 2008. [http://www.lacoast.gov/programs/DavisPond/map.gif].

Geology.com. 2008. Louisiana Elevation Map. 21 November 2008 [http://geology.com/state-map/maps/louisiana-state-map.gif].



Map of Louisiana showing the LCA circled in orange.

PROGRAM DESIGN AND IMPLEMENTATION PROCESS

Our research and interpretation of the legislation demonstrates a necessity to synthesize individual efforts to meet the complex goals in developing a program design and implementation process for Title VII. The mandated establishment of the Task Force will appropriately fill this role by facilitating cooperation among the involved agency representatives. In addition, the Task Force will utilize its authorized option of forming working groups to acquire further scientific inputs in order to devise sound remedies to the issues.

The Task Force

Title VII projects must address the complex issues of restoring and constructing hurricane and storm protection structures as well as completing the Comprehensive Plan by December 31, 2009. To aid this process, the legislation establishes a multi-stakeholder task force that consists of representatives from federal and state agencies as shown in figure 7.

Integration of Expertise

The Task Force integrates officers from its member agencies on the basis of project needs, in order to provide recommendations on the Comprehensive Plan to the U.S. Army Corps. According to the legislation, the Task Force may also form technical working groups to acquire further information and knowledge on project execution and future planning when necessary. These working groups will bring together earth system managers, wetland restoration professionals, and technology consultants to inform the needs identified for Title VII projects. During the first year of implementation, the Task Force will consider the input and advice from working groups in drafting the Comprehensive Plan. In light of the varying degrees of subsidence-caused land loss throughout the LCA (see Figure 8), the Task Force design must allow for better scientific understanding of such issue in individual provinces. A coherent institutional structure will therefore be essential to managing the information flow among Task Force members.

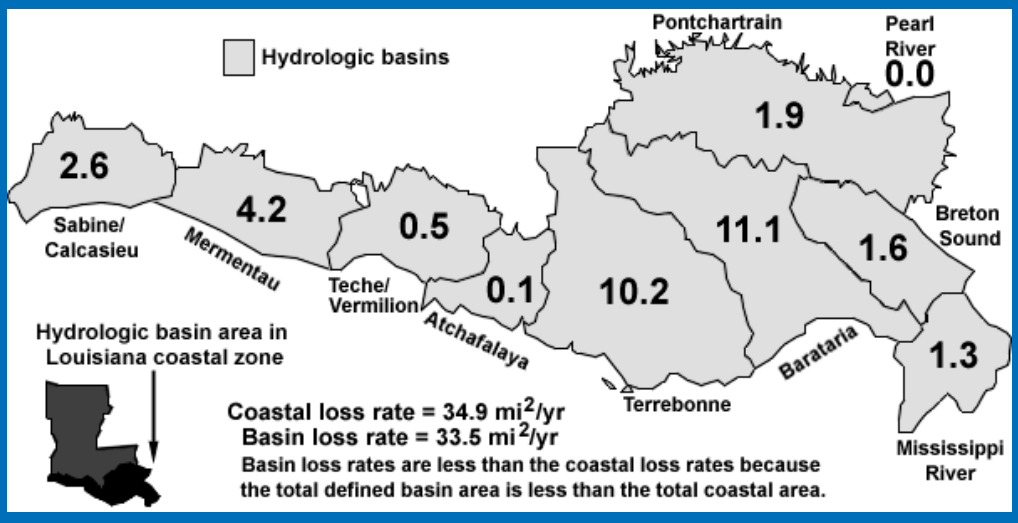


Figure 8. Estimated rates of land loss in different regions of the LCA (Barras, J.A. et al., 1994)

Task Force Design Options

Since Title VII indistinctly describes the logistical operation of the Task Force, there are various design options it could adopt during legislative implementation. Our team proposed three options for Task Force operation, which we evaluated based on effectiveness (in meeting the legislative goals) and efficiency (uses of time, labor, and budget):

1. The Project Implementation Oriented Task Force would primarily focus on effective short-term protection of human populations and infrastructure against future hurricanes and floods. This option would prioritize efficient use of time, labor, and budget in implementing authorized project construction over long-term restoration and preservation.

2. The Research & Development (R&D) Oriented Task Force would focus on achieving long-term effective protection, preservation and restoration by taking a science and technology approach. Particularly, this Task Force would highlight future well-being of humans and the ecosystem of LCA and focus less on delivering immediate results.

3. The Comprehensive Plan Oriented Task Force would balance short-term hurricane and flood protection and long-term preservation and restoration of the LCA. It would efficiently execute the short-term goal of drafting the Comprehensive Plan while yielding long-term effectiveness in improving social, environmental, and ecological conditions in the region.

Figures 9 and 10 below summarize the efficiency and effectiveness of the three design options.

Task Force Orientation	PROTECTION	PRESERVATION	RESTORATION
Project Implementation	+	+/-	
Research & Development		+	+
Comprehensive Plan	+	+	+

Figure 9. Effectiveness Analysis of Program Design Options

Task Force Orientation	TIME	COST	LABOR
Project Implementation	Short-term	Low	Army Corps/ Construction Experts
Research & Development	Long –term	High	External experts
Comprehensive Plan	Medium-term	Medium	Army Corps & External experts

Figure 10. Efficiency Analysis of Program Design Options

Optimal Program Design: The "Hybrid" Task Force

Based on an organizational analysis and reference to the task force models of the Florida Everglades, Chesapeake Bay, and the California Bay/Delta (CALFED) restoration projects, our team concludes that a "Hybrid" Task Force (see Figure 11) combining elements of the above three design options is the most fitting (Heikkila and Gerlak, 2005).

This Task Force design primarily involves state and federal agencies. A representative of the U.S. Army Corps will serve as Task Force Chair. The State of Louisiana and the Louisiana Coastal Protection and Restoration Authority will also be actively involved in providing local understanding of issues being addressed. This design also uses the aforementioned option of forming working groups. Specifically, our team proposes the creation of two types of working groups:

- ***Geographic***: responsible for identifying provincial research and development needs for the Programmatic working groups and also implementing place-based projects in each of the five sub-provinces in the LCA
- ***Programmatic***: focused on scientific research regarding best practices of restoring wetland ecosystem and flood protection features and conducts spatial analysis and planning throughout the LCA

These working groups will communicate their findings with each other and also with the federal and state agencies to complete the feedback loop of the structure. During the first year of implementation, collaboration between the two types of working groups will occur in scientific research and performance assessment in order to develop the Comprehensive Plan in a timely manner.

Integrating the range of functions performed by each component is a complex mission (see Figure 12). Also, Task Force and Working Group participants are already full-time employees of their respective agencies and will only provide a portion of their time to Task Force work. For these reasons, a full-time administrative body will be created to facilitate communication and collaboration among Task Force members.

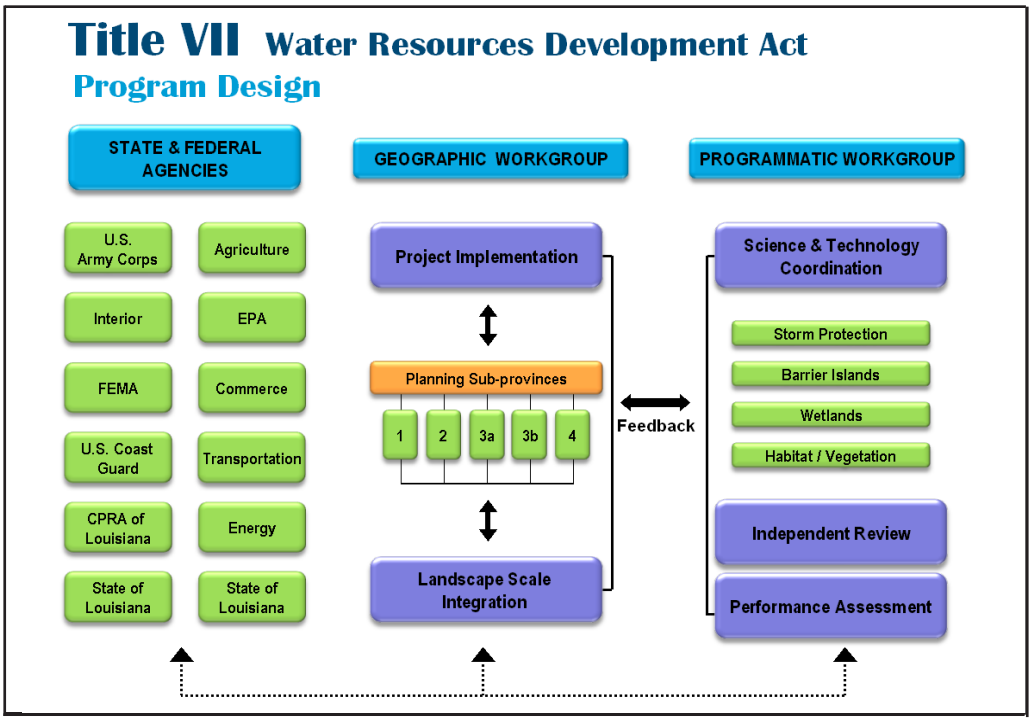


Figure 11. "Hybrid" Task Force Organizational Structure

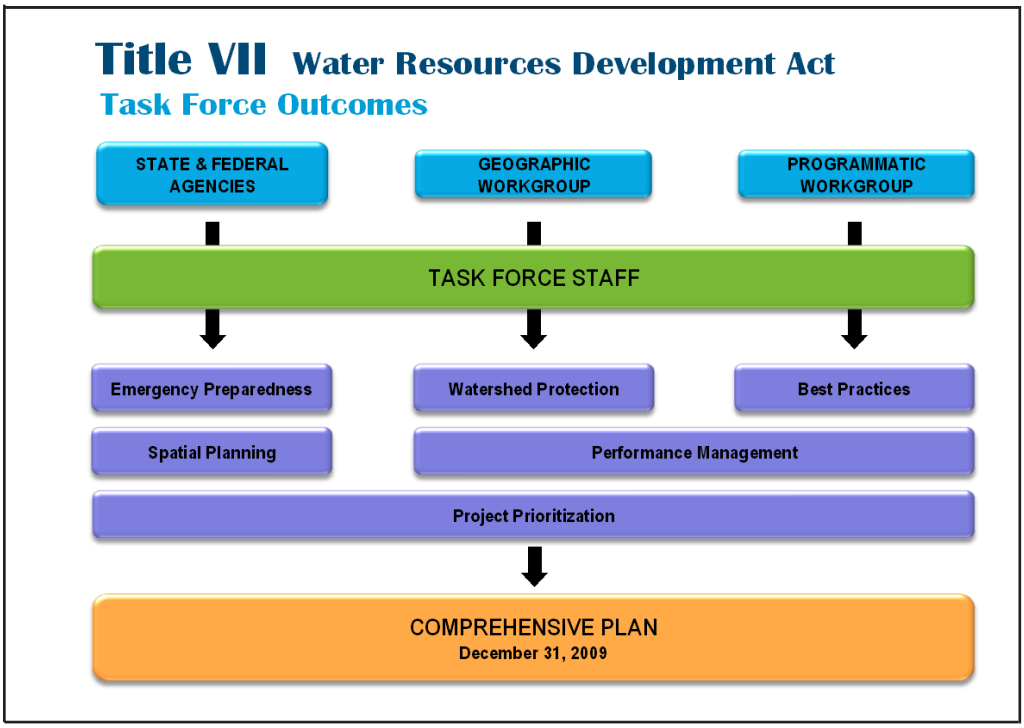


Figure 12. Deliverables of Task Force Components

The Task Force Administration will be housed within the U.S. Army Corps because Title VII charges the U.S. Army Corps with the responsibility to create the Comprehensive Plan. Moreover, the U.S. Army Corps has vast experience in working on structures in the LCA and can provide funding for Task Force operation. Internally, the U.S. Army Corps has created subsidiary units after Hurricane Katrina such as the Interagency Performance Evaluation Task Force (IPET) to focus on project management, demonstrating a desire to improve upon its former negative reputation (U.S. Army Corps of Engineers, 2005). Title VII also requires the Task Force to report to the U.S. Army Corps.

Staffing the Task Force

The U.S. Army Corps will hire an Executive Director (ED) to lead the Task Force Administration. An Executive Assistant and two Deputy Directors will report to the Executive Director. The executive staff will coordinate with the geographic working groups, programmatic working groups, and the Implementation team. The Implementation Team works with all agencies to ensure that legislative mandates and planning efforts of other Task Force components are translated into measurable outcomes, including project implementation, completion of the Comprehensive Plan, and performance management monitoring. *See Appendix 3 for detailed position descriptions.*

All of the Task Force components will aim at balancing protection and restoration, linking science to outcomes, synergizing project-level and system-wide planning, and encouraging adaptive management. *See Appendix 4 for the Implementation Year 1 Calendar and Task Distribution.* The ultimate goal of this Task Force design is to submit the Comprehensive Plan by December 31, 2009 and compile a progress report for the U.S. Congress every two years beginning from the passage date of Title VII.

As shown in Figure 13, a schedule of necessary tasks to achieve that first year's goals was created designatingthe responsible organization for each task. This calendar focuses on who will work for whom, who will be responsible for which tasks, and what skills will be needed to do the work. The calendar is broken up into a quarter system and it takes into account the budgetary constraints. A key component of the calendar is the allowance for performance management and adaptive management.

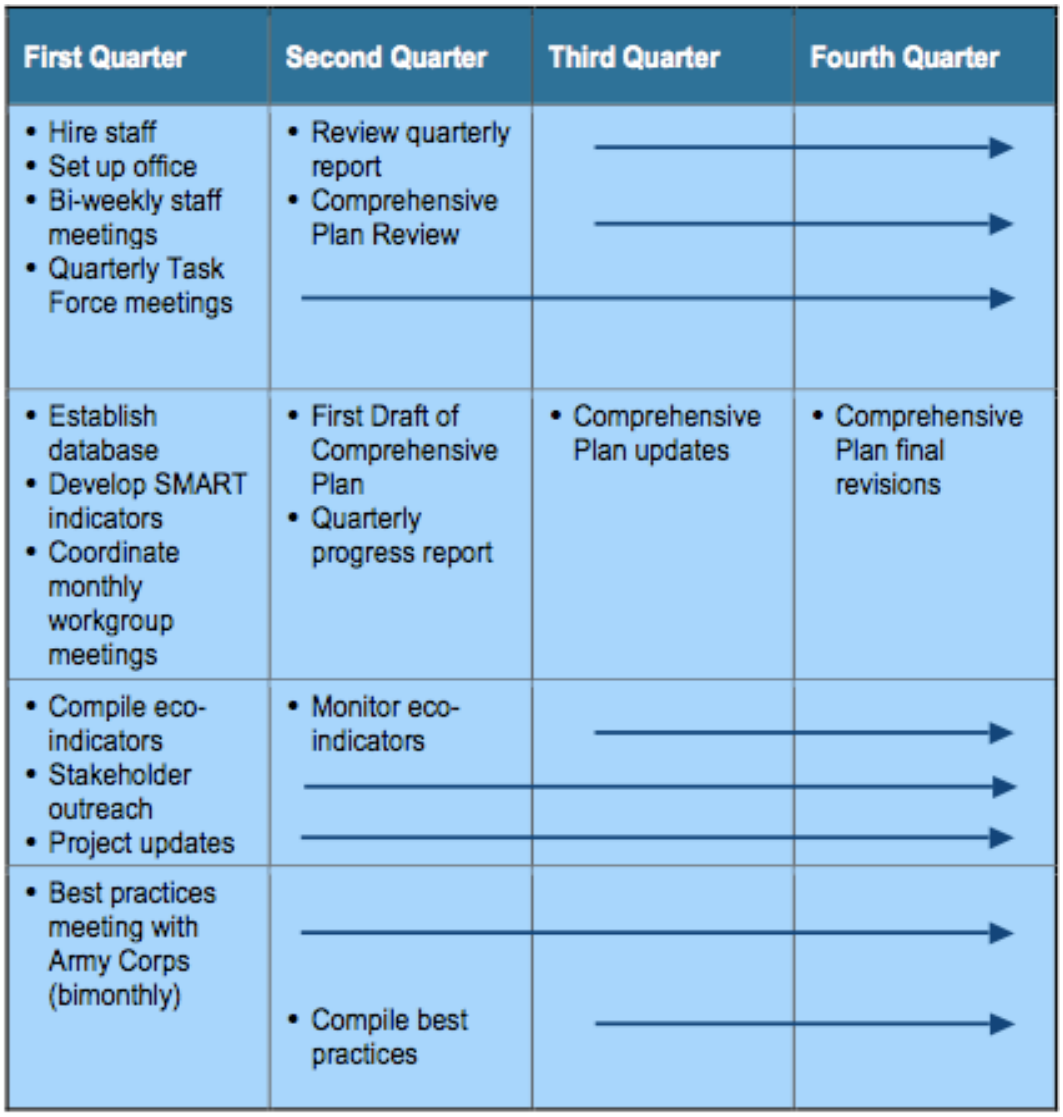


Figure 13. Simplified task distribution and Year 1 Calendar for Title VII Implementation.

The break down of the Task Force operations on a quarterly basis highlights the importance of institutional feedback and adaptive management in delivering legislative goals:

First Quarter (January—March 2009)

The Executive Director's team will hire staff and set up an office for the Task Force Administration, schedule frequent meetings for the Task Force Administration and quarterly meetings for the involved Task Force agencies to guarantee collaboration. The Implementation Team will begin establishing goals for the first year of implementation, such as creating a performance assessment and management database, developing "SMART" (specific, measurable, attainable, relevant, and timely) performance indicators for easier monitoring, and liaising with the Geographic as well as Programmatic working groups. The Geographic Working Group (GWG) will start to compile ecological performance indicators, reach out to stakeholders and provincial communities, and continue to report project updates throughout the year. The Programmatic Working Group (PWG) will start seeking best practices for implementing Title VII projects and making recommendations to the U.S. Army Corps, will continue doing for the rest of the year.

Second Quarter (April—June 2009)

The Executive Director's team will review first quarter progress reports from the working groups and the Implementation Team. Also, the Executive Director will begin tracking the progress of creating the Comprehensive Plan and continue doing so in the next two quarters. Significantly, the Implementation Team will submit the first draft of the Comprehensive Plan to the Task Force agencies and the Administration as well as a quarterly implementation progress report.

Third Quarter (July—September 2009)

The Implementation Team will submit its second update on the Comprehensive Plan while other Task Force components will fulfill their respective responsibilities.

Fourth Quarter (October—December 2009)

Under the leadership of the Executive Director's team, the Implementation Team will continue to incorporate research findings and expert knowledge gathered from the working groups into the revisions for the Comprehensive Plan. Simultaneously, other Task Force components will fulfill their obligations while cooperating with one another.

BUDGETARY CONSIDERATIONS

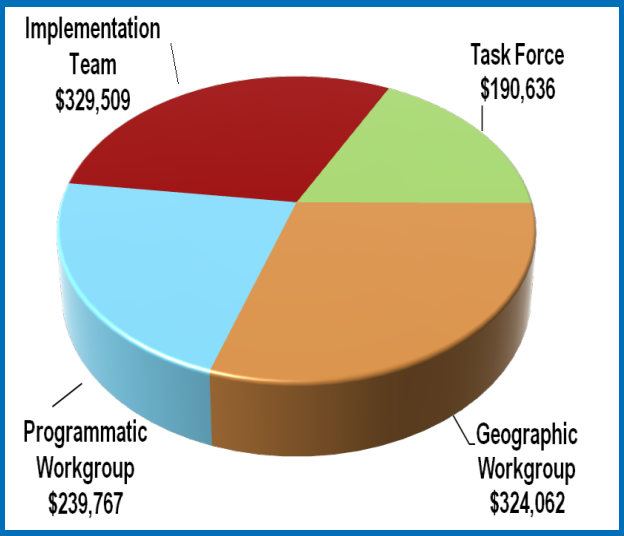
Our political background and issue analysis confirms that while the total authorizations for Title VII are over $2billion, the legislation does not explicitly authorize any funds toward setting up the Task Force. Member participation and the level of financial contribution therefore rely on the willingness of each involved party. Title VII currently has been appropriated $5.76 billion for population protection and only $2.95 million for ecosystem restoration. The budget allocation implies that the Task Force must balance these complementary needs.

In order to reach the goals of the legislative mandate and complete the Comprehensive Plan within the designated time, we have outlined our financial needs for the first year. We project to need $1.08 million, just 0.03% of what has been authorized. *See Appendix 8 for a detailed description of the total amount authorized under the legislations verses the amount appropriated*. The majority of the program's first year budget will be spent on staffing, but concessions for travel, supplies and equipment have also been allotted. Since the hiring of some staff will occur after the first quarter, the budget does not reflect the full-time salaries for those positions.

Program Budget

The budget for the Task Force and its administration has been broken down into four program budgets, which help justify costs and ensure adequate resources. See Figure 14 for budgetary allocation and distribution. *See Appendix 5 for a line item budget.*

Program Budget



Breakdown of Expenses

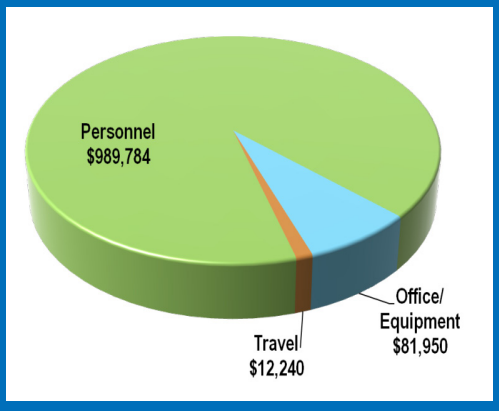


Figure 14. Budgetary allocation and distribution. Total Cost - $1.08 million

PERFORMANCE MANAGEMENT

While a detailed calendar and budget are important to ensuring the operations of the program are up and running in the first year, they are not a guarantee of program success. The effectiveness of the WRDA will depend on the ability of the Task Force to provide oversight and guidance to the U.S. Army Corps on restoration projects, as well as evaluate lessons learned from project monitoring, promote research, develop best practices, conduct stakeholder outreach, and assimilate findings into the Comprehensive Plan. A formalized Performance Management System will enable the Task Force to track progress made toward restoration goals as stipulated under WRDA Title VII. The guiding rationale of this Performance Management System is:

1. How do we know how well we are doing?
2. How can we do better?

Performance Management System: Organization and Implementation

The Implementation Team of the Task Force, which consists of the Project Coordinator, Comprehensive Plan Coordinator, and the Performance Management Specialist, will design and operate the Performance Management System (see Figure 15 for team chart). This team will be responsible for assessing Task Force performance by tracking measurable indicators of progress.

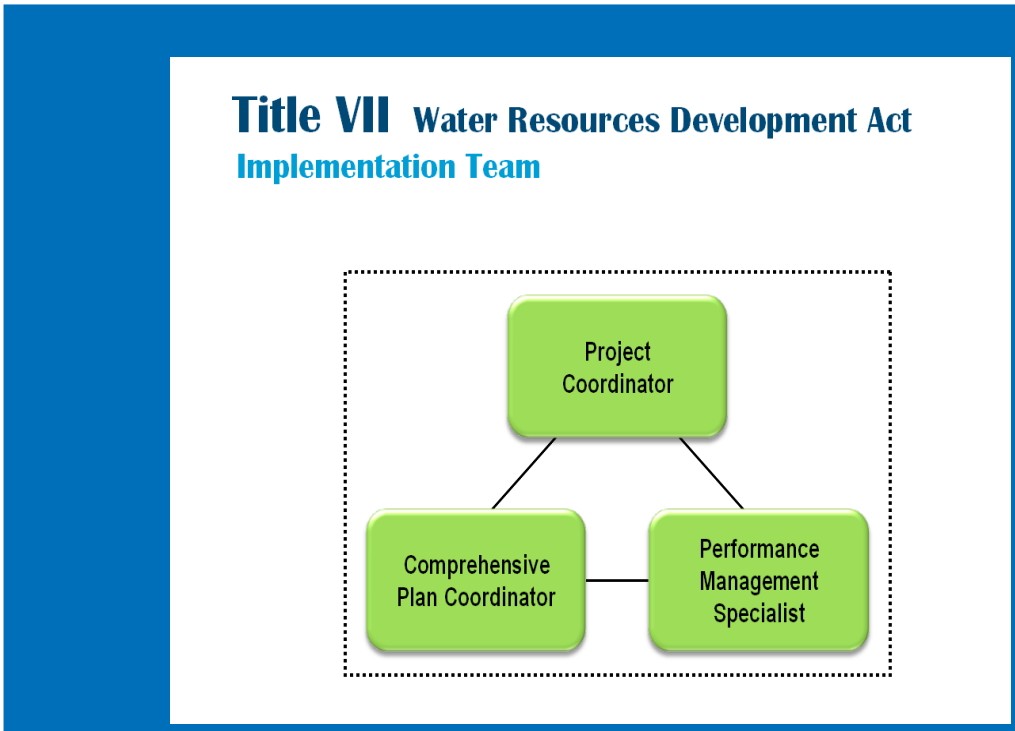


Figure 15. Implementation team

The Performance Management System will provide a rigorous approach to evaluating Task Force activities as well as implementing restoration projects and creating the Comprehensive Plan. The respective duties of each of the three Performance System Managers are outlined below:

Restoration Project Coordinator

- Coordinates research activities, develops best practices, and related activities for working groups.
- Transmits data into one cohesive Task Force-wide database system.

Comprehensive Plan Coordinator

- Ensures that working groups are meeting deadlines and developing the information essential to the completion of the plan.

Performance Management Specialist

- Oversees that the performance management indicators and processes are incorporated in all aspects of the Task Force's work.
- Collaborates with the Restoration Project Coordinator and the Comprehensive Plan Coordinator to measure status and outcomes of Task Force goals.

The three-tiered organizational structure is designed to ensure that the Task Force continually assesses its progress and potential for improvement through information measurement, collection, reporting and feedback *See Appendix 6 for details on the three-tiered structure.* The team will report results directly to the Executive Director, who is ultimately responsible for ensuring that progress is made toward Task Force objectives. In addition, performance metrics include clear objectives and SMART (Specific, Measurable, Attainable, Relevant, Timely) measurement techniques and indicators.

Measurable Indicators of Progress

The Performance Management System includes a suite of indicators, specific to the LCA restoration program, which will help the Task Force ensure that they are successful in meeting its immediate goals. It also establishes a process by which the long-term success indicators will be developed, adapted, and integrated with the Performance Management System for the first year. *The detailed description of these indicators can be found in the Performance Management Table in Appendix 6.* In general, the Performance Management System contains three categories for indicators of progress:

1. ***Task Force administrative and organizational performance***

   - Examples of measurable indicators of performance will be measured by frequency of Task Force meetings, high attendance rates, as well as the on time completion of the first year tasks presented in the master calendar.

2. ***Restoration project status and success***

   - An example of a measurable indicator used in assessing the status of restoration projects is a simple ratio of initiated to completed projects that is tracked each quarter. This metric is useful as it contains evaluation of both status and outcome of the projects. More specific ecological indicators of success, however, will be developed by the performance management staff, in conjunction with the working groups.

   Project status = Initiated Projects : Completed Projects

3. ***Comprehensive Plan implementation***

   - Measurement of this goal will also require assurance that a high quality report is delivered.

CONCLUSION

Implications for a Global Crisis

Title VII of the WRDA of 2007 confronts the challenges of addressing short-term flood and storm protection and long-term coastal restoration, as well as ecosystem preservation in the LCA. These issues are exacerbated by the impacts of climate change, complicated by varying project timeframes, and competing political interests.

This report presents a program design and implementation process that addresses a variety of issues comprehensively within the constraints of deadlines and budgets. Importantly, our team's proposal is the outcome a six-month research project on relevant science and management issues, as well as our interpretation of the Title VII legislation. Exhaustive peer review and revisions have taken place to ensure that our proposal complies with the legislative goals. If implemented successfully, Title VII would succeed in safeguarding the two million residents in the LCA from hurricane vulnerability and ecosystem decline in the immediate term. Looking into the future, Title VII would strive towards creating a sustainable water-resource planning framework that accounts for both human safety and ecosystem well-being.

While Title VII is specific to the geographic coverage of coastal Louisiana, the issues seen in the area are witnessed around the world, demonstrating the importance of acknowledging the interrelation between an intact coastal landscape and socioeconomic prosperity.

Historically, human civilization has concentrated along the coast worldwide due to geographic accessibility and resource availability. Today, 2.75 billion of the world population resides in coastal areas while 50 percent of the world's wetlands are suffering from heavy degradation. The projected impacts of climate change, such as sea level rise and extreme climatic events, pose the livelihood of these coastal populations at a higher risk. These crises create opportunities for a paradigm shift in environmental planning that emphasizes system-based management, which integrates human and nature to ensure future sustainability. Therefore, Title VII could be a pioneer for future legislation that may attempt to regulate large-scaled coastal area management in regions experiencing similar issues, both nationally and internationally.

REFERENCES

Title Page Image:

Turner, Tyrone. "Gone with the Water." Online image. October 2004. Louisiana's Wetlands at National Geographic Magazine. National Geographic Magazine. 10 September 2008. [http://ngm.nationalgeographic.com/ngm/0410/feature5/index.html].

All other Images and References:

America's Wetland Resources. 2008. Mississippi River Anatomy. 4 November 2008. [http://www.americaswetlandresources.com/background_facts/detailedstory/MississippiRiverAnatomy.html].

Barras, J.A., P.E. Bourgeois, and L.R. Handley. 1994. Land loss in coastal Louisiana 1956-90. National Biological Survey, National Wetlands Research Center Open File Report 94-01.

Barras, J., S. Beville, D. Britsch, S. Hartley, S. Hawes, J. Johnston, P. Kemp, Q. Kinler, A. Martucci, J. Porthouse, D. Reed, K. Roy, S. Sapkota, and J. Suhayda. 2003. Historicaland projected coastal Louisiana land changes: 1978-2050. USGS Open File Report 03-334.

Bullard, Robert D. and Wright, Beverly. "Washed Away by Hurricane Katrina: Rebuilding a 'New' New Orleans." Growing Smarter: Achieving Livable Communities, Environmental Justice, and Regional Equity. Ed. Robert D. Bullard. Cambridge: MIT Press, 2007.

Day, J. W. et al. Restoration of the Mississippi Delta: Lessons from Hurricanes Katrina and Rita. Science 315 (2007): 1679-1684.

Day Jr., J.W. et al. Pattern and process of land loss in the Mississippi delta: a spatial and temporal analysis of wetland habitat change. Estuarine Research 23 (2000): 425– 438.

Dunbar, J.B., L.D. Britsch, and E.B. Kemp. Land loss rates: Louisiana Coastal Plain Technical Report GL-92-3. U. S. Army Engineer Waterways Experiment Station, Vicksburg MS.1992.

Flickr.. http://www.flickr.com/photos/94388891@NOO/sets/72057504051306789/

Heikkila, Tanya, and Andrew K. Gerlak. The Formation of Large-scale.Collaborative Resource Management Institutions: Clarifying the Roles of Stakeholders, Science, and Institutions. Policy Studies Journal 33.4 (2005): 583-612.

Intergovernmental Panel on Climate Change, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland.

Library of Congress. 2008 "H.R. 1495" 10 September 2008. [http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.01495:].

Louisiana Coastal Protection and Restoration Authority. Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast. 2007.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. Coast 2050: Toward a Sustainable Coastal Louisiana. Louisiana Department of Natural Resources. Baton Rouge, La. 1998.

Penland, S., R. Boyd, and J. R. Suter. Transgressive depositional systems of the MississippiDelta plain: a model for barrier shoreline and shelf sand development. Journal of Sedimentary Petrology 58 (1988): 932-949.

Rosenzweig, Jakob. Reinventing the Mississippi River Delta: A Flood of Creativity. Masters Thesis, Tulane University School of Architecture. 2007.

Twilley, R.R., E. Barron, H.L. Gholz, M.A. Harwell, R.L. Miller, D.J. Reed, J.B. Rose, E. Siemann, R.G. Wetzel, and R.J. Zimmerman. Confronting Climate Change in the Gulf Coast Region: Prospects for Sustaining Our Ecological Heritage. Union of Concerned Scientists, Cambridge, MA and Ecological Society of America, Washington, DC. 2001.

U.S. Army Corps of Engineers. 9 December 2005, New Release. "Interagency Performance Evaluation Task Force - Repair Improvements for the New Orleans Hurricane Protection System." 24 November 2008 [http://www.hq.usace.army.mil/cepa/releases/Interagency_Eval.htm].

U.S. Army Corps of Engineers, New Orleans District. Louisiana Coastal Area Ecosystem Restoration Study. 2004.

U.S. Army Corps of Engineers, New Orleans District. Louisiana Coastal Protection and Restoration: A Preliminary Technical Report to United States Congress. 2006.

U.S. Congress. "Water Resources Development Act of 2007." 110th Cong., Sess. I. (2007) Sec. 7001 - 7016.

U.S. Geological Survey. National Wetlands Research Center. Southeast Louisiana Land Loss: Historical and Projected Land Loss in the Deltaic Plain. 6 December 2004. USGS-NWRC 2005-16-0001 [http://www.crcl.org/images/USGS_SE_land_loss.pdf].

Wohl, E. Inland Flood Hazards: Human, Riparian and Aquatic Communities. Cambridge University Press, New York. 2000.

Zinn, Jeffrey. Coastal Louisiana Ecosystem Restoration After Hurricanes Katrina and Rita (RS 22276). CRS Report for Congress. 25 October 2007.

ACRONYMS

DOA –	Department of Agriculture
DOC –	Department of Commerce
DOE –	Department of Energy
DOI –	Department of the Interior
DOT –	Department of Transportation
ED –	Executive Director
EPA –	Environmental Protection Agency
FEMA –	Federal Management Agency
GWG –	Geographic Working Group
IPCC –	Intergovernmental Panel on Climate Change
IPET –	Interagency Performance Evaluation Task Force
LCA –	Louisiana Coastal Area
MRGO –	Mississippi River Gulf Outlet
PWG –	Programmatic Working Group
R&D –	Research and Development
SMART –	Specific, Measurable, Attainable, Relevant, and Timely
USCG –	United States Coast Guard
WRDA –	Water Resources Development Act

DEFINITIONS

COASTAL LOUISIANA ECOSYSTEM:

The term "Coastal Louisiana Ecosystem" means the coastal area of Louisiana from the Sabine River on the west to the Pearl River on the east, including those parts of the Atchafalaya River Basin and the Mississippi River Deltaic Plain below the Old River Control Structure and the Chenier Plain within the study area of the restoration plan.

COMPREHENSIVE PLAN:

The term "Comprehensive Plan" means the plan developed under section 7002 and any revisions thereto. The Comprehensive Plan will incorporate the Restoration Plan as well as other studies and new scientific research and technology.

ECOSYSTEM:

The term "ecosystem" means a community of plants, animals and micro-organisms all living in a particular environment. This community forms a complex web of interdependency.

RESTORATION PLAN:

The term "Restoration Plan" means the report of the Chief of Engineers for ecosystem restoration for the Louisiana Coastal Area dated November 2004.

SUBSIDENCE:

The term "subsidence" means the sinking of land, which is a combined effect of geological movement along faults and the compaction of poorly consolidated sediments.

TASK FORCE:

The term "Task Force" means the Coastal Louisiana Ecosystem Protection and Restoration Task Force established by section 7003. The Task Force will provide recommendations on the Comprehensive Plan to the U.S. Army Corps.

UNITED STATES ARMY CORPS OF ENGINEERS:

The United States Army Corps of Engineers is a federal agency made up of civilians and military personnel. This group is the largest public engineering, design, and construction management group in the world. The group often executes projects associated with dams, canals, and other flood protection structures.

TASK FORCE ADMINISTRATION ORGANIZATION & POSITION DESCRIPTIONS

Executive Director GS-15

Oversees the work of the Task Force staff and coordinates the meetings of the Task Force. A senior level director from the Hurricane Protection Office in the New Orleans District of the U.S. Army Corps, this person will be the liaison/ official contact point within the U.S. Army Corps hierarchy. This person will also secure and allocate resources to the various working groups and to the other Task Force administration. Ideally, this person has a background in earth systems management or, more specifically, in wetlands management and restoration, ecosystems management, or environmental science. This position will be best filled by a person with 10+ years of managerial or executive experience in government or in the non-profit sector. This person is the head coordinator and overseer of the inter-agency mobilization and ultimately responsible for the generation of the Comprehensive Plan. Extensive managerial and executive experience is necessary to successfully administer the Task Force and ensure that the Comprehensive Plan is created.

Executive Assistant GS-6

The executive assistant will act as a personal assistant to the Executive Director. Duties will include but not be limited to, coordinating meetings, making travel plans, and managing the schedule of the executive director. In addition, the assistant to the executive director will arrange meetings of the task force and working groups and be responsible for document distribution.

Deputy Director Geographic GS-12

Executive level manager with background in large scale wetland restoration, flood control, and ecosystem restoration. This manager will have the responsibility of oversing, coordinating, and reporting on the work of the Geographic Working Group to the Executive Director of the Task Force. This Deputy Director will handle regional data-gap issues; and solicit stakeholder and citizen group feedback and involvement.

Deputy Director Programmatic GS-12

Executive level manager with background in large scale wetland restoration, flood control, and ecosystem restoration. This manager will have the responsibility of overseeing, coordinating, and reporting on the work of the Programmatic Working Group to the Executive Director of the Task Force. This Deputy Director will oversee all the technical work relating to ecosystem restoration projects including the distribution of research grants to universities and other institutions.

Analysts (6) GS-9

Provide technical support in various aspects of planning and project implementation. Analysts should have expertise or significant experience in one of the following areas:

- **Ecosystem Restoration**
- **Hydrology/Flood Control**
- **Science/Research/Monitoring**
- **Stakeholder/Agency Outreach**
- **Grants/Funding**
- **Planning Integration**

Administrative Assistant GS-5

Administrative assistant to the Task Force staff. Roles include scheduling interagency meetings and acts as a liaison between the two working groups. Tasks also include ensuring there is adequate office space, scheduling venues for meetings, and facilitates communication and flow of information between working groups.

Implementation Team

The Implementation Team is designed to ensure that the Task Force, working groups, and agencies are working toward the goals of the legislation and that they are completing their tasks and deadlines. The team will participate in all activities related to their discipline to ensure that there is continuity between the various groups. The team reports directly to the Executive Director.

- Restoration Project Coordinator GS-12

Oversees the project implementation and coordinates project prioritization. Highly organized individual with public management skills and experience in planning and constructing ecosystem restoration projects on time and on budget.

- Comprehensive Plan Coordinator GS-12

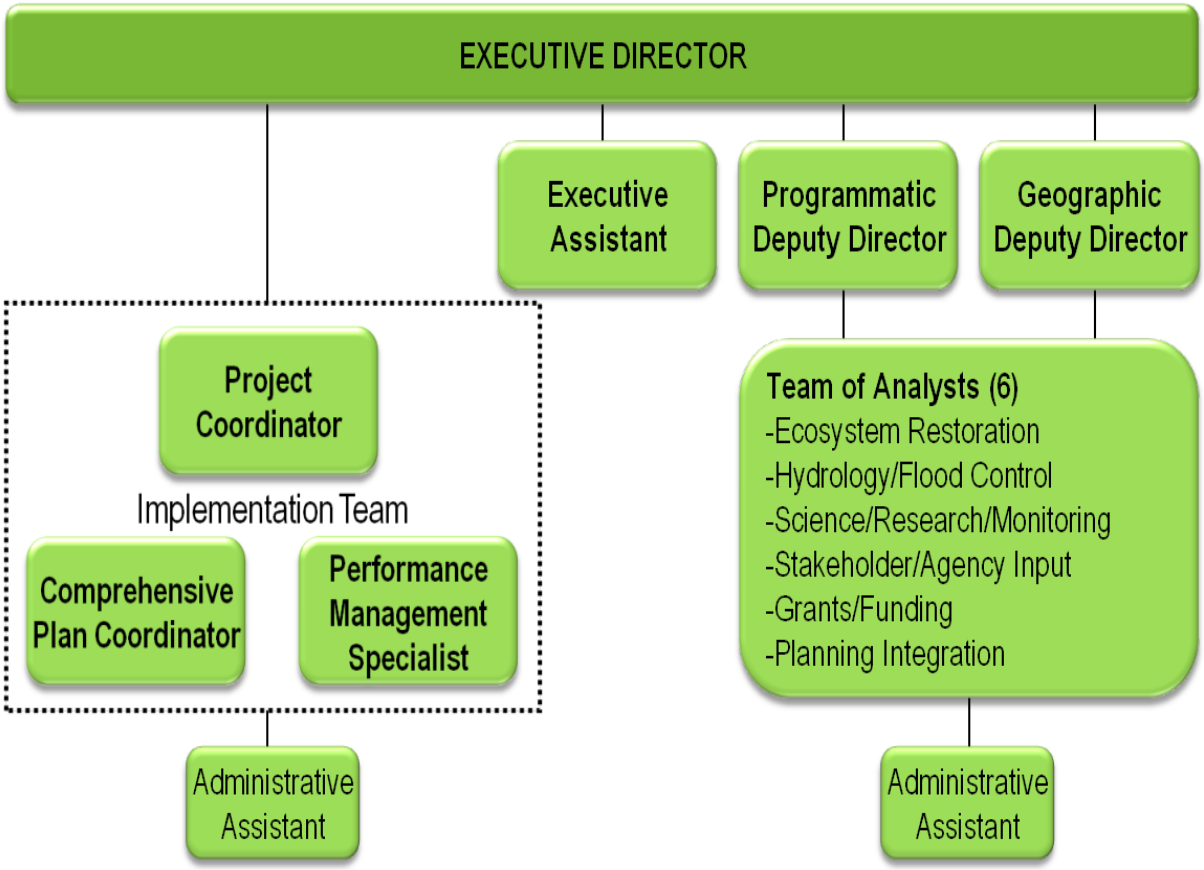
Oversees development of the Comprehensive Plan and ensures that all agencies are meeting deadlines and developing the information essential to completion of the plan. Must be highly organized and have extensive management experience.

- Performance Management Specialist GS-13

Oversees all working groups to ensure that Performance Management is incorporated in all the aspects of the Task Force's work. The Performance Management Specialist is charged with identifying indicators that mark progress toward the goals of the Task Force as identified by the legislation. This person will identify indicators that the Restoration Project Coordinator and the Comprehensive Plan Coordinator can use to measure the status and outcomes of these respective Task Force goals. This specialist will compile data in an information system that will provide feedback regarding the status of projects. The information collected by the Performance Management Specialist will be used to help the Task Force administration decide whether the program should be adjusted and/or how to better allocate resources among the working groups to achieve better outcomes.

Title VII Water Resources Development Act

Organization and Staffing Plan



FIRST YEAR IMPLEMENTATION

	Pre. Tasks	First Quarter			Second Quarter			Third Quarter			Fourth Quarter		
	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Hiring													
US Army Corps Appoint Executive Director (ED)													
ED Hire Executive Assistant (EA)													
ED Hire Geographic Deputy Director (GDD)													
ED Hire Programmatic Deputy Director (PDD)													
ED & EA Hire Outreach Analyst (OA)													
ED & EA Hire Plan Integration Analyst (PIA)													
ED & EA Hire Ecosystem Restoration Analyst (ERA)													
ED & EA Hire Hydrology Analyst (HA)													
ED & EA Hire Research Analyst (RA)													
EA Hire Grants and Funding Analyst (GFA)													
ED & EA Hire 2 Administrative Assistants (AA)													
ED & EA Hire Restoration Project Coordinator (RPC)													
ED & EA Hire Comprehensive Plan Coordinator (CPC)													
ED & EA Hire Performance Management Specialist (PMS)													
Extras													
Holiday Party													
Office Set Up													
ED & EA Find and lease office space-NOLA													
EA Purchase office furniture and supplies													
EA Purchase computers etc.													
EA Contract for web development													
EA Launch website and intranet													

	Pre. Tasks	First Quarter			Second Quarter			Third Quarter			Fourth Quarter		
	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Organizational Development													
ED Establish Initial Coordination with US Army Corps													
ED, EA, PMS Design/Review of SMART													
ED, EA, PMA Development of a SOP													
Creat an MOA between Federal Agencies in Task Force													
OA & EA Conduct Stakeholder Outreach													
EA & PMS Develop and Update Database													
ED, CPC, PMS Draft and Update Comprehensive Plan													
Task Force Meeting													
Performance Management													
Weekly meetings between ED and Admin Staff													
Bi-montly meetings between GDD, PDD, and ED													
RPC Meeting with Implementation Team													
Analysts Compile Ecological Indicators													
RPC Reviews Ecological Indicators													
ED and RPC Review Funding													
ED reviews interm reports													
PMS Submit Quarterly Progress Report													
PMS Meeting with US Army Corps for Project Updates													
RPC, US Army Corps Update Best Practices into CP													
OA Outreach with Stakeholders and Experts													

Key

US Army Corps - US Army Corps of Engineers
NOLA - New Orleans Local Area
SMART - Specific, Measurable, Attainable, Relevant, Timely
SOP - Standard Operating Procedure
MOA - Memorandum of Agreement
CP - Comprhensive Plan

BUDGETARY CONSIDERATIONS

PROGRAM BUDGET

The budget for the Task Force and its administration has been broken down into four program budgets which help justify costs and ensure that we have adequate resources. The program budgets are as a follows:

Task Force Facilitation ($190,636 – 18% of the total Budget)

The Executive Director is the chief liaison of reporting between the Task Force and Congress. While some time will be spent coordinating with the Programmatic and Geographic Working Groups (~30%), the majority of his/her time will be in the facilitation of the Task Force (~70%). Additionally, the Executive Assistant will spend all of his/her time addressing the needs of the ED as it pertains to the facilitation of the task force.

Geographic Working Group ($324,062 – 30% of the total Budget)

The Geographic Deputy Director is charged with the responsibility of overseeing the activities of the Geographic Working Group and reporting to the ED (~90% time). The Geographic Deputy Director also will spend some time coordinating with the Programmatic Deputy Director (~10%). The Ecosystem Restoration and Flood Control Analysts spend the majority of their time working on area-specific planning and project implementation (~70%), however, they also regularly coordinate with the Science and Technology Program under the Programmatic Working Group (~30%). The Planning Integration Analyst will focus on fusing existing planning efforts into the new Comprehensive Plan. The Stakeholder/ Outreach Analyst will work within the geographic sub regions to identify and solicit feedback from various stakeholders and agencies and will coordinate information releases to the public.

Programmatic Working Group ($239,767 – 22% of the total Budget)

The Programmatic Deputy Director will be responsible for the oversight of the Programmatic Working Group and reporting to the ED (~90% time). The Programmatic Deputy Director will also communicate regularly with Geographic Deputy Director (~10%). The Science/Research and Monitoring Analyst will work mainly under the Science and Technology Program in pursuing scientific research relating to wetland restoration and preservation (~80%). However, regular communication will be established with Analysts in the Geographic Working Group (~20%). The Grants Manager also works primarily under the Science and Technology Program to manage federal and non-federal funding (~70%). Additionally the Grant Manager will seek out additional sources of funding for research and development and project implementation (~30%). An administrative assistant will be shared equally among geographic and programmatic working group analysts.

Comprehensive Plan Facilitation ($329,509 - 30% of the total Budget)

Additionally, there is a separate Implementation Team within the Task Force Administration that is largely responsible for collecting the necessary inputs, coordinating and reviewing the Comprehensive Plan. Within this implementation team, the Ecosystem Restoration Coordinator will spend a significant amount of time ensuring authorized projects under the Geographic Working Group are moving forward. The Performance Management Specialist works with both the Geographic Working Groups and the Programmatic Working Groups to review and analyze project success. Both the Ecosystem Restoration Coordinator and the Performance Management Specialist will additionally be responsible for coordinating information with the Comprehensive Plan Coordinator to assemble the necessary information for the plan. An administrative assistant will provide support for the Implementation Team for Comprehensive Plan facilitation.

Office and Equipment ($81,950 – 8% of the total Budget)

Office space in New Orleans will cost $28,000 at $14 per square foot. Additionally, there are several start up costs to get the Task Force Administration in place. These one-time purchases represent 44% of this sub-total and include computers, desks, chairs, and phones.

Travel ($12,240 – 1% of the total Budget)

The travel budget includes funding for travel to Washington DC for the ED and one other Administrative member (4 trips). There is also funding to allow the Task Force Administration to get out into the field and attend local meetings within the various geographic sub-regions.

LINE ITEM BUDGET	SALARY	BENEFITS (30%)	% BUDGETED (YR 1)	TOTAL COST
Personnel				
Executive Director GS-15	$107,962	$32,389	100%	$140,351
Deputy Director Geographic GS-12	$65,315	$19,595	100%	$84,910
Deputy Director Programmatic GS-12	$65,315	$19,595	100%	$84,910
Analyst: Ecosystem Restoration GS-9	$45,040	$13,512	75%	$43,914
Analyst: Hydrology/Flood Control GS-9	$45,040	$13,512	75%	$43,914
Analyst: Science/Research/Monitoring GS-9	$45,040	$13,512	75%	$43,914
Analyst: Stakeholder/Agency Outreach GS-9	$45,040	$13,512	100%	$58,552
Analyst: Grants/Funding GS-9	$45,040	$13,512	50%	$29,276
Analyst: Planning Integration GS-9	$45,040	$13,512	100%	$58,552
Executive Assistant GS-6	$33,135	$9,941	100%	$43,076
Restoration Project Coordinator GS-12	$65,315	$19,595	100%	$84,910
Comprehensive Plan Coordinator GS-12	$65,315	$19,595	100%	$84,910
Performance Management Specialist GS-13	$77,670	$23,301	100%	$100,971
Administrative Assistant GS-5	$29,726	$8,918	100%	$38,644
Administrative Assistant GS-5	$29,726	$8,918	75%	$28,983
IT/Web Development				$20,000
Travel				
Out-of-state: Airfare				$1,920
Per Diem (includes hotel)				$4,320
In-States: Mileage Reimbursement				$6,000
Office/Rent				
12-Month Lease (includes utilities and phone)				$28,000
Task Force Meetings Facility Rental				$2,000
Equipment				
One time costs				
Computers (15)				$18,000
Printer/Fax/Copier (1)				$500
Desk/Chair/File Cabinet (15)				$15,000
Phones (15)				$750
Cell Phones (6)				$8,400
Annual Costs				
Professional Printing				$7,800
Office Supplies				$1,500
Office/Equipment Sub-Total				$81,950
Travel Sub-Total				$12,240
Personnel Sub-Total				$989,784
TOTAL BUDGET				$1,083,974

PERFORMANCE MANAGEMENT

Performance Management System's Guiding Rationale:
(1) How do we know how well we are doing? (2) How can we do better?

Key:
AA = Administrative Assistant
CPC = Comprehensive Plan Coordinator
EA = Executive Assistant
ED = Executive Director
IT = Implementation Team
MOA = Memorandum of Agreement
PMS = Performance Management Specialist
RPC = Restoration Project Coordinator
USACE = United States Army Corps of Engineers

Tier Level	Goal Category	Action	Indicator(s) of Performance	Reporting Method	Feedback Mechanism	Timescale
1 **Task Force Administration and Organizational Assessment**	***Member Engagement***	Schedule four annual **Task Force** meetings	Full attendance & active attendee participation	ITAA will compile attendance statistics and meeting minutes into a quarterly report submitted to PMS & ED	EA will contact attendees & follow-up & act on issues raised in to determine how to improve	Each quarter
		Determine satisfaction of **Task Force** working group members	Anonymous survey responses & frequency of communication	Surveys analyzed and published in AA's quarterly report to ED and PMS	ED will interpret results and make modifications as necessary	4 times a year, beginning of each quarter for the preceding quarter
		Create a Memorandum of Agreement (MOA) between the **Federal Agencies** (to ensure funding levels, time and resource commitment)	Signing of MOA & upholding contract provisions	ED oversees this process	ED holds agencies accountable for agreed upon contribution	MOA Signing- within first quarter Continuous Review of obligations
		Create website for Local **Stakeholders** about activities and updates on Task Force	Level of website traffic	Number of hits on website reported by AA to IT & ED	Stakeholder feedback is integrated into Comprehensive Plan by CPC	No later than second quarter

Tier Level	Goal Category	Action	Indicator(s) of Performance	Reporting Method	Feedback Mechanism	Timescale
1 **Task Force Administration and Organizational Assessment (cont.)**	***Member Engagement (con't)***	Host public forum for **Local Stakeholders** and info sessions on Task Force restoration projects	High attendance at meetings	Comment box / minutes taken reported by Administrative Assistant to ED	Stakeholder feedback is integrated into Comprehensive Plan by CPC	No later than second quarter
	Cohesive Organization	Complete Hiring of Adequate **Support Staff** for Task Force	Hiring the # of people needed to fulfill the WRDA authorization	AA drafts a staffing Assessment/request, considering budget allocation	Staffing status to be reviewed at the quarterly meetings and assessed by ED (in preparation for Congressional testimony)	Each quarter
		Establish interactive **Staff** information system (intranet)	Existence & Frequency of use of system by members	AA will confirm & publish use statistics in quarterly report	PMS will confirm utility of established database	First quarter

Tier Level	Goal Category	Action	Indicator(s) of Performance	Reporting Method	Feedback Mechanism	Timescale
2 **Evaluation of Restoration Project Status**	***Status Evaluation***	Ensure restoration projects are being implemented by USACE	Number of current restoration projects	AA Status reported by Restoration Project Coordinator in a quarterly report submitted to PMS & ED	RPC Progress reports & recommendations regarding bottlenecks and key issues will be presented by the ED to the AC	Each quarter
		Assess the incorporation of ecological restoration principles (e.g. balancing storm protection and ecosystem priorities)	• Salinity levels • Acreage of marshland conversion to open water vs. reversal • Arc-GIS satellite imaging of coastline and temporal comparison of land and water cover	Working group and analyst collection and compilation of data, submitted to RPC for review	RPC provides updates to senior level staff and task force on ecological assessment of USACE activities at quarterly meetings	Monthly measurement Quarterly data compilation
		Review funding needed for restoration tasks vs. Congressional appropriation	Increased budget authority	Compilation of USACE data and working group/ analyst research, reviewed by RPC & ED	ED reports to Congress on indicators of performance and assessment of needs for future restoration projects, Congress determines task force funding levels	Annually (Congressional Hearing)

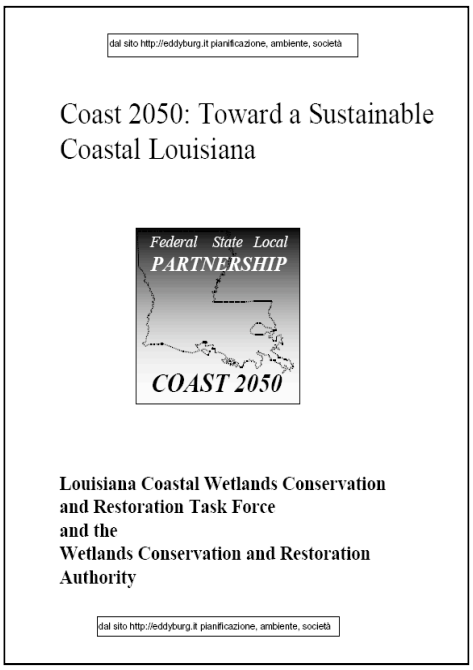
Tier Level	Goal Category	Action	Indicator(s) of Performance	Reporting Method	Feedback Mechanism	Timescale
2 **Evaluation of Restoration Project Status (cont.)**	***Outcome Evaluation***	Ensure timely completion of restoration projects by USACE	Ratio of initiated projects to completed projects	Status reported by Restoration Project Coordinator in a quarterly report submitted to PMS & ED	ED communication with USACE Chief	Annually
		Interim project reports drafted for existing restoration projects	Every project has a corresponding report on file with the RPC's AA	Quarterly progress report to RPC drafted by the project manager	RPC compiles reports into synthesis document assessing region- based ecosystem restoration and submits it to the ED	Quarterly
3 **Evaluation of the Comprehensive Plan**	***Efficacy***	Ensure implementation of best practices from restoration projects into current Comprehensive Plan	Comparison of final report to quarterly report recommendations	Coordination between RPC, Working Groups, & USACE	Continuous review by CPC & final review by ED	By the end of the third quarter
		Complete draft of the Comprehensive Plan	Quality of Printed Draft	Complete Review by all members and stakeholder	Implementation Team Coordination	Congressional Deadline: December 31, 2009

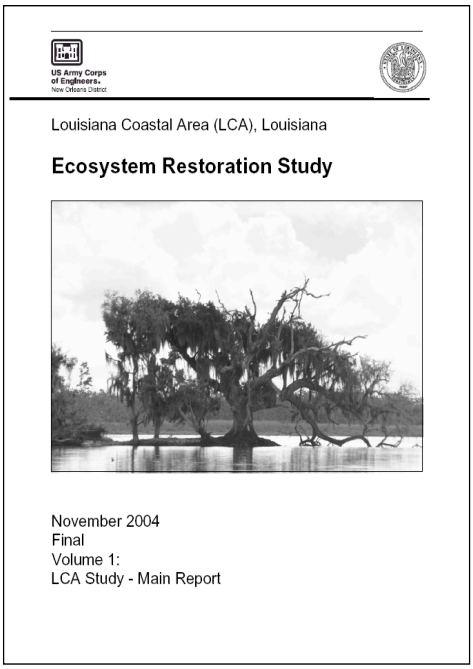
Source: WRDA Title VII Workshop Group, Output 9

REPORT DESCRIPTIONS

Coast 2050: Toward a Sustainable Coastal Louisiana LA Wetlands Conservation & Restoration Authority and Coastal Wetlands Conservation & Restoration Task Force 1998

Published in 1998 by the State of Louisiana, Coast 2050 outlined the first comprehensive strategy for restoring the Louisiana Coast. The document was a product of an 18 month collaboration between state, federal, and local government officials as well as scientists, engineers and a range of other stakeholders. Coast 2050 summarized scientific findings on coastal land loss, outlined ecosystem management and restoration strategies, documented research needs, and provided a framework for action and implementation. The overarching vision of Coast 2050 was, "to sustain a coastal ecosystem that supports and protects the environment, economy and culture of southern Louisiana, and that contributes greatly to the economy and well-being of the nation." Connecting coastal ecology to broader societal goals was a crucial step in building consensus for restoration. Coast 2050 laid the ground work for the establishment of the Louisiana Coastal Area (LCA) for ecosystem restoration.

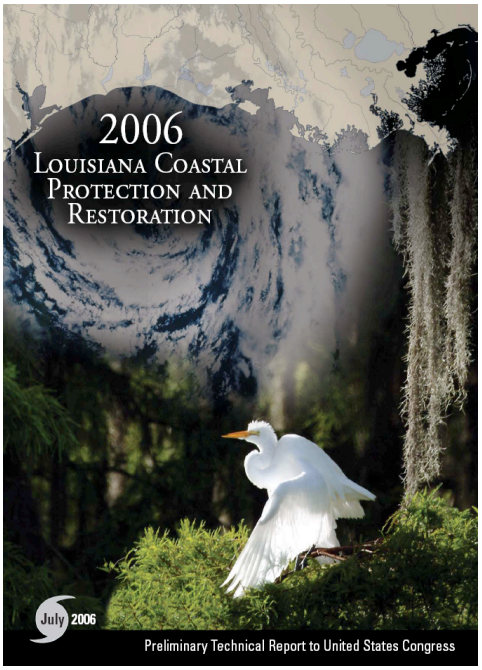




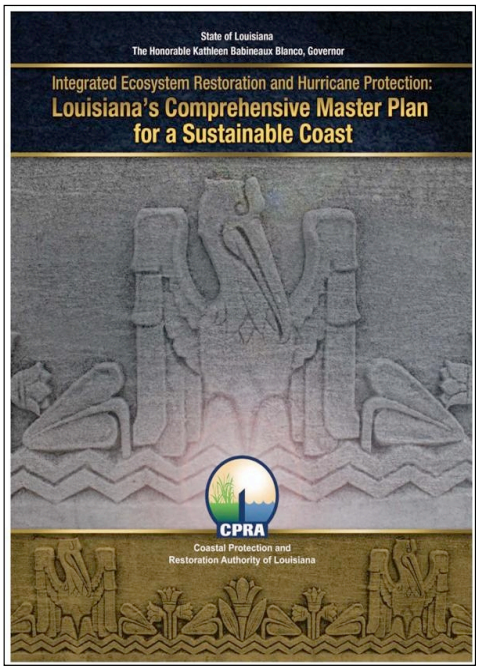
Coast 2050: Toward a Sustainable Coastal Louisiana LA Wetlands Conservation & Restoration Authority and Coastal Wetlands Conservation & Restoration Task Force 1998

Published in 1998 by the State of Louisiana, Coast 2050 outlined the first comprehensive strategy for restoring the Louisiana Coast. The document was a product of an 18 month collaboration between state, federal, and local government officials as well as scientists, engineers and a range of other stakeholders. Coast 2050 summarized scientific findings on coastal land loss, outlined ecosystem management and restoration strategies, documented research needs, and provided a framework for action and implementation. The overarching vision of Coast 2050 was, "to sustain a coastal ecosystem that supports and protects the environment, economy and culture of southern Louisiana, and that contributes greatly to the economy and well-being of the nation." Connecting coastal ecology to broader societal goals was a crucial step in building consensus for restoration. Coast 2050 laid the ground work for the establishment of the Louisiana Coastal Area (LCA) for ecosystem restoration.

Louisiana Coastal Protection and Restoration: A Preliminary Technical Report to U.S. Congress Army Corps of Engineers 2006



Following Hurricanes Katrina and Rita, the President signed an appropriations bill that required the U.S. Army Corps to create a "Comprehensive Hurricane Protection Study" that would consider the potential for protecting the coast from a 'Category 5' hurricane. The resulting study, which was submitted to Congress in 2006, documented the technical infeasibility of 'Category 5' protection and shifted emphasis to more pragmatic risk reduction techniques. The plan called for the creation of an "outer line of defense" against storm waves and flooding made up of stabilized barrier islands, marshes, wetlands, and forested areas. By combining these landscaped features with levees and other structures, the Corps sought to create a multi-scaled, geographically comprehensive system that could offer protection in a variety of weather scenarios. Title VII of the 2007 WRDA mandates that the findings of the Hurricane Protection Study be integrated into the Comprehensive Plan for coastal restoration.



Louisiana's Comprehensive Master Plan for a Sustainable Coast. Louisiana Coastal Protection and Restoration Authority 2007

The State of Louisiana enacted legislation shortly after Hurricanes Katrina and Rita that established a state "Coastal Protection and Restoration Authority" and called for the creation of a state master plan. Although the U.S. Army Corps' 2004 LCA Study had proposed a range of restoration projects, the planning scope was limited to Southeastern Louisiana. The state master plan expanded the planning scope to include the entire coastal area, which was subdivided into five sub-provinces. The state master plan also expanded the nature of the environmental problem to include vulnerability from flooding and hurricanes, while foregrounding the need to protect human populations in tandem with coastal restoration. Title VII of the 2007 WRDA authorized the U.S. Army Corps to incorporate the findings of the Louisiana state master plan into the Comprehensive Plan for coastal restoration.

AUTHORIZATION COSTS

Specific authorizations are included in Title VII. These authorizations can be grouped into two larger categories:

1. Items related to the continuation of the U.S. Army Corps' Louisiana Coastal Protection and Restoration Study (2004) and;
2. Items related to damages caused by Hurricanes Katrina and Rita in 2005.

Within each of these broader categories are additional projects, such as modifications to existing projects, river diversions, and a science and technology research program are specified. Legislative authorizations can serve as a proxy for determining Congressional intent. The broad categories mentioned above are depicted in Chart 1. Along with Charts 3 and 4, this pie chart is meant to graphically represent the relative spending Congress intended for the different components of Title VII.

Actual appropriations related to Title VII do not follow Congressional intent. Chart 2 depicts the same broad categories as its companion chart, but in terms of monies actually appropriated. Nearly 100 percent of the funds appropriated thus far have been for projects directly related to fixing hurricane damages and improving traditional methods of storm protection such as levees.

Related Appropriations to Date

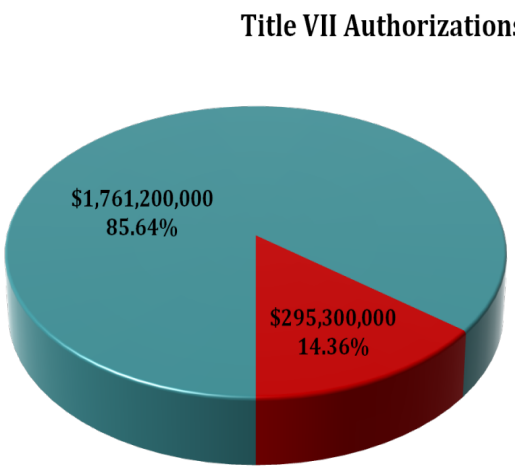


Chart 1. Broad authorization categories in Title VII.

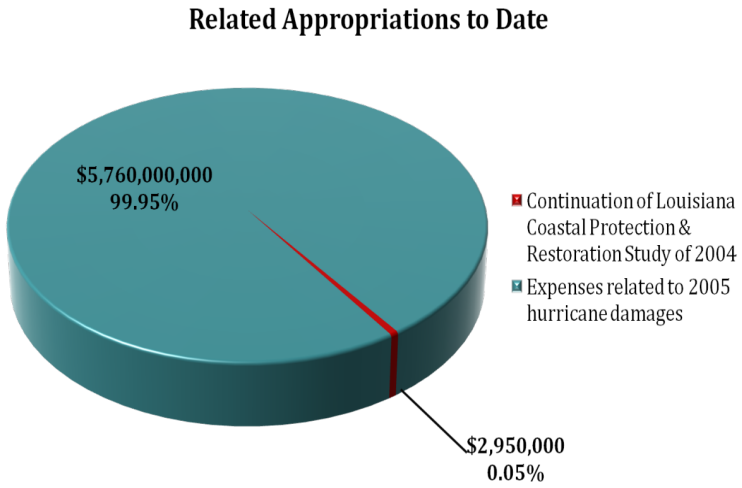


Chart 2. Actual appropriations to date.

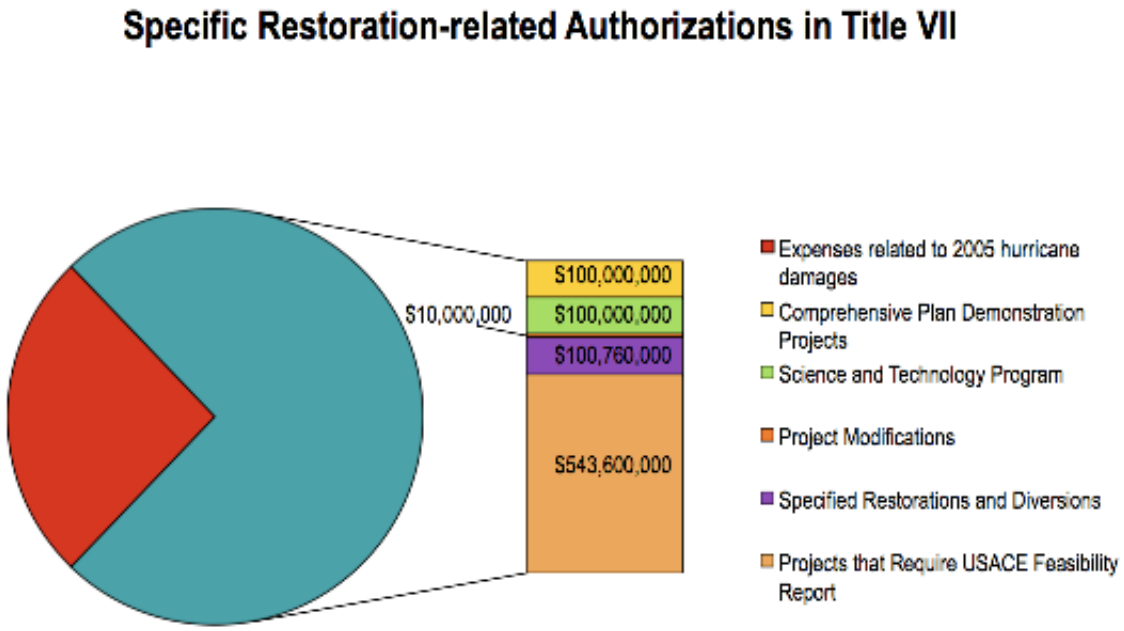


Chart 4. Projects related to the U.S. Army Corps' Restoration Study

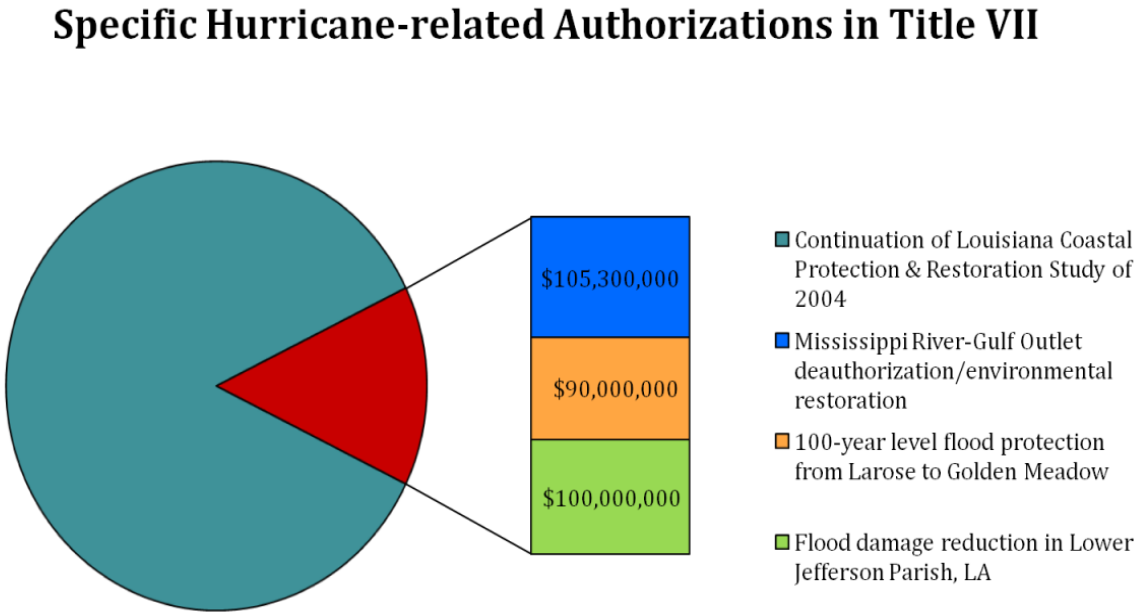


Chart 5. Projects related to damages from Hurricanes Katrina and Rita.

Specific Authorizations in Title VII

AUTHORIZATION	MAXIMUM COST	CATEGORY	APPROPRIATIONS TO DATE
Comprehensive Plan Demonstration Projects	$100,000,000	Continuation of the U.S. Army Corps of Engineers' Louisiana Coastal Protection and Restoration Study (2004)	
Science & Technology Program	$100,000,000		
Project Modifications	$10,000,000		
Diversion at Hope Canal	$68,600,000		
Barataria Basin barrier shoreline restoration	$242,600,000		
Small Bayou Lafourche reintroduction	$133,500,000		
Myrtle Grove Diversion	$278,300,000		
Dredged material beneficial use program	$100,000,000		
Caillou Lake & Gulf of Mexico land bridge	$56,300,000		
Gulf Shoreline at Point Au Fer Island	$43,400,000		
Modification of Caernarvon Diversion	$20,700,000		
Modification of Davis Pond Diversion	$64,200,000		
PROJECTS THAT REQUIRE USACE FEASIBILTY REPORT			
Multipurpose operation of Houma Navigation Lock	*$18,100,000*		
Terrebonne Basin Barrier Shoreline Restoration	*$124,600,000*		
Small diversion at Convent/Blind River	*$88,000,000*		
Modification of Amite River diversion canal	*$5,600,000*		
Medium diversion at White's Ditch	*$86,100,000*		
Conveyance of Atchafalaya River water to Northern Terrebonne marshes	*$221,200,000*		
Subtotal A:		**$1,761,200,000**	**$2,950,000**
Mississippi River-Gulf Outlet deauthorization/ environmental restoration	$105,300,000	**Expenses related to damages from Hurricanes Katrina & Rita**	
100-year level flood protection from Larose to Golden Meadow	$90,000,000		
Flood damage reduction in Lower Jefferson Parish, LA	$100,000,000		
Subtotal B:		**$295,300,000**	**$5,760,000,000**
TOTAL :	**$2,056,500,000**		**$5,762,950,000**

Columbia University

MPA - ESP

2008/2009