Order Code RS22110
April 11, 2005

Coastal Louisiana Ecosystem Restoration: The Recommended Corps Plan

Jeffrey Zinn
Specialist in Natural Resources Policy
Resources, Science, and Industry Division

Summary

The 109th Congress may consider legislation that authorizes activities to counter the widespread conversion of lands (mostly wetlands) to open water in coastal Louisiana. In its final report on restoring the coastal Louisiana ecosystem, released January 25, 2005, the U.S. Army Corps of Engineers (Corps) recommends congressional authorization of specific projects and general programs to both slow the process of conversion and reestablish land at some converted sites. The Corps estimates that this entire package of recommended activities would cost a total of $1,996 million. Included in this package are recommendations for immediate authorization ($1,123 million), further authorized investigation ($145 million), and projects that could be authorized in the future ($728 million). This CRS short report is limited to a summary of this Corps report and the next steps in implementation. It will be updated if Congress enacts implementing legislation. For general background on the causes of land loss, the social and economic costs that result from land loss, and earlier programs and proposals to respond to it, see CRS Report RL32673, *Coastal Louisiana: Attempting to Restore an Ecosystem*. To follow the likely legislative process, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109th Congress*.

Introduction

Scientists agree about the general parameters of past and future rates and patterns of land (and wetland) loss in coastal Louisiana. Since the 1930s, more then 1.2 million acres, mostly coastal wetlands, have been converted to open water. The Corps forecasts that land losses will continue, and that approximately 462,000 acres (including 328,000 wetland acres) will be converted to open water by 2050. The Corps and others who study these changes believe that future losses will continue to be caused by some combination of human activities, such as navigation improvements and development related to oil and gas, and natural causes, such as relative sea level change. These factors have contributed to losses over the past 75 years. These losses reduce the quality and productivity of this wetlands ecosystem, and are accompanied by economic and social costs. While these

costs are concentrated in Louisiana, impacts on navigation, energy, and commercial fisheries could be felt much more widely. (For more information on the wetland loss problem, see CRS Report RL32673, *Coastal Louisiana: Attempting to Restore an Ecosystem*.)

Federal (and state) actions to address extensive land conversion to open water have been growing over the past 15 years. These actions include analyzing the causes and extent of the problem, and initiating projects that are designed to counter it. The most recent federal action is the release of the Corps' *Louisiana Coastal Area Ecosystem Restoration Study* (hereafter referred to as the Report) in January 2005. The Report recommends five construction projects for immediate authorization, 10 projects for additional study, and several other actions that would slow the forecast rate of land loss.[1] The Report provided the basis for the Chief of Engineers report making recommendations to the Assistant Secretary of the Army for Civil Works on January 31, 2005. The Report will be a major source of information for Congress during consideration of legislation that would respond to past and anticipated land loss. (The Corps' Report and related documents can be found at [http://www.lca.gov]. For more information on the process by which Corps projects are developed, see CRS Report RL32064, *Army Corps of Engineers Water Resources Activities: Authorization and Appropriations*.

If the projects recommended in the Report are fully implemented, the Corps estimates that they would reduce the estimated loss from 462,000 acres by 2050 to about 170,000 acres (a reduction of 62.5%), by both reducing the number of acres that would be converted to open water, and by reestablishing wetlands at some sites where they had been lost. The Corps estimates that the five construction projects also would have significant ecosystem benefits. It estimates these benefits to be "22,000 habitat units,"[2] if the projects are fully implemented.

Recommendations in the Corps Report

The Corps Report was prepared to document how it determined which construction projects, termed "near-term critical restoration features," and other activities would be recommended, and what benefits can be anticipated from this suite of proposals. The Corps has organized these proposals into seven elements in the Report. Drafts of the Report were reviewed and commented on by others, including representatives of federal, state, and local units of government.

---

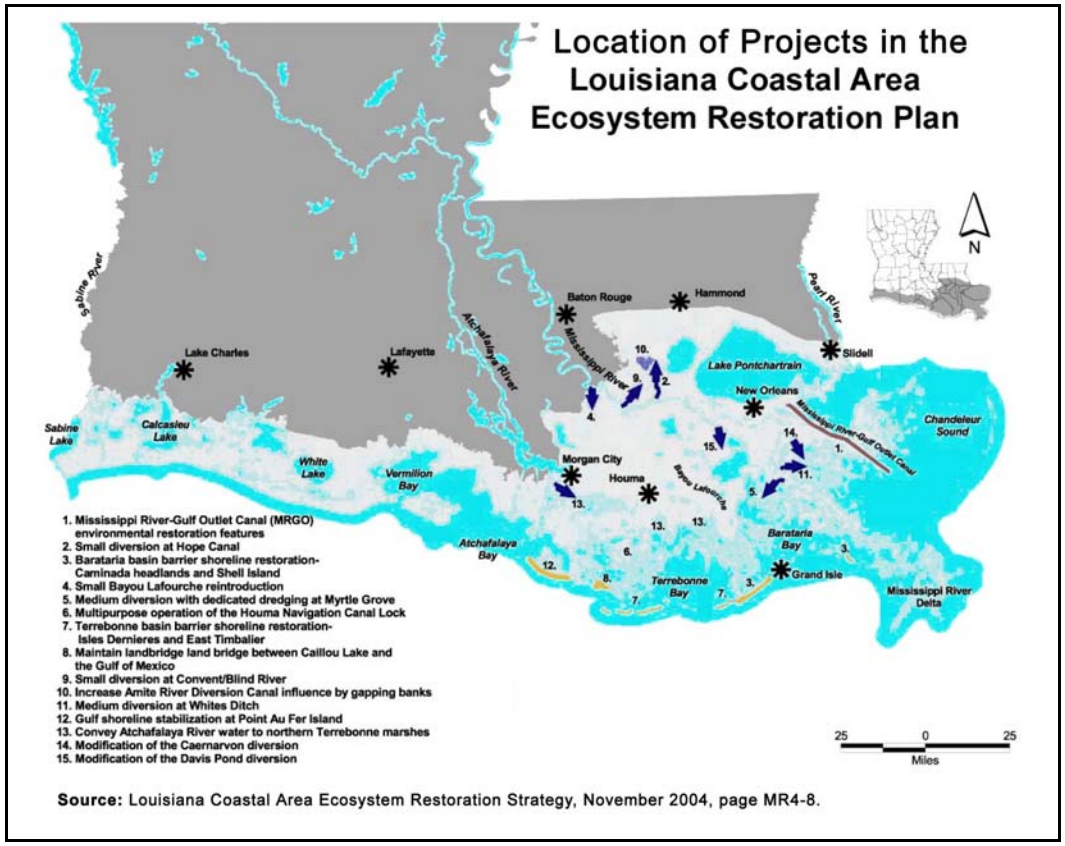
[1] The Report contains cost estimates dated June 2004, which are used throughout this CRS report. A December 2004 addendum to the Report contains updated cost estimate tables, dated October 2004. While several component costs changed, the total cost estimate of $1,996 million is unchanged. Estimates for individual projects are likely to continue to be updated.

[2] Habitat units are defined by the Corps in the Report as a numerical combination of quality and quantity (acres) calculated for an average year. The definition does not give a quantitative value to these units. It uses these units to compare future scenarios with a proposed project and without it; the number expresses the magnitude of the benefits (or losses) that are attributed to the project. The Corps has used these units in its analysis of some of its other ecosystem restoration programs.

Recommended Elements. If authorized and fully funded, the seven elements would be implemented over a decade. The Corps estimates the total cost to complete these elements is $1,996 million, and that the federal portion of this total is $1,283 million (62.9%). The entire federal portion is funding, while the non-federal share is divided between funding ($326 million) and real estate ($387 million). The proposed recommendations include specific construction projects that could be initiated relatively quickly because the preliminary planning and design work is largely completed (element 1), research and demonstration activities (elements 2 through 5), continuing studies of construction projects that require more extensive planning and design work than those in element 1 and would have to be authorized for construction at a later date (element 6), and projects that are at a more conceptual stage (element 7). The seven elements (and estimated cost in June 2004 and percentage of the total program cost) are as follows:

- **Element 1:** Five near-term critical restoration features that "have relatively advanced investigations and could be implemented expeditiously" (in 5 to 10 years) after they are authorized by Congress and pre-construction documentation is completed. (These are shown on the map on the next page as items 1 through 5.) ($864 million, or 43.3% of the total)
- **Element 2:** Science and Technology Program to decrease scientific and engineering uncertainties about ecosystem restoration for 10 years. ($100 million, or 5.0% of the total)
- **Element 3:** Demonstration Projects recommended as a result of the Science and Technology Program over 10 years. ($100 million, or 5.0% of the total)
- **Element 4:** Programmatic authorization for beneficial uses of dredged materials to benefit coastal wetlands. ($100 million, or 5.0% of the total)
- **Element 5:** Programmatic authorization for investigating modification, rehabilitation, or management of existing water resources structures. ($10 million, or 0.5% of the total)
- **Element 6:** Further analysis and possible future congressional authorization for 10 additional listed features. (These are shown on the map on the next page as items 6 through 15.) ($762 million, or 38.2% of the total)
- **Element 7:** Feasibility studies to evaluate six large-scale and long-term concepts to determine their potential for contributing to the restoration effort. ($60 million, or 3.0% of the total)

The Corps started the planning process leading to these recommendations by identifying 166 "restoration features." It then winnowed the list down to the five projects in element 1 and the 10 projects in element 6 using a complex sorting process described in detail in the Report. These 15 projects are located on the map below. All projects are located in the eastern and central portions of coastal Louisiana. Funding for these projects would account for almost 82% of the $1,996 million in the Corps' proposed budget. In addition, the Corps identified the six "restoration concepts" in element 7, which are much less developed and larger in scale. Two of the six concepts, for example, are a Mississippi River Delta Management Study and an Acadiana Bays Estuarine Restoration Feasibility Study.



Source: Louisiana Coastal Area Ecosystem Restoration Strategy, November 2004, page MR4-8.

The Chief's report recommends these elements. It distinguishes projects and programs for which it is seeking immediate authorization (elements 1 through 4, at a total cost of $1,123 million), further investigations of programs and projects that have already been authorized (elements 5 through 7, at a total cost of $145 million), and future authorization of project construction (implementing element 6, at a cost of $728 million).[3]

In addition to recommending these elements, the Chief's report makes two related recommendations. First, it plans to develop a cross-cut budget to show annually funding from all federal and non-federal sources for each project and activity that is considered to be part of this restoration effort. Cross-cut budgets are already being used for some other ecosystem restoration programs, such as the South Florida Ecosystem Restoration Program. Second, the Corps plans to issue a status report to Congress every five years to discuss accomplishments and consider refinements to the restoration effort. The discussion of this report suggests that it may include recommendations to add or remove projects from this effort, changes to implementation procedures, and other adjustments. Many might consider this periodic reporting process to be a type of adaptive project management. The Corps has used adaptive management in other restoration efforts.

Plan Costs, Uncertainties, and Benefits. The Corps concludes that its recommended plan is the most cost-effective of eight alternative plans when comparing average annual costs and average annual benefits. The average annual cost of this option

---

[3] The estimated costs in the Chief's report are somewhat different then those in the Report because they are based on updated estimates, as noted in footnote 1.

is $66 million; the other seven options range from $171 million to $543 million. However, it provides only slightly less in "average annual benefits," which the Corps calculated as a composite of land building, habitat suitability, and nitrogen removal. It calculates a numerical value for the benefits of the recommended plan to be 2865; the other seven options range from 3094 to 3202.

The Corps points out that, even with all the research that has been performed, there would still be significant uncertainties that accompany the restoration effort. The Report identifies 19 uncertainties in four groupings: knowledge of baseline physical conditions, engineering concepts and project implementation methods, ecological processes and responses to the proposed actions, and socioeconomic and political conditions and responses. The Corps identifies actions that can be taken to minimize the uncertainty by collecting additional data or monitoring certain aspects of changing conditions. In addition, as stated above, the Corps anticipates reviewing the effort every five years, and making recommendations for adaptive changes as uncertainties are reduced or resolved.

The benefits of the five projects in element 1 that the Corps proposes for congressional authorization are stated almost entirely in terms of wetland creation and restoration data. This should not be a surprise since halting wetland deterioration (and expanding wetland acreage) has been the core concern in coastal Louisiana. Actual wetland benefits, however, will depend on other factors beyond measuring acres gained and lost, such as where those wetlands are located, what types of wetlands are reestablished, and improvements in ecological performance in reestablished wetlands.

The benefits that the Corps identifies and discusses in greater detail in the Report when it compares future conditions with and without the proposed projects (and the wetlands that will be lost or created) include hydrology, coastal habitats and productivity, and socioeconomic factors (energy activities, navigation/shipping, and commercial fishing, among others). It shows that as the amount of land and habitat decreases, the productivity (measured in amount of vegetation) will decrease as well. It concludes that land loss will continue, but be limited to about 170,000 acres, if the proposed projects are constructed. It does not compare overall losses in coastal Louisiana if no additional projects are implemented and if this proposal is fully implemented. It does identify and briefly discuss losses with no additional projects (all discussed qualitatively), to include:

- disruption of oil, gas, and pipeline infrastructure;
- deterioration of navigable waterways;
- diminished coastal fisheries production;
- losses to recreation, especially forms that depend on wetlands and habitat diversity; and
- greater exposure and possible destruction of cultural resources.

The proposed projects would meet the Corps' general mandate that the environmental benefits "including improvement of the environment and fish and wildlife enhancement" are assumed to exceed costs, which is standard practice for Corps environmental projects; in this case, created or reestablished wetlands are assumed to provide greater benefits than open waters, and areas of open water will increase in both number and size if no projects are constructed.

Next Steps

Federal Authorization. With the issuing of the Chief of Engineers report on January 31, 2005, the next steps in the approval process are review by the Secretary of the Army and Office of Management and Budget for compliance with Administration policy. An informal copy of the Chief's report has been sent to Congress. If Congress authorizes the entire recommended plan, the agency would construct the five projects in element 1, initiate the programs in elements 2 through 5, and continue the preliminary investigations of the projects listed in element 6 and the concepts listed in element 7. It is widely anticipated that Congress will consider this plan with the next Water Resources Development Act (WRDA) legislation, which may be taken up this year. While awaiting congressional action, the Corps states that it will continue, under existing authority, with the necessary "investigations and preconstruction engineering and design activities." (To follow the likely legislative process, see CRS Issue Brief IB10133, *Water Resources Development Act (WRDA): Army Corps of Engineers Authorization Issues in the 109th Congress*.)

The State Role. The Chief of Engineers report identifies the State of Louisiana Department of Natural Resources as the nonfederal cost-sharing sponsor for the recommended plan. According to this report, the recommended cost-sharing for each of the project elements is consistent with current law and Corps policies. Prior to implementation, the state must agree to a number of cost-sharing and other requirements that are listed in the Chief's report. The nonfederal portion of the funding is 37.1% of the total, or $714 million, and a majority of this is for real estate. The split between federal and nonfederal shares varies in the Corps other large-scale restoration programs; the south Florida program is a 50-50 split, while a proposal for the upper Mississippi would be 91% federal and 9% nonfederal.

Future Planning and Authorizations. The Corps will continue to investigate projects identified in elements 6 and 7 for study. It then may submit them for congressional authorization. Although the Corps can continue these investigations under existing authority, it requests additional funding authorization in its Report to help accelerate this work. Each of the projects in elements 6 and 7 appears to require substantial additional study before the Corps would be ready to submit them to Congress to authorize construction, although exactly what additional work is required is not stated.