Table E-1.
Planning Scales by Subprovince.

	Land Change (ac/yr)			
	FWO [1]	**Reduce [2]**	**Maintain [2]**	**Increase [2]**
Subprovince 1	-806 ac/yr	+403 ac/yr	+806 ac/yr	+1,209 ac/yr
Subprovince 2	-2,291 ac/yr	+1,146 ac/yr	+2,291 ac/yr	+3,437 ac/yr
Subprovince 3	-2,842 ac/yr	+1,421 ac/yr	+2,842 ac/yr	+4,263 ac/yr
Subprovince 4	-461 ac/yr	--	+461 ac/yr	+692 ac/yr
Total	-6,400 ac/yr	+2,970 ac/yr	+6,400 ac/yr	+9,601 ac/yr
Total (mi^2/yr)	-10.0	+4.6	+10.0	+15.0

Notes:
1. *Numbers for FWO (future without project) are an estimated loss rate, and are subject to change.*
2: *Numbers for "reduce," "maintain," and "increase" scales are the gross amount of acres restored and/or protected. For net acreage change in any subprovince, the FWO number should be subtracted from the gross acreage protected.*

2.1 Province and Subprovince Planning Areas

Two major, but distinct, geological processes formed the Louisiana coast. One such process was the formation of sequential deltaic lobes of the Mississippi River, resulting in the Deltaic Plain in the eastern and central part of Louisiana's coast. The second major process was the formation of a series of beach ridges, or cheniers, that form the Chenier Plain in the western part of the state. For planning purposes, these two geomorphic provinces have been subdivided into four subprovinces, based on logical dividing lines between hydrologic basins.

Under the CWPPRA and Coast 2050 processes, Louisiana's coastal area is divided into four "regions" and nine hydrologic "basins." The hydrologic basins are further divided into mapping units that reflect similar problems and potential solutions. The LCA process has modified the CWPPRA divisions into "provinces" and "subprovinces" using different geologic and hydrologic criteria. The scales discussed above will initially be used at the subprovince level, with the exception of Subprovince 4. Therefore, due to relatively lower projected loss rates, the "reduce" scale has been dropped in recognition of the apparent attainability of the higher scales.

3.0 ASSESS RESTORATION STRATEGIES FROM THE COAST 2050 PLAN (PHASE II)

The PDT, in conjunction with the VT, and with suggestions from the individual members of the FDT, consisting of representatives from Federal and state agencies, academia, and the public, reviewed the Coast 2050 Plan and the LCA Section 905(b) reconnaissance report (for which the Coast 2050 Plan was the basis). These reports identified perceived problems in both

the current and future coastal landscape and laid out 88 broad-scale strategies to determine common methodologies for effecting restoration of wetland and system functions. These review efforts resulted in the identification of the following core strategic goals for coastal restoration.

- To create and sustain wetlands through input and accumulation of sediment
- To maintain estuarine and wetland salinity gradients for habitat diversity
- To maintain ecosystem linkages for the exchange of organisms and system energy

Additionally, six public scoping meetings were held throughout coastal Louisiana in April 2002. At these meetings, input from the public was solicited regarding the scope of issues (problems, needs, and opportunities) as well as strategies for restoration. These comments were considered when developing the strategies.

In Subprovince 1, the core strategies identified for restoration included: upper-basin diversions, lower-basin diversions, and control of salinities basin wide. The closure or constriction of the existing Mississippi River-Gulf Outlet (MRGO) navigation project was identified as a potentially significant component of the salinity control strategy. The marshes in the vicinity of Violet, LA were similarly identified as a critical target area for the lower basin diversion strategy.

Upper-basin introduction of freshwater, sediments, and nutrients is a strategy geared toward the maintenance of the large expanse of cypress-tupelo swamp located in the area. These swamps require the input of fine sediments and nutrients to maintain optimal water depths for regeneration and to stimulate bio-productivity. In addition, diversions can alleviate drought conditions, which can allow elevated salinities to encroach into upper portions of the basin. These incursions accelerate the transition of already stressed vegetative classes.

The lower-basin diversion strategy represents a broader need in the lower portion of the basin. The introduction of consistently elevated salinities over an extended period has resulted in wide-spread vegetative stress and subsequent habitat transition. In a significant portion of the area this transition has been to open water. A primary need in this area is the introduction of river sediments to stem subsidence coupled with freshwater to create an environment capable of sustaining more flood-tolerant vegetation over the near term. Freshwater introduction will have the added benefit of stimulating productivity with the accompanying waterborne nutrients.

The last strategy embodies the basic theme in this subprovince that the spatial and temporal control of salinity is key to maintaining healthy vegetative and estuarine communities. This strategy is geared toward the reduction of elevated salinities entering the marshes adjacent to the MRGO as well as those bordering lakes Pontchartrain and Maurepas.

In Subprovince 2 the core restoration strategies identified were: sustaining barrier islands, headlands, and shorelines; managing the available sediments of the Mississippi River; Mississippi River water and sediment introduction via the Third Delta; and preserving the land bridges within the Barataria Basin.

The barrier-shorelines in Subprovince 2 are some of the fastest eroding in the country. These landforms provide protection to adjacent marshes, reduce hurricane surge, define the vital bay habitat, support trees and shrubs that are essential to migratory songbirds, provide protection to inland oil and gas facilities, etc. Their continued stability will ensure the availability of these functions and habitats. Additionally, their presence increases the effectiveness of features addressing the introduction of resources from the Mississippi River and protects the function of the estuary as a whole.

The coastal wetlands are receiving less sediment than during the periods when the Mississippi River built them through overflow of its banks. Management of the river basin and the land within it for social and economic development has effectively cut off the coastal wetlands from a principal supply of sediment, freshwater, and nutrients. Exploration for, and the subsequent extraction of, natural resources in the coastal wetlands have further exacerbated the situation by increasing the effective export of sediments from the system. The reintroduction and management of these riverine resources to the wetlands would restore a key component for system stability.

The land bridge across the central portion of the Barataria Basin estuary is rapidly deteriorating. It is viewed as a vital strategic component in the maintenance of the estuarine salinity gradient throughout the basin. The continued stability of this geomorphic feature would ensure the stability of upper-basin wetland habitats, as well as aiding in the management of resources in that portion of the basin.

The core strategies for restoration in Subprovince 3 involved some geographic specificity because of its multi-basin makeup, but included: restoration of the Terrebonne/Timbalier barrier islands; rebuilding land in eastern Terrebonne Basin; modification of the Old River Control Complex operation scheme to increase sediment input to the Atchafalaya River; Mississippi River water and sediment introduction via the Third Delta; and management of Atchafalaya River freshwater, sediment, and nutrients.

The Terrebonne/Timbalier barrier island chain has suffered extensive degradation over the last 150 years, including the loss of extensive areas of coastal wetlands leeward of these features. The loss of these islands threatens the function of the estuarine bay system and the form, as well as the stability, of the remaining wetlands that fringe the interior of these bays.

The eastern portion of the Terrebonne Basin has experienced some of the highest rates of marsh loss on the entire coast over the last 50 years. The area is also hydrologically isolated from major sources of riverine input and continues to incur high rates of loss. The stabilization of wetland loss in this area would be key to achieving a coastwide balance in system function.

The balance of riverine resources between the Mississippi River and the Atchafalaya and Red rivers, and their delivery to the coastal zone, is maintained through the operation of the Old River Control Complex. As discussed previously, the distribution of flow between the Lower Mississippi and Atchafalaya systems is maintained at 70 percent of the latitude flow versus 30 percent, respectively. For optimum function in Subprovince 3 an increase in the sediments

directed into the Atchafalaya River system would provide additional wetland building potential in an area currently in a growth phase.

The last core strategy in Subprovince 3 builds upon the previous strategy. The Atchafalaya River, in combination with the Wax Lake Outlet Channel (WLOC), is currently in the building phase of delta development. This river system also provides freshwater and sediment to large portions of the Terrebonne estuary's wetlands. The proactive management of those available riverine resources would greatly increase the current productivity of the estuarine system.

In the Chenier Plain, which is encompassed by Subprovince 4, there are no excess riverine resources available to promote land building and to control salinities in the estuarine system. As a result, the core strategy for this subprovince is the control of estuarine salinities through the management of existing hydrology and geomorphologic features. Because the coastal landscape is continually subsiding relative to the level of the Gulf of Mexico, the physical exclusion of gulf salinities and management of natural rainfall and runoff inputs to the system will provide the best opportunities to maintain system stability.

4.0 DEVELOP AND EVALUATE RESTORATION PROJECTS AND FEATURES (PHASE III)

Using the core strategies for coastal restoration as a guide, the PDT undertook the development of restoration features for each of the subprovinces. The features that were developed also needed to be able to be combined to achieve the established planning scales. Four public meetings were held throughout coastal Louisiana in February 2003. At these meetings, input from the public was solicited regarding the development of restoration features to address the restoration strategies. The PDT assembled into sub-groups to develop restoration features to fit the strategic requirements of each subprovince. This phase of plan formulation identified a range of practical and accepted restoration features along with their characteristics. The PDT succeeded in developing and quantifying an initial suite of discreet possible solutions for coastwide restoration.

In this phase, each feature was developed independently with preliminary costs and land building, or land loss modifying, potential being estimated based on experience and insight gained through the execution of the CWPPRA program, along with the best available information and professional judgment. The ten years of effort in project development and design under the CWPPRA program, along with design work completed under other Federal and State programs, provided an extensive base of design information to build on. Detailed documentation of the design assumptions, feature level of detail, and development of the cost estimates is available at the Engineering Division of the New Orleans District office of the U.S. Army Corps of Engineers (USACE). The result of this phase was a "tool box" of restorations features for each subprovince. This phase of plan formulation also provided insight into the types of tools and metrics that would be required in the plan evaluation process.