



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

CECW-SAD

8.1 DEC 2006

SUBJECT: Mississippi Coastal Improvements Project, Hancock, Harrison, and Jackson Counties, Mississippi, Interim Report

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my interim report on water resources improvements associated with hurricane and storm damage reduction, flood damage reduction, and ecosystem restoration in the three coastal counties of Mississippi. It is accompanied by the report of the district and division engineers. These reports are an interim response to authorizing legislation contained in the Department of Defense Appropriation Act of 2006 (P.L. 109-148), dated 30 December 2005. The study authorization states, in part, the following:

"... the Secretary shall conduct an analysis and design for comprehensive improvements or modifications to existing improvements in the coastal area of Mississippi in the interest of hurricane and storm damage reduction, prevention of saltwater intrusion, preservation of fish and wildlife, prevention of erosion, and other related water resource purposes at full Federal expense; Provided further, that the Secretary shall recommend a cost-effective project, but shall not perform an incremental benefit-cost analysis to identify the recommended project, and shall not make project recommendations based upon maximizing net national economic development benefits; Provided further, that interim recommendations for near term improvements shall be provided within 6 months of enactment of this act with final recommendations within 24 months of this enactment."

Pre-construction engineering and design activities will continue under the cited authority.

2. The reporting officers identify fifteen one-time Federal assistance project elements to aid recovery of coastal Mississippi water resources infrastructure that was severely damaged by the hurricanes of 2005. Seven project elements are located in Hancock County, three in Harrison County, and five in Jackson County. These project elements include both structural and non-structural measures. Structural measures include protecting existing seawalls from continuing erosion, building protective breakwater structures, replacing storm drainage culverts, restoring protective beach and dune systems, reconstructing damaged seawalls, re-establishing tidal exchange between the Gulf and tidal wetlands, and removing storm debris from coastal streams and canals. Non-structural measures include removing residential structures from highly vulnerable floodplains and supporting continued evacuation planning. The hurricanes of 2005 severely taxed the resources of local governments and institutions, making it unlikely that those

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resources could be employed to implement these proposed recovery actions near-term without significant Federal assistance. Thus, this package of one-time Federal assistance project elements will help the people of coastal Mississippi in their recovery and aid the path to normalcy.

3. Each of the recommended project elements will function as a component of a larger comprehensive plan to provide hurricane storm damage reduction along coastal Mississippi. The detailed Comprehensive Plan is currently being developed. However, conceptually, the Comprehensive Plan will likely encompass proposals for both structural and non-structural hurricane and storm damage reduction features, as well as, features to restore and protect vital environmental resources. As currently envisioned, the Comprehensive Plan for hurricane and storm damage reduction in coastal Mississippi will be developed using a multiple lines-of-defense approach. The initial lines of defense would consist of restored offshore barrier islands and rubble and moveable wall breakwaters constructed in near-shore waters. At the beachfront, the conceptual plans call for constructing sand fill berms and dunes, and concrete seawalls. Inland of the beachfront, elevated coastal roadways and railway embankments would be used as storm-surge barriers. Non-structural measures will likely consist of elevating and flood proofing structures in-place and removing structures from the most vulnerable floodplains. Finally, opportunities to restore and protect storm-surge buffering wetlands will be pursued where appropriate. The proposed fifteen one-time Federal assistance project elements recommended in this report focus on mitigating flood damages by restoring drainage capacity in local waterways, as well as employing, on a smaller scale, the beachfront protection, wetland restoration, and floodplain evacuation concepts of the developing Comprehensive Plan. For these one-time Federal assistance project elements, non-Federal project sponsors will assume complete responsibility for the operation, maintenance, repair, replacement, and rehabilitation of the work recommended in this report.

4. The reporting officers developed the project elements recommended for near-term improvements for coastal Mississippi within the constraints imposed by the six-month time frame cited in the Department of Defense Appropriations Act of 2006 (P.L. 109-148), dated 30 December 2005. In accordance with P.L. 109-148, the reporting officers did not select the recommended project elements based on traditional benefit-cost analysis or by maximizing net national economic development benefits. Instead, the reporting officers evaluated each project element on the basis of its quantitative and qualitative contribution to the system of four accounts defined in the *Economic and Environmental Principles for Water and Related Land Resources Implementation Studies*. These four accounts include national economic development (NED), environmental quality (EQ), regional economic development (RED), and other social effects (OSE). On the basis of the assessments of probable near-term contributions to the four accounts, the reporting officers found each of the fifteen project elements to be a cost-effective improvement in accord with the directives of P.L. 109-148.

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5. Over 180 potential activities were identified through the public and agency involvement process. All were initially evaluated to establish ties to the hurricanes of 2005 and the areas of focus provided by the study authorization. Those that did not meet these criteria or that clearly had no cost-effective solution were eliminated from further consideration, while those that would require extensive study were deferred for further evaluation in the Comprehensive Plan. Application of additional screening criteria (including ability to be engineered and designed within a short timeframe, consistency with regulatory and environmental standards, public acceptability, being complementary with other ongoing recovery actions, and having potential cost effective solutions) resulted in approximately twenty activities. The reporting officers further refined these twenty activities by examining elements/reaches within an activity to determine whether each element/reach met the criteria and whether cost effective solutions were available to arrive at the final fifteen recommended project elements. The recommended near-term improvements that involve ecosystem restoration were further evaluated to determine the significance of the resources in terms of institutional, public, and technical recognition. The description of the fifteen project elements follows (by coastal county, from west to east):

a. Bayou Caddy Ecosystem Restoration, Hancock County, MS. This project element consists of restoring and protecting fresh and saltwater wetlands and coastal forests of national significance in the Biloxi marsh area. The Biloxi marshes form the southeastern boundary of the Pearl River watershed and represent the largest natural extent of this habitat in coastal Mississippi. Many of the lands are managed within the Mississippi Coastal Preserves program and provide habitat for fish and wildlife including a number of species of special concern. Restoring the saltwater wetlands that were badly damaged during the hurricanes of 2005 would involve the following: (1) constructing a protective offshore barrier using clean concrete rubble created by the demolition of local projects, (2) constructing a 3,900-foot-long earthen containment barrier using 50,000 cubic yards of material acquired from an upland source, (3) placing approximately 120,000 cubic yards of material dredged from the adjacent Federally authorized navigation channel to re-establish suitable substrate elevations, and (4) planting native vegetation. This project element will restore eighteen acres of high quality tidal wetlands that were lost to the storms of 2005 and prevent the further erosion of over 2,000 acres of high quality wetlands. The estimated cost of these one-time improvements is \$5,440,000. All costs of this project element are allocated to ecosystem restoration. In accordance with provisions of the Water Resources Development Act of 1986 (WRDA 1986), as amended, cost sharing would be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$3,500,000 and the non-Federal share would be \$1,940,000.

b. Hancock County Beaches Hurricane Storm Damage Reduction, Hancock County, MS. This project element will restore a six-mile long reach of dune fields and one-mile long reach of beach system in Hancock County. This project element will provide moderate storm damage reduction benefits for the Cities of Bay St. Louis and Waveland, Mississippi and approximately \$795,000 in equivalent annual recreation benefits. The plan consists of the following:

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(1) replacing approximately 43,800 cubic yards of lost sand dune material, (2) placing 37,000 linear feet of stabilizing sand fence, and (3) planting 19.3 acres of dune vegetation. The finished stable dune would be approximately two feet high with a crest width of approximately ten feet. The material will come from established upland borrow areas within ten miles of the work area. Plantings would have a density of one plant per four square feet and, along with the fence, would protect the entire length of this project element site. This project element will also provide scarce foraging and roosting habitats for various shore and migratory birds of special concern such as the piping plover and least tern that only utilize these specific habitats. The estimated cost of these improvements is \$1,300,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$840,000 and the non-Federal share would be \$460,000.

c. Hancock County Streams Flood Damage Reduction, Hancock County, MS. Storm surge from Hurricane Katrina deposited sediment and debris in Cowan Bayou and adjacent manmade drainage canals. This project consists of restoring lost drainage capacity of these waterways. Sediment and debris deposition has caused a reduction in storm water conveyance, leading to inundation of residences and businesses within the communities adjacent to these streams. In addition this deposition has caused a loss of habitat for many aquatic species such as shrimp and fish. Similar streams in the area in which debris removal would not restore lost flood drainage capacity are not included in this recommendation. Restoring lost capacity at both sites will involve removing approximately 1,035,500 cubic yards of sediment and debris. There may be some benefit to navigation use of these streams by local fishermen; however, these benefits are incidental to the flood damage reduction. The total estimated first cost of these improvements is \$5,800,000. All costs of this project element are allocated to structural flood damage reduction. In accordance with provisions of WRDA 1986, as amended, cost sharing for structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50 percent of total project costs allocated to structural flood damage reduction, including a minimum cash contribution of 5-percent of those costs to be paid during construction. The currently estimated Federal share of the total cost of this project element is \$3,770,000 and the non-Federal share is currently estimated as \$2,030,000.

d. Jackson Marsh Ecosystem Restoration, Hancock County, MS. This project element consists of repairing twelve coastal outfalls heavily damaged by Hurricane Katrina to restore tidal flow between the 980 acre Jackson Marsh system and Mississippi Sound. The Jackson Marsh system represents the last remaining intertidal wetlands in Hancock County and one of the few remaining in coastal Mississippi. This large expanse of pristine tidal wetland provides habitat for numerous aquatic species, neotropical migrants, waterfowl, reptiles and mammals. In addition, these wetlands provide a valuable function in storing and cleansing storm water flows from a large portion of the county prior to entering Mississippi Sound. Blockage of twelve of

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fifteen existing outfall channels has already caused damage to the resource. The repair will replace the failed outlet channel walls with vinyl sheet-pile, and remove deposited sediment and debris blocking the channels. The average length of the outfall structures is approximately 155 feet. The estimated cost of these improvements is \$2,780,000. All costs of this project element are allocated to ecosystem restoration. In accordance with provisions of WRDA 1986, as amended, cost sharing would be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$1,810,000 and the non-Federal share would be \$970,000.

e. Clermont Harbor Hurricane and Storm Damage Reduction, Hancock County, MS. This project element consists of modifications to the existing locally constructed shore protection project to prevent future undermining and failure of South Beach Boulevard and damage to associated utilities. South Beach Boulevard serves as a primary evacuation route. The modification will include addition of a vinyl sheet pile bulkhead attached to the face of the existing seawall with a cast-in-place reinforced concrete cap. The length of this project is approximately 2,000 feet. This project element will provide approximately \$1,206,000 in equivalent annual hurricane and storm damage reduction benefits. The estimated cost of these improvements is \$1,190,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$770,000 and the non-Federal share would be \$420,000.

f. Downtown Bay St. Louis Hurricane and Storm Damage Reduction, Hancock County, MS. This project element consists of construction of a seawall immediately seaward of the existing locally constructed shore protection projects. The new seawall will protect a major thoroughfare and evacuation route, and associated utilities. The new seawall will consist of a concrete gravity structure approximately 6,500 feet in length, incorporating pre-stressed foundation piles, a vinyl sheet pile cut-off wall, scour protection stone, and a backfill drainage system. The top elevation of the new wall will match the existing elevation of South Beach Boulevard (up to ten feet higher than the original shore protection projects) in order to prevent continued destruction of the road and utilities landward of this feature. This project element would provide approximately \$2,267,000 in equivalent annual hurricane and storm damage reduction benefits. The estimated cost of these improvements is \$29,000,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$18,850,000 and the non-Federal share would be \$10,150,000.

g. Cowand Point Hurricane and Storm Damage Reduction, Hancock County, MS. This project element consists of modifying the existing locally constructed seawall to prevent future

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undermining and failure of North Beach Boulevard and damage to associated utilities. North Beach Boulevard serves as a primary evacuation route. The modification will include the addition of a vinyl sheet pile bulkhead attached to the face of the existing seawall with a cast-in-place reinforced concrete cap. The length of this project element is approximately 5,000 feet. This project element will provide approximately \$511,000 in equivalent annual hurricane and storm damage reduction benefits. The estimated cost of these improvements is \$3,700,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$2,400,000 and the non-Federal share would be \$1,300,000.

h. Long Beach Canals Flood Damage Reduction, Harrison County, MS. This project element consists of the following features: (1) relocating the 28th Street Bridge as a LERRD item, (2) modifying the geometry of Canals 2 and 3, and (3) constructing an earthen berm and diversion channel at the upper limit of canal 2. This plan would provide a significant reduction in the water surface elevation (up to approximately 3.3 feet) along Canal 2 upstream of Menge Avenue to 28th Street in the Cities of Gulfport and Long Beach. In addition to significant improvements in floodwater conveyance, this project element will also provide for aesthetic improvement in the vicinity of the canals and increased circulation for better water quality and aquatic habitat conditions. Work includes constructing 375 feet of 24-inch diameter culvert and removing 263,000 cubic yards of sediment. The estimated cost of these improvements is \$23,950,000. All costs of this project element are allocated to structural flood damage reduction. In accordance with provisions of WRDA 1986, as amended, cost sharing for structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50-percent of total project costs allocated to structural flood damage reduction, including a minimum cash contribution of 5-percent of those costs to be paid during construction. The currently estimated Federal share of the total cost of this project element is \$15,570,000 and the non-Federal share is currently estimated as \$8,380,000.

i. Harrison County Beaches Hurricane Storm Damage Reduction, Harrison County, MS. This project element consists of restoring approximately 26 miles of dune systems that were destroyed by Hurricane Katrina. Local interests added the dunes to the Federally-constructed Harrison County Beach project. The beach, which also suffered extensive erosion, will be rehabilitated under the Flood Control and Coastal Emergencies program (P.L. 84-99). Restoration of the dune systems will consist of placing approximately 681,000 cubic yards of dune sand, adding sand fencing along a 134,000-foot-long perimeter, and planting approximately 125 acres of native vegetation. Vegetated dunes provide foraging and roosting habitats for various shore and migratory birds, including species of special concern such as piping plovers and least terns. Certain of these fauna species are only associated with dune systems (i.e. least tern nesting and plover resting and loafing). Dune habitat is scarce along the northern Gulf coast due to

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development and recreational pressures as well damage resulting from tropical climatic events. In addition to the strictly environmental benefits, a beach-dune system is advantageous for increased overall stability of the beach by providing reserves of sand acting as a buffer to resist erosive events. This project element will provide approximately \$4,707,000 in equivalent annual recreation benefits. The dune system would provide a secondary hurricane storm damage reduction benefit by absorbing surge and wave energy along its five-foot high profile. This project element is adjacent to a major thoroughfare and evacuation route (U.S. Highway 90) of the Mississippi coastline. The estimated cost of these improvements is \$13,420,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$8,720,000 and the non-Federal share would be \$4,700,000.

j. Courthouse Road Flood Damage Reduction and Ecosystem Restoration, Harrison County, MS. This project element consists of the following features: (1) replacing fourteen storm water canal wall braces along 235 feet of the Courthouse Road drainage channel and (2) restoring one-third acre of adjacent marshland, both heavily damaged by Hurricane Katrina. The canal repair will consist of installing and anchoring new pre-cast concrete lateral braces to prevent collapse of the drainage channel's concrete walls into the channel. Collapse of the channel walls would compromise the flood damage reduction performance of the near-shore community's stormwater drainage network. Restoration of the damaged marsh involves placement of fill, grading, and planting of native vegetation to provide marsh avian and aquatic species habitat. Although small in acreage, the restored marsh habitat is the only such habitat in Harrison County and provides an important function of the stormwater drainage project by improving water quality through nutrient uptake and sediment stabilization in the immediate area. In addition, the emergent marsh habitat will provide shorebirds and migratory birds with a feeding and resting site and a nursery area for fishes, shellfish, and crustaceans. The estimated cost of the improvements is \$360,000. Costs of this project element are allocated to structural flood damage reduction and ecosystem restoration. In accordance with provisions of WRDA 1986, as amended, cost sharing for costs allocated to structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50-percent of those costs, including a minimum cash contribution of 5-percent of those costs to be paid during construction. In accordance with provisions of WRDA 1986, as amended, cost sharing for costs allocated to ecosystem restoration would be 65-percent Federal and 35-percent non-Federal. The currently estimated Federal share of the total cost of this project element is \$234,000 and the non-Federal share is currently estimated as \$126,000.

k. Shearwater Bridge Hurricane Storm Damage Reduction, Jackson County, MS. This project element consists of repairing the damaged approaches to Shearwater Bridge, a local traffic artery and evacuation route damaged during Hurricane Katrina. These repairs are required to avoid

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potential failure of the approach and roadway surfaces during a future storm event. Repairs will consist of placing vinyl sheet-pile along the bridge abutments, sand fill, and a concrete cap. The estimated cost of these improvements is \$1,150,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$750,000 and the non-Federal share would be \$400,000.

1. Gautier Coastal Streams Flood Damage Reduction, Jackson County, MS. This project element consists of restoring lost capacity in the Old Spanish Trail, Graveline Bayou, Hiram Drive, Ladnier Road, and Seaciff Bayou drainage channels. An average of three feet of sediment and debris were deposited in these waterways by hurricane Katrina's storm surge. There has been significant reduction in drainage conveyance, leaving nearby residences and businesses in jeopardy of future flooding. In addition, the exchange of water between the Mississippi Sound and the tidal fringing wetlands associated with these channels has been significantly reduced. Approximately 2.8 miles of drainage channels have been identified as requiring sediment and debris removal. Other drainage channels in the vicinity where sediment removal would not restore lost flood control capacity are not included in this recommendation. Removal of deposited sediment and debris will reduce the possibility of flooding and restore tidal flow to the high quality fringing tidal habitat in these areas. Removal of the blockages will restore use of these streams by fish and shellfish and numerous species of reptiles and shorebirds. Removal of non-biodegradable foreign material and deposited sediments will improve overall water quality by improving circulation. Enhanced drainage in the area will reduce flooding to nearby residences. Restoring lost capacity would involve removal of approximately 73,300 cubic yards of sediment and debris. The estimated cost of these improvements is \$4,570,000. All costs of this project element are allocated to structural flood damage reduction. In accordance with provisions of WRDA 1986, as amended, cost sharing for structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50-percent of total project costs allocated to structural flood damage reduction, including a minimum cash contribution of 5-percent of those costs to be paid during construction. The currently estimated Federal share of the total cost of this project element is \$2,930,000 and the non-Federal share is currently estimated as \$1,640,000.

m. Pascagoula Beach Boulevard Hurricane and Storm Damage Reduction, Jackson County, MS. This project element will consist of the following features: (1) repairing the existing locally constructed seawall which was heavily damaged by Hurricane Katrina, (2) replacing the concrete walls the damaged drainage channel located west of 11th street, (3) replacing that channel's right extension wall pile cap, and (4) restoring the sand beach with installation of vegetated dunes and sand fencing. The seawall protects utilities and a heavily used road that serves as an evacuation route. The sand beach helps to protect the seawall and provides scarce sand beach habitat for

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shore birds of special concern. The drainage channel is an integral part of the community's drainage system. A beach and vegetated dune system will provide foraging and roosting habitat for various migratory and shorebirds birds, including piping plovers and least terns. This habitat is scarce along the northern Gulf coast due to development and recreation pressure and is critical to the existence of many shorebirds. Without a dune system certain fauna species may cease to exist in the project area. Approximately 270,000 cubic yards of beach sand will be placed at the toe of the wall to replace sand lost during the 2005 hurricanes and provide dune habitat for shore birds. The length of this repair is approximately 7,700 feet. The estimated cost of these improvements is \$7,310,000. All costs of this project element are allocated to hurricane and storm damage reduction. I do not recommend Federal participation in long-term periodic renourishment for this project element. I recommend that cost sharing for this project element be 65-percent Federal and 35-percent non-Federal. The Federal share of the total cost of this project element would be \$4,750,000 and the non-Federal share would be \$2,560,000.

n. Upper Bayou Casotte Flood Damage Reduction, Jackson County, MS. This project element consists of restoring lost capacity in local drainage channels within the Upper Bayou Casotte drainage of Jackson County. An average of two feet of sediment and debris were deposited from storm surge during Katrina, causing a significant reduction in conveyance and leaving nearby residences and businesses in jeopardy of future flooding. In addition, the exchange of water between the Mississippi Sound and the tidal fringing wetlands associated with these channels has been significantly reduced. Approximately 2.7 miles of drainage channels have been identified as requiring sediment and debris removal. Removal of deposited sediment and debris will reduce the possibility of flooding and restore tidal flow with habitat in these areas. Other drainage channels in this vicinity where sediment removal would not restore lost flood control capacity were not included in this recommendation. Restoring lost capacity would involve removing approximately 15,900 cubic yards of sediment and debris. The estimated cost of these improvements is \$1,400,000. All costs of this project element are allocated to structural flood damage reduction. In accordance with provisions of WRDA 1986, as amended, cost sharing for structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50-percent of total project costs allocated to structural flood damage reduction, including a minimum cash contribution of 5-percent of those costs to be paid during construction. The currently estimated Federal share of the total cost of this project element is \$910,000 and the non-Federal share is currently estimated as \$490,000.

o. Franklin Creek Floodway Flood Damage Reduction, Jackson County, MS. This project element consists of purchasing 59 parcels, with 29 being unimproved, and removing approximately 24 traditional residences and approximately six mobile homes occupying the heavily damaged community of Pecan, near the Mississippi-Alabama border. These homes were inundated by approximately four and a half feet of water as a result of storm surge created by Hurricane Katrina. This extremely low-lying area would be extremely difficult to protect from local flood events or large hurricane surges. The estimated cost of these purchases and removals

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is \$6,320,000. All costs of this project element are allocated to non-structural flood damage reduction. In accordance with provisions of WRDA 1986, as amended, cost sharing would be 65-percent Federal and 35-percent non-Federal. The currently estimated Federal share of the total cost of this project element is \$4,110,000 and the currently estimated non-Federal share is \$2,210,000.

6. Based on the fiscal year 2006 price levels, the total first cost of the fifteen project elements is estimated at \$107,700,000. All costs of the proposed project elements are allocated to ecosystem restoration, hurricane and storm damage reduction, structural flood damage reduction, or non-structural flood damage reduction. In accordance with provisions of WRDA of 1986, as amended, cost sharing for project elements with costs allocated to ecosystem restoration, hurricane and storm damage reduction, and non-structural flood damage reduction will generally be 65-percent Federal and 35-percent non-Federal. Cost sharing for project elements with costs allocated to structural flood damage reduction requires a minimum non-Federal share of 35-percent, and a maximum share not to exceed 50-percent of those costs, including a minimum cash contribution of 5-percent of those costs to be paid during construction. The currently estimated Federal share of the total project cost is \$70,000,000 and the non-Federal share is currently estimated as \$37,700,000. Significant monetary and non-monetary benefits as described herein would accrue from implementation of the fifteen project elements.

7. Washington level review indicates that the proposed plan will provide significant quantitative and qualitative contributions to the NED, EQ, RED, and OSE accounts defined in the *Economic and Environmental Principles for Water and Related Land Resources Implementation Studies*, and each of the fifteen project elements is a cost-effective improvement in accord with the directives of the Department of Defense Appropriations Act of 2006 (P.L. 109-148). Also, the views of interested parties, including Federal, State, and local agencies, have been considered.

8. During the Washington level review process, the Governor of Mississippi formally expressed strong support and sponsorship for the fifteen project elements discussed herein, as well as an additional eleven coastal environmental restoration project elements, to facilitate further recovery of the coastal Mississippi area. The additional eleven elements, which are contained in the report of the reporting officers, as well as the State of Mississippi's recovery plan, warrant additional analysis to support recommendations with regards to these additional eleven elements.

9. I find that the reporting officers have addressed the interim provisions of P.L. 109-148, and I generally concur in their findings, conclusions, and recommendations. Accordingly, I recommend that the improvements described herein be authorized for implementation in accordance with the reporting officers' plan, with such modifications as in the discretion of the Chief of Engineers may be advisable. This recommendation is subject to cost sharing, financing, and other applicable requirements of Federal and State laws and policies, including WRDA

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1986, as amended, and with the non-Federal sponsor agreeing to comply with applicable Federal law and policies, and with the following requirements:

a. Provide a minimum of 35 percent, but not to exceed 50 percent of total project costs allocated to structural flood damage reduction, as further specified below:

(1) Provide 25 percent of design costs allocated to structural flood damage reduction in accordance with the terms of a design agreement entered into prior to commencement of design work for a project element for structural flood damage reduction;

(2) Provide, during the first year of construction of a project element for structural flood damage reduction, any additional funds necessary to pay the full non-Federal share of design costs allocated to structural flood damage reduction;

(3) Provide, during construction of a project element for structural flood damage reduction, a contribution of funds equal to five percent of total project costs allocated to structural flood damage reduction;

(4) Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Government to be required or to be necessary for the construction, operation, and maintenance of a project element for structural flood damage reduction;

(5) Provide, during construction of a project element for structural flood damage reduction, any additional funds necessary to make its total contribution for structural flood damage reduction equal to at least 35 percent of total costs allocated to structural flood damage reduction;

b. Provide 35 percent of total project costs allocated to hurricane and storm damage reduction, as further specified below:

(1) Provide 25 percent of design costs allocated to hurricane and storm damage reduction in accordance with the terms of a design agreement entered into prior to commencement of design work for a project element for hurricane and storm damage reduction;;

(2) Provide, during the first year of construction of a project element for hurricane and storm damage reduction, any additional funds necessary to pay the full non-Federal share of design costs allocated to hurricane and storm damage reduction;

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(3) Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Government to be required or to be necessary for the construction, operation, and maintenance of a project element for hurricane and storm damage reduction;

(4) Provide, during construction of a project element for hurricane and storm damage reduction, any additional amounts as are necessary to make its total contribution for hurricane and storm damage reduction equal to 35 percent of total project costs allocated to hurricane and storm damage reduction;

c. Provide 35 percent of total project costs allocated to ecosystem restoration, as further specified below:

(1) Provide 25 percent of design costs allocated to ecosystem restoration in accordance with the terms of a design agreement entered into prior to commencement of design work for a project element for ecosystem restoration;

(2) Provide, during the first year of construction of a project element for ecosystem restoration, any additional funds necessary to pay the full non-Federal share of design costs allocated to ecosystem restoration;

(3) Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Government to be required or to be necessary for the construction, operation, and maintenance of a project element for ecosystem restoration;

(4) Provide, during construction of a project element, any additional funds necessary to make its total contribution for ecosystem restoration equal to 35 percent of total project costs allocated to ecosystem restoration;

d. Provide 35 percent of total project costs allocated to nonstructural flood damage reduction, as further specified below:

(1) Provide 25 percent of design costs allocated to nonstructural flood damage reduction in accordance with the terms of a design agreement entered into prior to commencement of design work for a project element for nonstructural flood damage reduction;

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(2) Provide, during the first year of construction of a project element for nonstructural flood damage reduction, any additional funds necessary to pay the full non-Federal share of design costs allocated to nonstructural flood damage reduction;

(3) Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Government to be required or to be necessary for the construction, operation, and maintenance of a project element for nonstructural flood damage reduction;

(4) Provide, during construction of a project element for nonstructural flood damage reduction, any additional funds necessary to make its total contribution for nonstructural flood damage reduction equal to 35 percent of total project costs allocated to nonstructural flood damage reduction;

e. Not use funds from other Federal programs, including any non-Federal contribution required as a matching share therefor, to meet any of the non-Federal obligations for a project element unless the Federal agency providing the Federal portion of such funds verifies in writing that expenditure of such funds for such purpose is authorized;

f. Not use a project element for ecosystem restoration or lands, easements, and rights-of-way required for a project element for ecosystem restoration as a wetlands bank or mitigation credit for any other project or project element;

g. Not less than once each year, inform affected interests of the extent of protection afforded by the project elements for structural flood damage reduction, nonstructural flood damage reduction, or hurricane and storm damage reduction;

h. Agree to participate in and comply with applicable Federal floodplain management and flood insurance programs for project elements for structural flood damage reduction, nonstructural flood damage reduction, or hurricane and storm damage reduction;

i. Comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12), which requires a non-Federal interest to prepare a floodplain management plan within one year after the date of signing a project cooperation agreement, and to implement such plan not later than one year after completion of construction of a project element for structural flood damage reduction, nonstructural flood damage reduction, or hurricane and storm damage reduction;

j. Publicize floodplain information in the area concerned and provide this information to

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zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with protection levels provided by a project element for structural flood damage reduction, nonstructural flood damage reduction, or hurricane and storm damage reduction;

k. For so long as a project element for hurricane and storm damage reduction remains authorized, ensure continued conditions of public ownership and use of the shore upon which the amount of Federal participation is based;

l. For so long as a project element for hurricane and storm damage reduction remains authorized, provide and maintain access roads, parking areas, and other public use facilities, open and available to all on equal terms;

m. Prevent obstructions or encroachments on a project element (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project element lands, easements, and rights-of-way or the addition of facilities which might reduce the level of protection a project element affords, reduce the outputs produced by a project element, hinder operation and maintenance of a project element, or interfere with a project element's proper function;

n. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way required for construction, operation, and maintenance of a project element, including those necessary for relocations, the borrowing of materials, or the disposal of dredged or excavated material; and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;

o. For so long as a project element remains authorized, operate, maintain, repair, rehabilitate, and replace the project element, or functional portions of the project element, including any mitigation features, at no cost to the Federal Government, in a manner compatible with the project element's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;

p. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to a project element for the purpose of completing, inspecting, operating, maintaining, repairing, rehabilitating, or replacing the project element;

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q. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, rehabilitation, and replacement of a project element and any betterments, except for damages due to the fault or negligence of the United States or its contractors;

r. Keep and maintain books, records, documents, or other evidence pertaining to costs and expenses incurred pursuant to a project element, for a minimum of three years after completion of the accounting for which such books, records, documents, or other evidence are required, to the extent and in such detail as will properly reflect total project costs, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;

s. Comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army"; and all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701 – 3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c *et seq.*);

t. Perform, or ensure performance of, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for construction, operation, and maintenance of a project element. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction;

u. Assume, as between the Federal Government and the non-Federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for construction, operation, and maintenance of a project element;

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v. Agree, as between the Federal Government and the non-Federal sponsor, that the non-Federal sponsor shall be considered the operator of a project element for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, repair, rehabilitate, and replace the project element in a manner that will not cause liability to arise under CERCLA; and

w. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5b), and Section 103(j) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213(j)), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until each non-Federal interest has entered into a written agreement to furnish its required cooperation for the project or separable element.

10. The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding. However, prior to transmittal to the Congress, the non-Federal sponsor, the State, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.



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