

REPORT SUMMARY

Mississippi Coastal Improvement Program (MsCIP) Interim Report

STUDY INFORMATION

Study Authority. In response to the hurricanes of 2005 that caused unprecedented destruction within the Gulf Region of the United States, Congress directed the U.S. Army Corps of Engineers in the Department of Defense Appropriations Act, 2006 (P.L. 109-148), dated 30 December 2005, to:

“...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.”

This mission requires that the Secretary of the Army provide a report to Congress by 30 June, 2006, that recommends “near-term” improvements and a plan of action to develop a comprehensive plan of improvements. The recommendations for comprehensive improvements will be provided to Congress by December 31, 2007. The ASA(CW) letter to congress, dated 30 June 2006, provided the status of the interim report on the Mississippi Coastal Improvements Program, in response to the department of defense Appropriations Act, 2006 (P.L. 109-148), dated 30 December 2005.

Non-Federal Project Sponsor(s). The potential non-Federal sponsor(s) for project implementation include the State of Mississippi, and the counties of Hancock, Harrison, and Jackson, Mississippi.

Study Purpose and Scope. The report is an interim response to the study authority. The study purpose is to recommend near-term actions and activities to address problems created by the hurricanes of 2005. The near-term actions and activities address four primary areas: 1) hurricane and storm damage reduction, 2) prevention of saltwater intrusion, 3) preservation of fish and wildlife, 4) prevention of erosion, and other related water resource purposes. The scope of study consists of the three coastal counties comprising the State of Mississippi; Hancock, Harrison, and Jackson counties, and the coastal (offshore) ecosystem including its barrier islands.

Project Location/Congressional District. Recommendations made in this report encompass the entire three-county area of coastal Mississippi, with specific actions in each county. The study area is contained within the 4th Congressional District of US House Representative Gene Taylor of Mississippi, also represented by Senators Thad Cochran and Trent Lott.

Prior Reports and Existing Water Projects. There are no relevant prior reports or existing water projects that address this specific problem set. Evacuation planning as an overall activity has been addressed by an interagency group consisting of the Corps of Engineers, FEMA, NOAA, and the State of Mississippi Emergency Management Agency, and documented in the *Mississippi Hurricane Evacuation Study; Technical Data Report for Hancock, Harrison, and Jackson Counties; USACE, April 2002*. That report contains a summary of on-going efforts to improve evacuation planning and implementation within coastal Mississippi. This interim report recommends continued support for this program, and updating of recommendations contained therein, based on study findings.

Federal Interest. The recommendations made in this interim report are in the Federal interest and conform to traditional Corps of Engineers’ mission areas. However, the direction given the Corps in the study authorizing

language does not comply with traditional Corps project planning and development guidance and current Administration policy regarding maximizing national economic development benefits or demonstrating cost-effectiveness of national ecosystem restoration plans. Nevertheless, all recommendations for near-term improvements made in this Interim Report are considered cost-effective solutions to immediate problems in the study area. All recommendations comply with the authorizing language stated above.

STUDY OBJECTIVES

Problems and Opportunities. The hurricanes of 2005 caused numerous deaths and injuries to local residents and visitors to the area, extensive damage to environmental resources, homes, businesses and industries, exacerbated saltwater intrusion problems, caused widespread coastal erosion, and damage to public infrastructure and the regional economy. Damage from hurricane-induced storm surge was particularly devastating along the coast of Mississippi. Hurricane Katrina alone caused over \$125 billion in damages along the Mississippi coast; caused 236 deaths statewide, and resulted in 67 missing; destroyed 65,380 homes, and resulted in 141,000 insurance claims in the three-county area.

Opportunities identified for the interim report study effort included addressing 2005 hurricane-caused: 1) storm damage to public infrastructure; 2) flood inundation to public infrastructure; 3) saltwater intrusion problems; and 4) damage to ecosystems supporting important fish and wildlife resources. Additional, opportunities include addressing the need for potential future structural and non-structural solutions to the problems identified above.

Planning Objectives. The objectives established for this interim report included identification and analysis of problems related to the hurricanes of 2005, development of measures to solve those problems, formulation of plans and alternatives, screening of measures and alternatives, and presentation of a package of recommendations directed at addressing the identified problems.

Planning Constraints. Constraints to the planning process included the necessity of developing solutions that: 1) could be engineered within the timeframe available for submittal of the interim report to Congress on June 30, 2006, 2) would not necessitate environmental mitigation or compliance activities that would prevent implementation in the near-term, and 3) would provide sound, cost-effective solutions to the identified problem set. All recommendations complied with State and local mandates in regards to environmental goals and objectives for the study area, and no impacts to threatened or endangered species, or critical habitats, are anticipated.

ALTERNATIVES

Plan Formulation Rationale. The ongoing MsCIP comprehensive study and this interim report comply with the Congressional legislative direction governing this effort. The analysis process for the near-term recommendations essentially followed ER 1005-2-100, the Corps' "Planning Guidance Notebook," with the specific exclusion of the determination of National Economic Development and National Ecosystem Restoration Plans and conduct of an incremental analysis, as called for in the authorizing language. In general the plan formulation followed the traditional sequence of identifying problems, opportunities, and planning constraints, developing and screening measure to address problems, formulating alternatives, screening alternatives using established "System of Accounts" criteria, and selection of recommended plans based on cost-effectiveness, technical, environmental, and acceptability criteria.

Management Measures and Alternative Plans. Management measures analyzed included sediment and debris removal; replacement of eroded coastal marsh substrate; restoration of protective materials, seawalls, and other natural and man-made features; modification or creation of plans, guidance and activities aimed at public safety, warning, evacuation and damage reduction; development of non-structural damage reduction measures such as purchase and removal plans, flood warning, structure elevation, flood proofing, and flood

insurance, and structural measures such as barrier island modification, dune and berm modification or restoration, coastal marsh restoration, road and property modification, embankment, dike and floodwall installation, and other natural and engineered modifications that address the four mission areas identified in the authorizing language. Potential measures were assembled to provide solutions for each problem area, and screened based on: a) technical feasibility; b) environmental feasibility, and; c) potential economic (identification of a cost-effective solution) feasibility. Each problem area was then evaluated for its priority in terms of immediate need, scale of damages, and ability to be addressed in a near-term approach. The list of general measures developed for each problem area was further refined, and specific measures were formulated for each site. These measures were then evaluated and screened once again, according to their continued technical, environmental and cost-effectiveness feasibility, based on more detailed input from agencies and technical staff, and their ability to be combined into multi-purpose alternatives, capable of dealing with more than one identified problem at a given site. The screened list of measures was then combined into a group of well-balanced alternatives.

Final Array of Alternatives. Final alternatives consisted of steel, aluminum, or vinyl sheet-pile repairs to existing seawalls; structural channel modifications; residential purchase and removal plans; dune restoration or beach modification plans; sediment and debris removal or channel modifications to restore drainage flow, and repair of existing structures using different methods and materials.

Comparison of Alternatives. Alternatives were compared using a “System of Accounts” analysis consisting of traditional NED, EQ, RED, and OSE accounts, with the goal of comparing and contrasting cost-effectiveness, environmental quality issues, regional economic development, and societal effects, including consideration of low-income and ethnic populations. All final alternatives were evaluated to determine the best balance of components that would achieve the most cost-effective solution, while maintaining technical and environmental feasibility. Because the legislative language *specifically excluded the preparation or presentation of an NED plan (i.e., the plan that generates the greatest net benefit), or a Benefit-to-Cost (B/C ratio)*, neither of these were developed. Nevertheless, each alternative chosen as a recommendation was demonstrated to be both; a) cost-effective in comparison to other screened potential projects, and b) the most cost-effective option possible at the chosen problem area. Alternatives were additionally compared and contrasted according to their achievement of the additional criteria of: a) effectiveness; b) completeness; c) acceptability, and d) efficiency (cost-effectiveness) according to applicable Corps guidelines. The resulting recommendations provide the best balance of all criteria, in pursuit of a solution for a specific problem or problem site.

Additional criteria used to identify measures evaluated for the MsCIP near-term recommendations included:

- Does a proposed measure or alternative provide an increase in the level of education on hurricane risks?
- Does a proposed measure or alternative provide a decrease in time before one would be warned of an impending hurricane event (i.e., more time to prepare)?
- Does a proposed measure or alternative provide an increased level of precision in information on the level of threat (i.e., better information on landfall location and magnitude of the event)?
- Does a proposed measure or alternative provide an increase in the effectiveness of hurricane/storm warning to area residents and visitors?
- Does a proposed measure or alternative provide better education as to evacuation options, required items a family or business might want to evacuate, and definitive information on routes to safety?
- Does this proposed effort duplicate or compliment the work of others?
- Does an alternative fit within the context of a larger, more comprehensive approach toward any of the required mandates of storm damage reduction, fish and wildlife preservation, saltwater intrusion remediation, or coastal erosion protection?

- Is a potential alternative sustainable after implementation?
- Does the alternative address environmental justice or have environmental justice implications?
- Does a potential alternative provide a potential reduction in hurricane or storm damage (if applicable)?
- Does a potential alternative provide a potential reduction in coastal erosion (if applicable)?
- Does a potential alternative provide a potential reduction in the extent or level of saltwater intrusion (if applicable)?
- Does a potential alternative provide for potential preservation of fish and wildlife and their habitats (if applicable)?
- Does a proposed action or project negatively impact low income or minority populations?
- Is the cost of a potential alternative reasonable in the light of the risk and consequences of not implementing the project?
- Are there unresolved issues (with other groups or organizations) regarding the proposed solution that may lead to longer implementation times?
- Would a proposed activity or project have potential regulatory and/or environmental issues that would preclude being implemented in the near-term?
- Does the proposed project fit in with, or complement the objectives of the State and/or locals plans and desires for this area?
- Would the implantation of the proposed project preclude other future options that may have a higher level of contribution or damage reduction?
- Does the proposed project contribute to the short or longer-term recovery of coastal Mississippi?

Recommended Plan. The recommended plan for near-term recommendations for the coastal Mississippi study area includes the following components:

Evacuation Planning. The critical need for adequate evacuation planning was borne out by Hurricane Katrina. An evacuation plan is an essential component of a comprehensive plan for ensuring the safety of residents of, and visitors to, the coast of Mississippi. The preservation of life is the single most important goal and objective of the recommendations presented in this Interim Report. The joint FEMA/NOAA/COE/MEMA task force's *Mississippi Hurricane Evacuation Study* of April 2002 has provided great value to-date in aiding local government, individual and family readiness, in the face of approaching events. There is still much that can be done to update this on-going effort, and to provide new, and more widely-disseminated tools in evacuation planning by local county and city governments, and also for use by individuals and families in their preparation for an impending event. Support for this program is a critical element of the recommendations for coastal Mississippi.

Bayou Caddy Ecosystem Restoration, Hancock County, MS. This recommendation consists of restoration of marshlands badly damaged during the hurricanes of 2005. Restoration would involve use of clean concrete rubble created by the demolition of local projects for use in development of a protective breakwater, construction of an earthen containment barrier, fill material placement of approximately 120,000 cubic yards to re-establish the marsh substrate, and planting of native vegetation on the approximately 18-acre site.

Hancock County Beaches Hurricane and Storm Damage Reduction, Hancock County, MS. This recommendation consists of restoring a destroyed dune field atop an existing 6-mile long beach system. The plan would replace approximately 31,000 cubic yards of lost sand dune material and

add stabilizing fencing and dune vegetation. The finished stable dune would be approximately 2 feet high with a crest width of approximately 10 feet. The material will come from the established upland borrow areas within 10 miles of the work area. Plantings would have a density of 1 plant per 4 square feet and the fence would protect the entire length of the project site.

Hancock County Streams Flood Damage Reduction, Hancock County, MS. This recommendation consists of restoring lost capacity in local drainage channels, caused by sediment and debris deposition resulting from storm surge during Hurricane Katrina. Sediment and debris deposition has caused a reduction in conveyance, leading to inundation of residences and businesses within the communities adjacent to these channels. Channels where sediment and debris removal would not restore lost flood drainage capacity are not included in this recommendation. Restoring lost drainage capacity would involve removal of approximately 1,035,500 cubic yards of sediment and debris.

Jackson Marsh Ecosystem Restoration, Hancock County, MS. This recommendation consists of repairing numerous outfalls heavily damaged by Hurricane Katrina, to restore connection of Jackson Marsh to the Gulf. The marsh is a high value resource along this reach of the coast, providing habitat for numerous species. Blockage of 12 of 15 existing outfalls has already caused damage to the resource. The repair would reinforce portions of the 12 damaged existing outlet channels with vinyl sheet-pile, and remove deposited sediment and debris blocking the outfalls. The average length of the outfall structures is approximately 155 feet.

Clermont Harbor Hurricane and Storm Damage Reduction, Hancock County, MS. This recommendation consists of replacing erosion protection on an existing seawall heavily damaged by Hurricane Katrina, to prevent undermining and failure of the structure. The seawall protects a heavily-used road, which serves as an evacuation route, and associated utilities. The repair would incorporate the existing seawall, with emplacement of a new sheet-pile toe wall seaward of that feature, tied together by construction of a new concrete cap. The length of this repair is approximately 2,000 feet.

Downtown Bay St. Louis Hurricane and Storm Damage Reduction, Hancock County, MS. This recommendation consists of replacing a seawall heavily damaged or destroyed by Hurricane Katrina, with a new gravity concrete seawall. The seawall protects a heavily-used road, which serves as an evacuation route, and associated utilities. The new seawall would consist of a concrete gravity concrete seawall approximately 6,500 feet in length, incorporating 20-inch and 14-inch pre-stressed foundation piles, vinyl sheet-pile cut-off wall, cast in-place concrete, scour protection, and new storm drains. The top elevation of the new wall would match the existing elevation of Beach Boulevard ranging from approximately, 7 feet NGVD to 20 feet NGVD (approximately 10 feet higher than the original wall) to minimize future storm and erosion damage to the road and utilities landward of this feature.

Cowand Point Hurricane and Storm Damage Reduction, Hancock County, MS. This recommendation consists of replacing erosion protection on an existing seawall heavily damaged by Hurricane Katrina, to prevent undermining and failure of the structure. The seawall protects a heavily-used road, which serves as an evacuation route, and associated utilities. The repair would incorporate the existing seawall, with emplacement of a new sheet-pile toe wall seaward of that feature, tied together by construction of a new concrete cap. The length of this repair is approximately 5,000 feet.

Long Beach Canals Flood Damage Reduction, Harrison County, MS. This recommendation consists of replacement of a damaged culvert, canal modification, bank stabilization, sediment and debris removal, construction of a diversion channel and bridge replacement in and along Canal 2 in Harrison County. These modifications would significantly improve floodwater conveyance,

aesthetics, and circulation for better water quality and fish habitat conditions. Work would include 375 feet of 24-inch culvert and 263,000 cubic yards of sediment removal.

Harrison County Beaches Ecosystem Restoration and Hurricane Storm Damage

Reduction, Harrison County, MS. This recommendation consists of restoring approximately 26 miles of dune systems, along a reconstructed beach, destroyed by Hurricane Katrina. These beach dune systems played host to the largest concentration of Least Tern on the entire Mississippi coast, and were also valued habitat for other coastal species. Restoration would consist of placement of approximately 681,000 cubic yards of dune sand, fencing along a 134,000 foot perimeter, to offer protection to the resource, and approximately 125 acres of native vegetation plantings. The 5-foot high profile dune system would provide a secondary hurricane storm damage reduction benefit by absorbing surge and wave energy along this heavily-trafficked and occupied portion of the Mississippi coastline.

Courthouse Road Flood Damage Reduction and Ecosystem Restoration, Harrison County, MS.

This recommendation consists of replacing 14 channel braces and restoring 14,200 square feet of adjacent marshland, both damaged by Hurricane Katrina. The channel walls protect adjacent land from erosion and potential collapse into the channel outfall, while the marsh provides avian and aquatic species habitat. The repair would install new pre-cast concrete channel braces, to prevent failure of the channel walls, anchoring to prevent future damage, and restoration of the damaged marsh by placement of fill, grading, and planting of native vegetation. The length of the channel repair is approximately 235 feet.

Shearwater Bridge Hurricane Storm Damage Reduction, Jackson County, MS. This recommendation consists of repairing the damaged approaches to Shearwater Bridge, a local traffic artery and evacuation route damaged during Hurricane Katrina. Failure to repair the approaches could result in failure of the approach and roadway surface during a future storm event. Repairs would consist of placement of vinyl sheet-pile along the bridge abutments, sand fill, and a concrete cap.

Gautier Coastal Streams Flood Damage Reduction, Jackson County, MS. This recommendation consists of restoring lost capacity in the Old Spanish Trail, Graveline Bayou, Hiram Drive, Ladner Road, and Seaciff Bayou drainage channels, caused by sediment and debris deposition resulting from storm surge during Hurricane Katrina. Sediment and debris deposition has caused a reduction in conveyance, leading to inundation of residences and businesses within the communities adjacent to these channels. The total length of channels requiring clean-out is approximately 2.7 miles. Restoration of tidal flow will re-establish saltwater exchange with habitat in these areas. Channels in which sediment removal would not restore lost flood control capacity are not included in this recommendation. Restoration of lost capacity would involve removal of approximately 73,300 cubic yards of sediment and debris.

Pascagoula Beach Boulevard Hurricane and Storm Damage Reduction, Jackson County, MS.

This recommendation consists of repairing an existing seawall heavily damaged by Hurricane Katrina, with vinyl sheet-pile reinforcement of the existing breakwater, replacement of joint caulking, repair of an existing outfall channel, cell capping, and construction of new concrete channel wall panels. The seawall protects a heavily-used road, which serves as an evacuation route, and associated utilities. The repair would incorporate portions of the existing seawall, with emplacement of a new sheet-pile seaward of that feature, tied together by construction of a new concrete cap. Approximately, 270,000 cubic yards of beach sand at the toe of the wall would replace sand lost during the hurricane. The length of this repair is approximately 2,590 feet.

Upper Bayou Casotte Flood Damage Reduction, Jackson County, MS. This recommendation consists of restoring lost capacity in local drainage channels, caused by sediment and debris deposition resulting from storm surge during Hurricane Katrina. Sediment and debris deposition has caused a reduction in conveyance, leading to inundation of residences and businesses within the communities adjacent to these channels. The total length of channels requiring sediment and debris removal is approximately 2.7 miles. Channels where debris removal would not restore lost flood drainage capacity are not included in this recommendation. Restoration of lost capacity would involve removal of approximately 15,900 cubic yards of sediment and debris.

Franklin Creek Floodway Flood Damage Reduction, Jackson County, MS. This recommendation consists of purchase and removal of approximately 24 traditional slab-on-grade or curtain-wall-foundation 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 low-lying area would be extremely hard to protect from any number of land-based flood events or large hurricane surges

Systems/Watershed Context. The package of recommendations above was created to function largely as a means of assisting the people of coastal Mississippi in their recovery and aid in the path to normalcy; however, each of the recommendations functions as a piece of a larger, integrated solution. None of the recommendations will require modification or removal, regardless of the measures chosen in the follow-on Comprehensive Plan development.

Environmental Operating Principles. The USACE Environmental Operating Principles were integral to the MsCIP planning process and decision making. First of all, public views were sought and respected. Active public involvement contributed significant two-way learning. The interdependence of the natural and human environment was highly valued. The citizens of Mississippi sought, and a MsCIP goal was, to balance natural and engineered solutions. The MsCIP supports the Governor's Seven Point Strategy for environmental restoration of the Mississippi coast. Accordingly, the majority of MsCIP near-term recommendations have an ecosystem restoration component. The near-term projects support environmental sustainability and contribute to present and future environmental well-being. The MsCIP is in compliance with all applicable Federal and State environmental laws and policy directives.

Independent Technical Review. The interim report has undergone an Independent Technical Review (ITR) conducted by the Corps' National Planning Center of Expertise for Hurricane and Storm Damage Reduction in the North Atlantic Division (NAD). The ITR has been coordinated by the Philadelphia District and utilized resources of NAD, other Corps Divisions, and the Engineer Research and Development Center (ERDC). Comments made by the ITR team and responses to those comments, are documented in the ITR package, which is provided as an attachment to Interim Report package. Certification of completion of ITR is also provided as part of that package.

External Peer Review (EPR) of the interim report has been coordinated and managed by the Baltimore District as part of their duties as the National Planning Center of Expertise for Hurricane and Storm Damage Reduction. Appropriate scientists within academia were identified and charged with the review. Because EPR is traditionally limited to projects of a particularly complex or contentious nature, most of the EPR concentrated on implications made during conduct of the Interim Report, and potential issues related to the Comprehensive Plan. Comments made by the EPR team, and responses to those comments, are documented in the EPR package, and provided as an attachment to the Interim Report. Certification of completion of EPR is also provided as part of that package.

The conduct of this study considered information generated by the Interagency Performance Evaluation Task Force (IPET). That information will be included in the development of alternatives for the Comprehensive Plan alternatives.

EXPECTED PROJECT PERFORMANCE

Expected Performance. Traditional national economic development (NED) and ecosystem restoration (ER) benefits were captured both quantifiably and qualitatively. Quantifiable NED benefits include \$3,994,000 in variable vehicle operating costs, value of time lost, and vehicle maintenance savings and \$11,954,000 in incidental recreation benefits. Flood damage reduction and hurricane and storm damage reduction benefits were qualitatively evaluated by the Project Delivery Team in terms of minimal, moderate, and significant impact with regard to project performance. The level of these benefits per project varies across all three ranges but the overall effectiveness of the projects is expected to be in the moderate to significant (upper) range.

Quantifiable benefits captured by the ER account include: 995.33 acres of tidal wetland restoration, 13,500 linear feet (2.6 miles) of coastline stabilization, 96.5 acres of vegetative dune creation, and 64,760 linear feet (12.3 miles) of restoration to coastal streams and waters. These outputs were evaluated using Institute for Water Resources Report 94-PS-2 *Cost Effectiveness Analysis for Environmental Planning: Nine Easy Steps*, and are the sum of the best buy plans for all the projects. Other ER benefits including aesthetic value, improved tidal flow, and improved fish migration were qualitatively evaluated in the same manner as previously mentioned. As with the NED, the level of these benefits per project varies across all three ranges, but the overall effectiveness of the projects is expected to be in the moderate to significant (upper) range.

Project Costs. The costs of the near-term recommendations are summarized below. All figures are expressed at current price levels.

Summary of Near-Term Recommendations Initial Implementation Costs

Name	Construction Cost (\$1,000's)	LERRD (\$1,000's)	E&D (\$1,000's)	S&A (\$1,000's)	Contingency (\$1,000's)	Estimated Cost**
Hurricane Evacuation Plng.	n/a	n/a	n/a	n/a	n/a	\$10,000,000*
Bayou Caddy	\$4,004,636	\$225,000	\$422,964	\$279,156	\$761,351	\$5,690,000
Hancock County Beaches	\$914,149	\$150,000	\$106,415	\$70,234	\$218,160	\$1,460,000
Hancock County Streams	\$4,224,045	\$862,500	\$406,924	\$329,608	\$992,115	\$6,820,000
Jackson Marsh	\$1,974,613	\$225,000	\$219,961	\$145,174	\$467,950	\$3,030,000
Clermont Harbor	\$838,078	\$150,000	\$99,000	\$65,000	\$200,416	\$1,350,000
Downtown Bay St. Louis	\$21,461,758	\$150,000	\$1,296,706	\$1,374,508	\$4,856,594	\$29,140,000
Cowand Point	\$2,632,004	\$150,000	\$278,000	\$184,000	\$618,801	\$3,860,000
Long Beach Canals	\$16,280,045	\$975,000	\$1,640,884	\$1,329,116	\$3,256,009	\$23,480,000
Harrison County Beaches	\$9,756,016	\$150,000	\$792,481	\$641,910	\$2,238,081	\$13,580,000
Courthouse Road	\$243,010	\$150,000	\$39,301	\$25,938	\$61,650	\$520,000
Shearwater Bridge	\$809,216	\$292,500	\$110,172	\$72,713	\$198,420	\$1,480,000
Gautier Coastal Streams	\$2,624,761	\$375,000	\$239,981	\$194,385	\$611,826	\$4,050,000
Pascagoula Beach Blvd.	\$5,196,465	\$150,000	\$534,647	\$352,867	\$1,216,796	\$7,450,000
Upper Bayou Casotte	\$722,668	\$262,500	\$78,813	\$63,839	\$173,064	\$1,300,000
Franklin Creek Floodway	\$2,851,230	\$210,000	\$244,898	\$198,368	\$658,899	\$4,160,000
Total	\$74,532,694	\$4,477,500	\$6,511,147	\$5,326,816	\$16,530,132	\$117,370,000

* Hurricane Evacuation Planning is currently a FEMA mission, and is a critical element of the recommendations made in the Interim Report. This cost may not be part of a funding package directed at Corps of Engineers implementation.

**Rounded to nearest \$10,000; E&D is 8% in some cases, 10% in others

Equivalent Annual Costs and Benefits. Because the authorizing language specifically excluded the completion of a benefit-cost analysis, that information was not developed; however, each recommendation's contribution to the NED, EQ, RED, and OSE accounts is summarized below.

Recommended Plans - Outputs and Achievements

Project Name	County	Impacts to NED ¹	Impacts to EQ	Impacts to RED ²	Impacts to OSE
Bayou Caddy	Hancock	Affects: 2,800 people; 1,500 structures (value not available)	FHI score of 465; 18 acres of tidal wetlands and estuarine habitat; Prevention of future shoreline erosion losses	Increase of: \$14,651,000 in sales \$3,533,000 in income; 90 new jobs	Improved community cohesion Potential increase in tax revenue from new jobs
Hancock County Beaches	Hancock	Affects: 13,500 people; 6,800 structures-average value of \$85,000; \$795,000 in avg. annual recreation benefits	FHI score of 405; 14.5 acres (8 miles) of vegetated dune habitat; Benefits to nearshore ecosystem including protected shorebirds	Increase of: \$4,493,000 in sales \$1,083,000 in income 28 new jobs	Improved community cohesion; Potential increase in tax revenue from new jobs
Hancock County Streams	Hancock	Affects: 17,500 people; 9,100 structures-average value of \$78,400; \$3,820,000 in avg. annual recreation benefits	FHI score of 195; 35,000 linear feet (6.6 miles) of coastal stream and waters; restoration of circulation and tidal exchange	Increase of: \$16,096,000 in sales \$3,881,000 in income 98 new jobs	Improved community cohesion Reduce risk of harm to children and pets Potential increase in tax revenue from new jobs
Jackson Marsh	Hancock	Affects: 2,800 people; 1,500 structures (value not available); prevent loss of 1,000 ac coastal marsh	FHI score of 525; Connectivity to MS Sound restored for 977 acres of tidal salt marsh wetland	Increase of: \$13,894,000 in sales \$3,350,000 in income; 86 new jobs	Improved community cohesion Potential increase in tax revenue from new jobs
Clermont Harbor	Hancock	Affects: 7,800 people; 4,100 structures-average value of \$86,100; Avg. Annual reduction of \$1,206,000 in road damage, vehicle operating, and maintenance costs	2000 linear feet of seawall modification; Shoreline stabilization, reduce erosion	Increase of: \$5,327,000 in sales \$1,284,587 in income 33 new jobs	Improved community cohesion; Potential increase in tax revenue from new jobs
Downtown Bay St. Louis	Hancock	Affects: 5,700 people; 2,700 structures-average value of \$83,900; \$2,267,000 in avg. annual costs and damage	6500 linear feet of seawall modification; Shoreline stabilization, reduce erosion	Increase of: \$2,067,000 in sales \$412,000 in income 12 new jobs	Improved community cohesion; Potential increase in tax revenue from new jobs
Cowand Point	Hancock	Affects: 5,700 people; 2,700 structures-average value of	5000 linear feet of seawall modification; Shoreline	Increase of: \$12,656,000 in sales \$3,052,000 in	Improved community cohesion; Potential increase in tax revenue from new jobs

Project Name	County	Impacts to NED ¹	Impacts to EQ	Impacts to RED ²	Impacts to OSE
		\$83,900; \$510,500 in avg. annual damage and costs	stabilization, reduce erosion	income 76 new jobs	
Long Beach Canals	Harrison	Affects: 12,600 people; 4,900 structures- average value of \$88,000	Removal of debris; Improved habitat; improved fish migration	Increase of: \$57,375,000 in sales \$12,145,000 in income 364 new jobs	Improved community cohesion; Reduce risk of harm to children and pets; Potential increase in tax revenue from new jobs
Harrison County Beaches	Harrison	Affects: 23,000 people; 13,100 structures (value not available); \$4,707,000 in avg. annual rec. benefits	FHI score of 405; 47 acres (26 miles) of vegetated dune habitat; Benefits to nearshore ecosystem	Increase of: \$39,064,000 in sales \$7,618,000 in income 221 new jobs	Improved community cohesion; Potential increase in tax revenue from new jobs
Courthouse Road	Harrison	Affects: 4,200 people; 2,500 structures (value not available)	FHI score of 525; 0.33 acres of coastal marsh and associated wetland functional values	Increase of: \$3,081,000 in sales \$805,000 in income 24 new jobs	Improved community cohesion; Potential increase in tax revenue from new jobs
Shearwater Bridge	Jackson	Affects: 10,400 people; \$330 in avg. annual reduction in vehicle operating costs	Estuarine shoreline stabilization; Improvement of aesthetics	Increase of: \$3,489,900 in sales \$680,600 in income	Improved community cohesion Potential increase in tax revenue from new jobs
Gautier Coastal Streams	Jackson	Affects: 12,500 people; 4,900 structures- average value of \$76,100	FHI score of 245; 14,880 linear feet of coastal streams; Removal of sediment and debris Restore ecosystem connectivity	Increase of: \$11,840,000 in sales \$2,309,000 in income 67 new jobs	Improved community cohesion; Reduce risk of harm to children and pets Potential increase in tax revenue from new jobs
Pascagoula Beach Boulevard	Jackson	Affects: 6,400 people; 2,900 structures- average value of \$68,500; \$20,500 avg. annual reduction in damage and costs; \$2,632,200 avg. annual recreation benefits	FHI score of 395; 35 acres (7,700 feet) of beach with vegetated dunes; Benefits nearshore ecosystem Beach/shallow water edge benefits aquatic habitats	Increase of: \$50,789,000 to sales \$9,905,152 to income 288 new jobs	Improved community cohesion Potential increase in tax revenue from new jobs
Upper Bayou Casotte	Jackson	Affects: 10,400 people; 4,100 structures- average value of \$59,400	14,880 linear feet of coastal streams; Improved habitat Improved water quality; ecosystem connectivity	Increase of: \$3,554,000 in sales; \$693,028 in income; 19 new jobs	Improved community cohesion; Reduce risk of harm to human beings
Franklin Creek Floodway	Jackson	Affects: Approx. 150 people; Full FDR benefits from the buyout of approx. 30 structures-average value of \$50,000	180 acres coastal pine savannah; Remove obstacles for restoration of hydrology of overland flows into Grand Bay	Increase of: \$0 to sales; \$0 to income; 0 new jobs	No future development of land for residential or commercial purposes

1. Population and structure counts represent the total possible number that could be affected. Structure value is for the dwelling only and does not include land value or the value of any secondary structures. All numbers are rounded to the nearest hundred.

2. All numbers are rounded to the nearest hundred except for employment.

* Functional Habitat Index, or FHI score, is a measure of the functional capacity of a given area of habitat.

Cost-Sharing. Applying current legislative (traditional) cost-sharing guidance hurricane storm damage or flood damage reduction benefits would generally be cost-shared on a 65-percent Federal/35-percent non-Federal basis. Similarly, those components with ecosystem restoration (“fish and wildlife preservation”) benefits would also be cost-shared on a 65-percent Federal/35-percent non-Federal basis. Under consideration, current Administration policy on comprehensive multi-purpose programs of this nature, including the Comprehensive Everglades Restoration Programs, is cost shared 50-percent Federal, 50-percent non-Federal. Those limited benefits attributable to recreation in association with the above projects would traditionally be cost-shared on a 50-percent Federal/50-percent non-Federal basis.

Project Implementation. The non-Federal sponsors for the recommended actions have not been explicitly identified at this time. The State of Mississippi, the counties of Hancock, Harrison, and Jackson, and all communities impacted, are supportive of the recommended actions; however, the impact of Hurricane Katrina, in particular, has left many of these entities with few financial resources. The issue of non-Federal sponsorship remains to be resolved. Because each one of the recommendations could be implemented independently, project implementation would vary base on funding. Obviously, the critical nature of many of the recommendations makes their implementation a local priority, but they could also be phased. Many of the smaller recommendations, such as Shearwater Bridge, could be implemented in as little as two or three months following completion of engineering design and plans and specification which could also be done in that timeframe. Implementation of larger recommendations such as Harrison County Beaches or Downtown Bay St. Louis, could take two or more years to fully implement.

Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R). OMRR&R of the recommended plans is anticipated to be, pursuant to the primary project purposes (flood and hurricane damage reduction, ecosystem restoration), 100-percent non-Federal. Given that there are no navigation projects in the recommendations contained in the Interim Report, there is no obligation for periodic maintenance of an authorized navigation channel.

Key Social and Environmental Factors. The Interim Report study process was fully integrated with the public, through a series of stakeholder meetings, information collecting web-casts, and discussions with public officials and individuals in the field. Social issues such as consideration of low-income and minority communities, families, and individuals, was a factor in plan formulation and selection. The recommended actions would serve to aid in the recovery of all income and ethnic groups, and may, in fact, have a larger positive effect on lower-income families and individuals, due to restoration of key elements on which they may depend.

The recommended actions for near-term implementation contained in this Interim Report were purposely formulated to avoid any anticipated environmental impacts. All plans or activities perceived to have a potential negative effect on environmental resources were deferred for study until the Comprehensive Plan phase. No environmental mitigation should be required on any of the recommended plans, and in fact, most will provide a positive benefit to environmental resources in the Mississippi coastal zone.

Stakeholder Perspectives and Differences. Public involvement has been discussed in the section above, as a key social action. The vast majority of comments received from the public, either on study conduct or the draft report, have been generally supportive. Criticism has mainly been in the form of anticipation of the effects various actions might have on plans that will be analyzed in the Comprehensive Plan phase to follow. Other comments focused mainly on why their particular problem area was not recommended in the Interim Report phase. The reasons for this were almost always that the particular problem area required more extensive

CECW-PC

Subject: Mississippi Coastal Improvements Program (MsCIP), Hancock, Harrison, and Jackson Counties, Mississippi, Interim Report (June 2006)

engineering or environmental analysis or coordination than would have allowed it to be included in the Interim Report study. The vast majority of public respondents support a combination of natural and engineered features in pursuit of the larger goal of storm damage reduction. The recommended plans have been reviewed by, and are supported, by the State of Mississippi, all three counties in which they would be implemented, and the communities that would be affected by their implementation. Several State compliance letters have been received concurring and supporting the near-term improvements. A letter of support has been received from the State of Mississippi.

Response to State and Agency Review.

State of Mississippi. The state of Mississippi Clearinghouse for Federal Programs responded by letter dated September 13, 2006. The letter states the following: “None of the state agencies involved in the review had comments or recommendations at this time. This concludes the State Clearinghouse review, and we encourage appropriate action as soon as possible. A copy of this letter is to be attached to the application as evidence of compliance with Executive Order 12372 review requirements.”

Federal Agencies. The US Department of Interior responded by letter dated September 29, 2006. The letter stated that the Department does not object to the proposed project and has no comments to offer. The Department of Commerce, National Marine Fisheries Service (NMFS), responded by telephone on November 7, 2006. The NMFS had no comment on the proposed project. The Environmental Protection Agency, Region 4, responded by telephone on October 11, 2006. The EPA has no comment on the project proposal.