Mid-Chesapeake Bay Island Ecosystem Restoration
Integrated Feasibility Report and Environmental Impact Statement (EIS)

REPORT SUMMARY FOR CIVIL WORKS REVIEW BOARD

STUDY INFORMATION

Study Authority. United States Army Corps of Engineers, Baltimore District (USACE-Baltimore) received the authority to conduct the Mid-Chesapeake Bay Island (Mid-Bay Island) Ecosystem Restoration Study under the resolution of the Senate Committee on Environment and Public Works on 5 June 1997, which reads:

> *Resolved by the Committee on Environment and Public Works of the United States Senate, That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Chesapeake Bay, Maryland and Virginia, published as House Document 176, Eighty-eighth Congress, First Session, and other pertinent reports with a view to conducting watershed management studies, in cooperation with other Federal agencies, the State of Maryland and the State of Delaware, their political subdivisions and agencies and instrumentalities thereof, of water resources improvements in the interest of navigation, flood control, hurricane protection, erosion control, environmental restoration, wetlands protection, and other allied purposes in watersheds of the Eastern Shore, Maryland and Delaware.*

Study Sponsor. The Maryland Department of Transportation [Maryland Port Administration (MPA)].

Study Purpose and Scope. The purpose of this study was to determine the technical, economic, and environmental feasibility of protecting, restoring, and creating aquatic, intertidal wetland, and upland habitat for fish and wildlife within the Mid-Bay Islands study area using suitable dredged material. Specifically, the Integrated Feasibility Study (FS)/Environmental Impact Statement (EIS) (1) examined and evaluated the problems and opportunities related to the restoration of island habitat through the beneficial use of dredged material; (2) formulated plans to address these problems and opportunities; and (3) recommended cost-effective solutions for implementing a project(s) recommended in the Federal Dredged Material Management Plan (DMMP) prepared by USACE- Baltimore District in 2005. To meet the needs identified by the Federal DMMP, the proposed project should provide the capability of receiving 30 to 70 million cubic yards (mcy) of clean dredged material over a 20-year period (3.2 mcy/yr).

The Mid-Bay Island restoration will support dredged material placement for the following navigation projects: 1) **The Baltimore Harbor and Channels Federal Navigation Project,** under the jurisdiction of the USACE-Baltimore District; 2) **The Inland Waterway, Delaware River to Chesapeake Bay, Delaware and Maryland, C&D Canal Project** under the jurisdiction of USACE-Philadelphia District; and 3) Federal navigation projects in the vicinity of Barren Island in Dorchester County, under the jurisdiction of the USACE-Baltimore District. Dredged material from within Baltimore Harbor, as statutorily defined by the North Point-Rock Point line within the Patapsco River, will not be considered for placement in the Mid-Bay Island project.

Project Location/Congressional District. Chesapeake Bay, Dorchester County, Maryland. Congressional District: MD-01, as represented by Honorable Wayne T. Gilchrest. Maryland Senators are Sen. Barbara A. Mikulski and Sen. Benjamin A Cardin.

Prior Reports and Existing Water Projects. ***The Baltimore Harbor and Channels Dredged Material Management Plan and Tiered Environmental Impact Statement*** (DMMP EIS) (USACE, 2005) recommended the construction of a large island restoration project in the Mid-Chesapeake Bay region to meet the long-term dredged material placement capacity shortfall for the Port of Baltimore. The Mid-Bay Island project was also identified as a high priority as part of the State of Maryland's Dredged Material Management Program. Planning and design needs for the Mid-Bay Island project were based on lessons learned from the construction and wetland development at the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island (PIERP), as documented in the ***Poplar Island, Maryland, Environmental Restoration Project Adaptive Management Plan*** (USACE/MPA, 2006) ***and the General Reevaluation Report (GRR) and Supplemental Environmental Impact Statement (SEIS) for the Poplar Island Environmental Restoration Project*** (USACE/MPA, 2005).

Federal Interest. The recommended project alternative fulfills the primary objective of the study authority which is ecosystem restoration while simultaneously meeting a complimentary objective which is the beneficial use of dredged material. The plan will restore 2,144 acres of remote island habitat and protect 1,325 acres of submerged aquatic vegetation through the placement of 90 to 95 MCY over 28 to 30 years. Benefits for ecosystem restoration projects are not expressed in monetary terms, which precludes a benefit-to-cost ratio. The ecosystem restoration outputs for this study are expressed in Island Community Units (ICUs) based on complex metrics used to measure their significance. A rigorous Cost Effectiveness and Incremental Cost Analysis was conducted to support the selection of the recommended alternative. This alternative produces substantial ecological benefits, which exceed the Federal Standard, in the most efficient and cost effective manner. The recommended alternative will produce 813 total annual ICUs. The James Island component will produce 459 annual ICUs at an annual cost of $69,682 per ICU and the Barren Island component will produce 354 annual ICUs at an annual cost of $4,702 per ICU. Federal Interest is established for the recommended alternative based on the production of maximum ecosystem restoration benefits in the most cost effective manner. Total project cost is $1,565,000,000 of which $1.015 billion are Federal cost and $550 million are the responsibility of the non-Federal sponsor.

STUDY OBJECTIVES

Problems and Opportunities. Land subsidence, rising sea level, and wave action are causing valuable remote island habitats to be lost throughout the Chesapeake Bay. Approximately 10,500 acres of island habitat has been lost in middle-eastern portion of Chesapeake Bay in the last 150 years, and should present island loss rates continue in the future, it is estimated that remote island habitats will disappear from the Mid-Chesapeake Bay region within 20 years. The Mid-Bay Island project would restore thousands of acres of lost wetland and upland island habitats. This restoration would provide critical regional habitats supporting resident fisheries and wildlife, while providing an environmentally sound method for the disposal of dredged material from the Chesapeake Bay approach channels to the Port of Baltimore.

The ***DMMP EIS*** (USACE, 2005) concluded that there is insufficient capacity for dredged material placement to meet Federal and State of Maryland dredging needs in the next twenty years and that there is potential for overloading and subsequent loss of capacity at existing placement sites if new placement sites are not constructed. More than 130 miles of dredged shipping channels serve the Port

of Baltimore, and annual channel maintenance and improvement projects require that approximately 4 to 5 million cubic yards of sediment be dredged from these Federal and State channels. In addition, the State of Maryland's Dredged Material Management Act of 2001 phases out open water placement of dredged material within Maryland waters by 2010, which will result in insufficient placement capacity to meet the annual need for maintenance dredging activity.

The Mid-Bay Island project provides multiple opportunities to address the problems by:

- Restoring habitat that is used by many species of migratory birds, as well as fish and other wildlife species, as resting/nesting/foraging/production areas;
- Reducing the rate of island erosion, thereby promoting conditions conducive to restoration/protection of SAV by decreasing localized sediment inputs and improving local water clarity;
- Providing spawning, nursery, and sheltered habitat for juvenile and forage fish species, epibenthic invertebrates, and benthic infauna by restoring wetland and shallow water areas;
- Protecting shallow water areas from storm and wave forces, providing suitable habitat for the sustainable growth of SAV;
- Providing essential nursery and foraging habitat for numerous fish in restored wetland and shallow water habitats;
- Protecting shoreline for avian, reptilian, and mammalian species resting/nesting/foraging areas;
- Meeting the dredged material capacity shortfall as projected in the DMMP of 30 to 70 million cubic yards of dredged material over the 20-year planning period; and
- Providing shoreline protection and reducing impacts from storms by reducing wave heights.

Planning Objectives. The objectives of the Mid-Bay Island study were:

- Restore and protect wetland, aquatic, and terrestrial island habitat for fish, reptiles, amphibians, birds, and mammals;
- Protect existing island ecosystems, including sheltered embayments, to prevent further loss of island and aquatic habitat;
- Provide dredged material placement capacity (3.2 mcy/yr) for Federal navigation channels;
- Increase wetlands acreage in the Chesapeake Bay watershed to assist in meeting the Chesapeake 2000 Agreement goals;
- Decrease local erosion and turbidity;
- Promote conditions to establish and enhance submerged aquatic vegetation; and
- Promote conditions that support oyster recolonization.

Planning Constraints. A number of environmental, engineering, and legal constraints were considered by the project delivery team (PDT) based on recommendations of the Federal DMMP, results of preliminary assessment studies at selected project sites, and lessons learned from PIERP. The following four constraints were initially identified as the most critical in evaluating the feasibility of the recommended plan:

- Minimize impacts to existing fisheries (nursery, feeding, and protective habitats);
- Minimize impacts to rare, threatened, and endangered species and their habitat;
- Minimize impacts to existing commercial fisheries;
- Minimize establishment of invasive species to maximum extent possible;
- avoiding natural oyster bars (NOBs);

- avoiding existing submerged aquatic vegetation (SAV) beds; and
- optimize use of borrow material from within island footprint.

ALTERNATIVES

Plan Formulation Rationale. Plan formulation was conducted to determine a recommended plan that would provide ecosystem benefits within site-specific constraints and meet the long-term dredged material placement need of 3.2 mcy/y. The plan formulation process had two primary phases, both of which included various ranking, scoring, and screening processes. First, potential locations suitable for a large island restoration project and meeting the project objectives of habitat restoration and dredged material capacity were identified. Feasible alternative alignments were then developed to meet the engineering and environmental design constraints for the potential site (or sites). Plan formulation activities were all done in collaboration with the Bay Enhancement Working Group (BEWG) as detailed below.

Management Measures and Alternative Plans.

Island Site Selection. The process to select a site for large island restoration had two components: 1) identify all potential locations for a large island restoration project within the study area (105 total existing or former island sites), and 2) rank these sites using engineering and environmental criteria, and public input. Eight feasible island sites were carried forward for additional consideration using the ranking process developed by the BEWG as part of the State of Maryland's DMMP process. The process evaluated sites on the basis of 52 parameters to determine each site's environmental suitability as a dredged material placement site. Based on the results of the process, James and Barren Islands (Figure 1) were selected for detailed alternatives development.

Selection of Alternatives. Four Barren Island alignments, five James Island alignments, and 20 additional alignments that were combinations at both James Island and Barren Island were used to develop an array of 145 feasible alignment alternatives for evaluation. The screening of the alternatives involved multiple analysis tools, including: 1) geographic information system (GIS) analysis, 2) engineering and design suitability screening, 3) ecosystem benefits determination [using Island Community Units (ICU) analysis], 4) cost effectiveness/incremental cost analysis, and 5) input from resource agencies. Once feasible alignment alternatives were identified, these alignments were optimized to maximize ecosystem benefits and placement efficiency by evaluating multiple wetland/upland proportions in conjunction with variable upland dike heights, minimization of the project footprint, and resource agency input.

Key Assumptions. Several key assumptions were used in the analysis of the alternatives, including: 1) a minimum of 50 percent wetland habitat at James Island (regional goal long in place for Bay Island restoration); 2) restoration at Barren Island would protect the existing SAV beds as well as the existing island; 3) annual dredged material inflow quantities would be in-line with current projections, 4) wetland cells would not be constructed on top of areas dredged for sand borrow due to difficulties in assuring final elevations.

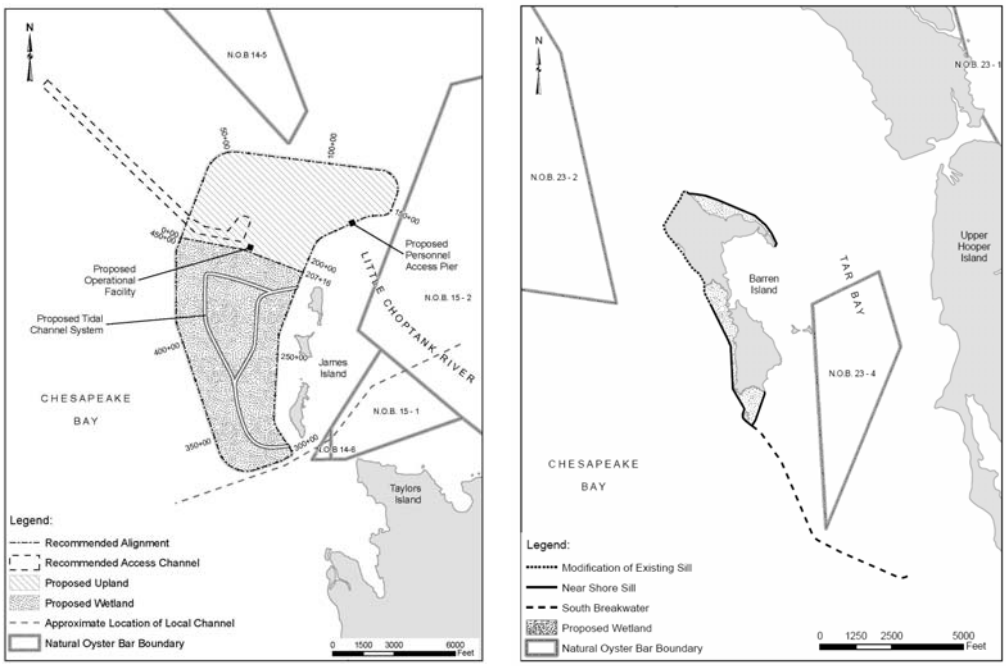

Figure 1. Mid-Chesapeake Bay Island Ecosystem Restoration Project Recommended Plan for James Island (left) and Barren Island (right)

Final Array of Alternatives. Project alignment alternatives and habitat proportions considered in the plan formulation process were screened out if they did not meet the capacity need, failed to provide a minimum of 50 percent vegetated wetlands, did not provide sufficient ecosystem benefits, or were not cost effective for the project ecosystem output. A total of three alignment alternatives remained after the plan formulation process (Table 1): 1) **Barren Island Alignment A** 2) **James Island Alignment 5 plus Barren Island Alignment D** and 3) **James Island Alignment 5 plus Barren Island Alignment E.** The no-action alternative was defined as the remaining acreage at both James Island and Barren Island projected without a project based on estimated long term erosion rates leading to submergence of James Island, approximately 100 ac by 2033, and Barren Island, approximately 180 ac by 2076.

TABLE 1
Comparison of Alternatives Considered for the Mid-Bay Island

	Barren Island Alignment A	James Island Alignment 5 plus Barren Island Alignment D	James Island Alignment 5 plus Barren Island Alignment E
Impact Area of Footprint	1,354	2,756	2,144
Wetland Proportion (%, acres)	55%, 745	60%, 1,927 (assumes 60% at James, 100% at Barren)	55%, 1,212 (assumes 55% at James, 100% at Barren)
Total Placement Capacity (mcy)	53	86	90-95
Ecosystem Benefits (ICUs)	668	937	813

Comparison of Alternatives. To quantify the ecosystem benefits for the project, island community units (ICUs) were developed by a technical working group as a metric to determine habitat value. Significant differences between the alternatives included: 1) the impact area footprint of the project, 2) the proportion of wetland habitat created, 3) total dredged material placement capacity, 4) the ecosystem benefits (ICUs), and 5) the preliminary estimate of the cost for implementation.

Key risks and uncertainties associated with the alternatives included the timing of the proposed project with respect to the authorized expansion of PIERP were evaluated to ensure there was no negative impact to the anticipated benefits of PIERP. To evaluate the timing issue, the dredged material placement schedule, costs, and impact to the ecosystem benefits were evaluated to: 1) determine the most efficient implementation scheme for the Mid-Bay Island project, with respect to the plan approved for the PIERP expansion; 2) achieve optimal operational effectiveness; 3) maximize site life by avoiding overloading the cells; and 4) realize significant ecosystem benefits for both the Poplar Island expansion and Mid-Bay projects. Based on the anticipated funding schedule, timing scenarios were evaluated for a dredged material placement at James Island in 2014, 2018, or 2023. The analysis indicated that developing James Island concurrently with the PIERP expansion will decrease the cost per ICU at PIERP because of the delay in the development of the upland cells. This scenario will also increase operational efficiencies by significantly reducing the potential to overload cells and slightly extending the site life of both PIERP and James Island.

The National Economic Development (NED)/Environmental Quality (EQ) tradeoff involves a comparison of placement capacity to total ecosystem benefits of the project. Project alternatives were formulated to maximize ecosystem outputs (NER) by maximizing the wetland acreage restored by the project and minimizing the overall footprint of the project, which resulted in a tradeoff of reduced dredged material placement capacity (NED).

Recommended Plan. The recommended plan (Figure 1) consists of constructing James Island Alignment 5, with a habitat proportion of 45% upland to 55% wetland and an upland dike height of 20 ft MLLW, in combination with protection/restoration at Barren Island through the construction of Alignment E. The recommended plan will restore 2,144 acres of remote island habitat (2,072 acres at James Island and 72 acres at Barren Island), while also protecting approximately 1,325 acres of potential SAV habitat adjacent to Barren Island and providing approximately 90 to 95 mcy, or approximately 28 to 30 years, of dredged material placement capacity.

The recommended plan was chosen to minimize the project footprint and reduce overall project costs without significantly reducing the capacity or ecosystem benefits or dredged material capacity of the project. The recommended plan had fewer ICUs than the James Alignment 5/Barren Alignment D alternative mainly because the recommended plan has a smaller wetland habitat proportion in the James Island portion of the project, and a smaller Barren Island component of the project. The James Alignment 5/Barren Alignment E was also significantly less expensive.

In response to an External Peer Review comment, an additional analysis was performed with the ICUs to incorporate the loss of open water habitat from island restoration. The reanalysis did not result in a change in the selection of the recommended plan. Over its project life, the recommended plan provides a total of 22,045 net ICUs. The only alternative that provides a greater number of total net ICUs is the James 5/Barren protection alternative at 40%/60% upland/wetland ratio which provides a net of 23,275 ICU, but does so at a higher cost.

Systems / Watershed Context. Remote islands in the Chesapeake Bay serve as an important stop-over point for migratory avian species, providing forage and protected resting habitat during spring and fall migration along the Atlantic Flyway for many species. Additionally, habitats restored at James and Barren Islands will provide valuable wetlands and a vital connection between open-water and mainland terrestrial habitats within the region and provide valuable nesting habitat for a variety of colonial nesting and wading bird species. For aquatic species, remote islands increase the forage for large predator finfish species (such as bluefish, striped bass, and Atlantic croaker) because of the island's proximity to deep open water. Protection of the extensive SAV beds east of Barren Island will also provide nursery habitat for blue crabs and many species of fish.

The significance of the fish and wildlife resources of the Chesapeake Bay is widely recognized by resource agencies, the public, and academic institutions. For more than 20 years, extensive efforts have been expended to support natural resources management and restoration plans in the Chesapeake Bay region. The restoration projects at James and Barren Island will contribute to the goals of the Chesapeake Bay Program watershed partnership through its habitat and ecosystem recovery and preservation efforts and contribute to the Chesapeake 2000 Agreement goal to restore 25,000 acres of tidal and non-tidal wetlands. In addition, the protection of 1,325 acres of SAV habitat adjacent to Barren Island would contribute to the Chesapeake 2000 Agreement goal to protect and restore 114,000 acres of SAV. Both the James and Barren Island projects would improve water clarity by reducing localized erosion by reducing wave heights and buffering storm impacts to the shoreline.

Environmental Operating Principles. The plan recommended by the Mid-Bay Island FS/EIS supports each of the seven USACE Environmental Operating Principles. The recommended plan will **strive to achieve environmental sustainability** by creating a diverse, productive ecosystem to replace rapidly vanishing remote island habitats. The recommended plan **recognizes the interdependence of life and the physical environment** by restoring habitats that will promote interaction and exchange with the surrounding ecosystems. The recommended plan **seeks balance and synergy among human development activities and natural systems** by managing sediments that originate from land use practices and natural erosion processes within the watershed,. By implementing the recommended plan, the Corps will **accept responsibility and accountability under the law** to ensure that the project complies with all applicable Federal laws, continues extensive environmental monitoring, and utilizes adaptive management practices. The recommended plan **seeks ways and means to assess and mitigate cumulative impacts to the environment** by minimizing environmental consequences to important regional resources, such as open-water, shallow water, and Bay bottom habitats. Through extensive and on-going consultation, coordination and outreach with other Federal and State agencies, scientific experts from universities, local government, and the public, the recommended plan will continue to **build and share an integrated scientific, economic, and social knowledge base.** Since the inception of the study, the Project Delivery Team (PDT) has **listened to, respected, and learned from the perspectives of individuals and groups interested in Corps activities** by maintaining extensive coordination with Federal and State agency representatives, interested members of the public and local watermen. The PDT has worked with these stakeholders to develop a **win-win solution** – a recommended plan that maximizes ecosystem benefits and meets the dredged material capacity need, while minimizing impacts to natural resources.

Independent Technical Review (ITR). USACE-Philadelphia District conducted the ITR for the Draft Mid-Bay Island Integrated Feasibility Study/EIS prior to the document's public release and for the final report prior to consideration by the Civil Works Review Board. The PDT consistently provided input and guidance on technical issues throughout the study process. The method for calculating ICUs was developed by a working group comprised of regional experts and representatives from academic

institutions and research organizations that were specifically selected because of their local knowledge and experience. The Engineer Research and Development Center (ERDC) conducted lifecycle analysis of the perimeter dike design and reviewed the hydrodynamic modeling, and Value Engineering (VE) was conducted from July 18 to 20, 2006. The Planning Center of Expertise (PcX) for Ecosystem Restoration (Mississippi Valley Division) reviewed the document from April through June 2007. This review included quality assurance of the ITR conducted by USACE- Philadelphia District on the draft report, assurance of adequate external peer review. An external peer review (EPR) process was completed by the PcX to complement the independent technical review (EC 1105-2-408). Quality assurance of the micro-computer automated cost engineering system (M-CACES) cost estimate and a cost-risk analysis using the Crystal Ball software package were conducted by the Civil Works Cost Estimating Center of Expertise at the Walla Walla District. The PcX also conducted review of the Island Community Model, used to evaluate and compare project alternatives. Rigorous Independent Technical Review of the model was conducted in accordance with EC 1105-2-407 and the Protocols for Certification of Planning Models (July 2007).

EXPECTED PROJECT PERFORMANCE

Project Costs.

TABLE 2
PROJECT FIRST COSTS
Mid-Chesapeake Bay Island Ecosystem Restoration
Integrated Feasibility Report and Environmental Impact Statement (EIS)
(Baseline Costs, October 2007 Price Levels)

	Cost
James Island **	
Navigation, Ports, and Harbors	$1,414,499,000
Pre-Construction, Engineering, and Design*	$56,501,000
Construction Management	$26,210,000
Barren Island	
Navigation, Ports, and Harbors	$37,136,000
Planting	$5,141,000
Pre-Construction, Engineering, and Design	$282,000
Construction Management	$1,144,000
Operations and Maintenance	$23,680,000
Total Project Costs	**$1,564,593,000**

* Includes PED efforts before construction in addition to engineering and design during construction
** Costs shown are above the cost of dredging to the Federal Standard, which is funded through the Federal Operations and Maintenance Program annually.

Equivalent Annual Costs and Benefits. Because the Mid-Bay Island study is an EQ project, an assessment of NED equivalent annual benefits and costs was not required. EQ costs are shown in Table 3. Ecosystem benefits are displayed in ICUs, which were developed for use in determining the ecosystem benefits of island restoration projects in the Mid-Chesapeake Bay region. Costs have been annualized over the life of the project, from initiation of PED for Barren Island in 2009 to project completion in 2060. Of the 813 total annual ICUs, the James Island component will produce 459 and Barren will produce 354. This yields an annual cost per ICU of $69,682 for the James Island component and $4,702 for Barren Island. The projects will not only restore valuable island habitat, but

they will also protect the existing island remnants and the shallow water habitat in the lee of the restored landmasses. Whereas the James Island project component will restore 2,072 acres of habitat, it will protect another 80 acres of existing island and 23 acres of potential SAV habitat for a total of 2,175 acres. The Barren Island project will restore 72 acres, but will protect 197 acres of island and 1,325 acres of ecologically important SAV habitat.

TABLE 3
ECONOMIC COSTS AND BENEFITS OF PROJECT[1] ($1,000)
Mid-Chesapeake Bay Island Ecosystem Restoration
Integrated Feasibility Report and Environmental Impact Statement (EIS)

Item	Ecosystem		Recreation		Total	
	Allocated Costs	Benefits	Allocated Costs	Benefits	Allocated Costs	Benefits
Investment Cost						
First Cost	$1,564,389		$204		$1,564,593	
Interest During Construction	$50,625		$3		$50,628	
Total	$1,615,014		$207		$1,615,221	
Avg Annual Cost						
Interest and Amortization	$33,934		$12		$33,946	
OMRR&R[2]	$391				$391	
Subtotal	$34,325		$12		$34,337	
Annual Benefits Non-monetary (Ecosystem)		813 ICUs (459 for James, 354 for Barren)		$176		$176 and 813 ICUs

[1]Based on October 2007 price levels, 4.875 percent rate of interest, and a 52-year period of analysis per project Planning Guidance Memorandum.
[2]Operation, Maintenance, Repair, Replacement, and Rehabilitation: Includes all Operations and Maintenance during construction of the project, both cost shared and non-Federal.

Cost Sharing. The baseline cost estimate, including contingencies, for implementing the recommended plan is $1.565 billion with $1.521 billion allocated to James Island, and $44 million allocated to Barren Island. The estimate includes the costs for planning, engineering and design; construction; O&M during construction; construction management; monitoring; and contingencies. The estimate does not include the cost of dredging 3.2 mcy of material annually for an estimated 30 years and placement of that material at the Federal Standard. Those costs will continue to be borne through the Federal Operations and Maintenance Program. The recommended plan for James Island will be cost shared at $986 million (65 percent, except for recreation, 50/50, and operation, maintenance, repair, replacement and rehabilitation [OMRR&R], 100 percent non-Federal) for the Federal government and $534 million (35 percent, except for recreation, 50/50, and OMRR&R, 100 percent) for the non-Federal sponsor. Prior to the Water Resources Development Act (WRDA) of 2007, specifically changes mandated by Section 2037, the James Island component was recommended for implementation under Section 207 (Beneficial Use of Dredged Material) of WRDA 1996. Section 207 projects were cost-shared 75% Federal and 25% non-Federal. Allowing for 50/50 cost share for recreational features, and 100 percent non-Federal OMRR&R, prior to WRDA 2007 the James Island project component would have been cost-shared $1.137 billion Federal and $382 million non-Federal. The recommended plan for Barren Island will be cost shared at $28.5 million (65 percent for construction, 75 percent for PED) for the Federal government and $15.3 million (35 percent for

construction, 25 percent for PED) for the non-Federal sponsor. The cost sharing for both components are now in accordance with Section 210 (Ecosystem Restoration) of the WRDA of 1996. Total baseline costs for the Mid-Bay Island project are $1.015 billion for the Federal government and $550 million for the non-Federal sponsor.

Project Implementation. Prior to WRDA 2007, two separate authorizations were to be pursued for this project. Changes to Section 207, specifically a per project funding cap limitation, now obviate this strategy. As a beneficial use of dredged material project, James Island had been eligible for authorization under Section 204 of WRDA 1992, as amended by Section 207 of WRDA 1996. Beneficial use of dredged material projects under Section 207 were cost-shared 75 percent Federal and 25 percent non-Federal. Due to changes in the Section 207 authority, both James and Barren Islands will be authorized under Section 103 (c) of WRDA 1986, as amended by Section 210 of WRDA 1996. The entire project will be cost shared 65 percent Federal and 35 percent non-Federal. For the recreational components, economically justified facilities will be cost shared 50 percent Federal and 50 percent non-Federal.

The MPA, the non-Federal sponsor, will provide 35 percent of the cost associated with construction of the James Island project component and the Barren Island project component, including provision of all lands, easements, rights-of-way, and necessary relocations (LERRD); and will pay 100 percent of the OMRR&R costs associated with the project.

Environmental monitoring needs for the project will be based on site-specific concerns and lessons learned from the existing PIERP project and will be managed through an adaptive management plan that will document progress in meeting the project's habitat restoration goals. This process will include continuing collaboration with the BEWG and public.

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R). It is not foreseeable when various project components could be turned over for OMRR&R. At the date of this report, no components had yet been turned over to the MPA on Poplar Island. Due to the layout of the wetland cells proposed for James Island and the proposed hydrologic connectivity of the cells, it is unclear as to whether these cells could be turned over prior to completion of the entire project. The assumption has been made that maintenance of the exterior dikes could become a non-Federal responsibility once their stability has been assured. More detailed design during PED may yield better estimates of OMRR&R; however, it will not be until construction phase that determinations of what components can be turned over. Based on experience at the PIERP, operations and maintenance costs at the time of project completion are projected to be less than two percent of the total project cost. An operation and maintenance plan for the project will be developed during PED and will provide detailed requirements and cost estimates.

Key social and environmental factors. In combination with other proposed restoration and/or protection projects in the Mid-Chesapeake Bay (i.e., the existing PIERP, the expansion of PIERP, and ecosystem restoration projects at Smith and Taylors Islands), the Mid-Bay Island restoration project will contribute to a restoration potential totaling approximately 3,565 acres of remote island habitat, including 1,872 ac of wetlands and 1,693 ac of uplands and the noted associated ecosystem benefits.

The recommended plan will provide additional protection to the Eastern Shore of Maryland from erosion by reducing wave heights. The project will also meet the long term dredged material capacity need in the Federal DMMP and will allow the deep-draft shipping channels to the Port of Baltimore to remain open and navigable.

The recommended plan would minimize disruption of the Port of Baltimore due to a lack of dredged material placement capacity. Maryland's Port of Baltimore is a major economic engine for the State of Maryland providing $1.9 billion in direct business revenues and $2.4 billion in personal wage and salary income in 2005. The Port generates approximately 42,300 jobs in Maryland. The total value of foreign cargo moving through the Port in 2005 was $35.8 billion. General cargo handled at state terminals exceeded 8 million tons. There were over 2,100 vessel arrivals at the Port in 2005, an increase of 2.6% over 2004.

The recommended plan will result in a loss of approximately 2,172 acres of Chesapeake Bay bottom within the project footprint, including open-water habitat, shallow water habitat, and benthic habitat. An additional 101 acres of shallow water habitat will be disturbed and deepened to construct the access channel at James Island. The loss of this regionally important habitat was a critical component in the selection of the recommended plan, which was specifically chosen to minimize impacts by reducing the size of the footprint at Barren Island. Finfish, blue crabs, and avian species that utilize the area within the footprint will be displaced. Non-mobile benthic communities within the footprint will eventually be buried. The benthic community is anticipated to recolonize the access channel area after dredging, but increased water depths and the exposure of a different bottom substrate may result in the recolonization of a different type of benthic community. Recreational and commercial fisheries within the project footprint will be displaced. The project will result in the hardening of approximately 43,350 linear ft of armored shoreline, which are anticipated to be off-set in the long term by the protection afforded to the existing SAV beds and the use of the perimeter dikes as epibenthic habitat and food source for juvenile finfish. The recommended plan will create a permanent viewshed change from the adjacent Eastern Shore of Maryland; and increases in noise and light levels will impact residents, primarily during the initial construction seasons when the exterior dikes are constructed and during subsequent dredged material inflow operations.

Stakeholder perspectives and differences.

As required by NEPA**,** agency and public comments received during the study phase and generally expressed strong support for the project. The DEIS received a rating of 'LO' (lack of objections) from USEPA, and the USFWS, MDNR and NMFS expressed general support of the project. At the public meetings, the project received support from Maryland State delegates and county representatives (Dorchester County Council), in addition to the Dorchester County Shoreline Erosion Group, the Dorchester Citizens for Planned Growth, and the Dorchester County Seafood Harvesters Association. These groups expressed support for the project because of the potential for shoreline protection, reduction in local erosion and water turbidity, and potential economic effect to both the local economy and to the Port of Baltimore, a vital economic component to the State of Maryland.

Concerns about the project were raised by MDNR and the Sierra Club. MDNR expressed concerns that the construction of the toe dike at James Island would be constructed within 500 yards of a designated natural oyster bar (NOB) with the potential to entrain and destroy oyster larvae during spawning and resuspend sediment that may bury the oysters. Because of these potential impacts, a time of year restriction will be in place for charted NOBs and oyster restoration sites preventing excavation of material or placement of unconfined material between December 16 and March 14 or June 1 through September 30 of any year. MDNR also requested the incorporation of one or more small (1-5 acre) islands into the breakwater design for Barren Island as nesting habitat for colonial waterbirds. This design modification will be further evaluated by USACE-Baltimore District during the Pre-Construction, Engineering, and Design (PED) phase of the project.

The Sierra Club expressed concern that the project as a solution to the dredged material capacity issue may not be ecologically or scientifically justified. In addition, the Sierra Club thought that multiple techniques should be used to completely characterize the importance of the shallow water habitats – habitats that are productive and serve a vital ecosystem role, despite their classification as "stressed" under the classification system of the Chesapeake Bay Benthic Index of Biotic Integrity (B-IBI). USACE-Baltimore District addressed the concerns of the Sierra Club by clarifying the explanation of the site selection process and updating text in the report accordingly.