

**New Jersey
Shore Protection Study**



**US Army Corps
of Engineers**

Philadelphia District

**New Jersey De-
partment of Envi-
ronmental Protec-
tion**

**Hereford Inlet
to
Cape May Inlet
Feasibility Study
PMP**

Project Management Plan – PMP

November 2005

PROJECT MANAGEMENT PLAN

DETAILED STUDY SCHEDULE AND BUDGET HEREFORD INLET TO CAPE MAY INLET FEASIBILITY STUDY

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INTRODUCTION

This document outlines the Project Management Plan (PMP) in accordance with Engineering Regulation (ER) 5-7-1 and ER 1105-2-100 for conduct of the Feasibility Study for Hereford Inlet to Cape May Inlet, New Jersey (see map on page 4). This PMP has been developed by the Philadelphia District of the U.S. Army Corps of Engineers in conjunction with the non-Federal Sponsor, New Jersey Department of Environmental Protection (NJDEP). A Feasibility Cost Sharing Agreement was signed by the District and the Non-Federal Sponsor on 30 September 2002.

This plan identifies the purpose, scope, schedule, budget, goals, opportunities, objectives and constraints to be examined within the upcoming Feasibility study as well as the division of responsibilities by the Philadelphia District, the NJDEP and their respective consultants and contractors. Also included are a cost summary table, a detailed description of work tasks and a Critical Path Method (CPM).

“Five Mile Beach” consists of a barrier island from Hereford Inlet to Cape May Inlet (Figure 1 pg4). The length of the study area is approximately seven miles. Municipalities within the study area include: North Wildwood City, Wildwood City, Wildwood Crest Borough, West Wildwood Borough and Lower Township. The southern portion of the island, within Lower Township, contains a US Coast Guard Station Electronic Engineering and Receiving Center as well as a natural area managed by the US Fish and Wildlife Service.

The Corps of Engineers is authorized to carry out water resource projects in seven mission areas: Navigation, Flood Damage Reduction, Ecosystem Restoration, Hurricane and Storm Damage Reduction, Water Supply, Hydroelectric Power Generation, and Recreation. The Corps of Engineers also retains the ability to combine mission areas for multipurpose projects (ER 1105-2-100, Chapter 3, Corps Civil Works Missions sec. 3-1).

The area between Hereford and Cape May Inlet has the potential to benefit from a combination of authorities including Hurricane and Storm Damage Reduction, Ecosystem Restoration and Section 111 mitigation. The Philadelphia District will combine these efforts for a multi-purpose project approach in the study area.

“Where ever possible, and subject to budgetary policy, projects shall combine these purposes to formulate multiple purpose projects. For example, flood damage reduction projects could include ecosystem restoration and recreation; navigation projects could include hydroelectric power generation and ecosystem restoration. In carrying out studies to address problems and take advantage of opportunities within these mission areas, every effort should be made to formulate alternative plans that reasonably maximize the economic and environmental value of watershed resources”

ER 1105-2-100, Chapter 3, Corps Civil Works Missions sec. 3-1

Hurricane and Storm Damage Reduction efforts will be designed to reduce damages caused by wind and storm generated waves, elevated water levels, and currents along the project shoreline. The types of improvements to be considered are beach-fill, groins, revetments, breakwaters and bulkheads.

Ecosystem Restoration efforts will be formulated to improve the potential for long-term health of aquatic and terrestrial complexes. The project will focus on restoration with dredged beach material, restoration conducive to native vegetation and rehabilitation of beach habitat.

Section 111 efforts will examine negative impacts from the Cape May Inlet north jetty. Since the 1911 navigation project was completed a large sand fillet has extended north along Five Mile Island, possibly causing maintenance and health hazards to the beaches of Wildwood and Wildwood Crest. Section 111 efforts seek to alleviate negative impacts (erosion or accretion) of navigation projects like Cape May Inlet.

PROJECT AREA

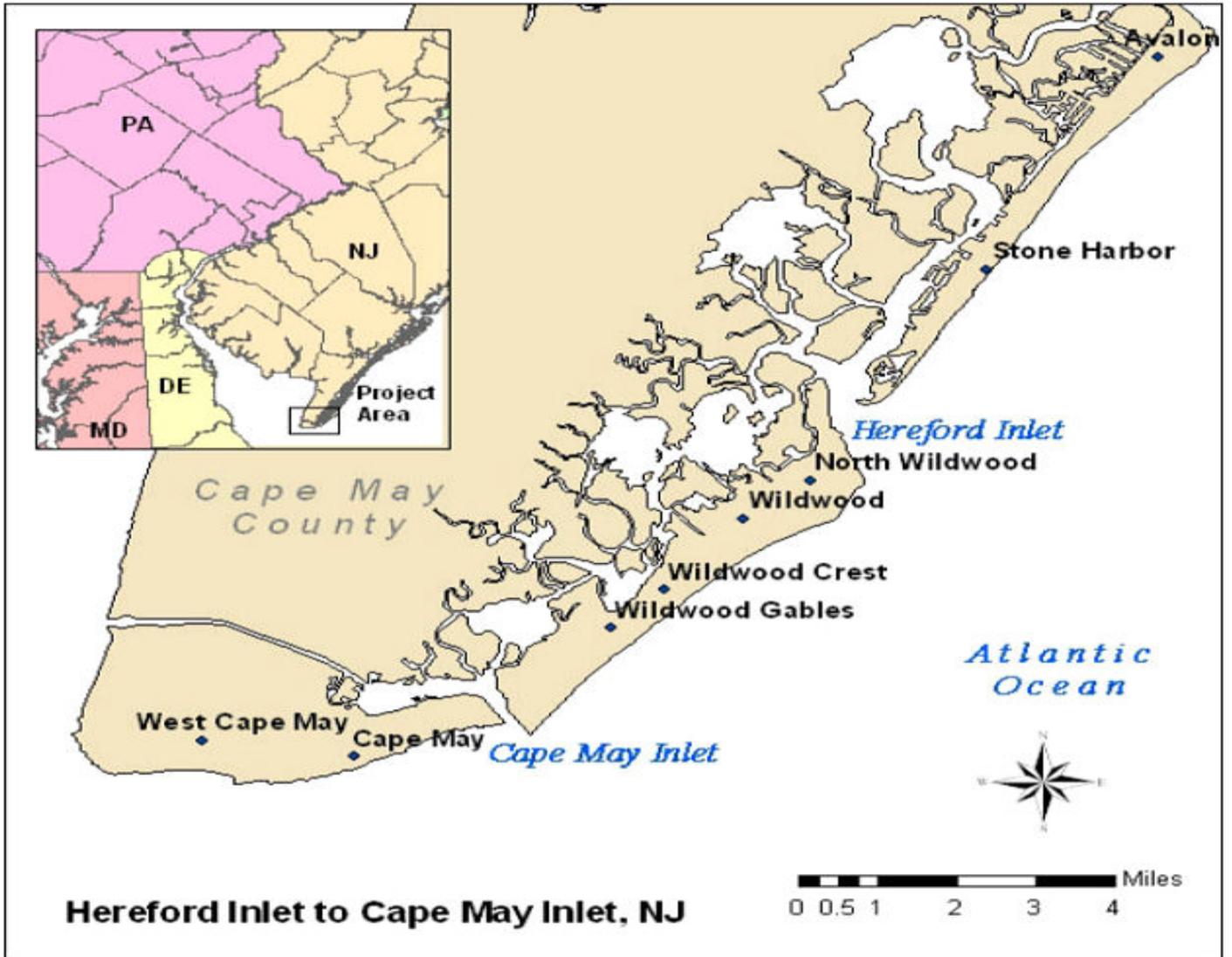


Figure 1. Hereford Inlet to Cape May Inlet project area.

STUDY PURPOSE AND DESCRIPTION

The purpose of this study is to investigate storm damage reduction and related problems between Hereford Inlet and Cape May Inlet.

General Investigations undertaken by the Army Corps of Engineers are part of a two part pre-authorization process including a Reconnaissance and Feasibility study. Reconnaissance efforts are fully funded and executed by the Federal government and structured to determine if Federal interest exists to develop a project into the more comprehensive Feasibility study. Feasibility Studies are more detailed investigations that pursue solutions to the identified water resource problems. This project is currently in the Feasibility study phase.

The Hereford Inlet to Cape May General Investigation was undertaken by authority of The New Jersey Shore Protection Study, by resolutions adopted within the Committee on Public Works and Transportation of the U.S. House of Representatives and the Committee on Environment and Public Works of the U.S. Senate in December 1987.

“That the Board of Engineers for Rivers and Harbors is hereby requested to review existing reports of the Chief of Engineers for the entire Coast of New Jersey with a view to study, in Cooperation with the State of New Jersey, its Political subdivisions and agencies and instrumentalities thereof, the changing coastal processes along the coast of New Jersey. Included in this study will be the development of a physical, environmental, and engineering data base on coastal area changes and processes, including appropriate monitoring, as the basis for actions and programs to prevent the harmful effects of shoreline erosion and storm damage; and, in cooperation with the Environmental Protection Agency and other Federal agencies as appropriate, the development of recommendations for actions and Solutions needed to preclude further water quality degradation and coastal pollution from existing and anticipated uses of coastal waters affecting the New Jersey Coast. Site specific studies for beach erosion control, hurricane protection and related purposes should be undertaken in areas Identified as having potential for a project, action or response which is engineeringly, economically, and environmentally feasible.”

Committee on Public Works and Transportation, U.S. House of Representatives, Washington D.C. December 10, 1987. (Appendix A)

This authorization culminated in the September 1990 Report of Limited Reconnaissance and supported investigative water resource studies along the New Jersey coast. Within that report problems between Hereford Inlet and Cape May Inlet were not identified as critical and recommendations were made for studies in areas requiring immediate attention. That changed soon after.

By the mid 90's a number of shoreline problems developed between Hereford Inlet and Cape May Inlet including erosion and excessive sand accretion within the project area. A letter from the non- Federal sponsor, the NJDEP, recognized that the most urgent needs of the New Jersey coastline had been met but “The situation in the Wildwoods has worsened and now requires being addressed immediately” (Appendix B). In response, the Hereford Inlet to Cape May Inlet Preliminary Financial Analysis was initiated by the Philadelphia District (Appendix C).

The District's Analysis efforts, after the initial 1990 Report, were completed in January of 2002. The intent of this Analysis was to determine if Federal interest existed and examine the erosion, storm damage vulnerability and public health issues that were not an imminent and critical threat at the time of the 1990 Report.

The purpose of the Preliminary Financial Analysis was to:

1. Determine if Federal interest exists
2. Define Federal Interest
3. Prepare the Project Study Plan.
4. Assess the level of interest and support of the non-Federal entities
5. Negotiate and execute a Feasibility Cost Sharing Agreement

During the Analysis it became apparent that Federal interest existed in pursuing a water resource project. North Wildwood was eroding severely while the beaches of Wildwood and Wildwood Crest were experiencing excessive growth to the point it was causing health and safety hazards.

In a letter dated 28 January 2002 North Atlantic Division approved the Preliminary Financial Analysis and directed the District to proceed into the Feasibility phase (Appendix D). A Feasibility Cost Sharing Agreement was signed between the District and the New Jersey Department of Environmental Protection on 30 September 2002.

WILDWOOD AND WILDWOOD CREST

Sand accretion in Wildwood and Wildwood Crest is causing extensive maintenance problems and health hazards with their storm water management system. The excess sand clogs storm-water outfalls, creates pools of stagnant water, produces unhealthy beach conditions and causes associated interior flooding (see Figure 2 and 3). During combined periods of heavy rain and high waves the City can not access the outfalls for excavation and rainwater becomes trapped within the pipes. This impounded water causes sections of the interior of Wildwood to flood from lack of drainage. Water levels of two to three feet have been observed in the streets of Wildwood during these events. The subsequent high volume discharge of impounded storm water can also cause spikes in poor water quality.



Figure 2. Clogged outfall in front of Wildwood Convention Center



Figure 3. Expansive beaches within the project area



Figure 4. Clogged storm water outfall

The storm-water outfalls are excavated daily. There are approximately 19 storm-water outfalls from Hereford Inlet to Cape May Inlet.

Historically the beach did not extend past the outfalls, and storm- water could drain directly to the ocean. Recently massive amounts of sand accreted in the project area causing the beach to grow 300-350 feet beyond the terminus of the outfalls. This growth causes associated drainage problems, health hazards, safety hazards and poor water quality.

The low elevation of the beach (Figure 4) is also the cause for saltwater ponds above the high tide line. During storms and high tides waves overtop the berm and collect in low areas near the streets and boardwalk. The ponds are unhealthy congregating areas for birds and wildlife. Rising summertime temperatures and wildlife activity foster unsanitary waterfront conditions for recreation. An Engineering Report, prepared by the City of Wildwood, evidenced the ponded areas and their high level of wildlife activity as a possible cause of poor water quality and a source for elevated levels of fecal contamination in the surf zone.

The current configuration of the beach provides sources of contaminated water, creates a safety risk and possibly leaves the southern portion of the island vulnerable to storm damage.

The District will consider adjusting the beach in Wildwood and Wildwood Crest to eliminate clogged outfalls, ponded water, decrease wave overtopping during storm events, interior flooding, eliminate unhealthy congregating areas for wildlife, enhance recreation opportunities, enhance education opportunities, and promote improved water quality across the project area.



Figure 5. Orange fencing around clogged outfalls is visible in background, left hand side. Note the lack of dunes on beach.



Figure 6. Clogged outfall in Wildwood

NORTH WILDWOOD

In contrast to Wildwood and Wildwood Crest, the City of North Wildwood is experiencing significant erosion of its berm and dune. What was the largest beach in the state now suffers from tidal flooding and wave run-up over a formerly protective beach. The municipality of North Wildwood has lost approximately 1,000' of beach during the past 5-10 years.

The photos on page 11 illustrate the drastic changes in North Wildwood. Figure 7 shows a dune and berm extending 1200' to 1500' seaward from the bulkhead in the foreground. This dune is stable and provides storm damage protection for North Wildwood. Figure 8, taken 13 years later, illustrates the exact opposite. The ocean is 400-450 feet from the bulkhead in the foreground, the ocean is advancing on North Wildwood and the vegetation that secured the dune in 1991 are nearly gone. Small isolated dunes visible in the 1991 photo are also gone. The current shoreline has eroded into the approximate centerline of North Wildwood's dune system. This erosion has reduced its effectiveness as a storm protection feature.

Historic shoreline data illustrates past configurations of the North Wildwood shoreline as it has fluctuated landward and seaward of its current location (Figure 9). In 1986 the shoreline was approximately 1,000 feet seaward of its 2004 position. This erosion has been well documented by local sources.

Dr. Stewart Farrell of the NJ Richard Stockton Coastal Research Center has maintained a survey station at 15th Avenue in North Wildwood since 1989. Stockton surveys this site, among others, twice a year and documents his findings in the New Jersey Beach Profile Network report to the New Jersey Department of Environmental Protection. An excerpt from his May 2002 report finds:

“The site has become the subject of erosion after 5 years of relative stability. The beach has retreated 890 feet since 1986, when the dry beach width extended about 1200 feet seaward of the lifeguard headquarters. Its location on May 4, 2001 has been reduced to just less than 400 feet of beach seaward of the headquarters building. The shoreline (zero datum) has retreated from a 1400-foot distance to a position 580 feet (December 2002) from the reference monument located adjacent to the lifeguard headquarters”.

Dr. Stew Farrel, Director of Coastal Research, Coastal Research Center

Erosion in front of the North Wildwood lifeguard headquarters continues steadily. The station referred to by Farrell is located on the following pages, south of the dune and seaward of the bulkhead, bottom right corner (Figure 7 and 8). Recently the City of North Wildwood placed a concrete barrier in front of this station to prevent damages to the structure. This does not represent a permanent solution. The barrier may prevent damages, but may also facilitate toe scour and erosion on the seaward edge, in front of the structure.

Farrell attributes the erosion in North Wildwood to changes in Hereford Inlet. His research indicates a northern and southern position of the main Hereford channel. As the main throat of the inlet fluctuates between its northern and southern positions the oceanfront shoreline of North Wildwood erodes and accumulates sand. The most landward and seaward positions of the North Wildwood shoreline can be seen in the 1879-1885 survey (Figure 9, green line).

The best practice may include renourishing the eroded area of North Wildwood with excess sand from Wildwood and Wildwood Crest. Multiple profile configurations and structural and non-structural alternatives will also be considered.



Figure 7. North Wildwood, 1991. Post Halloween storm.



Figure 8. North Wildwood, 2004



Figure 9. Historic shorelines of North Wildwood



Figure 10. Eroded beach in North Wildwood at 2nd and JFK, north end of island adjacent to Hereford Inlet

THE HEREFORD TO CAPE MAY INLET PROJECT

Raise, Realign, Replant and Renourish the shoreline from Hereford Inlet to Cape May Inlet:

- Decrease the island's vulnerability to storm damage
- Restore operation of the storm-water drainage system
- Decrease interior flooding
- Provide environmental restoration benefits
- Provide storm reduction benefits
- Provide recreation opportunities
- Provide education opportunities
- Enhance water quality

With the Letter of Support from the NJDEP (Appendix B), the District's Preliminary Financial Analysis (Appendix C), and a letter supporting the initiation of the Feasibility study from the Corps of Engineers, North Atlantic Division (Appendix D), the District negotiated and signed a Feasibility Cost Sharing Agreement with the NJDEP, the non-Federal Sponsor on September 30, 2002. This agreement outlines the scope, cost and responsibilities of all parties involved in the Feasibility study.

The Feasibility Phase of a General Investigation study is designed to identify solutions to the water resource problems and provide a complete representation of the study findings. Project alternatives developed and analyzed during the Feasibility Study will be evaluated. Development of a Hurricane and Storm Damage Reduction and Ecosystem Restoration plan will involve input from the non-Federal study sponsor, the New Jersey Department of Environmental Protection, local interests and reviewing agencies.

Multiple dune heights, berm lengths, structural and non-structural measures will be examined for the Hurricane and Storm Damage Reduction plan. The plan that provides the best level of protection maximizing NED benefits will be selected. A no-action plan will also be considered.

Multiple planting schemes, dune heights, shoreline reconfigurations and berm elevations will be considered for the Ecosystem Restoration portion of the project.

Storm damage prevention, education, recreation, major rehabilitation and water quality enhancement opportunities within the area will be considered as Section 111 mitigation for the Cape May Inlet Jetties only to the extent that they affected the Hereford Inlet to Cape May Inlet shoreline.

Goals of the study include:

- 1- Protect infrastructure from storm damage**
- 2- Eliminate storm-water drainage problems**

THE PLANNING PROCESS

The Corps of Engineers planning efforts follow a six step process. This process follows an approach to problem solving that provides a rational framework for decision making. The Hereford to Cape May Inlet study will follow the outline below to select a plan for implementation.

Six planning steps;

Step 1- Identifying problems and opportunities

Step 2- Inventorying and forecasting conditions

Step 3- Formulating alternative plans

Step 4- Evaluating alternative plans

Step 5- Comparing alternative plans

Step 6- Selecting a plan

Step 1- Identifying problems and opportunities. Along with identifying problems and opportunities, Step 1 should focus on the planning objectives, constraints and environmental scoping to address wildlife and resource issues.

Problems:

- erosion
- clogged outfalls
- ponded water above the high tide line
- interior flooding
- poor water quality
- lack of vegetation
- decreased recreation
- safety concerns with open ditches along the beach
- damage suits against the City of Wildwood for injury
- one vehicle lost in a drainage ditch
- cost to the city for maintenance vehicle replacement from saltwater corrosion
- costs to the City for daily outfall maintenance

Opportunities:

- protect homes and infrastructure from storm damage
- restore natural storm-water flow
- rehabilitate the beach ecosystem
- mitigate for damages caused by excessive beach growth
- increase recreation
- increase public education opportunities (kiosks, information booths)

Identifying objectives and constraints is also part of Step- 1. Planning objectives are statements that describe the desired results of the process by solving the problems and taking advantage of opportunities identified. Objectives must be clearly defined and provide information on the effect desired and the location of where the expected result will occur.

Objectives of the Feasibility study include:

- Renourish the beaches in North Wildwood
- Realign, raise and replant the beaches in Wildwood and Wildwood Crest
- Alleviate clogged outfalls in Wildwood and Wildwood Crest
- Determine the causes of the large beach in Wildwood and Wildwood Crest
- Determine the causes of erosion in North Wildwood
- Reduce ponded water in Wildwood and Wildwood Crest
- Examine sand by- passing from southern Wildwood to Cape May
- Examine sand back-passing from southern Wildwood to North Wildwood
- Improve water quality
- Consider alternative management plans
- Incorporate environmental education into the design
- Maximize education and recreation opportunities
- Maximize NED and NER efforts

Constraints are restrictions that limit the planning process. They include resource and legal constraints. Resource constraints are those associated with the limits of knowledge, expertise, experience, ability, data, information, money and time. Legal constraints are those that are defined by Corps policy, current law and higher authority guidance.

Constraints in the Feasibility study include:

- Technical inability to mobilize material to meet the selected plan's objectives
- Federal and non-Federal funding constraints
- Environmental regulations that would restrict construction
- Endangered species
- Inability to maximize NED or NER objectives
- Local opposition
- Reviewing agency opposition
- Headquarters opposition
- Restrictions based on Corps policy

Step 2- Inventory and forecast. The critical resources relevant to the problems and opportunities identified in Step-1 (physical, environmental, demographic, economic, social) will be inventoried and future conditions projected. These problems include but are not limited to: clogged outfalls, erosion, poor water quality and ponded water on the berm. The Philadelphia District is currently in the initial stages of Step-2. The information gathered will be used to define and quantify the problems and opportunities identified.

Step 3- Formulation of alternative plans. This identifies specific ways to achieve the planning objectives that solve the problems and realize the opportunities identified in Step- 1. The first phase of the plan formulation process is to identify management measures that could be implemented, considering structural and non-structural components. The second phase is the formulation of alternative plans by combining these management measures. An important aspect of this step is to ensure that project alternatives are significantly different from each other to maximize opportunities within the selection process.

Section 904 of the Water resources Development Act of 1986 also requires the Corps to address the following matters in the formulation and evaluation of each of the alternative plans. Each plan will be measured against the following accounts.

1. Enhance NED/NER
2. Protect the environment

3. Protect well being of the people of the United States
4. Prevent the loss of life
5. Protect cultural and historic values

Step 4- Evaluating alternative plans. This step will focus on the examination of with- project and without- project analysis for each alternative. The evaluation consists of four tasks.

1. Forecast with project conditions for each alternative
Describe critical variables for without project condition from Step- 2
PandG evaluation criteria (Completeness, effectiveness, efficiency and acceptability)
2. Compare each with project condition to without project condition
3. Characterize beneficial and adverse effects by magnitude, location timing and duration
4. Identify the plans to be considered

Step 5- Comparing alternative plans. All plans, including a no action plan, are ranked against each other. Beneficial and adverse effects of each plan must be compared. The comparison step can be defined as a reiteration of the Evaluation step, with the exception that in Step- 5 each plan is compared against each other and not against the without project conditions. The output of this step is a numerical ranking of plans.

Step 6- Selecting a plan. The culmination of the planning process is the selection of the recommended plan or the decision to take no action. A combination of the following plans will most likely be chosen.

The National Economic Development plan, (NED). For all project purposes except ecosystem restoration, the alternative plan that reasonably maximizes net economic benefits consistent with protecting the nation's environment shall be selected.

The National Ecosystem Restoration plan, (NER). For ecosystem restoration projects a plan that reasonably maximizes ecosystem restoration benefits compared to costs, consistent with the federal objective, shall be selected.

The Combined NED/NER plan. Projects that produce both NED benefits and NER benefits will result in a "best" plan, such that no alternative plan or scale has a higher excess of NED plus NER benefits over total project costs. Recommendations for multipurpose projects will be based on a combination of NED benefit cost analysis and NER benefits analysis, including cost effectiveness and incremental cost analysis.

The Locally Preferred Plan, (LPP). Projects may deviate from the NED or the NER plan if requested by the non-Federal sponsor and approved by the Assistant Secretary of the Army for Civil Works (ASACW).

Decision making for the selection of a recommended plan begins at the District level and continues at Headquarters through subsequent reviews and higher authority approval.

To provide for consistent and effective communication, the Sponsor and the Government shall appoint senior representatives to an Executive Committee. Thereafter, the Executive Committee shall meet regularly until the end of the Study Period. The Executive Committee shall generally oversee the Study and make recommendations that it deems warranted to the District Engineer on matters that it oversees, including suggestions to avoid potential sources of dispute. The Government has the discretion to accept, reject, or modify the Executive Committee's recommendations.

FEASIBILITY STUDY OVERVIEW

The purpose of the Feasibility phase is to:

- Conduct detailed engineering, economic, environmental and cultural investigations to support plan formulation and evaluation.
- Identify the combined National Economic Development (NED) and National Ecosystem Restoration (NER) plan
- Comply with National Environmental Policy Act (NEPA) requirements by preparing either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS).
- Estimate costs and benefits to a level of detail suitable for project justification, if applicable.
- Determine the appropriate construction cost-sharing arrangements and obtain non-Federal support, as necessary.
- Prepare appropriate documentation for Federal project for authorization.
- Recommend favorable projects for authorization and construction, if appropriate.

Scope of Feasibility Study

The Feasibility study extends from Hereford to Cape May Inlet. As part of the Feasibility study, information will be collected which includes: data collection and modeling programs, detailed site-specific investigations, detailed mapping and utilization of a Geographic Information System (GIS). Estimations and assumptions made during the Reconnaissance Study will be reviewed for accuracy once acceptable data is available. Detailed designs and cost estimates for construction will be prepared.

The anticipated product would be a Feasibility report for Hereford Inlet to Cape May Inlet accompanied by an EA/EIS to comply with NEPA. The Feasibility report will provide all the necessary documentation to permit project authorization by the U.S. Congress for construction of a Federal project(s), if justified.

The Feasibility Study will build upon the information contained in this PMP and include:

- A detailed examination of long-term sand placement and possible modifications to existing coastal infrastructure.
- More detailed investigation of potential onshore borrow site characteristics, including bathymetric mapping and subsurface exploration and vibra-coring.
- Numerical modeling of the coast to determine existing and future sediment transport conditions, storm impacts and to evaluate impacts of alternative solutions.
- An evaluation of the possible effects of existing coastal structures on the beaches from Hereford to Cape May Inlet.
- Data collection and sampling to be used for modeling effort.

- Formulation of practical alternatives, considering the nature of the problem, site characteristics, area resources, and the identification of the optimum plan of improvement for the purpose of Hurricane and Storm Damage Reduction (HandSDR) in North Wildwood.
- Consideration of the multiple purpose potential of shore protection projects with regards to ecosystem protection and/or restoration.
- Assessment of the environmental effects of the possible solutions, and preparation of an Environmental Assessment/Environmental Impact Statement.
- A limited Habitat Evaluation Procedure (HEP) analysis for the wildlife refuge at the south end of the Hereford Inlet to Cape May Inlet study area.
- Investigation of possible impacts to cultural resources with results and determination of effects coordinated in accordance with Section 106 (Public Law 89-665, as amended) responsibilities.
- Coordination with the USFWS including receipt of a Fish and Wildlife Coordination Act Report.
- Preparation of typical design drawings and quantity estimates.
- Estimation of project costs and benefits.
- Evaluation and ranking of feasible solutions.
- Identification of the National Economic Development (NED) plan.
- Preparation of a preliminary hazardous, toxic, and radioactive waste assessment.
- Compliance with other environmental laws and regulations as appropriate.
- A public involvement program to ensure the public's concerns are addressed and the public is kept apprised of the Corps proposals.
- Analysis of project implementation arrangements, including construction cost-sharing requirements and an ability-to-pay analysis of the non-Federal sponsor's project financing plan.
- Preparation of a Project Management Plan (PMP) that describes the tasks required during the Pre-Engineering and Design (PED) phase and associated costs.
- Recommendation for authorization and construction, if a project is economically justified and supported by non-Federal sponsors.

Feasibility Cost Sharing Agreement. Administration policy permits the expenditure of Federal funds for all costs associated with the Reconnaissance phase. Section 105(a) (1) of the Water Resources Development Act of 1986, however, requires that the cost of a subsequent Feasibility phase be shared equally (50/50 split) between the Federal government and a non-Federal sponsor(s). The Feasibility study was initiated with the signing of a Feasibility Cost Sharing Agreement on September 30, 2002 by the Corps of Engineers and the non-Federal sponsor, the NJDEP. The estimated cost of the Feasibility effort is \$2,525,000.

Up to one-half of the non-Federal contribution, or one-quarter of the total cost of the Feasibility phase, \$630,000, may be in the form of in-kind services. In-kind services are those tasks performed and paid for by

the non-Federal sponsor, which are in direct support of the Feasibility study effort. While all in-kind services should be in support of the particular study, it is permissible for non-Federal sponsors to re-orient existing programs and on-going work to complement the Corps Feasibility study.

To proceed beyond the Reconnaissance phase, the Federal government and the non-Federal sponsor must agree that the proposed project is in the Federal and non-Federal interest and then negotiate a Feasibility cost-sharing agreement (FCSA) that commits both parties to equally sharing 50-percent of the Feasibility phase cost. The FCSA is intended to promote a partnership for conduct of the Feasibility phase. It sets forth the management structure, obligations of the signatories, methods of payment, resolution of disputes, methods for termination or suspension of the Feasibility study, and other general contractual matters.

Federal funds to initiate the Feasibility phase may be allocated only after a negotiated FCSA has been prepared, a letter-of-intent to sign the negotiated FCSA has been furnished by the non-Federal sponsor, and all documents have been certified by the Corps higher authority. The Feasibility phase can then begin after execution of the FCSA and receipt of both Federal and non-Federal funds.

Project Study Plan. As part of the Feasibility cost-sharing agreement, a Project Study Plan (PSP) is prepared and negotiated. The PSP documents the specific Federal and non-Federal efforts, which will be required to conduct a particular Feasibility phase. The PSP is appended to the FCSA, lays out the work tasks, costs, and schedules for the entire Feasibility phase. It also furnishes a basis for identifying the in-kind services to be provided by the non-Federal sponsor and for negotiating the value of these services. Significant changes to the PSP during the Feasibility study will require a modification of the FCSA. The PSP is later adopted and modified as the PMP. The PMP gives a more detailed description of tasks and guidance for the project all while staying within the original scope of the FCSA and the PSP.

Identification of Potential Non-Federal Sponsors. The non-Federal sponsor is New Jersey Department of Environmental Protection (NJDEP). The non-Federal sponsor has been involved and coordination has been ongoing throughout the reconnaissance study. A letter of intent, dated January 2002, has been received from the potential sponsor stating they concurred with the reconnaissance report recommendations and were willing proceed to negotiating a FCSA, which was executed in September of 2002.

DESCRIPTION OF PRODUCTS

This Project Study Plan covers the development of four products prior to the initiation of Preconstruction, Engineering and Design (PED) including:

- **Feasibility Report:** This product includes all activities leading to the approval of the final Feasibility Report/Environmental Assessment by the Office of the Chief of Engineers. It entails all problem identification and formulation activities required to identify and recommend plans of improvement. It also includes NEPA, Section 106, and other environmental compliance documentation; coordination of the study and results with all interested parties; initial and final review by the North Atlantic Division, Office of the Chief of Engineers, and the Washington Level Review Center, and ultimately, transmittal to Congress. The Feasibility phase of study, culminating in the Notice of the Division Engineer, is scheduled for completion in FY2006.
- **Environmental Assessment (EA)/Environmental Impact Statement (EIS):** This product includes all activities leading to the assessment of environmental impacts related to beach nourishment, structural improvements and dredging associated with beach nourishment. This includes scoping and preparation of the environmental document, public coordination and review and notification of findings. If no significant impacts are anticipated, an Environmental Assessment (EA) will be prepared which would contain a Finding of No Significant Impact (FONSI). Otherwise, an Environmental Impact Statement would be required. The schedule has a milestone for completion of the EA/EIS with preparation and filing of the Record of Decision (ROD).
- **Preliminary PCA and Financing Plan:** As the details of the recommended plan are finalized, coordination will be undertaken with the non-Federal sponsor to review the model language for Project Cooperation Agreement (PCA) for a shore protection project. A letter of intent will be developed which acknowledges the requirements of local cooperation and expresses good faith intent to provide those items for the recommended project. Additionally, preliminary financing plans will be developed by the sponsors to detail plans for financing costs. Assessment of these plans will then be completed by the District. The scheduled completion for the coordination of the PCA model and preliminary financing plan is FY 2007.
- **Project Management Plan (PMP):** As part of the Feasibility efforts, a Project Management Plan will be prepared based on the recommended project and a baseline cost estimate will be developed. The PMP will address the schedule of Feasibility and PED activities. This includes design memorandums and preparation of plans and specifications for the initial construction contracts. The PMP will address the development of additional products and more detailed plans for successful project management. This document will form the basis for the Project Management Plan to be finalized for project construction. The PMP will be submitted with the draft report in FY 2007-08.
- **Other Supporting Plans:** Other supporting plans will be developed as needed as the study progresses to address specific items such as local cooperation, real estate acquisition, quality control, value engineering, environmental and cultural matters, safety and security, and operation and maintenance.

Reporting requirements in ER 5-7-1, entitled Project Management, Life Cycle Project Management System, will be adhered to.

OBLIGATION OF THE USACE AND THE NON-FEDERAL SPONSOR

The U.S. Army Corps of Engineers shall:

- a. Expediently conduct the study under the leadership of an Individual Project Manager (IPM) and Planning Division Study Manager. The study will be overseen by the Executive Committee, as discussed in the FCMA, which will meet periodically to review progress and findings.
- b. Develop and monitor a detailed schedule and network for execution of the study as a basis for determining the work efforts to be accomplished by the USACE, the non-Federal sponsor, and their respective contractors. This network will form the basis for determining study budget requirements and milestones. It will be modified and updated as necessary to reflect study findings, budget consideration, scope modifications, and other changes as the study progresses.
- c. Identify and manage study task contingencies in order to effectively manage the study budget and finances.
- d. Develop a range of alternatives in compliance with Federal regulations criteria to address the shore protection related problems and ecosystem restoration in the study area.
- e. Develop project cost estimates, identifying contingencies as separable items, and coordinate with the non-Federal sponsor as a basis for planning project financing.
- f. Manage and report on the study compliance with the regulations in ER 5-7-1 titled "Project Management" dated 30 Sept 1992, on the Life Cycle Project Management System. This includes required upward reporting through the Philadelphia District Project Review Board (PRB) and USACE hierarchy, as well as coordination with the non-Federal sponsor on project cost and schedule changes, study progress, key project issues, and other sponsorship matters such as financing and local cooperation requirements.

The Non-Federal sponsor shall:

- a. Appoint representatives to coordinate on scheduling, study management of in-kind services, and other matters related to study conduct. Representatives will also participate on the Executive Committee to oversee the study progress and review findings.
- b. Accomplish in an expeditious manner all activities to be provided as in-kind services, including participation in management activities, review of key products, and accomplishment of tasks.
- c. Notify the USACE at least 90 days in advance of task initiation if any change of the in-kind services is planned, so that appropriate steps can be taken to accomplish the work without affecting the overall study schedule.

Reconnaissance and Feasibility Study Cost Estimate

<u>SUMMARIZED FINANCIAL DATA;</u>	<u>Reconnaissance</u>	<u>Feasibility</u>
Estimated Federal Cost	25,000	1,250,000
Estimated non-Federal Cost	0	1,250,000
Cash	0	0
Other (possible in kind)	0	0
Total Estimated Study Cost	25,000	2,500,000
Allocation Through FY 01	25,000	0
Federal Budget Request for FY 02	0	0
Federal Allocation for FY 02	0	160,000 /1
Federal Budget Allocation for FY 03	0	136,000 /2
Federal Budget Allocation for FY 04	0	99,000 /3
Approximate Federal Balance after FY 04	0	855,000
Total Estimated Study Cost	\$25,000	\$2,500,000

1/ Congressional add of \$200,000; \$74,000 was assessed as savings and slippages; and 34,000 was reprogrammed to the study as adjustments.

2/ Conference Request 200,000 , 64,000 assessed as savings and slippage, 136,000 allocated

3/ Conference Request 100,000, 35,000 assessed as saving and slippage, 34,000 restored. 99,000 allocated.

STUDY TASK DESCRIPTIONS

The Feasibility study work plan has a multitude of detailed tasks. The following is a list and description of the tasks required to conduct the Feasibility study.

PUBLIC INVOLVEMENT

Public Involvement entails the continuation and expansion of the public involvement started during the Reconnaissance phase. Initially, it will involve introducing and explaining the reconnaissance study results and the direction and goals of the Feasibility phase. It will then continue by conducting meetings and coordination with a broad range of public and private agencies. Scoping efforts are required for coordination between Federal, state and environmental agencies. There will also be meetings between citizens committees and other groups. The Sponsor will share in the responsibility of these meetings, particularly those involving state agencies and groups. Newsletters will also be issued periodically to keep all interested parties updated on the study status and relevant issues. COE will provide the project Sponsor with minutes of meetings similarly as the Reconnaissance study. Public Involvement will also consist of notifying concerned parties (newspapers, police, property owners, ...etc.) of personnel who may be involved in on site data collecting.

The Sponsor will be responsible for providing representatives at the public meetings, meetings with other agencies and officials, and participation in other local coordination efforts. The Sponsor will also be responsible for providing the facilities for public meetings.

INSTITUTIONAL STUDIES

An investigation will be conducted to identify the jurisdiction, concerns, authorities, financial capabilities of the Sponsor and interest of other agencies and organizations involved with the study. COE will evaluate the Sponsor's financial capability for project construction and for handling post-construction project costs such as operation and maintenance, major repairs and long-term replacements to project features, etc. COE will prepare a financing plan for project construction, including Government outlays, Sponsor cash and credit contributions, use of borrow areas, and lands, easements rights-of-way, relocations and disposal areas (LERRD) by fiscal year. COE will also coordinate the model PCA with the non-Federal sponsor and prepare draft preliminary PCAs for each separable project. This work will be completed prior to submission of draft Feasibility report and included as an appendix.

- The Sponsor will assist COE in completion of the above-mentioned tasks by providing data on the financial capabilities, jurisdiction, and concerns of the agencies and organizations that may be involved in the study.

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SOCIAL STUDIES

Demographics and socio-economic profiles for the communities that comprise for the study area will be compiled. The profile of human resources in the study area will be updated to characterize the population, demographics and employment as it relates to shore protection and recreation. The economic base study begun during the reconnaissance phase will be updated and expanded for the Feasibility phase. Base and future "without project" conditions concerning population, employment, housing, land use, etc. will be defined. Projected future social impacts of the "with project" conditions for the alternatives under consideration will be determined.

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CULTURAL RESOURCES STUDIES

- **SHPO Coordination:** In compliance with applicable laws and regulations, such as NHPA and NEPA, Phase I investigations will be conducted and presented in the main Feasibility Report and Environmental Impact Statement prepared for this project. These documents will be circulated for public review, and all comments pertaining to cultural resources will be considered during preparation of the final report. Comment letters pertaining to cultural resources will be included in an appendix to the final Feasibility Report, and all comments and recommendations will be addressed in a comment/response format. A report describing the procedures and findings of Phase I investigations will be prepared and coordinated with the SHPO to fulfill compliance review requirements, pursuant to Section 106 of the National Historic Preservation Act (NHPA). The Phase I report and SHPO coordination letters will be provided in appendices to the main Feasibility Report.
- **Phase 1a and 1b Survey:** This effort will include developing and executing Phase I cultural resources investigations within the Hereford to Cape May Inlet study area. For Phase Ia, a records search, historical land use documentation, and State Historic Preservation Office (SHPO) consultation will be conducted to identify known and expected cultural resources in the study area. Known shipwreck locations, if any, will be identified within proposed sand borrow and near shore areas. Phase Ib will include field surveys of appropriate upland project areas, and underwater remote sensing investigations of proposed sand borrow and nearshore zones. Determinations of potential impacts of alternative plans on documented historical, architectural and archaeological resources will be evaluated. Phase I cultural resources investigations will be contracted to a qualified cultural resources contractor.
- **Scope and Award Phase Ia and Ib Survey:** The Environmental Resources Branch will be responsible for developing a contract scope of services for Phase Ia and Ib survey, and for contract management.
- **Cultural Impact Analysis:** Project areas potentially affected by construction of alternative plans will be evaluated to identify project impacts on cultural resources. Mitigation plans will be developed as necessary to avoid, minimize or compensate for project impacts. These plans will be coordinated with the SHPO and other agencies, as appropriate.

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ENVIRONMENTAL STUDIES

Work under this sub-account will be performed by the Environmental Resources Branch. The purposes of environmental tasks during Feasibility Studies are to satisfy NEPA and other compliance requirements, and to provide environmental technical support during plan formulation. Technical support will be provided throughout the Feasibility Study with regard to ecological resources. Tasks will include identification and evaluation of both "with-" and "without-project" environmental conditions, report preparation, participation in plan formulation, and in the development of conceptual and detailed project plans.

NEPA compliance requirements are outlined within the provisions of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations 40 CFR 1500-1508, and the U.S. Army Corps of Engineers regulation 200-2-2, "Procedures for Implementing NEPA". Requirements include documentation and assessment of the effects of a proposed Federal action on significant resources. The focus of NEPA compliance is to provide information to other agencies and the public on the study, and to ensure that the report adequately addresses environmental requirements. Other laws and regulations that require environmental compliance actions include Sections 401 and 404 of the Clean Water Act, Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, the Coastal Zone Management Act, the Clean Air Act

and the Fish and Wildlife Coordination Act.

- **Environmental Scoping:** Scoping efforts will include coordination with Federal and State resource agencies, and appropriate local groups and interested individuals to identify environmental issues and concerns to be addressed during the NEPA process. Scoping efforts will include letters requesting information, telephone contacts, meetings and field visits, as appropriate.
- **General Environmental Studies:** Environmental data gathered during the scoping process will be compiled to address expressed environmental issues and concerns. The information will be used to document both "with-" and "without-project" environmental conditions, and to provide environmental technical support during plan formulation. Additional information will be collected, as necessary, throughout the course of the Feasibility Study to ensure that all environmental issues are adequately addressed.
- **Environmental Screening of Borrow Area:** The Environmental Studies sub-account will also include a biological survey of candidate sand borrow sources to document the existing benthic community, and potential project impacts associated with dredging for beach nourishment purposes. Sampling procedures will focus on identifying macro-invertebrate species that comprise the benthic community, as well as determining the overall diversity and density of the community relative to an appropriately selected control site. Field investigations, laboratory analyses, data evaluation, and preparation of a technical report will be contracted to a qualified environmental contractor. The Environmental Resources Branch will be responsible for developing a contract scope of services for benthic studies, award of the contract and contract management. The total time estimate for benthic survey work and contract management is six to eight months, depending on the extent of borrow area surveying.
- **EQ Habitat Benefits Analysis:** The Environmental Resources Branch in conjunction with the FWS personnel will formulate a Habitat Evaluation Procedure (HEP) which will quantify and qualify the habitat on 5 mile Island, Hereford to Cape May Inlet, New Jersey. Tasks will include identification and evaluation of both "with-" and "without-project" HEP criteria, the development of conceptual HEP variables, which relate to indigenous ecological resources, and report preparation.
- **Environmental Impact Analysis:** Alternative plans of improvement will be evaluated and environmental impacts will be identified and quantified, as appropriate. Mitigation requirements, to include avoidance, minimization and compensation, will be developed and assessed when selecting the recommended plan of action. Project environmental impacts will be documented for presentation in the main Feasibility Report.
- **Ecosystem Restoration:** Significant efforts will be made during the Feasibility study to determine the potential habitat units based on delineation of the areas to restore within the project boundaries.
- **Prepare Draft Report/NEPA Documentation:** A draft Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be prepared to meet requirements of the Federal regulations listed above. The format of the draft EIS will comply with Council on Environmental Quality regulations 40 CFR 1500-1508.
- **Environmental Coordination of NEPA Document:** The draft Feasibility Report and EA/EIS will be coordinated with Federal and State resource agencies, appropriate local groups and interested individuals. A Public Notice announcing the availability of the draft document will be prepared and distributed. Letters of comment will be solicited during coordination of the draft report.
- **Solicit WQC and CZM Approval:** The draft EA/EIS will be used as technical documentation to solicit appropriate State approvals including Section 401 Water Quality Certification and Federal Consistency

concurrence with the New Jersey Coastal Zone Management Program.

- **Prepare Final Report/NEPA Documentation:** All comments received during coordination of the draft report will be considered during preparation of the final document. All comment letters will be included in an appendix to the final Feasibility Report, and all comments and recommendations will be addressed in a comment/response format.
- **Compute NER benefits:** Determine which plan will offer the highest contributions to the National Ecosystem Restoration efforts.

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FISH AND WILDLIFE STUDIES

The Corps will actively coordinate with the New Jersey Field Office of the U.S. Fish and Wildlife Service (Service) throughout the entire study, as required by the Fish and Wildlife Coordination Act (FWCA).

- **Scope and Award USFWS Contract:** The Environmental Resources Branch will coordinate with the USFWS by writing and negotiating a scope of services, with subsequent involvement in the review of the planning aid, and 2 (b) reports. Comments and recommendations provided in these reports will be considered during preparation of draft and final versions of the Feasibility report and Environmental Impact Statement. The 2(b) report will be included as an appendix to the final Feasibility Report, and all comments and recommendations will be addressed in a comment/response format.
- **Preparation of USFWS PAR/2(b) Reports:** Service participation will be accomplished through preparation of a Planning Aid Report (PAR) and a Fish and Wildlife Coordination Act, Section 2(b) report. Service participation will also include attendance at scoping meetings and site visits, as appropriate.

The Planning Aid Report will address base line conditions within the Hereford to Cape May Inlet study area. The Service will provide an inventory of fish, shellfish and wildlife resources within the vicinity of the study area, including Federal and State-listed threatened and endangered species. The Service will also provide information pertaining to high quality and/or sensitive habitat types, and appropriate concerns and recommendations to assist in developing a project that minimizes environmental impacts.

In addition to providing base line ecological information, the Service will aid in developing a scope of work and reviewing the results of benthic surveys to be conducted for the proposed sand borrow areas.

The Planning Aid Report will be included as an appendix to the main report, and information will be incorporated into the Environmental Impact Statement to satisfy NEPA compliance.

A Fish and Wildlife Coordination Act, Section 2(b) report will be prepared by the Service after review of the draft Feasibility Report and draft Environmental Impact Statement. This report will provide the Service's formal comments and recommendations on project alternatives and environmental impacts pertaining to fish and wildlife resources within the study area.

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ECONOMIC STUDIES

- **Review PMP and Previous Reports:** Review PMP, previous reports, recommendations and other relevant existing information. Review, develop, and coordinate tasks for the economic and economic related portions of the CPM. This includes detailing tasks and supervisory review of the assessment and restructuring of the tasks, as necessary.
- **Data Collection:** Gather data from township officials for damage estimation purposes. Historical storm damages, including emergency costs, will be obtained.
- **Structure Inventory and First Floor Elevations:** Conduct a structure inventory for the 500-year erosion, wave-inundation outline or an outline determined by initial coastal storm modeling and historical information as susceptible to damage. Each structure will be assigned a unique ID number. Field data collected will include structure type, quality, foundation, number of stories, and presence of a basement or piles and elevation of first floor relative to the ground. These characteristics will be documented and the structure ID encoded on mapping provided. Pictures and cross-reference to maps of beachfront structures will be provided.
- **Baseline Map Analysis and Cell Selection:** Maps, either from the municipal tax assessor's offices or from the District's FPMS, may provide detailed information for structure square footage and other useful characteristics of the structures. Structure address or lot number is necessary to cross reference structures. This task involves reviewing the maps and corresponding structures, and finding a block number and lot number match to the aerial structure map. In the case of tax maps, each printout is then to be analyzed to extract and record the appropriate information for structures identified as part of the study area. In the case of FPMS maps, each study area structure is matched to corresponding polygons and footprint area extracted as an input for square footage determination. Cell reaches will be selected by the study team to group beach profiles based on hydraulic, economic, and political criteria. A reference line will be established from which the hydraulic results of erosion, wave action, and inundation will be measured. The distance from each structure in the study area to the reference line will also be measured.
- **Structure Valuation and Depth-Damage Curve Selection:** Structure depreciated replacement costs will be defined using the Marshall and Swift valuation service based on data gathered from the structure inventory and total square footage estimation. Appropriate depth-damage structure and content curves for each structure will be determined. In addition, a generalized content to structure damage percentage for residential and non-residential structures will be established.
- **Infrastructure Damage Analysis:** Develop frequency-damage relationship per reach designation for infrastructure based on appropriate cost data. The infrastructure zone will be modified to the parameters of the study area as defined by the hydraulic frequency of storm events on a per cell basis.
- **Land Improvement (Cost of Fill):** Develop frequency-damage relationship for property lots (aggregated by reach) for replacement beach fill based on quantity of beach lost to erosion. Average lot size per cell will be provided by design technical element and cost of fill per cell will be determined based on quantity needed per lot. The stage damage relationship will be modeled using EAD.
- **Elevation to Structure Matching:** Match structure elevation to appropriate structure. Elevations to be provided to Economics Branch in spreadsheet (Excel format for previously agreed upon structure's ID's. This is to be conducted in two phases. Phase I, structure matching and proofing, and Phase II, establishing structure count per damage zone based on structure elevation, and location. The front, back, and midpoint of each structure will be calculated for damage zone measurement.

- **Prepare Structure Database:** Input all information relevant to structures in study area in a master database. The information is to include reach designation, structure ID, cost of structure, and damage curves.
- **Prepare Models:** Establish templates for COSTDAM program in appropriate format. This includes all entry inputs to run the model for all appropriate structures. Database and database subsets will be placed in appropriate format prior to model run. Prepare files for EAD program including economic and storm frequency parameters.
- **Without Project Model Runs:** Execute COSTDAM program to establish without project damage to structures from erosion, wave action and inundation. Run EAD (expected annual damage) model to establish damages to infrastructure and cost of fill evaluation on a cell-by-cell basis.
- **Calibrate Model Runs:** Review damage results of models and calibrate to hydraulic and economic historical data and topographic surveys.
- **Long Term Erosion (Future Without Project) Analysis:** Execute COSTDAM and EAD models to evaluate effect of long-term erosion. Erosion will be evaluated in appropriate years, to be defined by study team, over the project life. A hydrologic and hydraulic ‘Control’ file for structural damage and erosion rates for infrastructure and land damage are to be provided to Economics Branch for each increment.
- **With Project Model Runs:** Run COSTDAM and EAD models, using the appropriate hydraulic control files, to establish with project damage reduction (benefits) and with project residual damages.
- **Evaluate Incidental Benefits:** Quantify the incidental recreational benefits associated with the potential enhancement of beaches on Hereford to Cape May Inlet. The contingent value methodology survey conducted by the Forum for Policy Research and Public Service of Rutgers University to determine willingness to pay for the use of enhanced beaches will be used to calculate recreation benefits. Develop other potential benefit categories such as benefits during construction (BDC), local cost foregone, advanced infrastructure replacement, reduced maintenance, and cost effectiveness and incremental cost analysis (CE/ICA), if applicable.
- **Develop AAB, AAC, and BCR:** Develop average annual benefits, average annual costs, and benefit-cost ratios. This is to be done for various plan scenarios and will include associated costs, cyclical maintenance costs, and interest during construction.
- **Develop PED Update Plan:** Develop a benefit update plan and cost estimate for the PED study phase.
- **Report Write Up:** Develop and edit text and tables for the economic appendix and provide appropriate input to the main report.
- **Technical Review:** Review of economic parameters and products for reasonableness at critical junctions including without project, future without project, and with project conditions.
- **Study Meetings and Administrative Costs:** Attend all necessary study team meetings including Branch Chiefs Meetings and review meetings.
- **Review and Higher Authority Coordination:** Respond to comments from higher authority.

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REAL ESTATE STUDIES

- **ID Landowners:** Real estate-related work includes the development of ownership data, which is obtained by researching the property records in our database using the proposed site plans to define the property owners that are within the project limits. The proposed site plans are reviewed to determine the lands, easements, rights-of-way, and temporary work areas/staging areas required for the project.
- **Obtain Rights of Entry:** Rights-of-entry will be obtained, if required, for cultural, environmental, HTRW, or geotechnical analyses for the Feasibility study.
- **Prepare Right-of-Way Maps:** Right-of-way maps will be prepared by utilizing any available aerial photogrammetric mapping, tax maps, topographic survey information, and design plans. Mapping is for depicting types of estates required for the project, property data and extent of ownerships for calculating land areas and value of properties required for the project.
- **Gross Appraisal:** A Gross Appraisal will be prepared which provides a detailed estimate of all real estate costs associated with acquisition of real property interests.
- **Prepare Real Estate Plan:** An overall Real Estate Plan (REP) describing the real estate requirements for the project will be prepared. As part of the REP, a preliminary real estate cost estimate will be prepared in the MCACES format. The cost estimate will include a value estimate for real property required, PL 91-646 relocation payments, the non-Federal sponsor administrative costs to accomplish the Project's real property requirements, and the Corps' administrative costs to assist and monitor the non-Federal sponsor real property acquisition program. Attorney's Opinions of Compensability will be prepared as part of the REP for each relocation associated with the Project, to determine whether the owner has interest, and what the best measure of just compensation would be. A detailed acquisition schedule will also be developed and included in the REP.
- **Review PCA:** A draft Project Cooperation Agreement (PCA) for the construction of selected alternatives will be reviewed for inclusion in the Feasibility report. The PCA is a legally binding agreement that sets forth the terms of the relationship between the Federal Government and the non-Federal sponsor for construction, operation, and maintenance of projects approved through the Feasibility process.
- **Review Feasibility Report and PMP:** The Real Estate Division will review the Feasibility Report and respond to Division comments accordingly. Real Estate will also have input into the Project Management Plan (PMP).
- **Local Coordination and Site Visits:** Coordination includes, but is not limited to, Real Estate participation in team meetings, site visits, negotiation of work agreements, coordination with other offices on project data needed for Real Estate's major study products, and monitoring of progress and findings associated with Real Estate study products.
- **Report Preparation:** A separate real estate appendix will be prepared by the Corps for the Feasibility report, and detailed real estate costs will be a part of the baseline cost estimate for the recommended project. The appendix will also include ownership data, acreage, gross appraisal, and preliminary right-of-way maps.

The non –Federal sponsor will be responsible for assisting Federal government personnel during field surveys of affected properties in the study area. Additionally, the sponsor will work with government

personnel to establish the sponsor's administrative costs for acquiring LERRD.

The objectives of the tasks performed as part of this subaccount are: 1) develop a comprehensive plan identifying the real estate requirements for the project and the estimated costs associated therewith; and (2) develop a realistic acquisition schedule in coordination with the non-Federal sponsor .

The products associated with this sub account are: 1) rights-of-entry; 2) right-of-way maps; 3) gross appraisal; 4) REP; 5) MCACES cost estimate; 6) Attorney's Opinions of Compensability; 7) acquisition schedule; 8) PMP input.

The plan formulation and evaluation for Hereford to Cape May Inlet Project will be performed in accordance with current Corps of Engineers guidance. The appropriate guidance are listed below:

- Draft ER 405-1-12, Chapter 12, Real Estate Roles and Responsibilities for Civil Works: Local Cooperation and Full Federal Projects
- RE Policy Guidance Letter No. 3, Guidance for Preparation of Gross Appraisals, dated 31 May 1991
- EC 1110-1-538, Code of Accounts
- EC 1105-2-208, Preparation and Use of Project Study Plans
- ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies
- ER 5-7-1 (FR), Project Management

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HYDROLOGY AND HYDRAULICS INVESTIGATIONS

The principal types of physical data which must be collected and/or synthesized include: (1) map and survey data, i.e., topography, beach profiles, and near shore hydrographic surveys, and historic vertical aerial photography; (2) meteorological records; (3) data on wave characteristics and establishment of a representative annual wave climate; (4) tide records related to storm events and determination of frequencies of occurrence; (5) active beach profile surface sediment characteristics; (6) sediment characteristics of substrate material in potential beach/dune-fill borrow areas; and (7) detailed identification of functional and structural characteristics and states of repair of existing groin structures.

- **Acquisition of the most recent Boat Sheets:** Acquire detailed nearshore hydrographic survey sheets available from the National Ocean Service (NOS) covering the entire nearshore area of Five Mile Island. This detailed nearshore bathymetry will be used to describe the outer portions of the wave transformation zone in connection with development of a sediment budget/transport regime and the conduct of shoreline change modeling.
- **Assemble of Vertical Aerial Photographic Coverage:** Assembling aerial photographs of Five Mile Island will be necessary for use in shoreline analysis including the development of a sediment budget, and in calibration and verification of a numerical shore line change model. Photography available within the District archives is considered sufficient for these purposes.

- **Meteorological Records, Synthesis, and Analysis:** The Atlantic City, NJ, weather station records, from at least 1960, will be collected, synthesized, and analyzed with respect to winds and the statistics of storm intensity/frequencies. This information will be correlated with shore behavior analyses, storm tide records, predicted frequencies of storm tides and waves (particularly the prediction of more frequent events), and in selection of periods for use in calibration and verification of the shoreline change model.
- **Wave Climate:** The Atlantic Coast Hind cast Shallow-Water, Significant Wave Information Study (WIS) statistics will be examined for hind cast stations off Hereford to Cape May Inlet. These data are comprised of hind cast wave heights, periods, and direction for 3-hour time intervals over a period of 20-years. The synthesized hind cast for each year will be examined and compared, and the year and station representing the average conditions will be selected for use in performing a sand budget/transport-regime analysis and in conducting shoreline change modeling. Additionally, the results of the wind, wave, and water level climatology developed for the Delaware Bay Study for sites including Hereford to Cape May Inlet will be integrated with the WIS-derived data to develop the wave climatology.
- **Tide and Storm Surge Records:** Records from the Atlantic City, NJ, tide gage and from the Delaware Bay Study wind-wave-water level climatology will be examined with respect to storm events to evaluate the water-level/frequency relationships as concerns frequently occurring storms, and to determine if the currently established water-level/frequency curve for Hereford to Cape May Inlet warrants adjustment. The tide record selections will be based on the analysis of the meteorological records. The analysis of the tide records and adjustments as may be required to the water-level/frequency relationships will be significant in refining the present estimate of the expected average annual volume of material displaced from the study area's dune line and the portion thereof that would likely constitute a normal annual maintenance responsibility of local authorities.

The primary analytical assessments and design activities related to the coastal engineering aspects of the Feasibility study will involve (1) examination of mapping and profile survey data, to establish the best estimates of shoreline movement rates and directions for historic and projected without project condition, (2) establishment of sediment budget and sediment transport regime for Hereford to Cape May Inlet, (3) performing storm response modeling of active beach profile for "W/O" and "W" project scenarios, (4) performing analysis of dune material volume displacement and related frequencies of occurrence, (5) participation in formulation of shore protection alternatives, (6) performing beach fill material compatibility analysis for available borrow material, (7) conducting long-term shoreline change modeling in evaluating alternatives, (8) participation in selection of comprehensive shore protection plan, (9) participation in the design of recommended plan of improvement, and (10) participation in report preparation.

- **Shoreline Movement Rates and Directions:** The mapping and profiles surveys conducted in the Feasibility study effort provide physical data which allow for a substantial improvement in developing shoreline movement trends along the study area. This trend determination will be used in conducting the beach/dune storm response modeling and associated economic analysis for the "W/O" project scenario, will be applied in the sediment budget/transport regime studies, and in calibration of the long-term shore change modeling. The approach to this activity will be essentially the same as applied in the reconnaissance effort, with modifications as deemed appropriate.
- **Sediment Budget and Sediment Transport Regime:** A sediment budget and sediment transport regime is a necessary element for the understanding of the shoreline and active beach profile behaviors as captured by mapping and profile surveys, in the planning of a beach nourishment plan, and in the calibration and verification of long-term shoreline change modeling. The sediment budget/transport regime from Hereford to Cape May Inlet will be developed on the basis of: (a) wave transformation/energy-flux studies to establish alongshore transport gradients between appropriately defined shoreline

cells; (b) determination of profile volume changes in the shoreline cells as established by profile surveys; and (c) solving the continuity relationships between shoreline cell boxes based on the volumetric changes on the profiles, the alongshore energy-flux gradients, and the offshore sediment displacements due to relative rise in sea level.

- **Beach/Dune Profile Storm-Response Modeling:** Detailed beach/dune profile storm-response simulations will be performed in two stages with use of the USACE/SBEACH numerical model for the flood prone areas for North Wildwood. The first stage will examine the without project condition and will, by comparison to the reconnaissance investigation, involve substantially improved definition of study cells provided by the study base map. Production runs will be performed for one or more future positions of the shoreline, in addition to the existing position. The various outputs from the first stage modeling effort will be used in conducting economic analyses to derive the without project expected average annual damage levels within the respective study cells. Results of the economic analysis will guide formulation of reasonable alternative shore protection measures in the flood prone areas for evaluation in the study. Following the formulation of alternatives, the second stage of SBEACH model simulations will be conducted in evaluating beach/dune storm-response under with project conditions. The first stage of storm-response modeling will include the calibration and verification process. The second stage of the SBEACH model simulations will involve evaluation of the “W” project condition.
- **Dune Material Volume Displacements:** The results of the SBEACH model simulations in the flood prone areas will be used to determine the expected average annual volume of material displaced from the frontal dune. The proportions of material displaced and the associated recurrence intervals related to frequent storm event would also be determined by actual experience as reflected by profile surveys. The actual volumes of displaced dune material and their computed frequencies of occurrence will be correlated with the results of the meteorological and tide records synthesis and analysis, as well as any adjustments made in the existing water-level/frequency relationship. The information developed in this element of the Feasibility study constitutes the basis for identifying the expected annual costs of providing routine maintenance on the selected project dune feature.
- **Formulation of Alternative Shore Protection Measures:** With project alternative shore protection measures will be formulated by a study team representing various disciplines and District organizational units, and will involve broad inputs from the study’s general coordination and public involvement process. Internally, alternative formulations will involve individual efforts, coordinated activities and related meetings of the assigned District staff.
- **Long-Term Shoreline Change Modeling:** Alternative shore protection measures for without and with project condition will involve beach/dune fill. In any case, most if not all the alternatives will likely impose changes in the sediment budget and transport regime along the island and accordingly, will require assessment of long-term impacts by means of shoreline change modeling. This assessment will be performed by use of the USACE numerical model entitled, Generalized Model for Simulating Shoreline Change (GENESIS). The GENESIS model calculates local wave breaking, alongshore sediment transport rates, and the resulting plan-shape evolution of the modeled coastline reach. The effect of natural features, shore protection structures and activities such as beach fills are incorporated in the model by modification of the transport rate through boundary conditions and constraints. Long-term changes in the shoreline plan-shape will be determined by repetitive computations based on the selected average annual wave climate and the associated wave transformations computed in the nearshore zone. The GENESIS model retrieves the nearshore wave characteristic derived from RCPWAVE and performs local refraction, diffraction, and shoaling calculations to obtain breaking wave heights and angles at intervals alongshore. In accordance with the computed breaking wave-field along the modeled shoreline reach, GENESIS then computes alongshore sediment transport rates and in turn, the shoreline positions that produce the shores plan-shape. An important requirement in the appropriate application of the GENESIS model is the procedure of calibration and verification of the model using actual data such

as surveys, maps and aerial photography, as well as the results of sediment budget and transport regime analysis.

- **Selection of Recommended With Project Plan:** As was the case with the formulation of shore protection alternatives, selection of the recommended with project plan will be a collaborative effort of a study team based on the results of alternative analyses by various units concerning different project aspects, as well as outcomes from general Feasibility study coordination activities and the public involvement program.
- **Feasibility-Level Project Design:** Refinements will be made in the level of design detail comprising the selected plan of protection, initially formulated as a possible alternative or set of alternatives. Various District units may contribute to the Feasibility-level design.
- **Site Visits, Meetings, and Coordination:** Engineer assigned to the Feasibility study will be involved in numerous meetings and coordination activities, including meetings with non-Federal sponsors at the study site. It is estimated that these general activities will be conducted throughout the course of the study.
- **Report Preparation:** Numerous District units will contribute to the preparation of the Feasibility study report and its appendices. The coastal engineering staff will play a major role in the Feasibility report write up.
- **Coastal Engineering Supervision:** Supervision over activities conducted by the staff of the coastal engineering group, within the Hydrology and Hydraulics Branch, will be exercised throughout the course of the group's involvement in the Feasibility study.

Metadata must be created by team members or included as a deliverable on contracts. The metadata file(s) must comply with Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata Version 1.0 or higher.

GEOTECHNICAL INVESTIGATIONS

- **Potential Borrow Source Samples:** There are potential borrow areas within the Hereford to Cape May Inlet study area, which will be explored as potential sources of beach/dune material. These areas, which were identified on a preliminary basis by the USACE/CERC, are located along the beachfront in the neighboring communities of Wildwood, Wildwood Crest and Diamond Beach, in the Atlantic Ocean offshore of the study area and in Hereford Inlet. This material can potentially be used for placement in areas experiencing sediment deficits, including North Wildwood. Exploration of these potential borrow sources will be performed by a combination of vibracoring, sub-bottom profiling, and hydrographic surveying (bathymetry). The majority of these tasks will be contracted out to others.
- **Beach Profile Sediment Samples:** The properties of material representing the active beach profile will be determined from surficial sediment samples taken at 5 duplicated points on each of 10 LRP profiles and will be obtained in conjunction with the LRP profile surveys. Relative to NAVD, samples will be obtained at the following 5 locations, ranges or elevation points: Beach Crest-200', Beach Crest, tidal zone, -6.0' and -18.0'. This sampling has commenced with the collection of the post-summer samples. A second round of sampling will be performed in conjunction with the next LRP profile survey that will be conducted after the winter season.
- **Laboratory Analysis of Beach Profile Sediment Samples:** A contract was awarded to test the first series of 50 sediment samples obtained from the beach between Hereford and Cape May Inlets. The samples were subjected to laboratory gradational analyses and statistical evaluation to determine their grain size distribution, stability and suitability for beach fill material. Samples obtained during the next round of sampling will be subjected to similar testing and evaluation.

- **Borrow Material Compatibility Analysis:** Analyses of the beach profile sediments along with the sediment data obtained from other potential designated borrow sources will be performed to determine their compatibility with each other, and suitability as replenishment material. Separate analyses will be performed to determine the fill volumes needed from perspective borrow sites, including analysis of the distribution of particle sizes and determination of overfill and renourishment factors. The analyses will be performed by USACE personnel. Additional analyses will be performed if anticipated borrow sources are determined to be inadequate, or other borrow sources are required to supplement available resources. This supplemental evaluation may extend to include potential sources from the 3-6 mile zone offshore from Hereford Inlet to Cape May Inlet and other areas previously investigated by the NJGS.
- **Hired Labor:** This account will include Scope of Work Formulation and Contract Management, Report Preparation and Site Visits, as well as Outside Agency Coordination.

Metadata must be created by team members or included as a deliverable on contracts. The metadata file(s) must comply with Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata Version 1.0, or higher.

SURVEYING AND MAPPING

- **Digital Orthophotography:** Aerial photography will be obtained for the entire length of Hereford to Cape May Inlet at an appropriate scale for generation of a digital orthophotograph. Contour/planimetric mapping will cover the entire barrier island, extending from Hereford inlet to Cape May Inlet. Two foot contour mapping will be accurate to +/- 1 foot for contours, and +/- 0.5 feet for spot elevations. The mapping shall be provided in digital form. This will be a contract effort.
- **Beach/Offshore Profile Surveys and Sediment Samples** Beach profile lines will be surveyed along Hereford to Cape May Inlet. They will be obtained twice during the data collection phase of the study; one set will be surveyed in the winter and one set in the summer. Twenty-nine lines (29) will extend from the offshore closure depth, which is approximately -30 feet NGVD, landward to the first structures. Fifty-four lines (54) will extend from shallow water landward to the first structures. Field surveys will be performed to establish necessary horizontal and vertical control. Monumentation of the control points will be completed with the first set of beach profile surveys as they will establish the location of the profile line and will form the survey and construction baseline from which to design and build the selected shore protection plan. In addition, sediment samples will be collected along a number of the onshore/offshore profile lines during the surveys to determine the composite grain size of the beach material. This contract effort will be completed in two phases. The first phase will complete monumentation and survey of the first set of lines. The second phase will complete the survey of the second set of lines.
- **Groin Surveys:** Approximately 11 beach groins along the developed shoreline of Hereford to Cape May Inlet will be field surveyed to determine their profile and cross section. This survey is necessary in order to analyze the groin structures for function ability and current effectiveness with respect to shore protection. This work will be done concurrently with the summer beach profiles and during low tide. Necessary horizontal and vertical control will need to be established. This will be a contract effort.
- **Hydrographic Surveys:** Hydrographic surveys will be conducted to confirm the locations and boundaries of the documented borrow sites. In the event that the delineated borrow sites cannot be used, additional sites off 5 Mile Island will be investigated. This effort is anticipated to be done in house labor.
- **Aerial Photography Archive:** Aerial photography for the coastline of New Jersey will be scanned into an aerial database digital library by combining existing corps aerial photographs with additional aerial photography flight photographs where needed. Photographs will be geo-referenced and indexed onto a CD ROM format suitable for ArcView 2 display. Photography will span a sufficient period to allow

efficient visual display of shoreline changes. The optical database will also serve as an archival record of current and future aerial photography. This will be a contract effort.

Metadata must be created by team members or included as a deliverable on contracts. The metadata file(s) must comply with Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata Version 1.0 or higher.

ENGINEERING ANALYSIS AND DESIGN

- **Study Coordination / Management of Engineering Design Efforts:** Design efforts generally will involve coordination with involved parties relating to the survey and mapping tasks, and with the various technical elements for determination and design of the proposed erosion control features for the project. This may include team meetings, site visits, project research, coordination with outside parties, (eg. Sponsor, borough engineer, etc.) The design team member will coordinate survey and mapping requirements for the study, prepare surveying and mapping scopes of work and government estimates, monitor contractor compliance with the contract requirements, and review contractor submissions, intermediate and final.
- **Investigate Existing Utilities:** A detailed investigation into existing utilities will be performed to evaluate damages and replacement costs along the developed areas. This will consist of collecting available mapping of existing utilities in the study area, including electric, telephone, water, sanitary, storm water, cable, etc. Field investigations will be necessary to determine the existence and location of utilities when no mapping is available.
- **Infrastructure Replacement:** Investigate the infrastructure located in the ocean front zone of the study area, including roads, sidewalks, parking lots, boardwalks, access ramps, piers etc. Quantify the Infrastructure to determine replacement costs.
- **Inventory Erosion Control Structures:** An inventory of existing coastal erosion protection structures will be updated. A thorough field inspection and documentation will be performed to determine the functional and structural characteristics, and states of repair of the existing groin structures which compartment the entire developed ocean frontage of Hereford to Cape May Inlet. Collect available construction plans of existing erosion control structures in the study area, including groins, bulkheads, revetments, seawalls, etc.
- **Structural Failure Potential:** Determine the structure failure potential of the erosion control structures in the study area. This will be accomplished using accepted engineering analyses and will consider the condition of the structure.
- **Develop Design Alternatives (Cycle 1 and 2):** Viable alternatives for a comparative study will be developed under a two-step process. Cycle 1: Develop technically feasible alternatives and provide engineering judgements as to their effectiveness. Cycle 2: Develop the design alternatives chosen by the study team to further consider from Cycle 1. A conceptual design will be done and calculations will be prepared for comparative purposes.
- **Alternative Layouts and Quantities (Cycle 3):** Develop the design alternative chosen by the study team to further consider from Cycle 2. Design will be done and presented in more detail than the previous cycle. Appropriate calculations will be prepared to optimize various features of the plan.
- **Design of Selected Plan (Cycle 4):** Final design of the selected plan will be done including determination of the plan layout, typical sections and construction materials.
- **Report Preparation:** The plan selected will be designed for presentation, including plates and/or

mapping, technical abstracts, and text. Appropriate appendices will be developed.

- **PMP Preparation:** Assist in preparation of a Project Management Plan for the Preliminary Engineering and Design (PED) phase, Plans and Specifications phase and Construction phase of the proposed shore protection project.

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COST ENGINEERING

- **Infrastructure Costs:** Define replacement cost of existing infrastructure for the without project conditions.
- **Preliminary Cost Estimates:** Develop preliminary construction cost estimates for various project alternatives for screening purposes.
- **Selected Plan Costs:** Produce an MCACES baseline preliminary construction cost estimate to establish the NED plan and the selected plan (if different). Provide estimates of average annual maintenance costs and operation costs and the Fully Funded Cost Estimate. This work will be completed prior to approval of Project Management Plan (PMP).
- **Meetings, Report Preparation and Site Visits:** Attend without Project Conditions and With Project Conditions meetings and site visits to determine project and estimate's parameters. Prepare sections for draft and final report.
- **Address Higher Authority Review Comments:** Provide revisions in both the final design and construction cost estimate, if necessary in accordance with guidance from reviewers.

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GEOGRAPHIC INFORMATION SYSTEMS MANAGEMENT

A Geographical Information System (GIS) is a tool that offers a graphic representation of data, which helps in the decision-making process. The GIS for this project will be modeled after the GIS coastal template provided to Philadelphia District by Mobile District. The ultimate goal of any GIS is data organization. The bulk of the GIS design work will be completed by Floodplain Management Branch, where the GIS technical expertise resides in the District, with assistance from Hydrology and Hydraulics team member and the GIS Coordinator. Every team member will be responsible for metadata and the format of the data collected during the investigative process for the easy integration of data into the system.

- Create a base map
- Research available data resources
- Organize data and ensure project data is in proper format
- Create applications
- Prepare presentation quality maps for meetings
- Integrate other applications and models for demonstrations

Metadata must be created by team members or included as a deliverable on contracts. The metadata file(s) must comply with Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata Version 1.0 or higher.

PLAN FORMULATION

Plan formulation refers to the formulation and evaluation of alternative solutions to the problems initially identified during the reconnaissance study and subsequently refined during the Feasibility study, namely ecosystem degradation along with hurricane and storm damage. The future "without project" condition for each problem area will be established to serve as the basis for comparison of "with project" alternatives. Planning objectives and constraints and plan formulation rationale and criteria will then be developed. The evaluation of alternatives, both structural and non-structural, will array the costs and benefits associated with each plan for implementation.

Three cycles will be utilized to formulate the recommended plans of improvement. Cycle 1 will consist of an initial screening of alternatives. This initial screening process will involve input from the study sponsor and various agencies in order to develop alternatives that are acceptable to these interests as well as the interests of the Corps. Cycle 2 of the plan formulation would be used to further screen alternatives that were developed as part of the previous formulation cycle. This screening would be the result of an initial cost and benefit analysis and would include incremental analysis when appropriate. Besides and output factor, consideration will be given to technical Feasibility, environmental considerations, socio-economic, and institutional considerations. Cycle 3 will involve selecting the final recommended plan. The selection of the final plan will be the result, in part, of a detailed cost effectiveness analysis and incremental cost analysis. The detailed cost analysis will identify and eliminate economically irrational solutions while the incremental cost analysis will allow for the comparison of the additional costs and additional outputs associated with alternative plans.

REPORT PREPARATION

This sub account includes assembling, writing, editing, typing, drafting, reviewing, reproducing, and distributing the draft and final study report, environmental assessments, and other related documentation required for transmittal by the COE to higher authority.

The contents of the Feasibility report are summarized as follows: (1) main report summarizing the technical findings, and containing the conclusions and recommendations; (2) an Environmental Impact Statement, or Environmental Assessment (EA) and Finding of No Significant Impact (FONSI); (3) technical appendices presenting the detailed backup and results to individual work tasks; (4) appendix containing the Sponsor's financial capability statement and preliminary financing plan; (5) other supporting documentation including the Project Management Plan (PMP).

The steps necessary for producing a final report will include the following phases. Finalize draft Feasibility report for internal/Sponsor review. Conduct review board meeting and revise and reproduce draft reports for submission to Division (P6). Revise draft report in response to Planning Guidance Memorandum (PGM-P7 Milestone) and reproduce draft report for coordination with agencies and public. Modify draft report in response to comments during agency coordination and develop final report documenting responses to agency and public comment. Coordinate with the Sponsor and internal elements, and reproduce final District report for distribution.

The Sponsor will provide the appropriate report materials relating to their in-kind efforts as well as providing additional review and editing of draft report sections.

LIFE CYCLE PROJECT MANAGEMENT

The Project Manager (PM) is responsible for reporting to the District's Project review Board and for preparation of required Life Cycle Project Management (LCPM) reports. In addition, PM responsibilities include the monitoring of project schedules and finances, processing of schedule and cost change requests,

management of contingencies, review of budget documents, coordination of the FCSA and PCA, and identification of problems and issues.

WASHINGTON LEVEL REVIEW

This item is included to ensure the sponsor is afforded the opportunity to participate in any significant effort as a result of the review by the Policy Review and Analyses Division, Policy Review Branch. This is to cover expenses for the District and non-Federal sponsor associated with the review and processing of the Feasibility report subsequent to the Division Commander's Notice announcing the completion of the Feasibility report. The Sponsor will be responsible to respond to comments related to that portion of work provided as in-kind service. By regulation, this item is set at 5% of total study cost or \$50,000 which ever is lower.

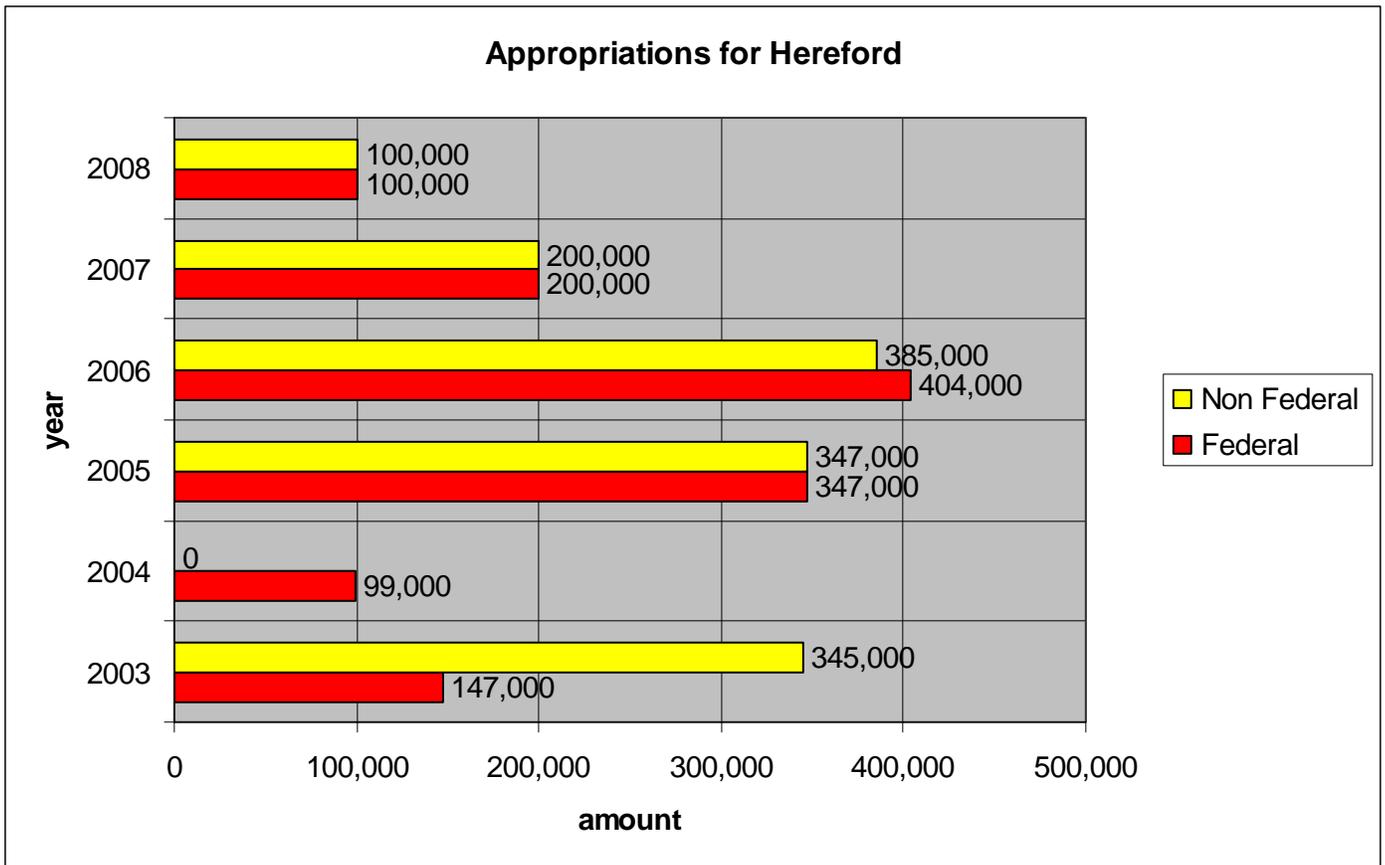
SAFETY

The USACE Safety and Health Requirements Manual EM 385-1-1 will be used to develop the Projects Plan for Safety to assure protection of the safety and health of government employees and contractor personnel. The District Safety Officer will review the contract plans and specs as part of the B/C/O review and certification process, and will conduct a safety briefing during the pre-construction conference with the contractor

The construction contractor will be required to prepare and submit a Safety Plan for District review and concurrence prior to starting work. Inspections of construction sites will be undertaken on a daily basis by construction management personnel to assure the Safety and Health of personnel working or visiting the site. Periodic safety inspections will also be conducted by the District Safety Officer as necessary to assure compliance with the approved Safety Plan.

**STUDY COSTS BY FISCAL YEAR
(APPROXIMATE)**

FUNDS



TASKS

FY2003- Acquisition strategy meetings, PDT selection, project conceptualization.

FY2004- Project Development, public involvement, Project Management Plan development.

FY2005- Without Project Hydraulic, Economic, Environmental, Geotechnical, Cultural conditions.

FY2006- With Project Economic Analysis; Hydraulic Analysis, Plan Formulation

FY2007- Plan Selection, Draft Report.

FY2008- Feasibility Report Preparation & Completion, submittal to congress.

MILESTONE SCHEDULE

Milestone	Description	Original Date	Actual Date
P1	Initiate Study	Dec-01	Dec-01
P2	Coordination Meeting/Site Visit	Dec-01	Dec-01
P3	Mid Point Meeting	N/A	N/A
P4	Reconnaissance Report/PFA	Jan-02	Jan-02
P5	FCSA	Mar-02	Sep-02
P6	Feas. Coordination Meeting /1	Sep-03	
P7	Formulation/2	Oct-05	
P8	Draft Report	Feb-07	
P9	Final Report	May-07	
P10	D.E. Public Notice, Report Completion/3	Sep-08	

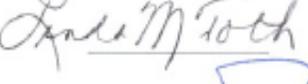
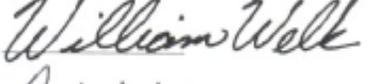
1/ The Feasibility Coordination meeting is between the PDT team, the sponsor, reviewing agencies and Corps HQ. It usually occurs when the project is entering the formulation phase and is intended to ensure the project is proceeding on the right path.

2/ Formulation describes the process of optimizing multiple plans and scenarios for the project area, weighing them against costs of the different plans and the suitability for the site.

3/ D.E. Public Notice stands for Division Engineers Public Notice. It signifies the completion of the Feasibility Phase and Report Completion. The Public Notice contains a recommendation from the Division Engineer about the project and is mailed to residents and reviewing agencies in and around the project area as an official notice of the reports completion.

PDT SIGNATURES
 Hereford Inlet to Cape May Inlet
 Feasibility Study, Project Development Team

PROJECT MANAGEMENT PLAN COORDINATION

<u>Name</u>	<u>Organization</u>	<u>Responsibility</u>	<u>Signature</u>
Brian Bogle	CENAP-PL-PC	Project Manager	
Jeff Gebert	CENAP-PL-PC	Coastal Chief	
John Garofalo	NJDEP	Bureau of Coast. Eng	
Merve Brokke	CENAP-PA	Public Affairs	
Chuck Sutphen	CENAP-EC-DG	Geotech	
Rob Lowinski	CENAP-EC-H	H&H	
Beth Adams	CENAP-PL-F	Flood Plains	
Linda Toth	CENAP-CT-C	Contracting	
Joe Dugan 	CENAP-RM	RMO	
Mike Ryba	CENAP-OC	Council	
Bill Bartel	CENAP-SA	Safety	
Heather Sachs	CENAB-RE	Real Estate	
Beth Brandreth	CENAP-PL-E	Environmental	
Gene Senycz	CENAP-PL-D	Economics	
Al Montes	CENAP-EC-DC	Engineering Design	
Bill Welk	CENAP-EC-DSC	Cost Engineering	
Robert Dunn	CENAP-PL-E	Archeologist	

Appendix A

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D. C.

RESOLUTION

Coast of New Jersey
Erosion and Storm Effects Study
Docket No. 2294

Resolved by the Committee on Public Works and Transportation of the United States House of Representatives That the Board of Engineers for Rivers and Harbors is hereby requested to review existing reports of the Chief of Engineers for the entire Coast of New Jersey with a view to study, in Cooperation with the State of New Jersey, its Political subdivisions and agencies and instrumentalities thereof, the changing coastal processes along the coast of New Jersey. Included in this study will be the development of a physical, environmental, and engineering data base on coastal area changes and processes, including appropriate monitoring, as the basis for actions and programs to prevent the harmful effects of shoreline erosion and storm damage; and, in cooperation with the Environmental Protection Agency and other Federal agencies as appropriate, the development of recommendations for actions and Solutions needed to preclude further water quality degradation and coastal pollution from existing and anticipated uses of coastal waters affecting the New Jersey Coast. Site specific studies for beach erosion control, hurricane protection and related purposes should be undertaken in areas Identified as having potential for a project, action or response which is engineeringly, economically, and environmentally feasible.

Adopted: December 10, 1987

ATTEST:

James J. Howard, Chairman



State of New Jersey

James E. McGreevey
Governor

Department of Environmental Protection
Natural and Historic Resources
Division of Engineering and Construction

Bradley M. Campbell
Acting Commissioner

January 17, 2002

Mr. Robert Callegari, Chief
Planning Division
Phila. Dist. Corps of Engineers
100 Penn Square East, Wanamaker Bldg.
Philadelphia, PA 19107

Dear Mr. Callegari:

Per our recent discussions, now that we have addressed portions of the coast with critical existing or imminent needs, we look forward in continuing toward completion of the New Jersey Shore Protection Study.

Since the completion of the Reconnaissance Phase, the situation at Wildwood in the Hereford Inlet area has worsened and now requires being addressed immediately. In addition we are in a position to analyze the entire coast as a system in order to maximize the efficiency of the New Jersey Shore Protection Program. The goal is to analyze and maximize the projects into a complete coastal system and to make changes to reduce renourishment requirements, environmental impacts and life-cycle cost.

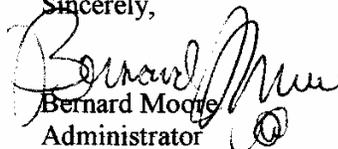
The State of New Jersey, therefore, wishes to express its support for the following Feasibility studies:

- 1) Alternative Long Term Nourishment, New Jersey (NJ Regional Sediment and Coastal Processes Study)
- 2) Hereford Inlet to Cape May Inlet, NJ

Recognizing the importance of efficiently managing our sand resource in the Hereford Inlet area, as well as along the entire coast, we fully intend to sign the Feasibility Cost Sharing Agreements (FCSA) for these two studies.

✓

Sincerely,



Bernard Moore
Administrator

mm

Phone
(732) 255-0770

1510 Hooper Avenue, Toms River, NJ 08753

Fax
(732) 255-0774

New Jersey is an Equal Opportunity Employer

HEREFORD INLET TO CAPE MAY INLET, NEW JERSEY SHORE PROTECTION FEASIBILITY STUDY

PRELIMINARY FINANCIAL ANALYSIS

The State of New Jersey has been involved in providing technical and financial assistance to its shore municipalities for decades. The State officially tasked the DEP to repair and construct all necessary structures for shore protection in the early 1940s (N.J.S.A. 12:6A-1). An annual appropriation of one million dollars was established and maintained until 1977. Due to extensive destruction and erosion of the shoreline from frequent severe storms, an additional \$30 million was appropriated in 1977. In addition to initiating their own research and construction efforts, the State of New Jersey also cost-shares portions of many Federal projects.

The NJDEP has been involved in various areas of local shore protection along the coast of New Jersey. The Division of Coastal Resources provides technical assistance to citizens, municipalities, etc. Further, it regulates land use through the Coastal Zone Facility Review Act (CAFRA), the Wetlands Act, and the Waterfront Development Act.

The issue of providing stable funding for shore protection at the State level had been raised on several occasions. The two storms during the winter of 1991-92 prompted a Governor's Shore Protection Summit in February of 1992. As a result, the Shore Protection and Tourism Act of 1992 was passed which created the first stable source of funding for shore protection of at least \$15 million annually.

The New Jersey Department of Environmental Protection (NJDEP) has indicated their willingness to serve as a non-Federal sponsor for the Feasibility study. NJDEP understands the Feasibility and construction cost sharing responsibilities and is willing to enter into the Feasibility phase of the investigation. The non-Federal sponsor is aware that the Feasibility study costs are shared 50%-50% with the Federal government.

SUMMARY OF FEASIBILITY STUDY ASSUMPTIONS

The study area is part of a barrier island complex located along the Atlantic Coast of New Jersey between Hereford and Cold Spring Inlets. This area was investigated as part of the New Jersey Shore Protection Reconnaissance Study completed in 1990. In the Reconnaissance Study, this area was identified as an area of Federal interest. Because of the efforts of the scope of the needs and anticipated State and Federal resources and funding requirements, priority was placed on portions with critical existing or imminent needs.

Since that time, erosion has accelerated along portions of North Wildwood oceanfront, while accretion has continued along the southernmost ocean segment near Cold Spring Inlet causing environmental and health concerns along the portions of the coastline. The study would investigate shoreline erosion, accretion, and storm damage vulnerability along this reach of the coast. Associated environmental issues to include habitat and wetlands need to be evaluated.

The development of Project Management Plan (PMP) and the schedule for the Feasibility report were based on the following assumptions, which were derived from information contained within the New Jersey Shore Protection Reconnaissance Study, completed in September 1990, and the current understanding of some of the problems in the area.

- In North Wildwood, the beach berm ranges between approximately 550 feet and 1100 feet wide and there are no substantial dune formations in North Wildwood.

- In Wildwood, the beach berm range between approximately 800 and 1300 feet wide.
- In Wildwood Crest, the beach berm ranges from approximately 300 to 560 feet wide.
- In general, the dunes in North Wildwood, Wildwood, and Wildwood Crest are small and discontinuous, thus providing little protective capability.
- Although the beaches of Wildwood are known for their width, the beaches are relatively flat and low, which, combined to the lack of a adequate dune system, exposes the infrastructure to storm damage.
- The accretion of sand in the area is creating problems for the community. The outfalls, which are frequently blocked, create potentially hazardous health and environmental issues.

FEASIBILITY PHASE MILESTONES

The anticipated schedule of the milestones for the Hereford Inlet to Cape May Inlet Feasibility Study is detailed in the following table.

	Feasibility Milestone	Estimated Date of Completion
P5	District and Sponsor Execute Feasibility Cost-Sharing Agreement	March 2002
P6	Initial Feasibility Coordination Meeting	March 2002
P7	Formulation Meeting/Briefing	August 2003
P8	Draft Feasibility Report and FRC	October 2003
P9	Final Feasibility Report	March 2004
P10	Division Engineer's Public Notice	May 2004

FEASIBILITY PHASE COST ESTIMATE

The Feasibility phase cost estimate for the Hereford Inlet to Cape May Inlet Feasibility Study is estimated as follows:

Study Task	Estimated Total Task Cost
Public Involvement	\$80,000
Environmental Studies	\$600,000
Economic Studies	\$90,000
Project Management	\$480,000
Engineering	\$700,000
Real Estate Studies	\$50,000
Contingency	\$500,000
Total Costs	\$2,500,000

RECOMMENDATIONS

It is recommended that this Preliminary Analysis be approved as a basis for developing the PMP, executing the Feasibility Cost Sharing Agreement (FCSA) with the non-Federal sponsor, and proceeding to the Feasibility phase of the study.



DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

28 JAN 2002

CECW-PM

MEMORANDUM FOR Commander, North Atlantic Division (CENAD-ET-P)

SUBJECT: Hereford Inlet to Cape May Inlet and the New Jersey Shoreline Sediment Management Study

1. Reference CENAP-PL memorandum dated 17 January 2002, transmitting Preliminary Analysis of the Hereford Inlet to Cape May Inlet and the Regional Sediment Management – Long-term Nourishment Projects and letter of intent for these studies from the State of New Jersey, to Headquarters for review and approval.
2. The Hereford Inlet to Cape May Inlet and the New Jersey Shoreline Sediment Management Study and letter of intent are approved for proceeding into the feasibility phase of planning. The district should plan to convene an in-progress-review meeting early in the study to ensure the study is focused and tailored to meet the specific objectives. Based on results of the in-progress-review, the project management plan may need to be revised to better define the depth of analysis required and/or refine study constraints.
3. Submission of the model feasibility cost sharing agreement is not required, provided no deviations are requested.

FOR THE COMMANDER:

JAMES F. JOHNSON
Chief, Planning and Policy Division
Directorate of Civil Works