US Army Corps of Engineers
Galveston District

Galveston District
Southwestern Division

Project Management Plan Update

Sabine-Neches Waterway, Texas

Channel Improvement Project

Feasibility Study Phase

April 2002
SABINE-NECHES WATERWAY, TEXAS

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PROJECT MANAGEMENT PLAN AGREEMENT
SABINE-NECHES WATERWAY FEASIBILITY STUDY

Statement of Agreement

By approving this document via email or PPDS annotation the undersigned agrees to follow the provisions of this Project Management Plan update. Each activity will focus its efforts and influence to provide complete comprehensive, up-front planning and to meet the objectives of designing and constructing this project to fulfill user needs and to meet U. S. Army quality, safety and reliability expectations, with minimum changes, within budget, and within schedule. Changes to this plan must be coordinated with and approved by the undersigned or their designated representatives.

Lizette Richardson
Project Management

Paula Wise
Planning

Jack Otis
Project Engineering

Art Martin
General Engineering

Nancy Young
General Engineering

John Bember
Cost Engineering

Lynn Robinson
Hydrology and Hydraulics

Tim Few
Geotechnical and Structures

Janelle Stokes
Environmental

Gloria Appell
Socio-economics

Sal Arcidiacono
Real Estate

Pramod Desai
Geotechnical and Structures

PROJECT MANAGEMENT PLAN
SABINE-NECHES WATERWAY FEASIBILITY STUDY
CERTIFICATION OF REVIEW AND APPROVAL

Endorsement by Office Chiefs

My staff and I have reviewed the Project Management Plan (PMP) update as developed by the Project Delivery Team. I endorse the update and recommend its approval.

Arthur Janecka
Chief, Project Management Branch

8 July 02
Date

David Campbell
Chief, Engineering Branch

8 July 2002
Date

Rick Medina
Chief, Environmental and Planning Branch

7/8/02
Date

Rick Harrison
Chief, Real Estate Division

7/8/02
Date

Project Management Plan Update
Sabine-Neches Waterway Feasibility Study

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_____ _____

Rick Harrison — Date
Chief, Real Estate Division

Overview

This PMP update was prepared by the SNWW study team members to reflect the changes in scope and cost and include reasons for the changes as compared to the original PSP developed in Mar 00. The funds spent to date as of Apr 02 are included in the document as well as a breakout of funds per FY to complete the Feasibility Study. This estimate is based on a project completion date of November 2004 to meet the WRDA 04 commitment to the sponsor.

Note: * Denotes Completed Tasks
** Denotes Ongoing/Future tasks

PROGRAMS AND PROJECT MANAGEMENT
Apr 02 Update

No revisions made to the original tasks and responsibilities

Project Management will oversee the project scope, schedule, resources, costs, and quality with the goal of delivering a quality product, on time, and within cost. Management of the potential project for improving the Sabine-Neches Waterway will be accomplished under ER 5-1-11, "Programs and Project Management," Department of the Army, U.S. Army Corps of Engineers. The management of the Feasibility Study and the preparation of the Feasibility Report will be the responsibility of the Planning Lead; however, the Project Manager will maintain an awareness of the details and commitments during the feasibility phase to establish the needed continuity through completion of the project.

During the feasibility study phase, the duties of the Project Manager and other staff in the Programs and Project Management Division will include the following:

- Monitor actual obligations and expenditures to ensure compliance with the study funding schedule, proper distribution of obligations and expenditures among the standard code of accounts, and effective use of Federal and nonfederal funds.

- Work with the study management team members and local sponsor to assure early identification of issues which may impact study scope, quality, cost, budget, and schedule, and either facilitate resolution of the issues or elevate them to the appropriate decision-making level.

- Prepare required upward reporting documents and those required by the local sponsor.

- Conduct monthly updates at the Project Review Board meetings.

- Review all project documents for consistency with the FCSA prior to formal submission to the local sponsor, higher authorities, or outside agencies.

- Prepare and review annual budgeting and programming documents.

- Coordinate with local sponsors to ensure their understanding of local cost-sharing requirements, to update them on the study progress, to review and monitor their compliance with commitments, and to participate in resolution of technical issues with them.

- Lead in the preparation of the draft Project Cooperation Agreement (PCA) for project construction.

- Participate in Feasibility Review Conferences and other technical review conferences. Develop the Project Management Plan which will guide post-feasibility studies and project construction.

- Develop a critical path network which displays the interrelationships between feasibility and post-feasibility tasks and activities, milestones, durations, and costs.

- Prepare project correspondence which may or may not be directly related to the execution or completion of the feasibility study phase.

During the feasibility study phase, Programs Management Branch will update the monthly funds utilization report and provide it to the project manager. A report will also be produced which compares actual costs to the current year schedule. This report reflects expenditures for each task for the current Federal fiscal year. At the end of each fiscal year, a final funds report will be issued reflecting effectiveness of expenditures and obligations for the fiscal year as compared to the scheduled. Programs Management Branch will provide inflation factors for task mid-points in coordination with the project manager. Programs Management Branch will provide the oversight for preparing Congressional budget submissions and development of the manpower resources required for future years.

Programs and Project Management	**Days**	**Federal**	**Sponsor**	**Total**
Attend Study Management and ICT Meetings	70	$ 50,000	$ 0	$ 50,000
Monitor Obligations and Expenditures	67	45,000	0	45,000
Identify Issues	22	15,000	0	15,000
PM Reports and PRB Meetings	37	25,000	0	25,000
Review of Project Documents	30	20,000	0	20,000
Review Budgeting and Programming Documents	27	20,000	0	20,000
Participate in FRC and TRC	22	15,000	0	15,000
Project Correspondence	118	10,000	0	10,000
Develop PMP	47	35,000	0	35,000
Provide Input for Baseline Cost Estimate	6	5,000	0	5,000
Coordinate Report Prep. & Review with Sponsor	14	10,000	0	10,000
Total		$ 250,000	$ 0	$ 250,000

Revised - Apr 02

Programs and Project Management	Days	Federal	Sponsor	Total
**Attend Study Management and ICT Meetings	109	**$ 70,000**	**$ 0**	**$ 70,000**
**Monitor Obligations and Expenditures	117	**75,000**	**0**	**75,000**
**Identify Issues	47	**30,000**	**0**	**30,000**
**PM Reports and PRB Meetings	39	25,000	0	25,000
**Review of Project Documents	31	20,000	0	20,000
**Review Budgeting and Program Documents	47	**30,000**	**0**	**30,000**
**Participate in FRC and TRC	23	15,000	0	15,000
**Project Correspondence	31	20,000	0	20,000
*Develop PMP	55	35,000	0	35,000
**Provide Input for Baseline Cost Estimate	8	5,000	0	5,000
**Coordinate Report Prep. & Review with Sponsor	47	**30,000**	**0**	**30,000**
****Update sponsor on project status quarterly**	23	**15,000**	**0**	**15,000**
Total		**$ 370,000**	**$ 0**	**$ 370,000**

Funds spent to date as of 13 Apr 02

Labor	$156,000
Contract	$44,000

	Remainder of FY02	FY03	FY04
Labor	40,000	70,000	40,000
Contract		10,000	10,000

Additional funds are needed to review funding status and track obligations due to the current funding exceeding requirements previously forecasted in the PMP. The existing estimate was low in time needed to coordinate the Feasibility report with the sponsor and identify, resolve issues with the team and review budgeting and programming documents. An additional line item was added for coordination with the JCWND board to brief them on the status of the project quarterly.

PLANNING BRANCH
Apr 02 Update (Changes highlighted)

Study Supervision

The Planning Lead shall ensure that the feasibility study accomplishes the established goals at the anticipated rate, and that all items in the **PMP** are followed. Study management includes regular periodic meetings with technical elements to review progress; preparation of study-related correspondence; coordinating with all Federal, State, and local agencies to ensure that each has been informed of all proposed plans of improvement as well as the progress of the study; government and sponsor participation in all Study Management Team meetings and Executive Committee meetings; and providing guidance and support as required to insure that all questions have been answered and all problems have been solved from the start of the study to the submittal of the final Feasibility Report to the Office of Management and Budget (OMB).

Overall study management will include preparation of study-related correspondence. This shall include response to all public, government, special interest groups, Congressional, or other inquiries directly or indirectly relating to study activities or the study area.

Information on the study shall be updated periodically during each year in support of budget reviews and to reflect changing interest rates or cost estimates. Monitoring and managing of study funds shall require preparation of annual obligations and expenditures schedules, monthly fund obligation projections, and regular continuing review of progress relative to expenditures. At the end of each fiscal year, an accounting of the funds expended in each study activity shall be prepared and submitted by the project manager to the Study Team for review. The local sponsor will be provided a formal financial report not later then 90 days after the end of the Federal fiscal year.

Tracking and maintaining project schedules will be a continuous part of study management. The Planning, Environmental and Regulatory Division and District workplans will be reviewed to ensure the project schedule has not been affected. When affected, the project schedule will be updated to ascertain the impacts on the final date of submission and other elements and their workloads. Workplans and schedules will require updating on a regular basis to reflect the state of resources involved in the study process.

During the study period, the Study Team shall conduct monthly meetings to review and discuss progress, problems, and related issues. Work conferences will be held in the study area at a location mutually agreed upon by the Corps and the local sponsor or at the Corps' Galveston District Office

as the need so arises. All payments by the local sponsor for transportation, subsistence, and lodging for trips to Galveston shall be considered a part of study management cost and shall be included in the annual and final accounting of study cost. A written record of all conferences, meetings, discussions, verbal decisions, telephone conversation on matters relevant to the work shall be made by the Corps members of the Study Team. These records shall be numbered sequentially and shall fully identify persons participating, subjects discussed, and conclusions reached, if any. Copies of these records shall be submitted to the local sponsor for review and confirmation.

Coordination will be maintained with all Federal, State, and local agencies to ensure that their input has been considered during the development of all proposed plans of improvement and to keep them informed on the progress of the study. Coordination with other agencies may require on-site visits and/or correspondence with Federal, State, and local government agencies, institutions, businesses or groups with expertise, responsibilities, or resources related to commercial navigation, environmental resources, or other areas of interest in the study area.

**Overall Study Supervision Costs	Days	Federal	Sponsor	Total
Correspondence	15	**$ 9,750**	**$ 5,000**	**$ 14,750**
Coordination	80	**52,000**	**11,000**	**63,000**
Budget and Funding Reviews	60	**39,000**	**15,000**	**54,000**
Scheduling	30	**20,000**	**8,000**	**28,000**
Study Team Meetings, Preparation, & Attendance	70	**46,000**	**45,000**	**91,000**
Total		$ **166,750**	**$ 84,000**	**$ 250,750**

Review Meetings and Conferences

Review meetings and conferences will be arranged and conducted by the Planning Lead to maintain support and guidance from higher review levels within the Corps of Engineers. Two issue resolution conferences are mandatory, the Feasibility Scoping Meeting (FSM) and the Feasibility Review Conference (FRC). A FSM will be held at the end of the survey period when the initial screening of alternative plans has taken place to assure that the appropriate technical criteria were used to formulate, design, and evaluate the alternatives. An Alternative Formulation Briefing (AFB) is optional, but **may** also be held when the evaluation of the final array of alternatives has been completed and the recommended plan being identified. The purpose of the AFB is to discuss the proposed project and resolve policy issues relating to plan selection and preparing the feasibility report. Immediately prior to release of the Draft Feasibility Report and environmental documentation to the public, a Feasibility Review Conference (FRC) will be held to assure that the Feasibility Report complies with the guidance received at the AFB and to determine whether additional work is needed before the report is released to the public. The requirement for the FRC may be waived if no major issues

are addressed at the AFB; however, the work and costs associated with the FRC are included in this PSP until such time as a determination is made. The work to be performed for meetings and conferences shall include preparation of conference materials; arranging the location, schedule, and agenda; attending and participating in the conferences; briefing the individuals involved; and preparing a memorandum of the results. **Contractor support will be required to assist district personnel with preparing for and conducting public meetings and conferences.**

Review Meetings and Conferences Costs	**Days**	**Federal**	**Sponsor**	**Total**
***Feasibility Scoping Meeting (FSM)**				
Prepare for FSM	6	**$ 3,900**	$ 1,500	**$ 5,400**
Attend FSM	11	**7,150**	3,000	**10,150**
Documentation of FSM	9	**5,850**	0	**5,850**
****Alternative Formulation Briefing (AFB)**				
AFB Identification of Problems	**6**	**3,900**	1,500	**5,400**
Prepare for AFB	6	**3,900**	1,500	**5,400**
Attend AFB	11	**7,150**	3,000	**10,150**
Documentation of AFB	9	**5,850**	0	**5,850**
****Final Review Conference (FRC)**				
Prepare for FRC	6	**3,900**	1,500	**5,400**
Attend FRC	11	**7,150**	3,000	**10,150**
Document FRC	9	**5,850**	0	**5,850**
Prepare PGM Compliance Documentation	3	**1,950**	0	**1,950**
Total		**$56,550**	$ 15,000	**$ 71,550**

Public Involvement and Coordination

The Planning Lead will implement Public Involvement **that** will include programs necessary to represent the public's views and to identify problem areas for further studies. This will be accomplished through public notices, public workshops, assessments of project users views, and through public distribution of these results.

Public involvement is necessary to ensure that the feasibility study is responsive to the needs and concerns of the public. The objectives of public involvement are to provide information about the study to the public; to learn the public's desires, needs, and concerns and make them known to decision makers; to provide for consultation with the public before decisions are reached; and to take into account the public's views in reaching decisions. The public involvement program will primarily consist of the following activities.

Public notices will be prepared and issued at the times presented below. This activity will require the preparation and maintenance of a mailing list of all agencies, organizations, media, and individuals known to be interested in the study. The Corps will prepare and mail the notices and maintain the

mailing list for the study. The sponsor shall receive credit for reviewing each notice and assisting in keeping the mailing list current.

- At the beginning of the feasibility study, a notice will be prepared which will state that the feasibility study is beginning, present the findings of the reconnaissance study, and solicit additional information on the water resources problems that need solved.

- Prior to each public meeting or public workshop meeting, a notice will be prepared which presents the current status of the study; announces the date, time, and location of the meeting; discloses the purpose of the meeting and the information being sought; and provides an alternate means to submit the information.

- Following each meeting or public workshop, a notice will be prepared which will present a summary of the meeting and the information gathered.

- When the draft Feasibility Report and Environmental Impact Statement (EIS) is filed with the Environmental Protection Agency (EPA) and circulated for field level coordination, a notice will be prepared which will present the findings of the feasibility study, advise the public of the availability of the draft Feasibility Report and EIS, and disclose the time frame for public review and comment on these documents.

- When the feasibility study has been completed and the final Feasibility Report forwarded for Washington level review, a notice will be prepared which will present the recommended plan of improvement and advise the public of the next public review period.

- Other notices will be prepared to provide study updates as needed. The study cost estimate is based on the assumption that two such notices would be required.

A public meeting will be held immediately prior to formulating the final array of alternative plans. The purpose of this public meeting will be to obtain public input so that the plan which is ultimately selected for implementation will include satisfactory mitigation measures and have a high potential for public support. The Corps will prepare exhibits and other visual aids and provide sufficient personnel to adequately conduct the meeting. The sponsor shall receive credit for providing the facilities for the meeting and for preparing for and attending the meeting. **Contractor support will be required to prepare for and support district personnel with public involvement and coordination.**

An Interagency Coordination Team (ICT) will be established which will consist of representatives from the Corps, the study sponsor, and the various State and Federal agencies concerned with the study area. The purpose of the ICT process is to make each agency a partner in the study so that when the study is completed they will not be surprised by the conclusions reached or by the study recommendations. The estimated cost for the Corps includes labor, travel, and per diem. The sponsor will receive credit for preparation and participation in the meetings and for providing the meeting facilities. The ICT will meet in the project area as needed throughout the study to accomplish the following functions.

- At the beginning of the feasibility study the ICT will meet to refresh the agency personnel with the study purposes and schedule, review the scopes of studies for the feasibility study, and make suggestions on additional studies that may be needed for improving the study outputs.

- Throughout the study, the ICT will review the progress of the studies and make recommendations on modifying the scope of studies to better determine the affected environment or project-induced impacts. During plan formulation the agencies input on project design and mitigation measures will be sought.

- Toward the end of the plan formulation and evaluation phase, the ICT will review the selected plan and obtain information to fine tune it.

- The ICT will participate at the AFB and FRC to demonstrate how the ongoing studies have contributed to formulating a plan of improvement which is environmentally acceptable and to respond to review comments.

**Public Involvement and Coordination Costs	Days	Federal	Sponsor	Total
Mailing List Maintenance	3	**$ 1,950**	$ 1,000	**$ 2,950**
Public Notices	9	**5,850**	1,000	**6,850**
Public Meetings	20	**13,000**	4,000	**17,000**
ICT Participation	29	**18,850**	8,000	**26,850**
Total		**$ 39,650**	$ 14,000	**$ 53,650**

Plan Formulation and Evaluation

The Planning Lead will lead the study team toward complete plan formulation. Plan formulation is the process whereby project measures (specific project features) are conceived, developed, and evaluated to satisfy specific objectives, and then combinations of measures are evaluated to develop comprehensive alternative plans. The recommended plan may be the Locally Preferred Plan (LPP) even though the NED has not been determined. The LPP must have greater net excess benefits that smaller scale plans and formulation must analyze enough alternatives to insure that

net excess benefits do not maximize prior to the LPP. Once the NED, or if necessary the LPP, have been identified, detailed economic analyses, cost allocations, and cost apportionments will be made.

The alternative plans shall be formulated in a systematic manner to ensure that all reasonable alternatives have been addressed and that the optimum plan has been identified. An alternative plan shall consist of a system of structural and/or nonstructural measures, strategies, or programs formulated to alleviate the navigational inefficiencies of the existing project. Each alternative plan shall include environmentally compatible design measures to mitigate adverse effects on fish and wildlife resources. The alternative plan which reasonably maximizes NED benefits shall be identified as the NED plan. If the NED plan is not supported by the sponsor, the locally preferred plan will also be identified and presented in the Feasibility Report.

Alternative plans shall be formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability. Completeness is the extent to which a given alternative plan provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. Effectiveness is the extent to which an alternative plan solves the specific problems and achieves the specified opportunities. Efficiency is the extent to which an alternative plan is the most cost effective means of solving the navigation problems and realizing opportunities consistent with protecting the nation's environment. Acceptability is the workability of the alternative plan with respect to acceptance by State, local entities and the public and compatibility with existing laws, regulations, and public policies. It is anticipated that ten channel enlargement plans will be formulated and evaluated in the initial array of alternatives.

Plan Formulation and Evaluation Costs	Days	Federal	Sponsor	Total
***Initial Plan Formulation**				
Policy on Authorities for Screening	6	**$ 3,900**	$ 0	**$ 3,900**
Identification of Applicable Problems	6	**3,900**	1,000	**4,900**
Formulate Without-Project Conditions	7	**4,550**	5,000	**9,550**
****Plan Formulation**				
Long Term Disposal Base Plan Selection	3	**1,950**	1,000	**2,950**
Alternative Plans for Navigation Problems	9	**5,850**	4,000	**9,850**
Optimization of Navigation Problems	7	**4,550**	0	**4,550**
Navigation Plans Selected	3	**1,950**	0	**1,950**
Alternative Plans for Long Term Disposal	7	**4,550**	5,000	**9,550**
Optimization of Plans for Long Term Disposal	9	**5,850**	2,000	**7,850**
****Other Evaluations**				
Long Term Disposal Plan Selection	3	**1,950**	0	**1,950**
Detailed Economic Evaluation	26	**16,900**	0	**16,900**
Cost Allocation and Apportionment	43	**27,950**	0	**27,950**
Total		**$ 83,850**	$ 18,000	**$ 101,850**

Report Preparation

Report preparation will include preparation of internal draft reports, advance draft report, draft report, and final report. The report submittal package will consist of the final Feasibility Report with EIS and Appendices, Supporting Documentation, draft Division Engineer's Public Notice, Draft Chief of Engineer's Report, and Authorization Fact Sheet and slides.

The Planning Lead will be responsible for report writing comprised of original text and text provided by other study elements. The final documentation for the study will be in two parts, the Feasibility Report and the Supporting Documentation. The Feasibility Report shall consist of the main report, Environmental Impact Statement, and Appendices, and will be prepared in compliance with the requirements of ER 1105-2-100. The report shall be a complete decision making document and as such shall include a complete presentation of plan formulation. The report shall be based on all studies and investigations conducted and from published reports applicable to the study area. The main report shall be direct, concise, and written in an easy to understand style using ample graphics, illustrations, and photographs. The main report shall also include the study findings and recommendations. The appendices will contain materials required for coordination of the Feasibility Report and Environmental Impact Statement. These appendices generally contain discussions on the following subjects if too lengthy for the main report: Detailed Plan Formulation, Threatened and Endangered Species Survey, Section 404(b)(1) Evaluation, Public Involvement, Interagency Correspondence, and Public-Views and Responses. The Supporting Documentation shall contain technical reports written for technical reviewers. The length and detail of each technical report shall be sufficient to cover all aspects of the subject. Graphics and other illustrations shall be

used to facilitate the presentation. The supporting documentation will generally contain sections on: Problem Identification; Engineering Investigations, Designs, and Cost Estimates; Natural Resources; Cultural Resources; and Social and Economic Profile and Impact Assessment.

**Report Preparation Costs	Days	Federal	Sponsor	Total
Report Writing	**90**	**$ 58,500**	$ 5,000	**$ 63,500**
Supervisory Review of Draft	**15**	**$12,975**	**0**	**$12,975**
Print Advance Draft Report and EIS	4	**2,600**	0	**2,600**
Revise Draft Report after FRC	46	**29,900**	2,000	**31,900**
Print Draft Report	11	**7,150**	0	**7,150**
Response to Comments on Draft Report	11	**7,150**	0	**7,150**
Revise Draft Report after Concurrent Review	64	**41,600**	3,000	**44,600**
Supervisory Review of Final Report	**15**	**$12,975**	**0**	**$12,975**
Print Final Report	17	**11,050**	**0**	**11,050**
Prepare Submittal Package	4	**2,600**	0	**2,600**
Total		$ **186,500**	$ 10,000	**$ 196,500**

Technical Review

A study team of corresponding functions will be formed to serve as a technical review team. Each discipline involved in the feasibility study will have a coordinating counterpart on the team. The technical review team will meet with study team members on a quarterly basis. These quarterly meetings will be documented as required by ER 1165-2-203. Coordination throughout the study will be accomplished through individual contact between the study team and technical review team. Currently, it is proposed that the New Orleans District, will provide a technical review team.

**Technical Review Costs	Days	Federal	Sponsor	Total
Contract ITR		**$ 60,000**	$ 0	**$ 60,000**
Total		**$ 60,000**	$0	**$ 60,000**

Planning Study Supervision	Federal	Sponsor	Total
Overall Study Supervision Costs	**$ 166,750**	$ 84,000	**$250,750**
Review Meetings and Conferences Costs	**56,550**	15,000	**71,550**
Contractor support $40,000			
Labor $16,550			
Public Involvement and Coordination Costs	**39,650**	14,000	**53,650**
Contractor support $30,249			
Labor $ 9,401			
Plan Formulation and Evaluation Costs	**83,850**	18,000	**101,850**
Report Preparation Costs	**186,500**	10,000	**196,500**
Technical Review Costs	**60,000**	**0**	**60,000**
Total	**$593,300**	**$141,000**	**$734,300**

Note: The main cause for the reduction in the cost estimate ($716,000 to $593,300) is the reduction of the number of days for report writing (from 300 to 120 days)

Funds Spent to date (March 2000- April 2002)

Labor		**$143,235**
Contracts		17,616
	Total	**$160,851**

Estimated Funding for Remainder of Study

	Remainder of FY02	FY03	FY04	Totals
PL (Paula – Labor)	$**44,000**	**$85,000**	**$70,200**	**$199,200**
(Superv. Labor)	$15,000	$44,000	$44,000	$103,000
Contracts	**$30,249**	**$60,000**	**40,000**	**$130,249**
			subtotal	**$432,449**

Funding Totals

March 2000-2002 ($ spent)		**$160,851**
Estimated $ for Remainder of Study		**$432,449**
	Total	**$593,300**

ENVIRONMENTAL BRANCH STUDIES

Apr 02 Update (Changes highlighted)

A variety of channel depths and widths will be evaluated during the feasibility study for the proposed channel deepening and widening alternative. Each variation will be considered in the same detail during incremental justification to select the most economical and least environmentally damaging alternative. Also, opportunities for beneficial uses of dredged materials and for ecosystem restoration will be fully explored in the selected alternative for the dredged material placement. **An Interagency Coordination Team (ICT) will be established to address all environmental issues and concerns raised by the proposed project. The ICT will advise the Galveston District in developing appropriate environmental studies to fully address concerns, oversee the scope and performance of these studies, and review and approve resulting reports. The ICT will also participate in the impact analysis of alternative construction and placement plans. The ICT will consist of representatives from interested Texas, Louisiana, and Federal resource agencies, the study's sponsor (Jefferson County Waterway and Navigation District) and the Corps.** The following studies will be performed to determine the environmental effects of the project and the study results will be documented in the Feasibility Report and EIS.

Environmental Baseline and Impact Studies

Hydrology (revised title)

The project area consists of a narrow pass connecting a shallow estuary surrounded by an extensive network of salt to brackish marshes, sloughs, bayous, and two rivers to the Gulf of Mexico. The Neches and Sabine Rivers also flow through a large wetland system of marshes and swamps. This complex ecosystem of terrestrial and marine resources has been heavily impacted in several locations by urban and industrial development. These resources will be described along with potential project impacts as described below.

Because there have been extensive impacts to the area's ecosystem from past development, there is great public and agency concern about the proposed project's impacts on salinity and circulation in the Sabine Lake estuarine system. Enlarging the channel will allow a greater volume of higher salinity water to penetrate deeper into the brackish-freshwater areas at the upper end of Sabine Lake and the Neches and Sabine Rivers. Higher salinity levels caused by the project may increase loss of adjacent marsh, leading to an increase in shallow unvegetated wetlands. Changes in

circulation patterns could affect sediment transport and sensitive bay resources, such as oyster reefs and marshes.

To address these questions about salinity and circulation, a hydrodynamic/salinity and conservative mass transport model will be used to study changes in the channel and shallower estuary. These changes will be shown on maps and discussed as average annual and seasonal changes at selected locations in the estuarine system. Changes under various freshwater inflow conditions, such as an operational permanent saltwater barrier on the lower Neches River will also be included. Model parameters will be determined after consultation with technical experts at the Waterways Experiment Station and the resource agencies. Specifics regarding these models are discussed in the Engineering Studies section of this document.

The Feasibility Report and EIS will discuss circulation and sediment transport changes in the bay system resulting from confined, upland placement and beneficial placement of dredged new-work and maintenance material based on the results of hydrodynamic model studies. The before and after project changes in bay circulation will be displayed on maps. Circulation and sediment transport impacts will be discussed and used in preparing a DMMP and predicting impacts to marine resources.

Marine Biological Resources

Marine resource concerns center around placement impacts on wetlands if existing confined placement areas in the marshes are expanded or new confined placement areas are needed. The Corps will contact the Texas Parks and Wildlife Department and Texas General Land Office for maps of natural resources in the wetland and estuarine system.

The Corps will identify these resources and quantify wetland losses and impacts from dredging and placement to these resources. The impacts will also be related to losses in the sports and commercial fishery in the estuarine system and Gulf of Mexico. All identified losses will be considered for mitigation. As explained above, any changes in circulation caused by widening and/or deepening the navigation channel will be predicted by hydrodynamic models and shown on maps.

These efforts will be conducted primarily through contracts administered by the Corps. In-house efforts include collection of available data, development of scopes of work, coordination with the ICT, review of draft documents, field trips to evaluate alternatives and coordinate with the resource agencies, and preparing the documentation for the Feasibility Report and EIS.

Terrestrial Biological Resources

Concerns exist about the effects of enlarging or using all of some large existing confined placement areas that contain high quality marsh or creating new sites in upland habitats. Other concerns include wave-induced erosion along the navigation channel banks, increased salinity intrusion into brackish-freshwater wetlands, and prevention of sediment nourishment in nearby wetlands. There is expressed opposition to incorporating any new marsh area in the expanded or new sites. The Corps will document habitat type around existing and any proposed new upland sites to determine the impacts of expanding or constructing new upland sites. Habitat Evaluation Procedures (HEP) will be developed, as needed, to quantify habitat losses. Habitat losses will be discussed in terms of impacts on wildlife, especially waterfowl and shorebirds. Project impacts to wetlands predicted by salinity, circulation, and sediment transport models will be described and habitat losses quantified, if possible.

These efforts will be conducted primarily through contracts administered by the Corps. In-house efforts include collection and transmittal of available data, development of scopes of work, coordination with the ICT, review of draft documents, field trips to evaluate alternatives, coordination with the resource agencies, and preparing documents for the Feasibility Report and EIS.

Threatened and Endangered Species

A Biological Assessment will be prepared as required by Section 7 of the Endangered Species Act (ESA) to determine any project impacts on any Federally-listed threatened or endangered species. A list of threatened and endangered species that may occur in the project area will be requested from appropriate State and Federal resource agencies. A literature search, consultation with local and academic experts, resource agencies, and a field search will be performed to obtain historical information, current population data for the species entire range and the affected area, and possible impacts of the project, whether adverse or beneficial, on each listed species. The Biological Assessment will incorporate this information to determine impacts to the threatened and endangered species that may occur in the project area and may include alternatives to eliminate any adverse impacts. If project-related adverse impacts are determined, a formal consultation will be requested with the appropriate agency to identify mutually acceptable alternative(s) or mitigation measures to reduce or eliminate these impacts. If no adverse impacts are determined, a biological opinion stating concurrence with the assessment will be requested from the appropriate agencies, fulfilling requirements of the ESA. **These efforts will be conducted primarily through contracts administered by the Corps. In-house**

efforts include collection and transmittal of available data, development of scopes of work, coordination with the ICT, review of draft documents, and resource agency coordination.

Ecosystem Restoration and Beneficial Use Measures (revised title)

The Corps will evaluate resource agency **and public** suggestions for restoring marsh and other sensitive natural resources in the area with beneficial uses of dredged material and incorporate them into the DMMP. Suggestions for specific ecosystem restoration opportunities will also be collected and incorporated into the project as appropriate. Suggestions include, but are not limited to, restoring marsh along the shoreline in selected areas (Bessie Heights and Rose City oil field) near existing confined placement sites on the Neches River, replenishing abandoned bird rookery islands (Sidney Island) in the upper estuary, and replenish marshes on the Louisiana side of Sabine Pass. **These efforts will be conducted primarily through contracts administered by the Corps. In-house efforts include collection of available data, development of scopes of work, workshop planning and attendance, coordination with the ICT, review of draft documents, and resource agency coordination.**

Mitigation

After a project alternative has been selected and habitat losses and gains have been quantified, the Corps will hold two interagency meetings and field trips, to determine mitigation type (habitat to be replaced in-kind or out-of-kind), quantity (acres), and location. Various restoration measures (beneficial uses) will be considered as replacement for habitat losses.

After avoiding and minimizing environmental impacts to the maximum extent possible, the remaining unavoidable habitat losses will be compensated to the extent justified according to ER-1105-2-100. To initiate this process, a Mitigation Workgroup of the ICT will be formed consisting of the members of the Study Management Team, project sponsor, and Federal and State resource agencies. The first task of the subcommittee will be to quantify losses for each habitat type using an accepted method such as Habitat Evaluation Procedures, acre-year analysis, or any other acceptable method. The subcommittee will then identify possible alternatives for compensation for each habitat type lost and determine unit costs. An incremental analysis will be conducted for each habitat type using the available alternatives and their associated costs to choose the cost efficient plan for mitigation.

Geographic Information System (GIS)

A GIS will be established to assimilate the various data layers (i.e. marine resources, historic properties, HTRW, existing placement areas, utility

crossings soil borings, etc.) and present them in a graphic display. The GIS will allow various alternatives to be displayed and their impacts assessed in a graphical format. A GIS consultant under contract to the Corps will perform the basic work of collecting and constructing the various data layers and the GIS format. In-house efforts will include initiating and managing the contract and insuring that the information needs of the study are met.

Historic Properties

A substantial amount of historic properties compliance work has been conducted in the Sabine-Neches area for new work construction and maintenance of the existing channel and other projects. This body of information will be utilized to identify and assess impacts of the various project alternatives considered during the feasibility phase study. Known resources in the project area include prehistoric archeological sites, historic archeological sites, historic structures, and shipwrecks.

Corps cultural resource staff will compile and evaluate current information for the project area. Known terrestrial and marine resources will be identified and included in plan evaluation. Additional survey and archival research will be performed by Corps contractors for areas where information is lacking. Both marine and terrestrial survey work and assessment may be necessary to depending upon the alternative plans, placement areas, and mitigation features selected. Potentially significant resources will be identified and presented in the feasibility report. Mitigation plans and budgets will be developed if sufficient information is obtainable within the budget constraints of the feasibility study.

The Corps will initiate coordination under Section 106 of the National Historic Preservation Act with the Texas State Historic Preservation officer (SHPO) and Advisory Council on Historic Preservation (ACHP) to achieve project compliance and facilitate future project coordination. Development of a Memorandum of Agreement for the project will be evaluated. This coordination will be documented in the feasibility report. The local state sponsored archeological steward will be consulted in regard to field work and resources identified. Any local individuals or organizations that express an interest in the cultural resource aspects of the project will be included in our coordination effort. At this time no Native American Tribes have expressed an interest in Galveston District projects. Should any come forth, they will be included in the project coordination. In-house efforts during feasibility will include: compiling all current survey and site information for the project area and providing input to project GIS development, evaluating the need for additional Corps or contract research and field work depending on the plan(s) identified and known or anticipated resources present, two field trips by staff archeologists, and coordinating with the SHPO, ACHP, and other interested groups and individuals.

Water and Sediment Quality

Contamination of new-work material is generally not a concern, but there is some concern over potential hot spots in the maintenance and new-work material near the Chevron Refinery, in the north section of the Sabine-Neches Canal, near Bailey's Pit superfund site at Hwy 87 at the Neches River, and in the vicinity of various RCRA sites near and adjacent to the Neches River Channel. Although improving, the Neches River has historically experienced poor water quality due to releases from the concentration of industries located adjacent to the river. Samples will be collected approximately every mile and a composite will be prepared for each five-mile section. Samples will be analyzed for priority pollutants. Sample collection and analysis will be performed by environmental and analytic consultants under contract to the Corps.

This data will be used to characterize any contaminants of concern in the channel. Based on this data and other available data, an evaluation of water and sediment quality and impacts will be conducted. The evaluation will include the principle historical and current sources of pollution in the project area and the results of physical and chemical analyses. The evaluation will be in sufficient detail to allow the selection of placement sites for the discharge of dredged material as required by Section 404(b)(1) of the Clean Water Act. The discussion will also provide information to be used in obtaining new EPA site designation or for enlargement of existing offshore placement sites as required under Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (Ocean Dumping Act).

Corps in-house efforts will include preparing and managing the contract, conducting site visits, coordinating with regulatory and local personnel, and preparing the documentation for the Feasibility Report and EIS.

Hazardous, Toxic, and Radioactive Waste (HTRW)

A reconnaissance level HTRW assessment was completed by the Corps in March 1994. Potential sources of contamination and releases identified during investigations include the industrial complex near Taylor's Bayou and along the Sabine-Neches Canal, including sites near the north end of the Sabine-Neches Canal, Bailey's Pit superfund site at Hwy 87 adjacent to the Neches River, and various RCRA sites near and adjacent to the Neches River Channel. Due to the potential for unregulated releases of hazardous materials into the project area or the discovery of new sources, the project area will be investigated and information on existing and potential HTRW sites will be updated. A Corps contractor will be utilized to investigate the

project area and update existing data. In-house efforts will include contract preparation and management, project area site visits, coordination with regulatory and local personnel, and generation of appropriate reports.

Cumulative Impacts and Summary

Historical maps, literature, and other records will be searched for information on past changes in estuarine and riverine water salinity patterns, bay bottom losses and disturbances, wetland losses, and water and sediment quality changes. A chronological account of changes in these factors will be presented. Project induced changes will then be added to the historical changes. Future projects and other foreseeable development around the estuarine system will be considered in addition to the above. The major findings of the environmental section will be summarized and the most important environmental concerns emphasized.

An environmental consultant under contract to the Corps will perform the assessment of cumulative impacts. In-house efforts include initiating and managing the contract, collection of available data, a field trip, and preparing the documentation for the Feasibility Report and EIS.

Coastal Zone Management Program (revised to include both TX and LA)

The Federal Coastal Zone Management Act of 1972 requires that Federal actions occurring within the coastal management zone boundaries of States with approved plans be consistent with the goals and policies of those plans. To show consistency with the coastal management plans of both Texas and Louisiana, Consistency Determinations will be prepared for both States and submitted for review during the public review period for the Draft EIS. The proposed project cannot be constructed until the States concur that the selected plan is consistent with their respective coastal management plans. Meetings with the Texas General Land Office and Louisiana Department of Natural Resources will be necessary to coordinate some policies, such as beneficial uses of dredged material.

EIS and Feasibility Report Preparation

Advance draft, draft, and final environmental documentation will be produced at the times required for feasibility reports of commensurate completeness. This will require attendance at study team and ICT meetings as well as participating in the development of scopes of work and timetables for supporting studies. The environmental impact statement will be produced and distributed by a Corps contractor.

Fish and Wildlife Coordination Act

Under this act, the Corps is required to coordinate with and solicit recommendations of the U.S. Fish and Wildlife Service (USFWS) concerning the study and project potential impacts. Under an interagency agreement, funds will be transferred to the Clear Lake **and Lafayette** Ecological Services Offices of the USFWS. The USFWS will prepare a Coordination Act Report (CAR) which will describe the important biological features of the study area, assess the impacts of the various alternatives, make recommendations for fish and wildlife conservation measures, and recommend possible mitigation features. Information from the CAR will be incorporated in the Feasibility Report and EIS and included in an appendix to the report.

In addition to fulfilling the requirements of the Fish and Wildlife Coordination Act, the National Marine Fisheries Service and other State and Federal resource agencies will be consulted. These agencies are expected to provide important information for project planning with respect to impact analysis, threatened and endangered species, mitigation planning, and contaminant issues.

Public Involvement Measures (new section)

The Corps will undertake public awareness and involvement activities designed to provide continuing updated information and solicit the views of the public and user groups regarding potential project impacts, opportunities for ecosystem restoration and the beneficial use of dredged material. A Corps contractor will assist with the planning and conduct of a series of restoration/beneficial uses plan workshops, and public scoping meetings in both Texas and Louisiana. In-house efforts will include scope of work preparation, draft report and transcript review, preparation of meeting presentations and handouts, and meeting attendance. The Corps will also post and update project and public meeting information on the Galveston District web page.

Independent Technical Review (new section)

The Corps will conduct an independent technical review (ITR) for National Environmental Policy Act (NEPA) documentation of the project. The ITR will be conducted by a Corps contractor whose responsibilities will include attending study team and ICT meetings as necessary to become familiar with the project, reviewing study team minutes, attending milestone reviews such as feasibility scoping meetings and alternative formulation briefings, reviewing NEPA documentation, and preparing written comments. In-house

efforts will include preparation of scope of works, transmittal of project information and documents, and responding to technical comments.

Original PSP Estimate (Mar 00)

Draft and Final EIS	Days	Federal	Sponsor	Total
Internal and SWD reviews	30	$ 18,000	$ 0	$ 18,000
Respond to SWD & HQ comments	20	12,000	0	12,000
Respond to Public comments	60	36,000	0	36,000
Respond to comments & file with EPA	20	12,000	0	12,000
Total		$ 78,000	$ 0	$ 78,000

Other Costs	Federal	Sponsor	Total
Travel (Meetings and Field Trips)	$ 20,000	$ 0	$ 20,000
ICT Meetings	30,000	0	30,000
Government vehicle and boat	7,000	0	7,000
Total	$ 57,000	$ 0	$ 57,000

Environmental Study Costs	Federal	Sponsor	Total
Biological Resources	$ 222,000	$ 0	$ 222,000
Geographic Information System	75,000	0	75,000
Historic Properties	77,000	0	77,000
Water and Sediment Quality	62,000	0	62,000
Hazardous, Toxic, and Radioactive Wastes	52,000	0	52,000
Cumulative Impacts and Summary	50,000	0	50,000
Texas Coastal Management Program	12,000	0	12,000
Fish and Wildlife Coordination Act	50,000	0	50,000
EIS and Feasibility Report Preparation	78,000	0	78,000
Other Costs	57,000	0	57,000
Total	$ 735,000	$ 0	$ 735,000

Revised Estimate (Apr 02)

ENVIRONMENTAL STUDY COSTS Total	Days	Federal	Sponsor	
EIS Studies & Report Preparation				
Contracts				
Environmental Baseline Studies		$191,245	$0	$191,245
Interagency Coordination Team Support		99,400	0	99,400
Environmental Impact Studies		200,000	0	200,000
Historic Properties Surveys		100,000	0	100,000
EIS Report Preparation		50,000	0	50,000
Labor	699	419,400	0	419,400
USFWS Coordination Act Report				
Contracts		90,800	0	90,800
Labor	8	4,800	0	4,800
Public Involvement				
Contracts				
Public Scoping Meetings		22,130	0	22,130

Labor	60	36,000	0	36,000
Independent Technical Review				
Contract		40,000	0	40,000
Labor	17	10,200	0	10,200
Total	**784**	**$1,328,625**		**$1,328,625**

	To Date	FY02 Remainder	Fy02 Total	Fy03	Fy04	Total
Contracts/MIPRs	$285,335	$144,890	$430,225	$358,000	$70,000	$858,225
Labor	196,200	49,200	245,400	150,000	75,000	470,400
Total	$481,535	194,090	675,625	508,000	145,000	1,328,625

Reasons for Additional Costs:

The primary reason for additional costs is the doubling of the area evaluated for potential project effects. The original PMP did not include evaluation of effects on the eastern shoreline of Sabine Lake and into Louisiana. The first public meeting and early ICT meetings identified significant potential effects in Louisiana which must be addressed in the environmental impact study. Inclusion of these areas essentially doubled the geographic area under study, doubled the number of state agencies to be consulted, and doubled the number of public restoration/beneficial use workshops. In addition, the original PMP envisioned accomplishing most of the EIS research and report preparation tasks in-house. However, the expedited project schedule has necessitated the use of contractors to accomplish most of these tasks, resulting in higher costs.

Historic properties investigations are also expected to increase significantly. Baseline research that has just been concluded identified high probability areas in the Neches River channel and the southern portion of Sabine Lake that were not anticipated by the reconnaissance report. Remote sensing surveys will be required to determine if potentially significant shipwrecks are present in these areas. The potential for shipwrecks in these areas was unknown prior to this research, and therefore costs were not included in the original PMP.

Three tasks were added that were not included in the original PMP. Potential changes to air quality and socioeconomic resources must be evaluated in the environmental baseline and impact studies. The Beaumont/Port Arthur area is located in a non-attainment area for air quality standards, necessitating a conformity study. In addition, a new requirement has been added for the independent technical review of the NEPA process and EIS report. This will be contracted separately as indicted in the revised estimate.

ECONOMIC AND SOCIAL ANALYSIS STUDIES
Apr 02 Update

No revisions were made to the original tasks and responsibilities

Evaluation of Commercial Navigation Benefits

The economic studies conducted during the feasibility study phase will evaluate the transportation savings benefits associated with deepening and widening the Sabine-Neches Waterway. The methods for analyzing the transportation savings are documented in ER 1105-2-100, "Guidance for Conducting Civil Works Planning Studies" (December 1990) and the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" (P&G) (March 10, 1983). The feasibility analysis will include risk and uncertainty studies. Although there is not currently specific risk and uncertainty guidance for navigation studies, such guidance is forthcoming. This PSP was prepared utilizing the assumption that risk and uncertainty procedures would be in effect at the start of the feasibility phase. The economic analyses performed as part the feasibility study will be presented in a technical appendix and summarized in the feasibility report. The major tasks for the economic analyses, and the costs associated with these tasks, are traffic data aggregation and analysis, transportation cost analysis and computation, National Economic Development (NED) benefit analysis, and risk and uncertainty analysis. The navigation benefit categories which will be evaluated are reductions in vessel operating costs, reductions in vessel delays, and reductions in vessel casualties. The benefits associated with reductions in vessel operating costs are a product of channel deepening and these benefits will be estimated based on improved utilization of the existing and future without and with project fleets. Reduction in vessel delay benefits are attributable to channel widening and the channel widening benefits will be evaluated based on the output of a vessel simulation model. The output of the model will be used to measure net change in the duration and frequency of delays for the without and with project conditions. Reductions in vessel casualties are attributable to channel widening and these benefits will be calculated based on the net change in accident probabilities for the without and with project conditions. The analyses needed to calculate the project benefits are as follows.

Traffic Data Analysis

The study area's commodity specific historical tonnage and associated vessel and trading port data will be compiled from the Waterborne Commerce Statistical Center's (WCSC) publications and databases; the "Lloyds Vessel Register"*;* the "World Port Index"*;* waterway users; pilots associations; and the U.S. Coast Guard (USCG). If supplemental fleet data

are available from the sponsor, these data will also be utilized. The tonnage data, which will be displayed in the feasibility report, will be for the most recent 10-year period.

The detailed tonnage records compiled from the WCSC databases and waterway users will be aggregated by trade route and vessel size and cross-referenced with the “Lloyds Vessel Register” and the “World Port Index”. The data will initially be assessed to determine the existence of historical trends. The trade route and fleet aggregations will be used to identify constraints at the foreign origin or destination port and, henceforth, utilized to identify what percentage of existing tonnage could benefit from increases in the existing channel dimensions. The historical tonnage and fleet data will provide the basis from which to make tonnage, trade route, and fleet forecasts. The historical tonnage and fleet data will be analyzed in relationship to Data Resources' Inc. (DRI) U.S. Gulf Coast forecasts to determine if application of DRI's tonnage and fleet forecasts are appropriate. If the study area's historical distributions are correlated with the Gulf Coast, DRI's tonnage and fleet forecasts will be applied. Other tonnage forecasts, such as the U. S. Department of Energy, U.S. Department of Agriculture, and the U.S. Department of Commerce forecasts, will also be evaluated to determine their appropriateness as tonnage forecasting tools. Interviews with vessel operators will be used to establish and verify long-term commodity and vessel fleet trends and changes. The interviews will primarily be conducted by telephone. The traffic data aggregation task is composed of three major subtasks. These subtasks include the origin-destination studies, commodity and vessel fleet forecasts, and design vessel studies.

Origin-Destination Studies

The origin-destination data will be organized by commodity, trade route, shipping method, vessel class interval, and channel segment. The organization of the data will likely be based on DRI's U.S. Gulf Coast trade route and fleet forecasts. Data for the existing condition will be obtained from the WCSC detailed records and telephone and/or personal interviews. The 1990 origin destination data utilized for the reconnaissance report will again be utilized for the feasibility report along with the most recent data available. The reconnaissance level analyses showed that the commodities currently limited by the existing channel dimensions were crude petroleum, petroleum and chemical products, grain, and iron ore. Determination of the future tonnage groups anticipated to be limited by the existing channel dimensions will be based on the commodity specific and vessel specific origin-destination analysis of historical commerce in relationship to forecast trends. The historic tonnage base data will be analyzed in relationship to vessel characteristic and port depth data extracted from the “Lloyds Vessel Register” and the ”World Port Index”. Future trends will be determined from analyses of

published trends and consultations with shipping experts. The output of the origin-destination analyses will be utilized to identify trade route constraints. The origin-destination studies will also influence the minimum and maximum vessel sizes for the existing and future conditions.

Forecast Potential Channel Traffic by Commodity Vessel Class

Commodity and fleet forecasts from the study year until the end of the project life will be prepared. The forecasts will be presented in time intervals not to exceed 10 years and will relate the traffic base to some type of index over time. These commodity and fleet forecasts will be based on (a) interviews of relevant shippers, carriers, and port officials; (b) opinions of commodity consultants and experts; and (c) historical flow patterns. Projections will then be constructed on the basis of the results of these studies.

Design Vessel Studies

The design vessel studies will be based on analysis of the historic tonnage and origin-destination data, and interpretation of these data in relationship to long-term trends and published forecasts. This subtask, along with the preceding subtasks, needs to be completed prior to initiation of the engineering design studies because the design vessel selection is critical to the appropriate configuration of the channel. The design vessel determinations by channel alternative will be summarized and provided to Engineering Division in a memorandum for record.

Analyses conducted as part of the reconnaissance report showed that a large percentage of the vessels currently using the Sabine-Neches Waterway were lightloaded. The proposed channel deepening alternative identified in the reconnaissance report would, therefore, allow a large percentage of the existing and historical fleet to carry more tonnage. The interviews and literature searches, which will be conducted for the traffic analysis and origin-destination tasks, will be utilized in the design vessel subtask. Recent trends towards wider beam vessels will also be researched as part of this subtask. These analyses will be used in the formulation of the without and with project future fleet distributions.

Vessel Trip Analysis

The widening and casualty reduction assessments will require the transformation of the tonnage data into trip data. The data preparations needed for these assessments are outlined as follows.

Channel Widening Data Input

The vessel class specific tonnage forecasts generated from the commodity and trade route analyses will be used to calculate the number of trips for the without and with project conditions. Determination of the volume of tonnage per vessel trip and the annual number of vessel trips for the without and with project conditions will be made based on existing practices, vessel cargo capacities, channel dimensions, and dock constraints along the Sabine-Neches Waterway as well as the foreign origin or destination port. After these analyses are completed, the vessel trip data will be incorporated into a vessel simulation model. The output of the model will be used to calculate transit times for the without and with project conditions. Transit times for the existing condition will be established based on actual transit statistics obtained from the Sabine Pilots Association's vessel logs. The log data will be used to model the existing distribution of vessel movements by vessel size as well as the interaction of vessel movements within the channel system. Future without and with project transit times will be extrapolated from the existing database based on the relationship between existing transit times, commodity mixes, trade routes, fleet distributions, and channel constraints. Construction of the vessel simulation model will be contracted out. Construction of the simulation model will cost $50,000. Galveston District personnel will provide the Contractor with the needed vessel trip data by channel segment and vessel class for the without and with project conditions.

Casualty Assessment Input

If historical casualty rates are high, or if initial discussions with the USCG personnel indicate that the proposed project improvements could reduce vessel casualties, benefits will be assessed for casualty reductions. Project area casualty statistics for the most recent 10-year period will be obtained from the USCG. The casualty reduction benefits will be based on estimations made by vessel operators and navigation experts concerning potential reductions in casualty frequencies due to channel widening. This procedure was used to calculate the casualty reduction benefits presented in the Houston-Galveston Channels feasibility and limited reevaluation reports. Solicitation of the vessel operator's and navigation expert's opinions will be obtained through a workshop setting. Compilation of the casualty data will be done by the Contractor, as will the formulation and presentation of the casualty assessment workshop.

Transportation Cost Analyses

Transportation costs will be calculated for the without and with project conditions. The transportation costs and associated savings will be presented by channel design alternative. Included in the transportation cost computations are the origin to destination costs, including handling, transfer,

and demurrage costs. The deepening benefits will be calculated based on the net change in the cost per ton transportation costs among the channel design alternatives. Evaluation of the widening benefits will be made based on the annual transportation throughput costs for the without and with project conditions. The casualty reduction benefits will be estimated based on the reduction in casualty costs associated with the with project designs and associated fleets. Two arrays will be constructed representing the without and with project conditions. The difference between the arrays will reflect the difference in transportation costs and any gains in efficiencies between the without and with project conditions.

Computation of the NED Benefits

Once the transportation costs for the without and with project conditions are known, total NED navigation benefits can be computed at the applicable discount rate.

Risk and Uncertainty Analysis

The parameters which undergo risk and uncertainty analysis are not currently defined for deep draft navigation projects. Risk and uncertainty, however, will likely affect variables associated with commodity forecasts, fleet distributions, shipping methods, and construction of alternative projects. Four subtasks have been defined based on these variables. The work associated with these subtasks is outlined as follows.

Forecast Potential Channel Traffic by Commodity, Trade Route, and Vessel Class
The commodity, trade route, and vessel class forecasts are likely to be conducted as usual but probability distributions of projections will likely be included to demonstrate risk and uncertainty. These may be normal distributions, triangular distributions, or others as required. Confidence levels will also be part of this analysis.

Design Vessel Determination
Design vessel determinations are a highly uncertain navigation variable. This variable will also undergo risk and uncertainty using probability distribution analysis confidence intervals.

Transportation Costs
These will likely undergo the same type of analysis as commodity, trade route, and vessel class forecasts.

Multiport Assessment
This task will include an analysis of all factors that might influence a demand schedule; e.g., impact of uncertainty in the use of the channel; ownership of vessels and special equipment; level of service; inventory and production processes. A multipart assessment will be made as part of this step. The multipart assessment will be used to determine how other navigation improvements, such as the Houston-Galveston Project, will affect future tonnage levels for the Sabine-Neches Waterway.

Socioeconomic Profile and Impact Assessment

The items which will be included in the socioeconomic profile and impact assessment are those required by Public Law 91-611, Sect. 122, and those outlined in ER 1105-2-100 and P&G. The socioeconomic profile will describe pertinent social and economic characteristics of the study area which will likely be influenced by the Federal project. Demographic and other relevant data needed to describe the baseline condition will be collected from the 1990 U.S. Census reports and other timely published sources. Data which are not available from published sources shall be obtained from field interviews and investigations. The baseline condition will be used to formulate a forecast of the without project future condition. Changes induced by the Federal project within the study area will be described in the future "with project" scenario with the differences in scenarios identifying the projected impacts.

The method of analysis will include primary data collection through personal interviews and data retrieval and analysis from appropriate sources. Projections will be made based on data collected and traditional stochastic methods but will include risk and uncertainty methodology where appropriate. Impacts will be identified with regard to duration, magnitude, and causal source. The impact assessment will also attempt to identify those social groups which will be impacted, either positively or negatively, by the Federal action. Should Federal action be required to mitigate for induced adverse effects, an assessment will be made with regard to the extent of probable success of the proposed remediation in terms of regional economics and social consequences. Of particular importance in this analysis is the effect of salinity changes in the waterway as a result of dredging activity. These changes may impact the operation of the Neches River Salt Water Barrier as well as recreation and commercial fishing. Also, impacts from channel enlargement to the flood protection system in place around adjacent urbanized areas will be assessed.

The end product of this task will be a narrative report consisting of a social and economic profile of affected areas and an impact assessment of project-

inducted effects with appropriate text, tables, charts, graphs, lists, and maps to be included in the environmental impact statement.

Financial Analysis

The analysis of financial capability is to determine the ability of the project sponsor to finance their share of the project construction cost. The specific guidance associated with the financial analysis is outlined in ER 1105-2-100. The analysis will be made on the sponsor's financial condition and the return that the sponsor can expect from investing in project construction. A portfolio will be prepared on the sponsor's debts and revenues as they relate to their ability to provide financial support for the recommended project. The analysis will include a description of the sponsor's debt history and current financial condition. The information to be described will include debt history and bond ratings assigned on bonds in the last 5 years and a list of outstanding debts; e.g. general obligation bonds, revenue bonds, and other debts. Demographic information will be collected to assist in determining the current financial condition of the local sponsor. The demographic information will include: population 5 years ago and present, annual rate of change in population, personal income for population within study area, amount of property taxes collected annually, other revenues, operating expenses, debt service payments, real property tax collection rate, assessed value of real property, current impact statement ratio, full market value of real property, and property tax revenues as a percentage of full market value of real property. The financial condition will be determined from the following indicators: current surplus of funds as a percentage of total current expenditures, real property tax collection rate, property tax revenues as a percentage of full market value of real property, overall net debt outstanding as a percentage of personal income, direct net debt per capita, overall net debt per capita, percent direct net debt outstanding due within next 5 years, operating ratio, and coverage ratio. This financial analysis will be prepared separately to be submitted with the Project Cooperation Agreement. The financial analysis will be completed during the feasibility phase.

**Economic and Social Analysis Costs	Days	Federal	Sponsor	Total
Evaluation of Commercial Navigation Benefits	530	$ 395,000	$ 0	$ 395,000
Socioeconomic Profile and Impact Studies	60	36,000	0	36,000
Financial Analysis	40	25,000	4,000	29,000
Total		$ 456,000	$ 4,000	$ 460,000

Funds spent as of 6 Apr 02: Labor: $84,035
IWR: $110,000
Wilmington District: $40,000
Total: $234,035

	Remainder of FY02	FY03	FY04
Labor	$34,581	$34,867	$20,000
SAD-W	$10,000	$20,000	
IWR		$20,000	

Category	Total	**Fed**	**Non-Fed**
Evaluation of Commercial Nav Benefits	395,000		
Socioeconomic Profile	36,000		
Financial Analysis	25,000		
Total PMP Estimate	456,000		
Labor Charges as of 6 April 2002	84,035	$56,035	$28,000
Funds Sent to IWR and Wilmington			
IWR Non-Traditional Benefit Workshop	10,000	$10,000	0
IWR Traffic Model	100,000	$100,000	0
Wilmington District	40,000	$25,000	$15,000
Total Charges as of April 2002	234,035	$191,035	$15,000
Remaining Funds as of April 2002	*221,965*		
Labor Funds Needed Remainder FY02	*34,581*		
Funds to SAD-W for Widening Analysis	*10,000*		
Labor Funds Needed For FY03 - Tentative	*34,867*		
Funds to SAD-W for Widening Analysis	*20,000*		
Funds to IWR for Widening Analysis Update	*20,000*		
If Work is Needed in FY 04 - Tentative	*20,000*		
Total Charges for Remainder of FY03 - 04	*139,448*		
TOTAL REVISED ESTIMATE AS OF MAY 2002	*373,483*		

Construction and Professional Services Branch

Apr 02 Update

No revisions made to original tasks and responsibilities

Construction and Professional Services Branch will coordinate engineering and design activities, procure and administer contract services, consolidate the technical information, oversee development and administration of a design quality control plan (DQCP) and plan schedules and budgets to produce the engineering sub-products for an Engineering Appendix. The final product, an Engineering Appendix, will be compiled from the sub-reports prepared under the direction of the Chief, Engineering Branch and edited by the Project Engineer. The Project Engineer will be the engineering liaison with the Planning Lead and the Project Manager. An independent technical review of the various design analyses developed by the Design Team will be arranged for and developed by the Project Engineer in accordance with the DQCP and quality management plan. The Project Engineer will develop work plan schedules for each task necessary to produce individual feasibility study products and sub-products in accordance with the work breakdown structure, within the time allocated for the study, and within budget. The Project Engineer will also administer the total budget for the engineering effort using the Corps of Engineer's Financial management System (CEFMS) to assure financial accountability for project funds.

The Engineering Construction and Professional Services Branch will provide technical and administrative support services for the solicitation, negotiation, award, and oversight of contracts for Architect-Engineer design services, the acquisition of land and hydrographic surveys, and procurement of geotechnical services. The Branch will also provide assistance to Planning, Environmental and Regulatory Division in procuring contracts for environmental, archeological, and historical investigations and related services.

The effort in days and estimated current dollars is as follows:

Construction and Professional Services	Days	Federal	Sponsor	Total
Financial Management & Scheduling	144	$ 141,000	$ 0	$ 141,000
Design Team Coordination	144	141,000	0	141,000
Review Coordination	12	10,000	0	10,000
Report Compilation & Writing	25	25,000	0	25,000
Contract Administration Support	120	77,000	0	77,000
Supervisory Oversight & Approval	20	18,000	0	18,000
Total		$ 412,000	$ 0	$ 412,000

Project Engineering Section Apr 02	**Days**	**Federal**	**Sponsor**	**Total**
**Financial Management & Scheduling	**144**	**$107,136**	**$ 0**	**$107,136** *
**Design Team Coordination	**144**	**107,136**	**0**	**107,136***
**Review Coordination	**12**	**8,928**	**0**	**8,938***
**Report Compilation & Writing	**25**	**18,600**	**0**	**18,600***
**Contract Administration Support	**208**	**154,752**	**0**	**154,752****
**Supervisory Oversight & Approval	**55**	**40,920**	**0**	**40,920*****
Total		**$ 437,472**	**$ 0**	**$ 437,472**

*** Level of effort for the first four line items is assumed to remain unchanged. Labor is decreased to reflect actual team rates**
**** Contract Administration Support - level of effort and cost increased due to greater use of AE contracts than originally anticipated.**
***** Level of effort and cost increased due to review, oversight and approval of a greater number of AE contracts.**

The overall level of effort is estimated to increase from 465 days to 588 days while overall cost is estimated to increase from $412,000 to $437,472 for reasons cited above.

Funds spent to date $146,000 as of 13 Apr 02.

	Remainder of FY02	**FY03**	**FY04**
Labor needs	95,000	152,000	44,472

General Engineering Section
Apr 02 Update (Updates in bold)

Preliminary Analysis

Channel Optimization Studies
Channel optimization studies will be conducted to determine a limited number of channel alternatives that will be studied in greater detail during Plan Formulation. This number of alternatives for the depth will be six. The number of alternatives for the width will be six: entire SNWW at 500', and 5 Selective Widenings, each widening with 2 different widths. In addition, 7 Turning Basins will be identified for the Neches River. The optimization will include all channels from Sabine Bank Channel to the Neches River Channel, including the Gulf Extension and Taylors Bayou Turning Basin. The purpose of the optimization studies will be to develop preliminary quantities to calculate life cycle costs for each of the alternatives. The life of the project will be assumed to be 50 years. Quantities will include estimated new work dredging, estimated maintenance dredging, berthing area dredging requirements, and pipeline/dock/utility relocations and removal requirements***. (Number of alternatives increased. Taylors Bayou was originally assumed not to be in the feasibility project. It was added in after original PMP.)*** These studies will utilize on hand data only. The Planning Lead will furnish the design vessels and the traffic pattern (1 way or 2 way) for each scenario in the optimization process. General Engineering Section will then determine channel dimensions based on criteria from EM 1110-2-1613, "Hydraulic Design Guidance for Deep-Draft navigation Projects." The product will be a report describing each of the channel options studied, the assumptions used in the study, and the results. The scope of the studies will be as defined below:

- *Optimizing channel deepening by evaluating 6 different channel depths: 43', 45', 48', 50', 53', and 55'*
- *Optimize 500' width for the Sabine Neches Channel and Neches River Channel*
- *Optimize Selective Widening of the Channel by evaluating 5 widenings:*
  Sabine Pass Jetty to Port Arthur Canal at 700' width
  Port Arthur Canal Short Reach at 600' and 700'
  Port Arthur Canal Long Reach at 600' and 700'
  Sabine Neches Canal at 600' and 700'
  Neches River Channel at 600' and 700'
- *Optimize 7 Turning Basins at all depths*

Pipeline and Utility Relocations
Pipeline and utility relocations requirements will be studied in greater detail than that in the Reconnaissance Report. Existing pipelines, utilities and bridges will be identified from existing dredging drawings, Corps permits, commercial sources and site visits. An in-house permit search will be conducted. A letter campaign will be performed to discover current pipeline and utility owners and for

verification of location. Pipeline permits will provide initial data to aid in determining impacts related to the widening and deepening of the waterway. Associated impacts will be passed on to the Cost Engineer. Also, obtained information will be forwarded to Real Estate Division***. (More work was initiated in this phase than was originally indicated.)***

Dock and Wharf Relocations
Aerial photos will be used to identify current locations of docks and wharfs. A letter campaign will be performed to discover current users and owners of the docks and wharfs along the waterway. Obtained information will be forwarded to Real Estate Division. ***(More work was initiated in this phase than was originally indicated.)***

Channel Surveys
Preliminary surveys of the existing channel, from bank to bank, will be conducted to provide initial cross sections for the deepening and widening study. In-house crews will perform the work. ***(It was added in after original PMP.)***

*Initial Plan Formulation	Days	Federal	Sponsor	Total
Channel Optimization Studies	69	51,200	0	51,200
Pipeline and Utility Relocations	26	19,600	0	19,600
Dock and Wharf Relocations	26	19,600	0	19,600
Channel Surveys	10	6,000	0	6,000
Report Preparation	5	4,000	0	4,000
Total		100,400	0	100,400

Plan Formulation

Determine Existing Shoaling Rates
Existing shoaling rates will be studied in much greater detail than in the Reconnaissance Report. Dredging quantities for each channel reach will be estimated using dredging records of the existing projects, as defined in the Dredging History Database. The Shoaling Rate Table will be provided to the Cost Engineer to use in developing costs associated with O&M dredging. ***(this was indicated as being major in-house effort, but relies on WES for the true study results.)***

Evaluate Without Project Conditions
Quantities for maintaining the existing channels will be developed and provided to the Cost Engineer for determining without project conditions. Quantities for levee lifts will be developed with the assistance of Geotechnical and Structures Section, who will estimate the projected life of each placement area, as well as bulking and shrinkage factors. ***Being done by Geotech's contractor.***

Ship Simulator Study Coordination
A ship simulation study will be conducted on the recommended channels as determined by the Preliminary Analysis. General Engineering Section will assist H&H Branch in providing input, developing the scope of work, reviewing and participating in the selection of the A&E ship simulation provider. General Engineering will also provide existing and proposed channel designs, identify specific areas of concern to WES, as well as witness validation and plan testing. General Engineering will review the study results for incorporation in to detailed design. ***(WES could not do Ship simulation, thus WES had to get an A&E on board to do the study. This increased in-house effort with additional coordination.)***

Sediment Study Coordination
A sediment study will be conducted on the recommended channels as determined by the Preliminary Analysis. General Engineering Section will assist H&H Branch in providing input, preparing scope of work, provide existing and proposed channel designs, identify specific areas of concern and reviewing study results for incorporation into the detailed design. Future shoaling rates are required to estimate O&M costs of the proposed project, which in turn will affect the life-cycle cost of the project. If beneficial uses are planned, reasonably accurate shoaling rate estimation becomes even more important. Efforts on previous projects relied on extrapolating shoaling rates for an improved project from data on the existing project. This method has serious shortcomings in that it fails to quantitatively take into account the variables that impact the shoaling rates. An empirical "curve fitting" analysis also leads to inaccurate results. The sediment study will be used to identify expected future shoaling rates, verify current shoaling rates and predict any shoaling rate changes for the proposed channel***. (this work started in this phase)***

Pipeline and Utility Relocations
Progressive communications with pipeline owners will yield "as-built" plans, and current condition surveys to give support to identification of impacts. A contractor, Lamar University, will be hired to field verify existing pipeline locations and prepare preliminary plans to assist General Engineering with pipeline relocations. Any additional associated impacts will be passed on to the Cost Engineer***. (This work started in this phase)***

Dock and Wharf Relocations
Positive ownership will be identified by response from the letter campaign, and Ports of Port Arthur, Beaumont, And Orange, Texas, Port Series No. 22. Progressive communications with dock and wharf owners will identify if design project depths are wanted, as well as existing conditions of their facilities. Information obtained will be passed on to Structural Section for structural evaluation of impacts associated with widening and deepening of the waterway. Dredging quantities required to deepen the facilities to the level of the new

project and estimated maintenance quantities will be included in the 50-year disposal plan. Associated impacts will be passed on to the Cost Engineer. ***(This work started in this phase)***

Update Channel Alternatives
An updated cost of the selected alternatives will be required for the Alternative Formulation Briefing (AFB). The number of channel alternatives is assumed to be a combination of 3 alternatives for deepening, 3 alternatives for selective widening, and 7 turning basins. Model studies, surveys, and Geotechnical analysis will not be complete in time to incorporate into the document prepared for the AFB, but results known at the time can be utilized. Life cycle quantities will be updated for each of the alternatives. A report will be written describing study results and assumptions used for each of the alternatives. General Engineering will provide complete set of plates of the entire waterway with the alternatives identified. ***(The number of alternatives increased.)***

Survey Coordination
Surveys will be required of all existing and proposed placement areas. It is expected to be a major endeavor, knowing that several of the existing placement areas have not been in use for many years, and minimal existing data available. Geotechnical Section will be taking the lead on the Placement Areas. General Engineering will coordinate all surveys required by the Geotechnical Section, as well as any other Sections***.(added in after initial PMP)***

**Plan Formulation	Days	Federal	Sponsor	Total
Determine Existing Shoaling Rates	10	8,000	0	8,000
Ship Simulator Study Coordination	20	16,000	0	16,000
Sediment Study Coordination	20	16,000	0	16,000
Pipeline and Utility Relocations	58	40,400	0	40,400
Dock and Wharf Relocations	48	34,400	0	34,400
Update Channel Alternatives	75	57,000	0	57,000
Survey Coordination	105	84,000	0	84,000
Total		255,800		255,800

(more of detail design phase was done in this phase)

Detail Design

Determine Maintenance Shoaling Rates
The sedimentation model performed by WES will predict proposed shoaling rates for the new project. The goal will be to estimate future shoaling rates for discrete intervals of the project, which can be associated with individual placement areas. General Engineering Section will utilize the information for the advanced maintenance study. ***(more of this study was started in previous phase)***

Advanced Maintenance Study
Advanced maintenance is the deepening of a particular reach of the waterway for anticipated shoaling, in an attempt to decrease the number of dredging cycles. Advanced maintenance amounts will be determined on each channel segment

through a life cycle cost analysis. Various depths of advanced maintenance will be combined with the estimated future shoaling rates to determine the frequency and quantity of dredged material in a given reach. The unit cost for dredging the material will be determined by using the Corps' dredge estimating program. The life cycle analysis will include both dredging costs and costs associated with rehabilitation of placement areas. General Engineering will determine advanced maintenance depths and associated reaches for final channel design. ***(awaiting WES sediment study results)***

Ship Simulation Results

Anticipated results from the ship simulation may identify the Taylors Bayou area as a possible source of additional simulation being required. In addition to this area, the waterway under the two bridges may need to be re-simulated with a different channel bottom width. ***(Addition of Taylors Bayou will increase the need for simulation, as well as TX Dot's concern about the deepening of the channel under their two bridges.)***

Pipeline and Utilities Relocations & Docks and Wharfs Relocations

Information received from owners will be used to update existing impact information. General Engineering will establish a point of contact with the users and owners for future use during the PED stage. Information exchange provides a clear idea of what is being studied, and allows owners to plan for anticipated relocations. Information obtained will be utilized in the formulation of cross sections depicting assumed true locations of the pipelines within the new proposed channel. Determination of required relocations will be finalized. As geotechnical investigations progress, possible stability issues may arise. Contingencies within the baseline cost will reflect these unknowns. Coordination with owners' relocations and rehabilitations will be during the PED stage. General Engineering will be the lead in providing information, and plans for use by the District. All information obtained will be forwarded to Real Estate Division. ***(Information requested from previous phases comes in slowly. Data updates are performed as information comes in.)***

Placement Plans

General Engineering Section, working with Geotechnical and Structures Section, will provide assistance to environmental representatives in developing and performing preliminary design on feasibility placement options. General Engineering will review and help finalize proposed placement plans. General Engineering will also assist with the coordination with final preparation of plates to incorporate into the EA.

Mitigation Requirements

Although the type and extent of mitigation is not known at this time, it is very likely that some form of mitigation will be required. General Engineering will assist Environmental Resources Branch and Geotechnical Section with the design of the mitigation features. General Engineering will produce

approximately 10 drawing plans for Environmental Resources Branch's conceptual designs. ***(New request from Environmental Branch, more specific in nature than previous PMP.)***

Final Channel Design
Final channel design will consist of incorporating results from both the ship simulation study and the advanced maintenance study to develop final recommended channel geometry. During this phase, the location of docks, structures, and other fixed objects will be pinpointed and the channel centerline modified, if possible, to avoid impacts to these items. Expected unknowns and uncertainties may contribute to design changes of the channel centerline and will be considered in the PED stage. Hydrograph surveys will form the basis for new work dredging quantities using a digital terrain-modeling program. These quantities will be provided to the Cost Engineer for incorporating into the baseline estimate. The final design will be provided to Real Estate.

Survey Coordination
General Engineering will continue to provide services for survey coordination for all Sections. New placement areas may be required, resulting in additional data collection. Final surveys required for construction will be obtained during PED. General Engineering will also coordinate with Real Estate, providing any additional data available. ***(Was not accounted for in initial PMP)***

Project Design and Construction Schedule
General Engineering will assist with the schedules for design, performance of utility/facility relocations, provisions of placement area improvements, and construction for preparation of the Management Plan. These schedules shall be based on engineering judgment and indicate the optimum schedule for completing design and construction. ***(Was not accounted for in initial PMP)***

First P&S
General Engineering will prepare preliminary plans and specifications in preparation for the first contract. It is anticipated that the first contract will be dredging of the Gulf Extension, approximately half of the anticipated extension. Hydrograph surveys will be required for the new work, and will be contracted out. ***(Was not accounted for in initial PMP)***

**Detailed Design	Days	Federal	Sponsor	Total
Determine Maintenance Shoaling Rates	**3**	**2,400**	**0**	**2,400**
Advanced Maintenance Study	**30**	**24,000**	**0**	**24,000**
Ship Simulation Results	**3**	**2,400**	**0**	**2,400**
Pipeline and Utilities Relocations	**20**	**21,400**	**0**	**21,400**
Dock and Wharfs Relocations	**20**	**21,400**	**0**	**21,400**
Placement Plans	**9**	**9,400**	**0**	**9,400**
Mitigation Requirements	**15**	**12,000**	**0**	**12,000**
Final Channel Design	**39**	**29,400**	**0**	**29,400**
Survey Coordination	**60**	**16,000**	**0**	**16,000**
Project Design and Construction Schedule	**5**	**4,000**	**0**	**4,000**
First P&S	**68**	**178,600**	**0**	**178,600**
Prepare Input for Engineering Appendix	**5**	**4,000**	**0**	**4,000**
Total		**325,000**		**325,000**

	Original	Revised
Initial Plan Formulation	70,200	100,400
Plan Formulation	65,000	*255,800*
Detailed Design	361,600	325,000
Total	496,800	681,200

Funds spent as of 13 Apr;

Labor	$200,000
Contract	$ 38,770
	$238,770

	Remainder of FY02	**FY03**	**FY04**
Plan Formulation	90,000 (labor)	27,430 (labor)	
Detailed Design		125,000 (labor)	178,600 (P&S surveys) 21,400 (labor)

Revised new total is $681,200

Geotechnical and Structures Section
Apr 02 update (Changes highlighted)

NOTES:

1. ***In-House Labor Rate from 1 April 02 to 1 June 03 will be $5,000/month. Labor spent to date as of Apr 02 was $160,402.***
2. ***All statements pertaining to the revised SOW are shown in bold.***
3. ***At the date of this report, the current contract funds to URS and ERDC were $451,505***
4. ***At the date of this report, total funds to Vicksburg District were $215,000.***

1. ***This SOW revision has been drafted based on the following general assumptions listed immediately below, and the specific assumptions contained within the text. These will be reviewed, and updated periodically during the study, and a recommendation for revision of the PMP will be made, if significant changes develop, which impact the original time and cost estimate to a degree whereby they are no longer considered valid.***

   (1) <u>Channel Alternatives</u>. It is assumed that approximately ten channel depth alternatives, with several widening options will be evaluated during plan formulation phase.

   (2) <u>Placement Plan Alternatives</u>. It is assumed that the following 18 upland PAs will be investigated for incorporation into the New-Work Placement Plan (NWPP) and the 50-year Dredged Material Management Plan (DMMP).

   Placement Areas (PAs) 5, 8, 9, 11, 12, 13, 14, 15, 15A, 16, 17, 18, 20, 21, 23, 24, 25, 27A.

   (3) Beneficial Use of Dredged Materials. It is assumed that approximately five to ten beneficial use sites will be identified, and will require design for the project, including Bessie Heights Marsh and Rose City Marsh.

   (4) Overall, the geotech team of the Geotechnical and Structures Section will be responsible for developing preliminary designs and construction quantities for each alternative included in the DMMP.

Preliminary Plan Formulation

This portion of the work was completed in Geotech about 1 March, 2001. Duration of work – 18 months

The average in-house labor cost during this period was $94,662/18 = $5,259/month.

Geotechnical and Structures Section will conduct a field reconnaissance inspection to confirm the availability and to assess the remaining storage capacity of the upland placement areas that will be considered for use. A field reconnaissance inspection will also be made to locate potential sites where material could be used beneficially as well as the Bessie Height Marsh, Rose Hill Oil Field, Sidney Island Bird Rookery, and replenishment of marshes on the Louisiana side of Sabine Pass. Also the accessibility to these sites to obtain soil data through borings will be noted.
Work completed for upland PAs. Work for BUDM sites is to be done by TC&B contract, 1 July 2002 – 15 April 2003.

Field reconnaissance will facilitate assessing the total volumetric storage capacity afforded by the existing and proposed placement areas. For new placement areas extensive field surveys and real estate acquisition are needed. ***The above portion of the work was completed in Geotech about 1 March, 2001.***

Suitable borrow material for constructing and raising the levees will have to be located. ***This work will be deferred until final design for P&S. Design work will be documented in a full DDR.***

Potential areas where the dredged material can be used beneficially will be evaluated for practicality in designing and constructing environmental features such as marsh and aviary habitats consistent with the requirements of the resource agencies. Field information needed for these evaluations include the depth of water and strength characteristics of the existing foundation materials***. This portion of the work was completed in Geotech about 1 March, 2001.***

For the preliminary plan formulation phase all available data will be reviewed, analyzed and used for the design of the channel side slopes and placement areas. For the preliminary design phase, the locations of placement areas will be established. ***This portion of the work was completed in Geotech about 1 March, 2001.***

Erosion protection will be designed and quantities will be calculated. Placement area capacities, levee heights, side slope quantities will be determined. ***No erosion protection design was performed, rather an***

approximate, typical cost for channel slope protection, in cost/lineal foot of channel, was provided for use in cost estimate.

Preliminary Plan Formulation	Days	Federal	Sponsor	Total
Channel Depth	50	$ 34,200	$ 0	$ 34,200
Channel Width	55	38,000	0	38,000
Placement Area Design	80	55,000	0	55,000
Report Preparation	5	3,500	0	3,500
Total		$ 130,700	$ 0	$ 130,700

ESTIMATED ACTUAL COSTS = $94,662
(all in-house)

Comparison – *Actual cost was $36,038 less than original estimate.*

REASONS FOR DIFFERENCE.
1. General engineering performed all design on channel.
2. Preliminary design of the placement area cost was about right.
3. Additional task of developing preliminary new-work dredge material placement plans, and maintenance material placement plans, plus determining levee quantities for each use accounted for the additional labor expenses.
4. No formal summary report was written – rather did just a short summary by E-mail.

Plan Formulation

It is assumed that this phase will have four alternatives to be investigated after the initial ten alternatives have been screened. Subsurface investigations (borings) will be conducted as necessary to assess the existing foundation conditions of the available upland placement areas (and consequently their ultimate storage capacity). ***Since 14 of the 18 existing PAs did not have any previous foundation investigation. It was decided that the best way to accomplish the necessary preliminary upland geotechnical investigations would be to use Cone Penetration Testing, rather than core drilling, due to the lower cost, and higher production. Original cost estimate of the work by private sector exceeded $1M. To reduce cost, Vicksburg District was contracted to perform the CPT investigation for about $200,000, and surveys performed using our on-board surveys contractor for about $500,000, saving $300,000 in investigation cost.***

ASSUME:
1. This phase occurred from 1 March 2001 to 1 April 2002 (13 Months)

In-house Labor cost = 13 X $5,259 = $68,367

We also would determine the viability of establishing beneficial-use sites at specific locations, design the channel template, and prepare designs for the beneficial-use site confinement structures, placement area levees and any breakwater structures that may be necessary. ***This work was partially started in-house, but has been temporarily delayed pending progress by ICT in determining preferred options. About 200 options were initially compiled by the ICT in spring of 2002. Anticipate this will be reduced to under 10. TC&B will be given Task Order to perform the design of Bessie Heights. The Task Order (TO) will later be modified to cover additional locations to be selected during the ICT process.***

Sampling of the soils will enable determination of the physical characteristics of the material to be dredged, necessary to establish the stiffness of the new work material for dredging purposes, its suitability for building confinement embankments in convenient locations, and to calculate the additional volumetric storage capacity that will be needed to accommodate this material. ***Core drilling in the channel was deferred until P&S. Existing boring data will be used by A-E to determine assumed material-type breakdown. Assumed bulking and shrinkage factors will be used for design for Engineering Appendix.***

The embankment section will estimate the total storage capacity requirements necessary to accommodate maintenance dredging of the channel(s) for the ensuing 50 years. Available existing soils and survey information will be researched and, wherever practicable, used in the evaluations and design analyses. ***A-E will do this as part of 5th Geotech DO, URS***.

For reduction of cost every effort will be given to the use of any available water boring information to reduce the number of borings to be performed. This estimate is made on the assumption that we may be able to use recent available information on materials and may not have to do very many hydrographic borings in the channel or topographic borings on land.

Methods of open-water disposal confinement will be explored to construct the beneficial-use sites. Designs for erosion protection will be accomplished for those areas along the perimeter of the proposed beneficial-use sites, which are exposed to severe wave and tidal action. ***A-E will do this as part of "Bessie Heights" TO, TC&B.***

Geotechnical and Structures Section will work with the General Engineering Section to determine hydrographic surveying requirements, and will obtain land surveys of the upland placement areas. ***General Engineering will handle hydrographic surveys during the design phase. General Engineering contracted out the land surveys. The level of effort and cost for land surveys was increased since existing levee locations were required to be determined for all 18 areas. CPT locations, and elevations were required to be determined at 12 areas, and cross section surveys will be required at 15 to 17 areas, depending on success at obtaining Rights-of-entry.***

Contracted services will be employed for the most part to obtain the additional soils information and surveys required, and will be used to supplement in-house labor or to assist in the design efforts when needed. Subsurface investigations will be conducted to determine the properties of the soils where the channel improvements are proposed and the existing foundation conditions of the upland placement areas and potential beneficial-use sites. Existing soils data will be evaluated and supplemented with newly acquired data in those areas affected by the improvements. Additional hydrographic borings will be needed to evaluate in situ materials along the channel where new work dredging will be done. The information obtained from the topographic and hydrographic borings will be used to:

- Design the channel side slopes and levees.

- Determine the suitability of the material for beneficial use such as for marsh creation and beach replenishment.

- Estimate how much additional upland placement area capacity may be needed if alternative disposal is not practical or, when combined with the maintenance dredging needs, the determination of existing upland storage capacities.

- Determine the consistency of the material and classify the new material to be dredged for cost estimating purposes.

Borings in the upland placement areas will be used to evaluate the foundation conditions, which in turn will dictate the design of the containment levees and the ultimate height to which they can be built. Borings will also help in locating suitable sources of local borrow for levee construction. ***Borings to determine locations of borrow material, and material conditions are deferred until P&S.***

All drilling (topographic and hydrographic borings), soil sampling, and laboratory testing of materials will be done by contracted services acquired through and administered by the Construction and Professional Services Branch.

Surveys

Recent condition and maintenance dredging surveys of the existing channels, and nautical maps depicting the waterway bathymetry will be used. Existing available survey information will be used wherever practicable to develop the design of project features and the quantity estimates. However, surveys of the available upland placement areas, hydrographic surveys along the channel, surveys of the proposed new placement areas, and surveys of areas for beneficial-use sites will be performed as necessary. These surveys will provide a basis for estimating material quantities so that a reasonably accurate MCACES baseline construction cost estimate can be developed. The surveys will also be necessary to determine the existing and future storage capacities of the upland placement areas. Cross sections along the perimeter of the upland placement areas will be taken at 800 to1000 foot intervals and along the channel at 1000 to 2000 foot intervals.

Most of the cross-sectional surveys will be acquired through contracted services that will be administered by the Construction and Professional Services Branch. The AE contract costs will vary depending on the availability of recent survey information. ***Geotech expended negligible in-house labor with regards to surveys. Survey needs were discussed with the Survey Coordinator, who contracted for the work. Survey info was forwarded directly to the geotech A-E, URS.***

AE Contract Costs	**Days**	**Federal**	**Sponsor**	**Total**
Travel & Per Diem	30	$ 20,000	$ 0	$ 20,000
Statement of work (delivery orders)	10	8,000	0	8,000
*Floating Plant				
Mob & Demob	3	41,000	0	41,000
Mileage	$ 75/mile	10,000	0	10,000
Standby Time (Inclement Weather)	$ 7,500/day	30,000	0	30,000
*Geotechnical Investigations				
Drilling, Sampling, and Testing (Deepening & Widening)	60	450,000	0	450,000
Coordination / Admin of Survey Efforts	30			
Land Surveys		250,000	0	250,000
Hydrographic Surveys		250,000	0	250,000
Review	10	8,000	0	8,000
Total		$ 1,067,000	0	$ 1,067,000

* AE Contract

Of the original estimate, above, $250,000 was for hydrographic surveys which will be handled by General Engineering in the

design phase instead of being handled in the Geotechnical section.

Note: At the time of the writing of the original SOW, surveys responsibility was part of Geotechnical and Surveys Branch. Since that time, surveys coordination has moved to General Engineering. For the revised SOW, only land surveys are included in the Geotech SOW.

$1,067,000 Original Total (above).
- $ 250,000 Hydrographic Surveys (General Engineering responsibility).
$ 817,000 Total of original estimate pertaining to Geotech Work.

Original Plan Formulation Geotech and Survey Cost Estimate

LAND SURVEYS	*=$ 272,000*
GEOTECH	*=$ 545,000*
TOTAL	*=$ 817,000*

Revised Plan Formulation Cost Estimate

Upland surveys	*$343,429*
Geotech Contract work completed (URS and ERDC)	*$451,505*
Additional core drilling, soils testing to be done	*$40,000*
Vicksburg CPT	*$215,000*
In House Labor	*$68,367*
Total	***$1,118,301***

REASONS FOR CHANGE
1. As indicated in previous comments, there was a very high deficiency in foundation information throughout the upland sites at this project. Additionally, the foundation conditions along the Neches River, are known to be some of the poorest in the Galveston District. Therefore, we had to investigate every site, BUT saved on the cost by using CPT. The original estimate included NO estimate for investigation of upland placement areas.

2. Although core drilling in the channel was deferred until PED, this savings is temporary, since it is likely we will need

$1,000,000+ of additional core drilling to be able to award contracts for dredging of the project channel.

The CPT work was completed about October 2001.
The core drilling and testing (still to do) will be completed about September, 2002.

3. Regarding the "Plan Formulation" Tasks described in this portion of the SOW, there were no itemized costs included for any of these tasks.

Detail Design

Assume This Begins 1 April 02 And Continues Thru 1 Oct 03 (14 Months). Only In-House Labor Past 1 May 2003

The final design of the new and existing placement areas will encompass the following:

- Stability analysis of the foundations
- Configuration of placement area levees
- Maximum levee heights
- Configurations and sizes of beneficial use sites
- Total volumetric storage capacity requirement for the life of the project

In addition, determination of slope stability for the channel side slopes will be performed and final drawings for the placement areas will be provided.

Design Analysis	**Days**	**Federal**	**Sponsor**	**Total**
Stability Analysis of Placement Areas & Channel (drawings)	120	$ 204,000	$ 0	$ 204,000
Report write-up	25	17,000	0	17,000
Total		$ 221,000	$ 0	$ 221,000

REVISED ESTIMATED COSTS
In-house labor, @ $5,000/mo, 1 April 2002 – 1 Oct 2003
FY02 Portion = $30,000
FY03 Portion = $55,000

REASON FOR REVISION.

1. The cost estimate for the analyses of slope stability is a relatively accurate reflection of the actual labor time and cost to identify and analyze the stability of only <u>the most critical</u> levee reaches for levee enlargements to contain the new-project dredging, at 18 individual placement area sites. Analyzing the five most critical reaches, and determining if and what beyond-the-ordinary construction may be required, will allow for a reasonably accurate overall levee design, and cost estimate. The remainder of the levees can be analyzed and designed during the Plans and Specification phase.

2. The estimate did not include cost of developing the 50-year Placement Plan, by which the required levee heights for the 50-year plan could be determined, or other required design tasks, listed below.

<u>Additional Costs</u> - AFTER 1 APRIL 02 include:

Determining Maintenance Material Breakdown and Long Term Shrinkage	***$ 30,000***
Determining New-Work Material Breakdown and Long Term Shrinkage	***$ 40,000***
Design Approximate Levee Templates and Construction Quantities	***$ 30,000***
Development of Preliminary 50-Year DMMP	***$ 50,000***

SETTLE Analyses by Lamar U. $ 50,000
Column Settling Test by TC&B $ 30,000
Workshop/Oversight by ERDC. $ 18,000
In-House Labor Develop SOWs,
IGEs and QA of Work $ 30,000
TOTAL (Additional Cost) $278,000

$178,000 (FY02)
$100,000 (FY03)

3. ***The originally estimated cost of $17,000, identified as "report write-up", which covers work limited to presentation of analysis and design results in text, tables and drawings is significantly inadequate to accomplish this work for this large a project.***

4. ***Additionally, the work being done in FY 2002, and partially into FY 2003, under the recently negotiated 5th Geotech DO, includes considerable compiling of data, calculating of quantities, review of geotechnical data and performance of approximately 5 to 10 detailed slope stability analyses, but we will require award of a 6th Geotech DO on or about 1 October for the remainder of the analyses and design work. This final design work will dovetail with development of tables, drawings and eventually, the text presentation of the final project design for the Engineering Appendix.***

The work under this Task Order will begin about 1 October 2002 and be completed sometime in May 2003.

Estimated Cost of 6th Geotech DO = $ 250,000
In-house QA and ITR = $ 20,000

TOTAL (Additional Cost) = $ 270,000 (FY03)

5. There was no estimated cost for the design of the Beneficial Use Sites in the original estimate. Currently, we are working on award of a contract to do design and report write up for one site at Bessie Heights.

Estimated Cost of Bessie Heights
Contract TO = $ 60,000 (FY02)
Estimated Cost of Modifications
To A-E TO for Additional
Sites (Assume 5-8 Sites = $ 300,000 (FY03)
In-house QA and ITR = $ 20,000 (FY03)

TOTAL (Additional Cost) = $380,000 (FY03)

6. Finally, In-house Labor from 1 June- 1 Oct = $15,000 (FY03)

Detail Design Revise Cost = $15,000 + $380,000 + $270,000 +278,000 = $943,000

SUMMARY

	Orig. Estimate	Revised
Preliminary Plan Formulation	130,700	94,662
Plan Formulation	817,000	1,118,301
Detail Design	221,000	943,000
TOTAL	$1,168,700	$2,155,963

	FY02(Remainder)	FY03	FY04
Labor	$30,000	$55,000	$20,000
Contract	$278,000	$650,000	

Structural Analyses

Apr 02 Update

The Structural Section will provide design input for the spillboxes required for the placement areas of all of the channel alternatives. The section will also provide consultation services (not design services) for bridge, bulkhead, and dock analyses, if required by local entities affected by the project.

**Design Analysis Costs	Days	Federal	Sponsor	Total
Recommended Channel Design	35	$ 25,000	$ 0	$ 25,000
Channel Optimization Study	35	25,000	0	25,000
Total		$ 50,000	$ 0	$ 50,000

FY02

Investigation for Impact on Stability and preliminary estimated cost for expected modification of foundations of Docks, Wharfs and three bridges (MLK, Rainbow & Veteran's Memorial Bridge) required a lot more time in collecting data /information of foundations of existing structures. Initial estimate did not cover extensive time & efforts in collecting data and study on structural impact. Coordination with sponsors /owners of each facility, and with Texas Department of Transportation for bridges & dolphins. Also added scope for impact consideration from 45', 48, and 50' depth of dredging plans.

Estimated hours for remaining period of FY02 = 430 hours @ an average rate of $ 70 = $ 30,000.

FY03:
Design Analysis for recommended channel /bridge, bulkhead, docks & wharfs.
Estimated hours = 500 hours @ an average rate of $ 70 = $ 35,000.

FY04: Coordination of Feasibility Report.
Same as above: 80 hours @ an average rate of $ 70 = $ 5,600.

New Design analysis cost $70,600.

Cost Engineering
Apr 02 Update

Cost Engineering will prepare ten comparative estimates for various designs, including costs for numerous utility relocation or removals and costs for operation and maintenance (O&M). This information will be used by the Planning, Environmental, and Regulatory Division to develop average annual costs. Cost Engineering will also prepare a fully funded MCACES baseline estimate for the selected plan and the NED Plan if it is not the recommended plan. This includes developing contingencies with the study team members, computing O&M costs, completing the cost estimate narrative, and developing both inflated dollar and constant dollar estimates.

Engineering Branch	**Days**	**Federal**	**Sponsor**	**Total**
Cost Estimate, Initial and Plan Formulation	60	$ 52,000	$ 0	$ 52,000
Cost Estimate, Plan Formulation	39	21,000	0	21,000
Cost Estimate, Selected Plan	40	31,000	0	31,000
Total		$ 104,000	$ 0	$ 104,000

Revised Estimate Apr 02

Engineering Branch	**Days**	**Federal**	**Sponsor**	**Total**
***Cost Estimate, Initial Plan Formulation**	**65**	**$ 54,000**	**$ 0**	**$ 54,000**
****Cost Estimate, Plan Formulation**	**81**	**67,000**	**0**	**67,000**
****Cost Estimate, NED/Recommended**	**87**	**72,000**	**0**	**72,000**
Total		**$ 193,000**	**$ 0**	**$ 193,000**

Funds spent as of 13 April 2002 -- $ 81,000
Estimated funds required for remainder of FY02 -- $ 40,000
Estimated funds required for FY03 -- $ 59,000
Estimated funds required for FY04 -- $ 13,000

The reason for the $89,000 increase is due to the 21 estimates for turning basins (7 basins at 3 depths) and anticipated 9 estimates for selective widening (3 reaches at 3 depths) that were added to the scope of work after the original estimate for the PSP was prepared. The original scope assumed 10 channel alternatives would be evaluated during Initial Plan Formulation. The actual number evaluated was 13.

Hydrology and Hydraulics (H & H) Branch
Updated 17 April 2002

Hydrology and Hydraulics (H&H) Branch portion of the study will include: data collection for model studies, model study of salinity changes, ship simulation, sediment transport model study, **vessel effects study**, **Gulf shoreline study**, environmental compliance and coordination studies, and providing H&H design parameters for dredged material placement sites. In addition, various H&H report reviews and feasibility appendix preparation will be performed. Military Interdepartmental Purchase Requests (MIPR) will be initiated by H&H upon reception of funds in H&H for work conducted by the Waterways Experiment Station (WES). The tasks are described below.

Data Collection

The data collection effort is a fundamental component to the H&H studies of the Sabine-Neches Waterway system. The available and collected data will be used for H&H studies, model testing, and verification of existing conditions of the channels and the Sabine Lake system. The area to be modeled extends from: Beaumont on the Neches River to the northwest; the Sabine River at Orange to the northeast; into the Gulf of Mexico in the south; and the Gulf Intracoastal Waterway (GIWW) and Port Arthur to the west. H&H and WES will review available hydrologic and hydraulic data on the Sabine-Neches system to avoid duplication of data collected by other agencies, contractors, or offices. H&H and WES will then monitor the data collection program to insure that requirements and method of data collection meet the needs of the model input format. The data collection program will include objectives that are well defined and detailed. A rationale for variable selection, sampling locations and frequencies, and plans for data interpretation, storage and analysis during data collection will be maintained. Areas of interest include:

- Tides and Circulation
- Channel surface, middepth and bottom currents
- Wave Climate
- Freshwater Inflows
- Salinity with depth
- Tide Range/Frequency
- Suspended sediment
- Scour and deposition including disposal area erosion
- Surveys of submerged channel banks
- Bank Erosion
- Climatology

An analysis of historical data on tide, wind, rain, inflows to the bay, salinity, water elevations, and storm data will be performed. The hydrology of present condition inflows will be obtained from the Texas Water Development Board (TWDB) and the US Geological Survey gage records. The future project conditions of inflow into the hydrologic system will be estimated by H&H for input into the salinity model study scenarios. **Data collection by WES with help from Lamar is estimated to take seven months for completion**.

Hydrodynamic and Salinity Model

A model is necessary as a tool to help predict the potential salinity to the multiple Sabine-Neches Waterway system caused by the deepening and widening of the ship channel. A 3-D salinity model by WES is recommended to address the deep channel changes and the environmental impact issues. The model output will include comparisons between baseline (existing) conditions and future scenarios for lake and marsh circulation patterns, currents, and salinity for various seasonal and freshwater inflow conditions. **The 3-D model work is estimated to require about 24 months**. Model boundaries will extend through the three passes of the Sabine River and up to Orange, Texas to the northeast and along the Louisiana Marshes on the east side of Sabine Lake including the mouth of Johnson Bayou. The northwest boundary will be at the Neches River Saltwater Barrier site near the Pine Island Bayou confluence. Western boundaries will include the Port Arthur Canal, the GIWW/Taylors Bayou diversion channel confluence, and Keith Lake. The model study will incorporate project features with specific interest in salinity changes in the Bessie Heights Marsh area, the intersection between the Neches River and Sabine Lake, Keith Lake, and the interchange of flow between Sabine Lake and Sabine Pass.

The final channel width dimensions will be screened economically before the ship simulation model study is complete. This will aid in selection of the proposed channel design plan to be evaluated by the salinity model. Freshwater inflows for model input of existing conditions will be estimated from available TWDB studies, and future inflow scenarios will be developed based on local and state water plans or predictions of water use. Surveys will be performed of submerged channel banks, Bessie Heights Marsh, the Sabine Lake intersections with the Neches River and Sabine Pass, the Keith Lake inlet, and spot elevations in Neches River adjacent marshes will be needed from others for this model study.

Ship Simulation

Ship simulation is required by ER 1110-2-1461, “Design of Navigation Channels, Using Simulation Techniques”, 31 October 1989. The simulation

model study will be initiated by H&H and conducted by a contractor with WES oversight since WES is obtaining a new simulator at the time being. **The study is estimated to require about 10 months**. H&H will manage, monitor, review progress, and assist with the model study. A 2-D hydrodynamic model will be applied initially to the vicinity of the ship channel to generate currents for the ship simulator model. Design deep draft vessels for two-way traffic in some reaches such as the Sabine-Neches channel upstream of the Pleasure Island Bridge will be simulated with the assumption that side slopes of the channel can be used for meetings by barge traffic and thus does not require simulation. Prior to simulation model initiation, the design ship vessels for meetings within the bottom width limits will be provided to H&H by PER with concurrence on dimensions by the Engineering and Construction Division. Initial project plan alignment and dimensions as developed or modified by the General Engineering Section and H&H will be tested by simulation and a recommended design channel width will be developed through coordination with design staff as a part of the H&H and WES simulation team. Based on coordination with WES and the pilots, H&H will recommend meteorological and hydrologic parameters for simulation and monitor the hydraulic and hydrologic aspects and progress of the simulation study up to completion of the final report by WES. Channel alternatives will be screened before simulation to reduce the number of scenarios, and then the ship simulation model will be conducted to test the adequacy of the final proposed economic channel depth and width. The simulator study will recommend channel width based on combined beam width of meeting vessels. Simulation results and recommendations will be used for determining a final design channel plan that will be applied to the salinity model studies.

Sedimentation Transport and Shoaling Model

A sediment transport and shoaling model is needed as a tool to aid in predicting environmental impacts of the deepening and/or widening of the channels. Changes to sediment contribution to the shallow marshes adjacent to the Neches River Channel and to sedimentation in Sabine Lake are primary areas of interest along with changes to future channel shoaling and maintenance for the proposed channel project. The impact, if any, of the deepening and extension of the Gulf of Mexico offshore channel on longshore transport and beach/shore erosion will also be addressed by WES. **This study is estimated to take ten months for completion**.

Vessel Effects Study (New study added)

Numerical modeling of vessel currents and water level changes will be conducted with the two-dimensional HIVEL2D model. Maximum vessel drawdown and return velocity at the shoreline for one-way traffic in both the existing channel and in the proposed channel will occur in straight reaches

along the channel where vessel speeds are highest. Meeting conditions in the proposed two-way channel will also occur in these same straight reaches. The HIVEL2D modeling is proposed for three straight reaches along the waterway. The first reach will be the reach from Louisiana Point to Point Hunt, which has the largest channel width. The second reach will be the straight reach adjacent to Round Lake and south of the Martin Luther King Bridge. The third reach will be the straight reach north of the Martin Luther King Bridge. Field data will be used to determine which vessel size and the corresponding speed that produces the maximum forces for one-way traffic in the existing channel. Results from the ship simulator studies will be used to determine speeds during the meeting condition in the proposed channel. The study is estimated to take seven months for completion.

Gulf Shoreline Erosion Study (New study added)

A cursory assessment will be conducted based on the effect of channel modifications on the local coastal wave conditions in the vicinity of the channel and at adjacent shores. Following which, it will be determined if additional study is required via shoreline change and sediment transport modeling. The study is estimated to take five months for completion.

The work performed includes setting up existing and two design alternative condition computational grids for STWAVE execution. The grid will be extended to a minimum of 16 km to either side of the inlet. The model execution will use a recently updated 10-year WIS hindcast for the western Gulf of Mexico. After assessing STWAVE results and conducting cursory potential transport investigations of adjacent shores, the impacts may require quantification for more detailed investigations.

Environmental Compliance

H&H will coordinate with the District environmental personnel and TWDB to insure the modeling studies, model scenarios, and presentation of results address the environmental issues of concern. In addition, the effect of encroachment of new or increased height of dredge placement areas in the river flood plain of the Neches River will be computed and described for the 10, 50, 100, and 500-year flood plains. This flood plain study will require about 4 months to complete and would begin after the Neches River Channel dimensions and dredge placement plan were developed. At this time, there is no planned hurricane surge model study, but H&H will review past hurricane studies to provide a synopsis of changes which could occur with ship channel enlargements. The addition of hurricane surge models, if required later, could add substantially to study cost and schedule time. Mitigation or beneficial use sites may also be addressed for salinity and flood plain changes. Environmental concerns are expected to play a large role throughout the life cycle of this project, and studies may be expanded or

adapted to incorporate new issues or concerns that usually surface during feasibility study. The results of the salinity model studies will be used primarily to analyze environmental impacts of the final channel and dredge placement site plan on the estuary system. H&H participation will continue form start to finish of the WES model studies.

Dredged Material Placement

H&H will be involved in all aspects of the dredged material placement plan and design, for control of erosion, effluent return from any proposed confined levee sites, tidal exchange, and impacts to or impedance of local drainage. Wave climate and other H&H design parameters will be provided for each proposed placement area. H&H parameters will be computed and provided to Geotechnical and Design engineers upon request within their proposed schedules.

Feasibility Report

H&H will provide a written section for the feasibility report, perform review of various reports related to this project, make comments and recommend revisions and additions. H&H will prepare input to the feasibility report describing the H&H studies and models performed and will respond to request for H&H related information to various individuals and agencies concerned with the feasibility tasks or model study work. H&H will review past hurricane studies to provide a synopsis for the feasibility report and describe results of flood plain studies. The feasibility report will include the mean lower low water (MLLW) datum as required by ETL 1110-2-349, but since it is already the responsibility of the Dredging and Operations offices to establish MLLW datum for the existing channel, it is assumed that the conversion from the existing mean low tide (MLT) to MLLW will be completed by the District Dredging and Operations office before writing of the feasibility report. H&H tasks are limited to application of datum, and there is no time or cost for H&H for the conversion of MLT to MLLW. Report preparation is estimated to require about 3 months after reception of model study results. However, H&H functions and tasks are flexible and will continue after report preparation with study team participation, incorporation of comments, and through completion of plans and specifications.

Old Cost Summary

Hydrology & Hydraulics Costs	**Days**	**Federal**	**Sponsor**	**Total**
Data Collection – WES (1)	**215**	**$ 250,000**	**$ 0**	**$ 250,000**
Data Collection Contract Administration	**70**	**50,000**	**0**	**50,000**
Hydrodynamic and Salinity Model - 3D – WES (2)		**400,000**	**0**	**400,000**
Hydrodynamic Investigations, monitor model SWG	**175**	**123,000**	**0**	**123,000**
Ship Simulation – WES (3)		**250,000**	**0**	**250,000**
Ship Simulation Contract Administration (4)		**75,000**	**0**	**75,000**
Nav Investigations, monitor model EC-EH	**45**	**31,000**	**0**	**31,000**
Ship Simulations Investigations EC	**45**	**32,000**	**0**	**32,000**
Sediment Transport Model		**240,000**	**0**	**240,000**
Sediment Assistance to WES by EC-EH		**30,000**	**0**	**30,000**
Environmental Compliance EC-EH	55	70,000	0	70,000
Placement and Effluent Return Plan	40	27,000	0	27,000
Reports write up and reviews	20	25,000	0	25,000
Total		$ 1,603,000	$ 0	$ 1,603,000

(1) Assumes some data required is available from TWDB and surveys may be needed of some localized elevations or depths. Cost estimate was not coordinated with WES because of short time to prepare estimate, but cost is based on past study estimates.
(2) Insufficient time to gather background information to provide to WES so that a cost estimate could be obtained from WES. Cost is based on past study estimates.
(3) Cost is based on WES performing the study.
(4) Schedule would require additional 5 to 6 months for contracted work.

Updated Cost Summary (revised April 2002)

Hydrology & Hydraulics Costs	**Days**	**Federal**	**Sponsor**	**Total**
Hydrodynamic/Salinity Model				
*Data Collection – WES	240	$ 633,304	$ 0	$ 633,304
*Lamar help – Direct Fund Cite Contract	80	39,630	0	39,630
*Contract Administration	10	13,340	0	13,340
**3-D Model - WES	480	405,000	0	405,000
**Storm surge	60	46,000	0	46,000
**Assistance to WES by EC-EH	171	123,000	0	123,000
Ship Simulation				
*Ship Simulation – Contract	200	269,386	0	269,386
*Contract Administration	10	69,200	0	69,200
*WES oversight and pilots	100	119,000	0	119,000
*Ship currents	80	90,000	0	90,000
*Navigation Investigations, monitor model EC-EH	88	64,000	0	64,000
**Ship Simulations Investigations	44	32,000	0	32,000
Sediment Study				
*Data Collection – WES	40	71,000	0	71,000
**Lamar help – Direct Fund Cite Contract	10	9,000	0	9,000
**Contract Administration	10	6,320	0	6,320
**Study	160	150,000	0	150,000
**Assistance to WES by EC-EH	44	32,000	0	32,000
Vessel Effects Study				
*Data Collection – WES	40	65,000	0	65,000
**Study	140	110,000	0	110,000
**Assistance to WES by EC-EH	44	32,000	0	32,000
****Gulf Shoreline Erosion Study**	120	33,100	0	33,100
**Assistance to WES by EC-EH	33	24,000	0	24,000
****Environmental Compliance EC-EH**	97	7,000	0	7,000
****Placement and Effluent Return Plan**	37	7,000	0	7,000
****Report write ups and reviews**	34	25,000	0	25,000
Total		$2,475,280	$ 0	$2,475,280

As of 13 Apr 02
MIPR funds spent to date: $1,748,860
Labor funds spent to date: $ 147,891
$1,896,751

	Remainder FY02	**FY03**	**FY04**
MIPR funds needed:	$231,100	$149,320	$0
Labor funds needed:	$50,000	$70,000	$39,109
Environmental compliance		$7,000	
Placement and effluent return plan		$7,000	
Report write ups and reviews		$12,500	$12,500

The original estimate was low because of insufficient time to coordinate with WES on the model studies (see the notes on the original estimate). The data collection effort for the H/S model was a tremendous 7-month effort to satisfy the ICT along with the storm surge task. The sponsor asked for Lamar help for the data collection which also added a contract administration cost. The H/S model had a problem with a storm event which has increased the study by $50,000. The ship simulator had to be given to a contractor which added more to the total amount. Also, Taylors Bayou was added on after the contract was awarded adding an extra $35,000. Two new model studies were added – Vessel Effects and Gulf Shoreline Erosion – to satisfy the ICT and the locals.

REAL ESTATE STUDIES
Apr 02 Update

The Real Estate effort will provide real estate investigations and estimates of value for alternative plans identified prior to the selection of the recommended plan. The Real Estate effort will also consist of the preparation of a Real Estate Plan (REP) and a Gross Appraisal for the recommended plan. The REP will contain information in sufficient detail to authorize acquisition of the real property required for the project. The Gross Appraisal will identify the cost of the lands required for the recommended plan. The Gross Appraisal and the REP will require review and approval from Headquarters. Real Estate personnel will provide the real estate portion of the baseline cost estimate, prepare status reports on assigned activities, review the Project Cooperation Agreement (PCA), and attend study team meetings and other meetings as needed (FSM, AFB, & FRC).

Mapping

Real Estate project planning maps will be developed from existing Real Estate Segment Maps, preliminary engineering design drawings, digital ortho-photos, and real property maps obtained from the county tax assessor's office. Real Estate will establish tract ownership data, determine the acreage, and recommend tract configuration for the required lands. The real estate planning maps will also show existing R.O.W. and placement area easements owned by the Government and/or the project sponsor. The Real Estate planning maps will be exhibits to the REP. The existing conventional (hand drawn) real estate segment maps which cover affected portions of the Sabine-Neches Waterway will be converted to electronic format (CADD) and will become the base maps for the Real Estate Project Maps. As design and ownership data are obtained they will be entered into the Real Estate planning maps and will be made available to the project sponsor to assist them with the acquisition of real property when the project is authorized.

Rights of Entry

Real Estate will obtain all rights-of-entry for any activity, such as survey and exploration that requires entry to private property.

Gross Appraisal

A gross appraisal for the recommended plan will be made in accordance with the Real Estate Handbook (ER 405-1-12). The appraiser shall perform a detailed inspection of the proposed project area, noting the number and

value of all improvements that fall within the project limits. The appraiser will also note those improvements lying near enough to the project limits to be impacted by the project and any unimproved land that may be damaged by the Project. Severance damages may be caused by loss of access, distortion of tracts or uneconomic remnants, and will be estimated as a lump sum for the recommended plan. During property inspection, the appraiser will note which improvements are business-related, owner-occupied, or tenant occupied residences. This information will be used in arriving at the amount (if any) of relocation assistance required by Public Law 91-646 (Uniform Relocation Assistance and Real Property Acquisition Act of 1970), as amended. The appraiser will also note the number and type of oil and/or gas wells and other related equipment and/or improvements that would be affected by the Project. This information will be used if it is necessary to acquire or subordinate any mineral rights. The appraiser will prepare a written report giving a general description of the project area, a summary of the highest and best use of the land involved, a summary of sales and offer data with location maps, and a detailed breakdown of the value of the required lands and improvements, for the recommended plan.

Real Estate Plan

The Real Estate Plan (REP), prepared for the recommended plan will contain land values supported by the Gross Appraisal. Other required topics of discussion include the following:

Project description
Land requirements
Federally owned land within the project area
Navigation Servitude issues relevant to the project
Public law 91-646 (relocations)
Project Sponsor's Land Acquisition Ability
Project Cooperation Agreement Issues
Base Line Cost Estimate for Real Estate
Mineral activity in the project area
Environmental Restoration and/or Mitigation
Proposed Estates
Acquisition Schedule
Relocation of Utilities/Facilities (Pipelines & Cables)
Impact on Aids to Navigation
Hazardous & Toxic Waste
Attitudes of Landowners
Recommendations

Environmental Restoration/Mitigation

This project has the potential to include mitigation and or environmental restoration efforts associated with the removal and placement of dredge material. If restoration/mitigation activities take place in waters adjacent to the project, acquisition of additional lands will be unnecessary, because the Government will exercise its rights under the Navigation Servitude to secure any sub aqueous placement sites that are required. If, on the other hand mitigation/restoration were to take place on upland sites, the project sponsor would be required to acquire additional tracts in fee. Costs associated with the acquisition of additional upland sites would rise incrementally, based on the total number and size of the tracts to be acquired.

Pipeline and Cable Relocation/Removal

There are sixty-five pipelines below channel that may require relocation or removal. A determination of which of the facilities will require relocation (substitute facility) and which will be considered removals will be made during the feasibility study. Under existing policy, reflected in the Water Resources Act of 1986 and Policy Guidance 44, the expense of relocations of facilities or utilities located in navigable waters will be split 50-50 by the facility owner and the project sponsor for any portion of the Project that has an authorized depth lower than 45 feet. Removal of facilities for any portions of the Project that have an authorized depth of 45 feet or above are also covered by PGL 44. Under the current policy, the project sponsor is supposed to perform or assure the performance of relocations in navigable waters for projects at or above 45 feet. If neither the sponsor nor the State of Texas has independent authority to require the relocation of facilities in navigable waters at owner expense, PGL 44 provides that the sponsor and the Governor must request the Corps to exercise its navigation servitude then we are allowed to do so. In that event, the cost of the shallow draft relocations would be borne by the owners of the facilities. Determination of removals and relocations requires the preparation of Preliminary Attorneys Opinions of Compensability for each facility. Compensability reports require investigation of any real property interest the facility owner may have and whether or not there is a public necessity for the continuation of the service provided by the facility. An additional requirement will be a legal analysis of the sponsor's legal capability to compel removal of facilities at the owner’s cost.

Real Estate Study Costs

The amounts listed below take into account man-hour and staffing requirements for the various tasks identified, and are based on past experience with real estate studies of a similar nature. The specific land requirements for this project are not yet known, however generally speaking the material from the proposed

improvements to inland waterways will be placed in existing upland placement areas. Since most of the existing upland sites were acquired with temporary or revocable easements, a significant number of new permanent easements will be a requirement. Along with the acquisition of new easements over the upland sites, the project sponsor will be required to provide access road and dredge pipeline routes to the various sites. The costs shown below reflect the costs associated with acquisition of long term easements over existing upland placement areas. Costs will increase commensurate with additional real estate requirements. In the chart below the cost of each real estate study activity is divided between the project sponsor and the Government according each entity's anticipated contribution to the specific task.

Real Estate Activity Costs	**Days**	**Federal**	**Sponsor**	**Total**
Preparation of the Gross Appraisal	44	$ 30,000	$ 0	$ 30,000
Preparation of REP	55	45,000	5,000	50,000
Evaluation of Alternative Plans	14	15,000	5,000	20,000
Preparation of Base Line Cost Estimate	2	3,000	0	3,000
Study Team Meetings (including travel)	8	6,000	3,000	9,000
Obtaining Rights-of-Entry	3	3,000	3,000	6,000
Surveying and Mapping	3	3,000	7,000	10,000
Ownership Data Compilation	3	2,000	3,000	5,000
Relocations of Facilities/Utilities	17	30,000	10,000	40,000
Environmental Restoration Site Investigation	6	4,000	3,000	7,000
Internal Review	4	5,000	0	5,000
Clerical activities	2	1,000	1,000	2,000
Comment Response	3	5,000	0	5,000
Total		$ 152,000	$ 40,000	$ 192,000

A description of work product requirements which will be the basis for crediting of Real Estate study cost expenses incurred by the project sponsor are as follows:

Preparation of REP - The sponsor will provide information in writing that describes the real estate aspects of the project from their point of view. This information will include an explanation of any controversial issues or potential problems known to them, with recommendations for local solutions.

Evaluation of Alternative Plans – The Corps will present all alternative plans to the sponsor as they are identified. It will be the responsibility of the sponsor to evaluate the alternatives and provide written comments and recommendations that address real estate issues related to each alternative.

Study Team Meetings - The sponsor will send representatives who are knowledgeable with regard to real estate issues to all meetings held in the Galveston District Headquarters. The sponsor will also provide facilities suitable for study team and public meetings in Beaumont-Port Arthur area when they are deemed necessary by the Chief of Real Estate. The sponsor will coordinate and attend site visits as necessary.

Obtaining Rights of Entry - The sponsor will identify owners (names, addresses, and telephone numbers) of property on which access is required for the purpose of planning the project. Corps Real Estate personnel will prepare and acquire the rights of entry.

Surveying and Mapping - The sponsor will provide all survey and mapping information needed to identify the configuration of each tract of land to be acquired in the recommended plan. The survey may also identify severed (remaining) lands for each of the required ownerships. All surveys will be performed by a Registered Public Land Surveyor and will include preliminary Tract Maps and Legal Descriptions. All surveys, maps, and legal descriptions will be subject to review by Corps real estate personnel.

Ownership Data Compilation - The sponsor will provide ownership data for all alternatives and the recommended plan upon request. This will include identification of tract ownership through courthouse research and or the use contracted services.

Relocations/Removals of Facilities/Utilities - The sponsor will quantify the affected facilities based on preliminary channel template specifications provided by the Corps. The sponsor will obtain data on the affected facilities in order to verify depths, locations, product, ownership and other information which the Corps may deem useful in planning this portion of the project.

Environmental Restoration Sites - The sponsor will take an active role in the development of the environmental restoration features of the project. The sponsor will assist the Corps and other federal and state agencies with site selection criteria. The sponsor will also review and provide written comments and recommendations after the Environmental Restoration plan has been formulated.

Clerical Activities - Preparation of reports, review comments, etc

Real Estate Activity Costs Apr 02 update	Days	Federal	Sponsor	Total
**Preparation of the Gross Appraisal	**65**	**$52,000**	**$ 0**	**$ 52,000**
**Preparation of REP	55	45,000	5,000	50,000
**Evaluation of Alternative Plans	**55**	**45,000**	**5,000**	**50,000**
**Preparation of Base Line Cost Estimate	4	3,000	0	3,000
**Study Team Meetings (including travel)	8	6,000	3,000	9,000
**Obtaining Rights-of-Entry	**25**	**20,000**	**3,000**	**23,000**
**Surveying and Mapping	4	3,000	7,000	10,000
**Ownership Data Compilation	**35**	**28,000**	**3,000**	**31,000**
**Relocations of Facilities/Utilities	**88**	**70,700**	**10,000**	**80,700**
**Environmental Restoration Site Investigation	5	4,000	3,000	7,000
**Internal Review	6	5,000	0	5,000
**Clerical activities	2	1,000	1,000	2,000
**Comment Response	6	5,000	0	5,000
Total		**$ 287,700**	**$ 40,000**	**$327,700**

April 2002 Revised Real Estate PMP Estimate $287,700.00
Funds spent to date $101,700 as of 13 Apr 02.

	Remainder of FY02	**FY03**	**FY04**
Labors needs	$50,000	$124,000	$12,000

Reasons for overrun:

1. Preparation of Gross Appraisal – (additional $22,000.00)
   Because of the additional alternatives reviewed and with many placement areas being revoked or terminated, these will now need to be addressed in appraisal as additional lands to be identified and acquired.

2. Evaluation of Alternative Plans – (additional $30,000.00)
   More alternative plans have been reviewed than originally anticipated.

3. Obtaining R-O-E – (additional $17,000.00)
   Rights-of-Entries have been extremely difficult to obtain. Acquisition of rights have required several attempts and numerous calls to landowners and sponsor.

4. Ownership Data Compilation – (additional $26,000.00)
   Because of the various and additional alternatives, ownership data has become difficult to obtain. One instance is that the Neches River is the County dividing line and there are several isolated islands where turning basins are proposed. Ownership of these islands have yet to be determined since neither adjacent counties claim them. Title evidence will be required. There will be a cost for

the contract administration and the cost of title evidence.

5. Relocation of Facilities/Utilities – (additional $40,700.00)
   There are several issues that have come up with pipeline relocation and costs. Lots of coordination has taken place with District disciplines and Sponsor. Also, an estimate of cost for the writing of compensability reports for each relocated facility was inadvertently omitted.

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SECTION IV - FEASIBILITY STUDY COST

Cost item	Federal	Sponsor	Total
Project Management Costs	$ 250,000	$ 0	$ 250,000
Overall Study Supervision Costs	178,000	84,000	262,000
Review Meetings and Conferences Costs	60,000	15,000	75,000
Public Involvement and Coordination Costs	42,000	14,000	56,000
Plan Formulation and Evaluation Costs	79,000	18,000	97,000
Report Preparation Costs	312,000	10,000	322,000
Review Support Costs	45,000	5,000	50,000
Environmental Study Costs	735,000	0	735,000
Economic and Social Analysis Costs	456,000	4,000	460,000
Engineering Mgmt. and Support Branch Costs	412,000	0	412,000
General Engineering Section Study Costs	496,900	0	496,900
Geotechnical and Surveys Investigation Costs	1,418,700	0	1,418,700
Design Analysis Costs	50,000	0	50,000
Cost Engineering Costs	104,000	0	104,000
Hydrology and Hydraulics Investigations Costs	1,603,000	0	1,603,000
Real Estate Activity Costs	152,000	40,000	192,000
Contingencies	300,000	0	300,000
Total	$ 6,693,600	$ 190,000	$ 6,883,600
Cash Payment	(3,251,800)	3,251,800	0
Apportioned Cost	$ 3,441,800	$ 3,441,800	$ 6,883,600

FY02 Study Cost with price levels and inflation adjustments (includes $125,000 for Recon) $7,865,000

Revised - Apr 02

SECTION IV - FEASIBILITY STUDY COST

Cost item	Federal	Sponsor	Total
Project Management Costs	$ 370,000	$ 0	$ 370,000
Overall Study Supervision Costs	166,750	84,000	250,750
Review Meetings and Conferences Costs	56,550	15,000	71,550
Public Involvement and Coordination Costs	39,650	14,000	53,650
Plan Formulation and Evaluation Costs	83,850	18,000	101,850
Report Preparation Costs	186,500	10,000	196,500
Review Support Costs	60,000	5,000	60,000
Environmental Study Costs	1,328,625	0	1,328,625
Economic and Social Analysis Costs	373,483	4,000	377,483
Engineering Mgmt. and Support Branch Costs	437,472	0	437,472
General Engineering Section Study Costs	681,200	0	681,200
Geotechnical and Surveys Investigation Costs	2,155,963	0	2,155,963
Design Analysis Costs	70,600	0	70,600
Cost Engineering Costs	193,000	0	193,000
Hydrology and Hydraulics Investigations Costs	2,475,280	0	2,475,280
Real Estate Activity Costs	287,700	40,000	327,000
Total	$8,966,623	$ 190,000	$9,156,623
Cash Payment	(4,388,311)	4,388,311	0
Apportioned Cost	$4,578,311	$4,578,311	$9,156,623
Recon			$125,000
Total Study Costs			**$9,281,623**

Appendix A - Sabine-Neches Waterway Feasibility Study

Strategic Communication Plan

Introduction:

This is a process for developing a communication strategy to be used in Project Management Plans. However, it can work across the organization, at different levels, and for any size and type of project. It is designed to help structure a thought process for an effective communication plan.

The following elements should be considered in developing a communication strategy for the life cycle of a project.

1. **The PDT needs to ask:**
   a. Who is affected by the project?
   b. Who affects the project? How and why? Consider geography, economics, quality of life, and political sensitivity when determining internal and external interested parties.
   c. Document this information for easy access by the PDT, review and update as needed.

2. **What are the problems, concerns and/or issues?**
   - Issues to be considered include:
     -Technical
     -Institutional
     -Political (Tribal, Federal, State, Local)
     -Environmental
     -Economic/Fiscal
     -Cultural
     -Other

   - How do these problems/concerns/issues affect the project?

3. **Listen, understand and validate expectations, problems, concerns, and issues.**
   - How to get to the issues:
     -Talk with local sponsors/customers
     -Look at existing documents
     -Talk with interest groups

   - Partner/customer has major input into strategic communications –
     TALK WITH THEM!

4. Design communication strategy for each interested party and link to milestones.

- Determine key decision points in the project/study according to the following:
    1. Information requirements/expectations.
    2. Project schedule milestones.
    3. Note impacts, and how extensive (risk management)

- Analyze the relationship between key decision points and the stakeholders' concerns

- Develop key messages for each step of the process that consider the following characteristics for an effective message (ensure a match with goals and objectives):
    1. Timeliness
    2. Clarity
    3. Honesty
    4. Sensitivity
    5. Relevance
    6. Openness
    7. Consistency

- Design specific steps that consider the following options:
    1. Utilize the toolbox.
    2. Request for professional assistance.
    3. Note potential schedule/budget constraints.

- Plan for 360-degree feedback with interested parties.

5. Evaluate success

a. Did the strategy allow us to define the playing field?
b. Did the strategy allow us to frame the issues?
c. Did the strategy bind us to our partners publicly?
d. Was the majority of the dialogue fact based rather than emotional?

US Army Corps of Engineers
Galveston District

Galveston District
Southwestern Division

Project Management Plan
Amendment #1

Sabine-Neches Waterway, Texas

Channel Improvement Project

Feasibility Study Phase

October 2003
SABINE-NECHES WATERWAY, TEXAS

Overview

This PMP amendment #1 was prepared by the SNWW study team members to reflect the changes in scope and cost and include reasons for the changes as compared to the revised PMP dated April 2002. It also incorporates the Public Involvement Plan for SNWW. This estimate is based on a project completion date of September 2005.

Revised – Oct 03

SECTION IV - FEASIBILITY STUDY COST

Cost item	Federal	Sponsor	Total
Project Management Costs	$ 520,000	$ 0	$ 520,000
Overall Study Supervision Costs	166,750	84,000	250,750
Review Meetings and Conferences Costs	78,550	15,000	93,550
Public Involvement and Coordination Costs	46,650	14,000	60,650
Plan Formulation and Evaluation Costs	83,850	18,000	101,850
Report Preparation Costs	272,500	10,000	282,500
Review Support Costs	113,000	5,000	118,000
Environmental Study Costs	1,978,491	0	1,978,491
Economic and Social Analysis Costs	447,483	4,000	451,483
Engineering Mgmt. and Support Branch Costs	578,000	0	578,000
General Engineering Section Study Costs	546,200	52,500	598,700
Geotechnical and Surveys Investigation Costs	2,345,963	0	2,345,963
Design Analysis Costs	95,000	0	95,000
Cost Engineering Costs	243,000	0	243,000
Hydrology and Hydraulics Investigations Costs	2,603,671	0	2,603,671
Real Estate Activity Costs	375,700	117,500	493,200
Total	$10,494,808	$ 319,500	$10,814,808
Cash Payment	(5,087,904)	$5,087,904	0
Apportioned Cost	$5,407,404	$5,407,404	$10,814,808
Recon			$125,000

Total Study Costs **$10,939,808***

*Includes $499,160 for FY 05

Changes from the Apr 02 update

Cost item	
Project Management Costs	$ 150,000
Overall Study Supervision Costs	0
Review Meetings and Conferences Costs	22,000
Public Involvement and Coordination Costs	7,000
Plan Formulation and Evaluation Costs	0
Report Preparation Costs	86,000
Review Support Costs	53,000
Environmental Study Costs	649,866
Economic and Social Analysis Costs	74,000
Engineering Mgmt. and Support Branch Costs	140,602
General Engineering Section Study Costs	(135,000)
Geotechnical and Surveys Investigation Costs	190,000
Design Analysis Costs	24,400
Cost Engineering Costs	50,000
Hydrology and Hydraulics Investigations Costs	128,391
Real Estate Activity Costs	88,000
Recon	$125,000
	$1,653,185

FY 05 SNWW Funding Estimate (Oct 2004– June 2005)
Planning (does not include Economics)

	Labor
Meetings/scheduling/misc.	$10,000
AFB	$6,000
FRC	$6,000
Public Involvement	$5,000
Public Notice	$2,000
Report Writing	$86,000
Subtotal	$115,000
S&A support (20%)	$23,000
Subtotal	$138,000
Contract: ITR contract	$30,000
Total	$168,000

FY 05 PM estimate

Attend Study team meetings	$16,000
Monitor Obligations	$16,000
Review budgeting and programming documents	$16,000
Project Correspondence	$8,000
Coord report & review with sponsor	$16,000
PROMIS	$8,000
Total	$80,000

FY 05 Other Sections

Real Estate	$50,000
Economics	$25,000
Engineering	$50,000
Environmental	$126,160
Total	$251,160

FY05 Total	**$499,160**

Supporting Data for the PMP increases

SNWW memo on labor/contract increases for FY03

Project Management

Additional time needed to coordinate the NED plan, erosion issues and tracking of the ERDC studies, esp. the H/S model. Additional tracking of funds by PM and Programs were also needed based on the CRA and time needed to develop budget requests for FY04 and 05. Costs for CADD/GIS were not accounted for in the original estimate.

Planning

The increases in funding charges from the Planning Section appear to mainly be from supervisory and administrative charges. The additional supervisory charges were warranted since we had several meetings for the selection of the NED plan and then more recently, discussions on the erosion issues and coordination with the team on the lock alternative. Approximate $10,000 of charges (for a 7-mo period) by administrative personnel and were not included in the Apr 03 estimate.

Economics

Additional time for economic analysis support for the IPR, identification of the NED and write up of the lock alternative.

Cost Estimating

Cost overruns for EC-E are due to additional, unscheduled requests for cost estimates performed during the 1st quarter of the FY and efforts to prepare a cost for the lock alternative. There may be some additional, unscheduled costs to be done in the coming months, prior to preparation of the MCACES estimate, for BUS and salinity control structures.

Geotech

Increase due to turnover of personnel and time required to get the person up to speed on the project plus more oversight of the A-E contracts contributed to the increase. Additional labor was needed to prepare the geotech portion of the lock alternative.

H&H

Increases due to personnel changes and the delay in the H/S model validation by ERDC required more time to keep track of the study progress. Additional labor for ERDC was needed for the H/S model and vessel effects.

General Engineering

Performed additional quantity take offs than originally planned, accelerated some tasks that were scheduled for FY04 and attended additional meetings for clarification of on-going progresses such as erosion issues. Additional labor was also expended on the lock alternative.

Environmental
Additional coordination with ERDC, the ICT and workgroups on the H/S model as well developing and negotiating the SOW for the EIS with the contractor.

FY03 Contract Increases

EIS Baseline	$29,441
Historic Properties	$29,187
ERDC Labor	$64,000
Vessel Effects Study	$17,000
ERDC travel	$ 3,000
CADD/GIS	$40,000
Total	$182,628

Sabine-Neches Waterway
FY 04 Funding

Section	Labor Apr 02	Labor Oct 03	Contract Apr 02	Contract Oct 03
Programs/PM	$40,000	70,000	$10,000	$50,000[1]
Planning	$114,200	114,200	$40,000	$40,000
Environmental	$75,000	128,700	$70,000	$528,000[2]
Economics	$20,000	44,000	$0	$25,000[3]
Project Engineering	$44,472	135,000	$0	
General Engineering	$21,400	65,000	$178,600	(178,600)[4]
Geotech	$20,000	60,000	$0	$ 150,000[5]
Structures	$5,600	30,000	$0	
Cost	$13,000	63,000	$0	
H&H	$51,609	60,000	$0	$120,000[6]
Real Estate	$12,000	50,000	$0	
Total	$417,281	$819,900	$298,600	$734,400

Revised FY04 estimate- $1,554,300
Previous FY04 estimate- $715,881
Increase $838,419

Total $1,554,300
Carryover from FY03 $ 200,000
New Total $1,354,300

1/ Includes $40K for CADD/GIS

2/ $150K-EIS; $25K-Cultural; $83K-W/S Quality; $200K-ODMDS; $23K- ICT;

$27K – USFWS; $20K – ITR

3/ Includes $25K for Financial Analysis

4/ Deferred surveys for first set of P&S to PED

5/ Includes $100K for BU mod and $50K for DMMP mod

6/ Inlcludes $60K add H/S model runs and $60K for ERDC labor

Costs not included in this estimate and deferred to PED

Historic Properties	$150,000
Survey costs	$178,600

Changes to estimate

Task	Cost
ODMDS	$200,000*
EIS Baseline Data	$29,441**
EIS Impacts/Report	$53,428**
Historic Properties	$54,187**
Water & Sediment Quality	$83,000*
Add H/S Model Runs	$60,000*
Add ERDC support	$60,000**
ICT	$23,000**
USFWS	$28,000**
DMMP Mod	$50,000**
BU Mod	$100,000**
CADD/GIS FY04	$40,000*

* New task not included in April 02 PMP
** Increases to existing tasks in the PMP

SNWW PMP – FY04 Environmental Revisions with FY03 Estimate Provided for Comparison
October 24, 2003

Revised Estimate (April 03)

ENVIRONMENTAL STUDY COSTS Total	Days	Federal	Sponsor	
EIS Studies & Report Preparation				
Contracts				
Environmental Baseline Studies		**$220,686**	$0	$**220,686**
Interagency Coordination Team Support		99,400	0	99,400
EIS Impacts/Integrated Report		**303,428**	0	**303,428**
Historic Properties Surveys		**329,187**	0	**329,187**
ODMDS Testing		**200,000**	0	**200,000**
HTRW		**50,000**	0	**50,000**
Water & Sediment Quality		**62,000**	0	**62,000**
Labor	699	419,400	0	419,400
USFWS Coordination Act Report				
Contracts		**97,050**	0	**97,050**
Labor	8	4,800	0	4,800
Public Involvement				
Contracts				
Public Scoping Meetings		22,130	0	22,130
Labor	60	36,000	0	36,000
Independent Technical Review				
Contract		40,000	0	40,000
Labor	17	10,200	0	10,200
Total	784	$1,958,931		$1,958,931

	To Date	FY03 Remainder	Fy03 Cumm	Fy04	Total
Contracts/MIPRs	$740,281	$518,150	$1,258,431	$230,100	$1,488,531
Labor	303,000	64,200	367,200	103,200	470,400
Total	1,043,281	582,350	1,625,631	333,300	1,958,931

FY03 Environmental Studies revisions to the SNWW PMP increased the study costs and justification for FY03 revisions are provided for each study area below:

Environmental Baseline Studies: Biological resource data collection in conjunction with the EIS Baseline Affected Environment report required more extensive research than was originally anticipated. Costs for this section of the Affected Environment report increased by $29,441 because of scope changes. Tasks were added to provide expanded descriptions of erosion concerns along the inland waterway and coastal shoreline. HTRW costs for preparation of the EIS Baseline report also increased because an HTRW survey task was not conducted by Lamar University as part of their pipeline research task as expected, thereby requiring that it be added to the environmental baseline task order. Socioeconomic profile data collection for the EIS Baseline

report required more extensive research by the Contractor than was originally anticipated and more oversight and involvement by in-house staff than was expected.

EIS Impacts/Integrated Feasibility Report: The total estimated cost for this item increased $103,428 (from $200,000 to $303,428) to cover additional contract costs for preparation and distribution of an integrated Feasibility Report/EIS. However, the actual cost increase is $50,000 less or $53,428 because the EIS report preparation line item in the FY02 estimate ($50,000) is now included in this line item. The original estimate assumed that a separate EIS report would be produced and that the feasibility report would be produced and distributed by in-house Planning Division staff. The Planning Section estimate is being revised to delete in-house costs associated with this task. The estimated contract increase will cover additional report writing and preparation costs, and additional distribution and publication costs. It also covers higher than anticipated GIS contract costs. The baseline archeological inventory yielded a much larger number of properties than was anticipated, requiring additional GIS mapping efforts during the impact analysis.

Historic Properties Investigations: Estimated costs for historic properties investigations have increased by a total of $229,187 (from $100,000 to $329,187). An estimated $189,187 is associated with increased contract costs for submerged historic properties and $40,000 (contract) is associated with newly identified costs for terrestrial historic properties investigations.

The revised estimate includes an additional $29,187 for the current survey of the existing channel (already expended), an estimated $110,000 for close-order survey and diver assessment in the inland channel reach, and an estimated $50,000 for marine survey of beneficial use areas and the offshore channel extension and new placement areas. Costs for the completed marine survey of the existing channel increased by $29,187 because the work included data collection for general engineering (pipeline locations) and environmental (oyster bed surveys) that was not included in environmental estimates. Estimated future costs for remote-sensing surveys of submerged properties are higher than the revised FY 02 estimate because the Corps anticipated surveying only high probability segments of the project area. Coordination with the SHPO has resulted in identification of the entire waterway as a high probability area, thereby requiring survey of the entire waterway from the 3 mile limit of State waters in the Gulf to the City of Beaumont. The $110,000 estimated for close order survey and diver assessment is scheduled for execution in FY 2003. This cost assumes that 12 to 15 areas will require close order survey and 3 diver assessments will be required. An additional $50,000 in contract costs estimated to be expended in FY04 for marine close-order survey of selected beneficial use areas in the Sabine Lake and Sabine Pass area, and survey of potentially-significant anomalies that would be impacted by the proposed channel extension and new offshore placement areas. No estimates are included for mitigation of impacts to significant submerged historic properties. The estimates assume that all impacts to potentially significant properties can be avoided, and that no data recovery investigations will be necessary. If impacts cannot be avoided and cultural resource mitigation is necessary for submerged historic properties, this will result in increased costs.

Terrestrial survey costs are estimated at $40,000 in additional contract costs for FY 03. No terrestrial survey costs were included in either the original PSP or FY02 revision because no new terrestrial impacts were identified with original project plans. Beneficial use proposals have added some terrestrial areas to the project impact areas. Terrestrial survey will be conducted only of those areas that are relatively certain to be included in the final plan. This estimate assumes that impacts to potentially significant properties can be avoided, and that no National Register testing or data recovery investigations will be necessary. If impacts cannot be avoided and cultural resource mitigation is necessary for terrestrial historic properties, this will result in increased costs.

ODMDS Studies (Ocean Dredged Material Disposal Sites): The total cost for ODMDS studies is estimated at to be $200,000. These are necessary to identify areas for placement of dredged material along the channel extension. These studies were not identified in the PSP or FY 02 revision. It was anticipated that funds from the Environmental Protection Agency (EPA) would be available to cover some of the cost of these studies. EPA contacts have now verified that FY03

funds will not be provided for the SNWW project. We are, however, exploring whether FY04 may be available to cover a portion of these costs.

HTRW Studies: $50,000 has been reserved for special HTRW studies as a contingency for studies of contaminated areas, should the need be identified.

Water and Sediment Quality: $62,000 was reserved for water and sediment studies in the FY99 PSP. In the FY02 revision, it was assumed that these studies were covered in the EIS baseline contract and that evaluation of water and sediment quality impacts could be accomplished with existing data. After evaluation of existing information and agency comments, the need for a separate water and sediment field data collection effort was recognized. Sampling will need to be conducted in certain reaches which have no current data. The FY99 estimate appears sufficient for this effort at this time, assuming that no bioassays will be required. If bioassays are required, this will result in increased costs.

ENVIRONMENTAL STUDY COSTS Revised Estimate (Oct 03)

	To Date	FY03 Remainder	Fy03 Cumm	Fy04	Fy05	Total
Contracts/MIPRs	$740,281	$518,150	$828,431	$528,000	$50,000	$1,406,431
Labor	303,000	64,200	367,200	128,700	76,160	572,060
Total	$1,043,281	$582,350	$1,195,631	$656,700	$126,160	$1,978,491

FY04 Changes

As explained below, some costs for HTRW and Historic Properties were removed, while new costs were added for the ODMDS EIS, and costs increased for ICT support, water/sediment analysis, USFWS coordination and FY05 in-house labor.

ICT – additional $23,000 added for ICT support in FY 04; required because ICT effort has increased for evaluating H/S model.

Historic Properties –Reduced significantly from April 03 estimate by decision to move further surveys and assessment to PED; $25,000 more estimated in 04 to finalize report already prepared.

HTRW - $50,000 contingency cost removed. No specific need identified at this date.

Water and Sediment Quality Assessment – increased by $21,000 to actual cost of contract at $83,000.

USFWS Coordination Act Report – FY04 contact with USFWS is estimated to increase by $11,725 because of additional effort associated with coordination act report preparation.

Labor – Previous estimate for FY04 increased by 15% to cover supervision and administration – amount increases from $103,200 (Apr 03 estimate) to $128,700.

FY05 Estimate:

EIS/Feas Report Preparation - $50,000 to complete EIS Impacts/Integrated Report contract

Labor $76,160; estimated same labor per month as projected for FY04 ($10,880/month). This includes 15% for S&A. The Oct FY03 schedule identifies 7 months of work for environmental section to incorporate ITR comments, prepare the PDEIS, prepare PMP for PED/construction, prepare materials for FRC, prepare draft and final EIS.

Sabine Neches Waterway (SNWW)
Public Involvement Plan

Introduction:

This public involvement plan develops a strategy to be used prior to and during the feasibility phase for the Sabine Neches Waterway (SNWW) deepening and widening project. The feasibility study is evaluating alternatives to modify the Sabine-Neches Waterway to reduce delays, increase safety, and increase efficiency of transporting commerce through the existing 40-foot deep waterway. Channel depths of 45, 48 and 50 feet are being investigated as well as increased channel width and barge lanes in some areas. A major effort in this study will be the identification and coordination of beneficial use areas for the placement of dredged material. The project is a cooperative effort between the Corps of Engineers as the Federal sponsor and the Jefferson County Waterway and Navigation District as the Non-Federal sponsor.

Goal:

The goal of this public involvement plan is to ensure that the feasibility study is responsive to the needs and concerns of all stakeholders to ensure public involvement through an open, interactive process. Stakeholders include all the various publics that could be affected or are interested in the project. The plan should both provide information to, and obtain information, from the stakeholders. It should provide sufficient information that the stakeholders can participate wisely and contribute to the plan formulation process.

Objectives:

Objectives of the plan are to:

a. Enhance public understanding of the need for the project, the range of alternatives studied, and the recommended plan for the project.
b. Identify all stakeholders and the best ways to communicate with each.
c. Learn the public's desires, needs, and concerns and make them known to decision-makers.
d. Explain the planning process and study progress.
e. Provide for consultation before decisions are reached.
f. Provide information about the results of environmental studies including the results of the salinity/circulation modeling, predicted impacts to fresh and saltwater marshes, water and sediment quality, threatened and endangered species, and induced changes in erosion.
g. Obtain views and concerns on proposed beneficial use areas, and mitigation features.
h. Solicit the public's views and comments for consideration in the decision-making process.
i. Disseminate study information and results in a wide variety of formats.
j. Provide a coherent, unified voice in communicating with the public.

Stakeholders: (Texas and Louisiana)

1. Resource agencies
2. Study area community
3. Waterway users (commercial, barge, recreational)
4. Land owners (public and private)
5. Industry
6. Local civic groups
7. Special Interest Groups
8. Texas DoT
9. Environmental groups
10. Congressional staff
11. Contributing sponsors
12. Local government entities

Level of Participation

	HIGH	
Agreeing to the decision		1,12
Having an influence upon the Decision		3, 5, 8, 10
Being heard before the final decision is made		2, 4, 6, 7, 9, 11
Being informed about the decision being made		All
	LOW	

Potential Public Involvement Techniques:

a. Status briefings
b. Media day/Boat trip
c. News releases
d. Newsletters/Fact Sheets
e. Web page
f. Small workgroup discussions
g. Public meetings
h. Interagency working groups
i. Exhibits/Displays

Stakeholders	Most Effective Techniques
1. Resource agencies	f, g, h
2. Study area community	b, g
3. Waterway users (commercial, barge, recreational)	b, d, f,
4. Land owners (public and private)	d, g
5. Industry	b, d,
6. Local civic groups	a, b, d
7. Special interest groups	d, g
8. Texas DoT	a, f
9. Environmental groups	d, g, h
10. Congressional staff	a, b
11. Contributing sponsors	a, b, d, f
12. Local government entities	a, b, d

Project Milestones Gameplan

H/S runs complete	Newsletter #1 (These are designed to provide information to all stakeholders during the long periods of the study in which no other public involvement activities are taking place. Interactive Workgroups/ERDC (Interagency coordination meetings in which resource agencies and the study team meet to approve and evaluate the H/S model results.
Select Recommended Plan	Interactive Workgroups/ERDC (Interagency coordination meetings in which resource agencies and the study team meet to agree upon selection of the recommended plan and the evaluation of impacts. Newsletter #2 (announce recommended plan and solicit small groups interested in small group meetings). Small group meetings (Study team members meet with interest groups to provide description of alternatives evaluation and selected plan. Team members would be matched with appropriate groups (i.e. Project Manager and Lead Sponsor - investing stakeholders; Planning Lead - industry groups/ Landowners; Environmental - environmental and historic preservation groups). A

	PowerPoint presentation would be prepared for use by all.
	Media day /Boat trip (Media from entire study area will be invited to travel and observe the channel and speak with team members, resource agencies, and non-federal sponsors. Publicity from this trip should generate public interest in the project and encourage greater participation in public meetings, which should be scheduled within 30 days of the media day)
	Interactive Public meetings (These should be interactive meetings in which questions can be posed by the public and answered by knowledgeable technical team members.)
	Beneficial Use plan meetings - Environmental will meet with those groups that asked for a return briefing on the recommended beneficial use plan.
Design of Recommended Plan	Newsletter #3 - Update on study progress and summary of all public involvement efforts.
Draft Integrated Report	Notice of Availability (Federal Register)
	Newsletter #4 - announce availability of draft report
	Formal public meeting - (formal public meeting with court reporter; no interaction; purpose is for the stakeholders to put their comments on the formal record.)
	Newsletter #5 - results of public meeting