**DEPARTMENT OF THE ARMY**
NORTH ATLANTIC DIVISION, US ARMY CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
BROOKLYN, NEW YORK 11252-6700

REPLY TO
ATTENTION OF

CENAD-PSD-P

DEC 17 2007

MEMORANDUM FOR Commander, Baltimore District, ATTN: CENAB-PL

SUBJECT: Review Plan Approval for Maryland Coastal Management Chesapeake Bay Shoreline Erosion Feasibility Study

1. Reference:

a. EC 1105-2-408, Peer Review of Decision Documents, 31 May 2005.

b. Memorandum, CECW-CP, 30 March 2007, subject: Peer Review Process.

2. The enclosed Review Plan for the Maryland Coastal Management Chesapeake Bay Shoreline Erosion Feasibility Study has been prepared in accordance with the referenced guidance.

3. The Plan has been made available for public comment, and any comments received have been incorporated. It has been coordinated with the Ecosystem Planning Center of Expertise of Mississippi Valley Division which is the lead office to execute this Plan. The Plan currently does not include external peer review.

4. I hereby approve this Plan, which is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Plan or its execution will require new written approval from this office.

Peter R Blum

Encl

for Joseph R. Vietri
Chief, Planning & Policy Community of Practice
Program Support Division
Programs Directorate

# QUALITY CONTROL AND PEER REVIEW PLAN

**Maryland Coastal Management**
**Chesapeake Bay Shoreline Erosion**
**Feasibility Study**

**In Partnership with:**
**Maryland Department of Natural Resources**

**General Investigation**

**November 2007**

## QUALITY CONTROL (QC) AND PEER REVIEW PLAN (PRP)

### 1.0 PURPOSE

This Peer Review Plan presents the process that assures quality products for the Maryland Coastal Management (Chesapeake Bay Shoreline Erosion) General Investigation (GI) Feasibility Study. This PRP defines the responsibilities and roles of each member on the study and technical review team.

The product to be reviewed by the technical review team is the integrated Feasibility Report. Under the provisions of new U.S. Army Corps of Engineers (USACE) policy, as detailed in EC1105-2-408 dated May 31, 2005, the independent technical review (ITR) will be conducted by specialists from organizations outside of the district responsible for the study. ITR will be conducted for all decision documents and will be independent of the technical production of the project. This PRP is, by reference, a part of the PMP for this Feasibility Study.

### 2.0 APPLICABILITY

This document provides the Quality Control Plan for the Feasibility Study. It identifies quality control processes and independent technical review for all work to be conducted under this study authority, including in-house, sponsor and contract work.

### 3.0 REFERENCES

EC 1105-2-408 "Peer Review of Decision Documents" (May 31, 2005)
EC 1105-2-407 "Planning Models Improvement Program: Model Certification" (May 31, 2005)
EC 1105-2-409 "Planning in a Collaborative Environment" (May 31, 2005)
ER 1105-2-100 "Planning Guidance Notebook & Appendices"

### 4.0 GENERAL PROJECT DESCRIPTION

The original authorizing language states: "That, the Secretary of the Army is requested to review the report of the Army Corps of Engineers on the Chesapeake Bay Study, dated September 1984, and other pertinent reports, with a view to conducting a comprehensive study of shoreline erosion and related sediment management measures which could be undertaken to protect the water and land resources of the Chesapeake Bay watershed and achieve the water quality conditions necessary to protect the Bay's living resources. The study shall be conducted in cooperation with other Federal agencies, the State of Maryland, the Commonwealth of Virginia, and the Commonwealth of Pennsylvania, and their political subdivisions and agencies and instrumentalities thereof and the Chesapeake Bay Program, and shall evaluate structural and nonstructural environmental enhancement opportunities and other innovative protection measures in the interest of ecosystem restoration and protection, and other allied purposes for the Chesapeake Bay."

The District, with approval from Headquarters, developed a separate feasibility study solely for the state of Maryland portion of the Chesapeake Bay shoreline. During the reconnaissance study for the Chesapeake Bay watershed, preliminary shoreline management opportunities were developed. The reconnaissance report discussed opportunities such as the development of a revised shoreline protection manual, comprehensive regional shore erosion projects, and the need for environmental restoration of marsh, beach, and bluff habitat as well as other coastal habitats. The study also identified the critical need for data collection and analysis. Additional issues include addressing hydrologic changes associated with sea level rise, developing innovative solutions to erosion, and improving the water quality within the Chesapeake Bay. The study recommended studies that addressed comprehensive environmental restoration and storm/flood damage reduction, moving away from site by site analysis.

## 5.0 REVIEW REQUIREMENTS

Initial Quality Control (QC) review will be handled within the Section or Branch performing the work or by staff in the corresponding Sponsor Department when it involves In-Kind Services. Additional QC will be performed by the Project Delivery Team (PDT) during the course of completing the integrated Feasibility Study. The detailed checks of computations and methodology should be performed at the District level, and the processes for this level of review are well established.

Pursuant to EC 1105-2-408, item 2 c (2), models used in the preparation of decision documents covered by this Circular will be reviewed in accordance with EC 1105-2-407, Planning Models Improvement Program: Model Certification, and are not subject to the requirements of this [1105-2-408] Circular. The uses and applications of models in individual studies that lead to the preparation of decision documents covered by this Circular will be reviewed in accordance with the requirements of this Circular. This study will be utilizing models to determine physical and economic conditions for the purpose of plan development and screening. The District will coordinate with the Ecosystem Restoration Planning Center of Expertise (ECO-PCX) to determine the need and process for model certification. The primary models being used include a wave model being run by the Engineering Research and Development Center (ERDC), a Hedonic pricing model, and GIS erosion vulnerability assessment analyses being done by the Virginia Institute of Marine Sciences (VIMS). These are discussed further in Section 10.2.

Pursuant to EC 1105-2-408, due to the somewhat complex nature of the planning phase of this project the integrated Feasibility Report will need an ITR team assigned by the Planning Center of Expertise (PCX) for Environmental Restoration (National Ecosystem Planning) Projects. Dr. Dave Vigh (CEMVD-RB-T) will assign this team. It is recommended that the ITR be handled entirely within USACE, as the scope and level of technical complexity do not warrant an External Peer Review (EPR), based upon the initial Risk Screening Process conducted by the PDT noted in Section 9. It is anticipated that while this study will be challenging and beneficial, it will not be novel, controversial or precedent setting, nor have highly significant national importance. North Atlantic Division has orally agreed to this conclusion. Approval of this plan will act as formal concurrence. It is understood that if the study undergoes a significant change in scope then this conclusion can be revisited. Currently, the total cost of implementation is not anticipated to exceed $40 million. As the study goes on and costs are developed, the anticipated

cost will be monitored to determine if EPR is ultimately required. If so, it will be coordinated with the ECO-PCX. As a result, the ITR will focus on:

- Review of the planning process and criteria applied.
- Review of the methods of preliminary analysis and design.
- Compliance with authority and NEPA requirements.
- Completeness of preliminary support documents.
- Spot checks for interdisciplinary coordination.

## 6.0 REVIEW PROCESS

It is anticipated that the ITR Team Review Process will begin after the ITR Team has been assigned, and will initially cover the Project Management Plan and the models to be used in the analysis. It is understood that, at a minimum, the ITR leader will come from a District outside of the North Atlantic Division. As alternative plans are formulated, the Review Process will focus on data, assumptions and the engineering, scientific, economic, social & environmental analysis process. It is understood that cost estimates will be reviewed by Walla Walla District in accordance with recent direction. Major Review Process milestones are listed below:

- Approval of Review Plan by NAD
- ITR team assigned by ECO-PCX
- Feasibility Scoping Meeting RAM to ITR
- Feasibility Scoping Meeting
- Formulation Analysis Notebook (P-7 RAM) to ITR Team
- P-7 Plan Formulation Meeting (NAD milestone)
- AFB RAM
- AFB
- Draft Report Review
- Final Report Review

## 7.0 REVIEW COST

The cost of the ITR is to be determined. It is assumed that documents to be reviewed will be transmitted electronically. Comments will be made and addressed in Dr. Checks. It is also assumed that the external ITR team will be working virtually. Only under extreme circumstances should the external ITR team, or a representative of that team, be required to physically attend team or milestone meetings. The team should participate in all P milestone meetings; however, via conference call or video tele-conference.

## 8.0 REVIEW SCHEDULE

Note that since the commencement of this study preceded the requirement for PCX involvement and development of this Review Plan, the review schedule below does not match the major review process milestone list above.

| TASK | START DATE | FINISH DATE |
|---|---|---|

| | | |
|---|---|---|
| Develop ITR Plan & post to Web Site, PCX | Apr-07 | Nov-07 |
| Identify ITR resources | Nov-07 | Jan-08 |
| PCX Approves or Assigns ITR Team | Jan-08 | |
| Review of Models | TBD | |
| ITR Team Review of FSM documents | Feb-08 | |
| Feasibility Scoping Meeting | Apr-08 | |
| Review of Formulation Analysis Notebook | TBD | |
| P-7 Meeting | TBD | |
| Preparation for AFB | Jun-08 | |
| Alternative Formulation Briefing | Aug-08 | |
| Review of Draft Feasibility Report | Jan-09 | |
| Review Final Feasibility Report | May-09 | |

## 9.0 PROJECT RISK

An initial project risk assessment was conducted by Baltimore District's study manager. Ultimately, the assessment of risk will be defined in coordination with the entire project team and the PCX. For this exercise, an assessment was made of the risk associated with this project based upon the factors discussed in EC 1105-2-408 paragraph 4.b and the project was rated quantitatively among five levels of project risk, ranging from low to high (risk score class). All factors were weighted equally and are described further below. The rater considered previous District project experiences when making this analysis. No attempt was made to tie this risk to a national scale of rating; however, it is assumed that the PCX will bring this perspective to their assessment of the rating.

- Project risk inherent in project complexity is handled in the first group of items and deals with the potential that the project will fail after it is ultimately constructed.
- Customer expectation risk is a measure of the level of expectation of the sponsor and the risk that we may not be able to meet them.
- Staff technical experience was assessed as a low degree of risk if the staff had a high level of ecosystem restoration experience, and a high degree of risk if the staff had minimal experience.
- The impact of project failure and the subsequent consequences are determined based on preliminary future, without project scenarios in conjunction with sponsor and technical team member input.
- The project schedule and cost were assessed a low degree of risk if they both remained flexible, and a high degree of risk if the project schedule and cost were to become fixed.

The score for the risk items were summed and the average value of the risk assessment scores was used to determine overall project risk level (Table 9.1). Based upon this analysis by the Corps study manager, the project is projected to carry a medium level of risk with a score of 3.2. The need for EPR is also determined by the project magnitude. Based on Table 9.1, the project magnitude score is 3.3, which is medium. The results of the evaluation are tabulated as follows:

**Table 9.1 Quality Control/Review Plan Score Guide**

| Project Risk Item | Assessment Score (Low Degree to High Degree) | | | | | Score |
|---|---|---|---|---|---|---|
| | Low | | Medium | | High | |
| Potential for Failure | 1 | 2 | 3 | 4 | 5 | 2 |
| Uncertainties of Predictions | 1 | 2 | 3 | 4 | 5 | 3 |
| Long Term Cumulative Effects/Customer Expectations | 1 | 2 | 3 | 4 | 5 | 5 |
| Staff Technical Experience | 1 | 2 | 3 | 4 | 5 | 4 |
| Failure Impact and Consequences | 1 | 2 | 3 | 4 | 5 | 2 |
| **Average Project Risk Assessment Score** | | | | | | **3.2** |
| | | | | | | |
| **Project Magnitude Item** | | | | | | |
| Product Schedule/Cost | 1 | 2 | 3 | 4 | 5 | 4 |
| Project Complexity | 1 | 2 | 3 | 4 | 5 | 4 |
| Project Benefits | 1 | 2 | 3 | 4 | 5 | 3 |
| Project Scale | 1 | 2 | 3 | 4 | 5 | 2 |
| **Average Project Magnitude Assessment Score** | | | | | | **3.3** |

## 10.0 REVIEW PLAN

The components of the Review Plan (external ITR only not Peer Review) were developed pursuant to the requirements of EC1105-2-408.

### 10.1 Team Information

The decision documents that will be the ultimate focus of the peer review process are the integrated Feasibility Report, the Division Commander's Public Notice, and the Environmental Record of Decision (ROD) for the Maryland Coastal Management (Chesapeake Bay Shoreline Erosion) Project General Investigation Feasibility Study. The purpose of the decision document will be to begin the approval process leading to the authorization to begin Plans & Specifications. The PDT is listed as follows. This list provides the names and points of contact of NAB team members that are available to answer specific technical questions as part of the Review Process. The list also provides the names and organization of participating outside entities.

**District PDT Members:**

CENAB-PPMD
Project Manager
410.962.3377

CENAB-PL
Study Team Leader
410.962.6715

CENAB-EN
Design Team Leader
410.962.6757

CENAB-PL
Biologist
410.962.6134

CENAB-EN
Civil (Hydraulic) Engineer
410.962.6759

CENAE
Regional Economist Support
978.318.8140

**Non-District PDT Members:**

Marcia Berman PhD.,
Virginia Institute of Marine Science
GIS and Erosion Vulnerability Modeling

Doug Lipton PhD.,
University of Maryland
Economic Modeling (Hedonic Pricing)

Institute for Water Resources
Economic Analysis Coordination

Elgin Perry, PhD.
Statistical Analysis

ERDC-EL-MS
Chesapeake Bay Modeling

**Independent Technical Review Team:**

It is requested that the ECO-PCX provide the Name, Organization, Discipline, Phone, & E-Mail for these disciplines-
Coastal (Hydraulic) Engineering
Geotechnical Engineering
Economics
Ecology
Environmental Plan Formulation
Cost Engineering (Walla Walla District)

**10.2 Scientific Information**

Based upon the self-evaluation by the PDT, it is unlikely that the USACE report to be disseminated will contain highly influential scientific information. The environmental restoration measures that were identified within the 905 (b) analysis will be evaluated using standard hydrologic, hydraulic, coastal, geotechnical and economic processes.

Economic and planning processes will additionally consider the Collaborative Planning EC (EC 1105-2-409). This EC describes the economic accounts that can be used to describe economic benefits. The four main economic accounts are national economic development (NED), national

ecosystem restoration (NER), regional economic development (RED), and the other social effects (OSE). Supporting Hedonic Pricing economic modeling will be performed to attempt to quantify the "Other Social Effects" account. The District's intent is to use the OSE account in plan formulation because we are taking seriously the Collaborative Planning EC. The District does not intend to use the Hedonic Pricing Model to determine a recommended plan but rather to follow the Collaborative Planning EC which allows the District to use the OSE account as one of the parameters to justify selecting one of the best buy plans (out of X number of best buy plans) as the NER plan. Therefore, the use of the OSE account to justify a plan is a post formulation but pre-NER selection activity.

The use of the Virginia Institute of Marine Science (VIMS) Erosion Vulnerability Assessment Tool (EVA) will allow for planning level problem identification and will not be used for the development of concept or detailed designs.

While the restoration and/or protection of shoreline living resources will require innovative steps to achieve quality habitat along the shoreline of a state that has laws allowing landowners "the right to hold back the sea," the efforts envisioned to date will not result in a highly influential scientific assessment.

**10.3 Timing**

The ITR process is envisioned to begin fall 2007 with an assessment of key models to be used in the evaluation and comparison of alternative plans in this feasibility study. It is anticipated that work would start within days of naming the external ITR team. The estimated schedule is noted in Part 8 of this Review Plan.

**10.4 External Peer Review Process**

No External Peer Review process is envisioned at this time. This assessment is supported by the evaluation of the PDT in March 2007 and tabulated as shown in Section 9 of this Review Plan.

**10.5 Public Comment**

Public involvement is anticipated throughout the Feasibility Study. The Public Involvement meeting dates have not been scheduled at this time; however, at a minimum there will be a public meeting held during the NEPA review of the draft document in fall of 2008. There will likely be more meetings than that since the study includes producing a master plan and shoreline protection manuals for citizens and professional. Coordination and input will be required. It is anticipated that minutes of Public Involvement Meetings will be disseminated to the ITR Team following the meetings. This will allow the public response to be available to the ITR team. Any public input gathered during the study process will be made available to the ITR team. For review of the final report, all public comments and responses will be included.

**10.6 ITR Reviewers**

It is anticipated that four to five reviewers total should be available in the following disciplines: 1) Coastal (Hydraulic) Engineering; 2) Geotechnical Engineering; 3) Economics; 4) Ecology; and 5) Environmental Plan Formulation. The reviewer contact information should be stated in Section 10.1 of this Review Plan.

The expertise that should be brought to the review team includes the following:

1) Coastal (Hydraulic) Engineering – The reviewer(s) should have extensive knowledge of estuary hydraulic modeling, wave dynamics and analysis. The reviewer(s) should also have a solid understanding of the hard (e.g. breakwaters) and soft (living; e.g. wetlands) shoreline protection measures.

2) Geotechnical Engineering - The reviewer(s) must have knowledge of coastal construction and design. The ultimate plan will likely be a combination of hard and soft protection measures. Settlement is always a concern in coastal environments, especially in estuaries.

3) Economics – The reviewer should have a solid understanding of Economic Models including cost effective incremental cost analysis (e.g. IWR Plan Suite) and Hedonic Pricing and their application to ecological restoration and public perception of risk.

4) Ecology – The reviewer should have a solid background in the restoration of tidal wetlands, beach and other shoreline habitats, and understand the factors that influence the reestablishment of native species of plants and animals.

5) Environmental Plan Formulation – The reviewer should have recent experience in reviewing Plan Formulation processes for multi-objective studies and be able to draw on "lessons learned" in advising the PDT of best practices.

**10.7 External Peer Review Selection**
Because an External Peer Review is not anticipated for this study, there is no EPR selection

**11.0 Approvals**

The PDT will carry out the review plan as described. The Study Manager will submit the plan to the PDT District Planning Chief for approval. Coordination with PCX will occur through the PDT District Planning Chief.

**DEPARTMENT OF THE ARMY**
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
VICKSBURG, MISSISSIPPI 39181-0080

REPLY TO
ATTENTION OF:

CEMVD-PD-N 19 November 2007

MEMORANDUM FOR Commander, North Atlantic Division
ATTN: Joe Vietri CENAD-PDS

SUBJECT: Chesapeake Bay Shoreline Erosion Study, Ecosystem Planning Center of Expertise Recommendation for Approval of Peer Review Plan

1. References:
   a. EC 1105-2-408, Peer Review of Decision documents, 31 May 2005.
   b. CECW-CP Memorandum, 30 March 2007, subject: Peer Review Process.
   c. Supplemental information for the "Peer Review Process" Memorandum, dated March 2007.

2. The proposed PRP has been coordinated with the National Ecosystem Planning Center of Expertise (ECO-PCX) and concurred in by the ECO-PCX. The PRP complies with all applicable policy and provides an adequate independent technical review of the plan formulation, engineering, and environmental analyses, and other aspects of the plan development. The ECO-PCX concurs with the conclusion that external peer review of this project is not necessary for the following reasons: (1) no influential scientific information will be produced by the study and (2) the risk was assessed as moderate. Non-substantive changes to this PRP do not require further approval.

3. The district should post the PRP to its web site and provide a link to the ECO-PCX for posting on their web page, as well as providing a copy of the final approved PRP to the ECO-PCX for their use. Before posting to the web site the names of Corps/Army employees should be removed in accordance with reference 1.c. above.

4. Conclusion. The ECO-PCX recommends the PRP for approval by NAD.

Rayford Wilbanks
Director, National Ecosystem Planning Center of Expertise

CF:
CEMVD-RB-T (D. Vigh)
CEMVR-PM-F (C. Knollenberg)
CENAB-PL (R. Pace)
CENAB-PL-P (A. Guise)
CENAB-PL-P (D. Bierly)
CENAB-PPMD (M. Dan)