

# **QUALITY CONTROL (QC) AND INDEPENDENT TECHNICAL REVIEW (ITR) PLAN**

## **1.0 PURPOSE**

This review plan presents the process that assures quality products for the North Shore of Long Island, Bayville, New York feasibility study. This QC and ITR plan 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 Bayville project's Beach Erosion Control and Storm Damage Reduction Feasibility Study. Under the provisions of new U.S. Army Corps of Engineers (USACE) policy, as detailed in EC1105-2-408 dated May 31, 2005, the 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 QC and ITR plan is, by reference, a part of the project management plan.

## **2.0 APPLICABILITY**

This document provides the quality control plan for the Bayville project's Beach Erosion Control and Storm Damage Reduction 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 and Appendices"

## **4.0 GENERAL PROJECT DESCRIPTION**

Bayville is a low-lying community bound by two water bodies: Long Island Sound to the north and Oyster Bay/Millneck Bay to the south. During periods of storm event, water levels of both the Sound and the Bay rise to exceptional height due to the combination of high astronomical tide and storm surge. The floodwater flows through low or damaged seawall and dune on Long Island Sound and through low-lying grounds on Bayside, causing severe flooding damages. In addition, interior drainage via gravity force is mostly blocked due to rise of surrounding sea level and ground water level. Historically, the worst inundated and flood damaged area is located approximately between Arlington Avenue to the west and West Harbor Drive to the east and between the north and south waterfront shorelines. The community north of Bayville Avenue confronts exceptionally high water level due to storm surge combined with large storm waves generated in Long Island Sound and breaking on the existing bulkhead seawall or segments of dune system.

Storm waves also undermine the toe of the shore protection structures or overtop the existing protective seawall and dune, resulting in eventual failure during storm. Breaking waves directly attack properties landward of failed seawall and/or dune, causing property damages. In addition, floodwater inundates the low ground and continues flowing to the low ground south of Bayville Avenue, causing inundated streets and basements. The average ground elevation in this area ranges from approximately +12 ft NGVD along northern shoreline to approximately +8 ft NGVD along Bayville Avenue. Average ground elevation is generally higher to the east of Ludlam Avenue (located approximately in the middle of the study area). In addition to direct wave damages to the seawall, dune, front row buildings, and road, additional properties on the low-lying ground are also inundated. During the December 1992 northeaster, storm waves crashed through seawalls and dunes, damaged buildings and foundations, and flooded basements and properties in the region north of Bayville Avenue. The hardest hit area was the waterfront structures near Ludlam Avenue with breaking waves and flood flows rushing through damaged buildings. The crest elevations of breaking waves were estimated at +14.5 to +15.0 ft NGVD while the flood elevation north of Bayville Avenue was estimated from +10.0 ft to +10.7 ft NGVD (Flood Mark Report and Mapping by Sydney Bowne, March, 2003).

Although the low-lying community south of Bayville Avenue is spared from direct wave attack, this area is vulnerable to storm water inundation due to surge flows from Long Island Sound through damaged seawalls and dunes to the north and from back Bay flood flows through low-lying marsh lands and roadway (West Harbor Drive). The average ground elevation in this area is generally lower to the west of Ludlam Avenue (+ 8 to +10 ft NGVD) and higher to the east (+10 to +12 ft NGVD). The average road elevation of West Harbor Drive, which rings the southeastern border of this area, is approximately +11.5 ft NGVD. Several low spots in this area at elevation +6.8 to +7.5 ft NGVD have served as temporary drainage basins. In addition to storm surge flows, heavy rainfall during storms (estimated at 3.5 inches during the 1992 northeaster) combined with saturated soil and higher ground water table also contributes to inundation.

During the 1992 northeaster, the floodwater elevations were estimated at approximately +10.5 to +11.0 ft NGVD south of Bayville Avenue. Floodwater would remain in the basement and on low ground for the duration of the storm due to lack of efficient internal drainage system, storm rainfall, and higher than normal groundwater level, causing prolonged flood damage. During the 1992 northeaster, approximately 1,000 homes, more than one-third of the total 2,437 homes in the Village, were affected by the storm. The damages range from failed seawalls, demolished homes, flooded basements/floors, and cars to irreplaceable pieces of personal valuables such as collections of antiques, old photographs, books, and furniture. Roadway was temporarily cut off, and many residents had to be in shelter due to interruption of utility and food supply. In summary, significant flooding from both the Sound and Bay combined with storm rain and high groundwater elevation will continue to cause property damage, traffic delays or interruption, and threats to life and safety under the existing condition.

The feasibility report under review will examine structural and nonstructural measures and formulate plans to reduce this beach erosion and storm damage. Plans will be formulated in accord with general

Planning Guidance and Collaborative Planning Guidance. Plans outlined in the draft feasibility study will emphasize beach erosion control and storm damage reduction activities that involve construction of structures, fill, or nonstructural measures and are most likely to be appropriate for Corps initiatives.

## **5.0 REVIEW REQUIREMENTS**

Initial Quality Control (QC) review has been handled within the Branch performing the work. Additional QC will be performed by the Project Delivery Team (PDT) during the course of completing the 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. For this study, one or more spreadsheet-based economic models will be utilized, which would need to be reviewed consistent with the current certification procedures.

Pursuant to EC 1105-2-408, the Feasibility study and EIS will need a full ITR team coordinated by the Planning Center of Expertise (PCX) for Coastal Storm Damage Reduction Projects. 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. The study is not controversial or precedent setting, nor does it have highly significant national importance so as to warrant risk abatement external peer review. As a result, the ITR will focus on:

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

## **6.0 REVIEW PROCESS**

The ITR review process has not commenced; as stated above, the PCX for Coastal Storm Damage Reduction will coordinate this process. The review will cover key formulation and benefit and cost assessment areas. Following completion of the draft feasibility study, which is indefinite at this time, the major review process milestones will be those listed below:

- 1 Draft Report Review
- 2 Final Report Review

## **7.0 REVIEW COST**

The final cost of the ITR is to be determined between the PDT and the PCX. It is

assumed that any remaining 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 travel to physically attend PDT or milestone meetings. The external ITR team should, with this constraint, participate in all remaining milestone meetings.

## 8.0 REVIEW SCHEDULE

The review schedule is as follows:

<u>TASK DATE</u>	<u>START DATE</u>	<u>FINISH</u>
Develop ITR Plan and post to Web Site, PCX	June 2007	July 2007
Identify Regional ITR resources and Recommend ITR Plan to PCX	July 2007 July 2007	
Sponsor Approves ITR Plan	indefinite	
Review of Models	N/A - standard	
Alternative Formulation Briefing		
Review of Draft Report	indefinite	
Review of Final Report	indefinite	

## 9.0 PROJECT RISK

The PDT has completed an initial risk assessment associated with this project based upon five factors and rated the project quantitatively among five levels of project risk of failure ranging from low to high (risk score class). The PDT scored each Project Risk Item in the Review Plan Score Guide (Table 9.1) and calculated an overall Average Project Risk Assessment Score. The exact value of the scores were not as important as compared to what risk score class (low, medium, or high) the Average Project Risk Assessment Score was classified as. Based upon the PDT analysis, the project is medium in risk because it did not receive an overall high risk score.

The PDT considered previous District project experience when making this analysis. No attempt was made to tie this to a national scale of rating. The Project Schedule and Cost were assessed as a low degree of risk if they both remained flexible and a high degree of risk if the Project schedule and cost was fixed. Staff Technical Experience was assessed as a low degree of risk if the staff had a high level of beach erosion control and coastal storm damage reduction experience and a high degree of risk if the staff had a low level of experience. The results of the evaluation are tabulated as follows:

**Table 9.1 Review Plan Score Guide**

<b>Project Risk Item</b>
--------------------------

Project Complexity
Customer Expectations
Product Schedule/Cost
Staff Technical Experience
Failure Impact and Consequences
<b>Average Project Risk Assessment Score</b>

## 10.0 REVIEW PLAN

The components of the review plan were developed pursuant to the requirements of EC1105-2-408.

### 10.1 Team Information

The decision document that will be the ultimate focus of the review process is the Bayville project's Beach Erosion Control and Storm Damage Reduction Feasibility Study. The purpose of the feasibility study and associated EIS will be to guide the Corps' efforts to control erosion and reduce storm damage at Bayville. This list provides the points of contact of NAN team members who 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 Project Team Members:

MAIN REPORT PRODUCT	STUDY TEAM MEMBERS	REVIEW TEAM MEMBER
Feasibility Report Main Text	Project Planner CENAN-PL-F	All review team members will review this document internally External ITR: TBD
NEPA Documentation	TBD CENAN-PL-E	All review team members will review this document internally External ITR: TBD

Sections	STUDY TEAM MEMBER	REVIEW TEAM
----------	-------------------	-------------

		<b>MEMBER</b>
Plan Formulation		TBD thru PCX
Economics		TBD thru PCX
Environmental	TBD	TBD thru PCX
Cultural Resources	TBD	TBD thru PCX
Real Estate		TBD thru PCX
Hydrology and Hydraulics		TBD thru PCX
Geotechnical/Structural		TBD thru PCX

### **10.2 Scientific Information**

Based upon the self evaluation by the PDT, it is unlikely that the USACE study to be disseminated will contain influential scientific information. Influential scientific information is defined by the Office of Management and Budget as scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.

### **10.3 Timing**

The ITR process will start upon coordination with the PCX--dependent on the completion of the draft feasibility study, which is indefinite at this time.

### **10.4 External Peer Review Process**

It is not anticipated that external peer review will be required. PCX and vertical team concurrence is required.

### **10.5 Public Comment**

Public involvement is anticipated during the outreach phase between the draft and final feasibility studies. As the former is still indefinite at this time, further public involvement activities have, therefore, not been scheduled at this time.

### **10.6 ITR Reviewers [This will be updated accordingly based on PDT and NAD negotiations.]**

It is anticipated that four to five reviewers total should be available in the following disciplines: coastal hydraulics and design, economics, geotechnical, planning, environmental, cultural resources, and cost estimating. The reviewer contact information should be stated in Section 10.1 of this review plan. Cost estimating, as required by HQUSACE, review will be conducted by Cost Estimating Center of Expertise (NWW).

### **10.7 External Peer Review Selection**

This will be determined conclusively in conjunction with the PCX and vertical team, if at odds with Section 10.4.