# GENERAL RE-EVALUATION REPORT
# APPENDIX E: QUALITY CONTROL
## SAVANNAH HARBOR EXPANSION PROJECT
Chatham County, Georgia and Jasper County, South Carolina

## January 2012

**US Army Corps of Engineers**
*Savannah District*
*South Atlantic Division*

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# QUALITY CONTROL PLAN

# SAVANNAH HARBOR EXPANSION PROJECT

# WRDA 1999 POST-AUTHORIZATION GENERAL REEVALUATION REPORT AND TIER II ENVIRONMENTAL IMPACT STATEMENT

## 1. INTRODUCTION

This Quality Control (QC) plan provides the process, methods, and technical review activities for the Savannah Harbor Expansion project, Georgia and South Carolina, General Reevaluation Report (GRR) and Tier II Environmental Impact Statement (EIS). The procedures that will be employed to insure quality products and compliance with all technical and policy requirements throughout the development of the GRR and Tier II EIS are described in this QC plan. This QC plan was previously updated in February 2006. Since that time, the Water Resources Development Act of 2007 (WRDA 2007) was passed, and EC 1165-2-209 (Civil Works Review Policy) was signed. Accordingly, the plan has been updated again to address the requirements of WRDA 2007 and EC 1165-2-209.

## 2. AUTHORITY AND GUIDANCE

This QC plan has been accomplished in accordance with the following:

**A.** DR 5-1-2, CESAS-PM, 20 May 02, subject: Management – Quality Management Plan.
**B.** ER 5-1-11, CECS, 17 Aug 01, subject: USACE Business Process.
**C.** ER 1105-2-100, CECW-P, 22 Apr 00, subject: Planning Guidance Notebook.
**D.** ER 1110-1-12, 1 Jun 93, subject: Quality Management.
**E.** AR 5-1, 15 Mar 02, subject: Total Army Quality Management.
**F.** Interim Draft ER (unnumbered), CEMP/CECW, 13 Apr 00, subject: Quality Management.
**G.** EC 1165-2-203, CECW-A, 15 Oct 96, Water Resources Policies and Authorities, Technical and Policy Compliance Review (historical purposes only).
**H.** CECW-A Policy Memorandum No. 2, 6 Apr 95, subject: Civil Works Decision Document Review Policy Guidance.
**I.** CECG/AASA (CW) Joint Memorandum, 31 Mar 95, subject: Technical Review Process.
**J.** Quality Control Concepts Rev2.doc dated 22 Apr 05.
**K.** EC 1105-2-407, CECW-CP, 31 May 2005, Planning Models Improvement Program: Model Certification.

**L.** EC 1105-2-408, CECW-CP, 31 May 2005, Peer Review of Decision Document.
**M.** ER 1105-2-100, CECW-CP, 20 Nov 2007, subject: Appendix H Policy Compliance Review and Approval of Decision Documents.
**N.** Water Resources Development Act of 2007.
**O.** EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

## 3. QUALITY CONTROL OVERVIEW

**A. Responsibility.** The Savannah District (the District) is responsible and accountable for the quality of its projects and products. Accordingly, the District shall maintain a Quality Control Manager (QCM) that will continually monitor study activities to insure that the requirements of this Quality Control Plan are met. Additionally, South Atlantic Division personnel will monitor the QC activities involved with this study as a part of its Quality Assurance (QA) commitment.

**B. Objectives.** The objectives of this quality control plan are to:

- Provide quality technical products by providing an effective, comprehensive technical review of work or work products used as a basis for decision making.
- Verify that functional, legal, safety, health, and environmental requirements are met.
- Achieve cost-effective solutions consistent with product requirements.
- Obtain process efficiency by integrating technical review throughout product development.
- Resolution of document issues and concerns.
- Assure accountability for the technical quality of the products.
- Avoid start-overs and redesign.
- Provide continued development of District technical expertise.
- Achieve a seamless review process that includes early identification and resolution of both technical and policy issues.

## 4. QUALITY CONTROL CONCEPTS

### A. General Concepts

1. In accordance with EC 1165-2-209, an Agency Technical Review (ATR) will be conducted by a team developed in collaboration with the Deep Draft Navigation Planning Center of Expertise. ATR will be conducted on a variety of specific reports, and the draft decision document (GRR/EIS Report).

All appendices and supporting reference documents will undergo an internal review in the District at the time they are completed. Quality checks of completed products will be performed by staff responsible for the work, supervisors, team leaders, and senior staff. Among the supporting reference documents are the reports of specific analyses, either

conducted by USACE personnel or outside contractors, which will be used in the plan evaluation and selection process by the PDT. Examples of these documents include:

- Aquifer Analysis Report
- Environmental Fluid Dynamic Computer Code (EFDC) and Water Quality Analysis Simulation Program (WASP) model calibration reports
- Sediment Quality Analysis Report
- Sedimentation and Dredged Material Management Plan (DMMP)
- Economic Analyses Report

2. Management of the ATR process will be provided by the National Deep Draft Navigation Planning Center of Expertise (DDNPCX).

3. A number of Independent Technical Reviews (ITR) and External Peer Reviews (EPR) were accomplished for supporting study documents prior to the signing of EC 1105-2-410 and EC 1165-2-209. These reviews were conducted by subject matter 'experts' who were not involved in the study development. The Project Review Plan (RP) that contains a matrix listing these supporting documents is provided on the Savannah District web site.

4. The ATR will be a formal process with documentation of reviewer comments, documentation of responses to the comments, and documentation of the resolution of each comment. Provisions for documentation will include:

a) The goal to resolve each comment to the satisfaction of the reviewer. For each comment, the reviewer should provide a basis for the comment, whether it is from law or policy, and an indication of the significance of the comment. For each comment, the reviewer should also provide some specific action that needs to be accomplished to satisfy or resolve the comment. Each comment that is resolved should contain a definitive statement of acceptance by the reviewer.

b) Only the reviewer can withdraw or cancel a comment.

c) A complete record of the interactions, from comment to resolution, will be maintained. This will be accomplished by the use of DrChecks software for the ATR. The use of the DrChecks software is intended to provide an efficient means of assuring proper documentation of the review process. The use of the DrChecks software will also be used the IEPR.

5. Dispute Resolution. The ATR Lead, who must be from outside South Atlantic Division (SAD), will identify any outstanding disagreements between members of the PDT and the ATR team. Any technical disagreements that cannot be resolved by the parties within a reasonable amount of time will be brought to the attention of the appropriate functional chief in the District (i.e. Chief, Planning Division, Chief, Engineering Division, etc.) to facilitate resolution. The functional chief is responsible for making the final decision on the disagreement. The functional chief may consult with other resources as appropriate, including knowledgeable experts from the Corps Labs, SAD or Headquarters, U.S. Army Corps of Engineers (HQUSACE), which may serve as

an unbiased sounding board. Major policy issues may be forwarded to HQUSACE for resolution, with proper coordination with SAD.

6. Technical and Policy Issue Resolution. Issues involving technical or policy interpretation will be brought to the attention of the chief of the responsible functional element for resolution. In some cases, the chief of the responsible functional element may hold an Issue Resolution Conference (IRC) to resolve major policy or technical issues. SAD and HQUSACE personnel may be requested to participate in the IRC.

**B. Measures**

Specific measures will be utilized, in addition to the overall quality control provided through chain-of-command review and supervisory guidance, to evaluate progress and ensure compliance with current policy and procedures.

1. Overall Progress. The overall progress of the study effort will be measured through several means including Planning Division, Programs and Project Management Division, and the Project Study Plan (PSP) that includes work plans, study schedules, and budget milestones. The PSP will be reviewed on a monthly basis to identify any changes to the resources designated for any portion of the study. Any changes will be analyzed for their impact upon other critical functions as well as the completion date of the project. Significant changes will be elevated to higher administrative levels to coordinate impacts and ensure minimal effect on the study.

2. Project Review Board. Progress reports will be made monthly to the District Project Review Board (PRB). Early decisions on competing resources and priorities will be addressed in this forum as well as upward reporting to SAD and HQUSACE via normal PRB procedures.

3. Project Delivery Team Meetings. The PDT is an organized multi-agency, multi-disciplinary group, consisting at least of the affected functional elements in the district. Under team management, the Project Manager (PM) will coordinate with the other functional managers and technical staff on the PDT. The PM will ensure that the study accomplishes the established goals at the anticipated rate, and that all items of the study schedule are accomplished.

4. Issue Resolution Conferences. Review meetings and conferences will be held to maintain continuous support and guidance from higher review levels within USACE. Two specific issue resolution conferences (IRCs) are expected to be conducted. Other IRCs will be held as needed. Meetings and conferences will utilize the most cost effective methods including, but not limited to, televideo conferences, teleconferences, or face-to-face meetings.

5. Technical Review Conferences. A Technical Review Conference (TRC) will be held to review ongoing studies and ensure that future studies are on-track. The primary purpose of the TRC is to resolve issues, which will affect schedules and costs for the remaining study period. Field investigations and design studies conducted prior to the

conference will be reviewed for appropriateness and progress. Guidance on the TRC is contained in "Engineering and Design for Civil Works Projects," ER 1110-2-1150, dated 31 Mar 94. Meetings and conferences will also utilize the most cost effective methods including, but not limited to, televideo conferences, teleconferences, or face-to-face meetings.

6. General Reevaluation Scoping Meeting. The General Reevaluation Scoping Meeting (GRSM) will be convened early in the study to provide feedback to the PDT from SAD, HQUSACE, and the Office of the Assistant Secretary of the Army for Civil Works (ASA-CW). In addition, appropriate Federal and non-Federal agencies shall be invited to participate in the GRSM. This meeting is to ensure that the general reevaluation studies are tailored to meet specific objectives, and focus the General Reevaluation Study on key alternatives, to further define the depth of analysis required and to refine study/project constraints. Accordingly, the PSP may require revision to document changes agreed to at the GRSM. The revised PSP will then form the basis for subsequent conduct and review of the GRR/EIS.

7. Alternative Formulation Briefing. The Alternative Formulation Briefing (AFB) will be used to provide feedback to the PDT from SAD, HQUSACE, and ASA-CW. In addition, appropriate Federal and non-Federal agencies shall be invited to participate in the AFB. The AFB will be scheduled when the PDT has identified a selected plan and is prepared to present the formulation and evaluation of alternatives. The Washington level participants will seek to confirm that the plan formulation and selection process, the tentative identified preferred plan, and definition of Federal and non- Federal responsibilities, conform to current policy guidance. The goal is to identify and resolve any policy concerns that would otherwise delay or preclude approval of the draft report.

8. Feasibility Review Conference. The Feasibility Review Conference (FRC) is scheduled to be held just prior to release of the draft report to the public. This conference, however, may be waived if no major issues are identified in the AFB.

## 5. REVIEW

Reviews will be accomplished to assure conformance with Corps technical requirements through the application of the ATR and IEPR processes. Careful coordination and integration of planning, economics, environmental, and plan formulation with engineering, real estate, and technical considerations during this phase are imperative. Review will focus on compliance with established policy, principles, and procedures using clearly justified and valid assumptions. It includes the verification of assumptions, methods, procedures, and materials used in analyses based on the level of data obtained, alternatives evaluated, appropriateness of data used, functionality of the product and verifies the reasonableness of the results including whether the product meets the project needs consistent with law and existing policy and engineering and scientific principles.

In accordance with EC 1105-2-209 dated 31 January 2010, the ATR team will also focus on those planning models being used in the project development that are not certified. Through coordination with the District, the DDNPCX will conduct an ATR on the non-certified planning models and provide "certification for use" in the study. The ATR review of certified models will insure that their application in the studies and analysis are appropriately applied.

### A. Agency Technical Review

As defined in EC 1165-2-209, ATR is a critical examination by a qualified person or team not involved in the day-to-day production of a technical product, ensuring the continued independence of reviewers. The purpose is to confirm that technical work was done in accordance with clearly established professional principles, practices, codes and criteria. It will involve participation by experts within the Corps, other agencies, universities and consultants.

1. Agency Technical Review Team (ATR)

The DDNPCX (Center) will manage the ATR process. The Center will form an ATR team from qualified individuals in corresponding specialties within SAD, other USACE districts, and Corps laboratories that might include contracted and/or private consultants. Selection of the appropriate individual to review a specific decision document, report, and/or study will be made by the ATR in coordination with the DDNPCX based upon cost, timeliness, technical capabilities, and project need from one of the following resources:

a) The "Within District" alternative identifies a reviewer through the lead functional chief. This alternative will use existing senior technical staff that perform other technical work but are not involved in the technical products under review. Generally, reviewers will not be selected from the District that prepared the product under review, except in unusual circumstances when no qualified reviewers are available from other sources.

b) The "Other Districts within the Division" alternative involves review work by personnel in one of the other four SAD districts (excluding Savannah District). These districts are the most familiar with navigation within the Southeast United States.

c) The "Other Districts outside the Division" alternative involves review by personnel in a USACE district outside of SAD. This alternative may be necessary when workloads at other districts within SAD preclude their taking on additional work effort and/or in order to obtain specialized expertise not available at SAD districts.

d) The "Contracted and/or Consultant" alternative would utilize outside expertise, other Federal and/or State agencies, academia and individuals. This alternative may be obtained via a Savannah District contract or via a contract through another USACE district.

2. The objectives of the Agency Technical Review are as follows:

a) Insure quality technical products by providing an effective, comprehensive technical review as a basis for decision-making.

b) Verify that functional, legal, safety, health and environmental requirements are met.

c) Achieve cost effective solutions.

d) Obtain process efficiency by integrating technical review throughout product development.

e) Document issues, concerns and their resolution.

f) Assure accountability for the technical quality of the product.

g) Minimize lost effort and redesign.

h) Provide continued development of Corps technical expertise.

i) Achieve a seamless review process that includes early identification and resolution of both technical and policy issues.

3. Documentation

a) Technical Review Comments

b) Technical Review Responses

c) Technical Review Annotations

d) Statement of Technical and Legal Review

4. Team Formation and In-progress Review Process

a) The ATR will be coordinated by the DDNPCX (the Center). The Center will appoint an ATR Lead to manage and direct the ATR. A technical reviewer will be assigned for each discipline involved in the study, such as Engineering, Economics, Plan Formulation, Environmental, etc.

b) The ATR team will be provided the Project Review Plan (RP) and this Quality Control Plan (QCP). They will document any concerns in writing and provide them to the ATR Lead.

c) The ATR Lead will consolidate the concerns and provides them to the Project Manager (PM). The consolidated documented concerns/comments are then distributed to all of the PDT members.

d) The PDT will develop responses to the concerns/comments and provide them to the PDT leader, who will in turn provide them to the ATR Lead. An initial technical review teleconference will be held between the ATR team and the PDT to discuss the comments and develop responses. The PM will document the proceedings of the technical review teleconference in a memorandum for record (MFR) that incorporates the comments and responses.

e) The PM will distribute the MFR to all meeting attendees, their supervisors and the remainder of the PDT. The PM will then file the MFR to document the technical review process. The DDNPCX will look for opportunities to use the DrChecks online software to document the proceedings.

f) During the ATR should uncertainty or concerns involving the documentation result, a teleconference between the ATR and the PDT will be conducted by the PM in coordination with the Center. The teleconference will seek to discuss and resolve the concerns and develop responses. The PM will document the proceedings of the teleconference in an MFR that will be distributed to those involved and the vertical team (the vertical team includes the district, MSC, and HQUSACE).

g) If the ATR team and the PDT are unable to resolve any concern the Center will immediately initiate the dispute resolution process described in ER 1110-2-12 or ER 1105-2-100, Appendix H.

h) Once all issues are resolved, the PM will prepare and distribute a MFR to all meeting attendees, their supervisors, and the vertical team. The PM will file the MFR to document the resolution of the concerns and the technical review process.

5. ATR of the Draft Report

a) The PM will deliver the draft report (GRR\Tier II EIS and supporting documents) to the ATR team via file transfer program (FTP) in a timely manner, allowing at least two weeks for review.

b) Each member of the ATR team is encouraged to read the entire draft report and focus review on their respective disciplines.

c) Once the review of the draft report is complete, the ATR team members will post their comments in DrChecks review software. The PDT will evaluate the ATR comments and place their responses in DrChecks. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will include:

(i) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(ii) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(iii) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(iv) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

d) In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

e) The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination, and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

f) At the conclusion of the ATR, the ATR Lead will prepare and provide to the DDNPCX a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

g). The DDNPCX will prepare a Statement of Technical Review certifying that the ATR has been completed and that the issues raised by the ATR team have been resolved (or elevated to the vertical team). The Statement of Technical Review will be submitted to Savannah District prior to the District Commander signing the draft report. The Savannah District Office of Counsel will sign the Certification of Legal Review.

**B. Independent External Peer Review**

IEPR will be conducted on the entire final draft decision document (Draft GRR/EIS) including the supporting documents. This review will be conducted by a team assembled by the DDNPCX through an Outside Eligible Organization (OEO).

6. External Peer Review

As required by EC 1165-2-209, External Peer Review (IEPR) of the draft report (GRR\Tier II EIS and all supporting documentation) will be conducted.

IEPR Process. The DDNPCX will manage the IEPR process. The DDNPCX will engage an Outside Eligible Organization (OEO) to conduct the IEPR, and assess the output of the review panel selected to perform the IEPR. The OEO will develop a work plan to describe, in detail, the process that will be used to identify and select the IEPR panel, conduct the review, and prepare the IEPR report. The OEO will select the reviewers who will be recognized national experts in their disciplines drawn from academia, the private sector, as well as other federal and state agencies. These reviewers may not be current employees of USACE, but must be familiar with USACE policies and guidance.

Potential candidates for the IEPR panel will be recruited, screened for availability, interest, and technical experience in defined areas of expertise. Ultimately, seven (7) experts will be selected for the final IEPR panel using predetermined criteria related to technical expertise and credentials, relevance to the major disciplines involved in development of the GRR/EIS, and overall balance. A link to an FTP site will be used to provide reviewers with electronic copies of the study documents to be reviewed. Sufficient time will be allocated so that the documents could be read thoroughly. Reviewers will provide written comment; however, individual review comments will not be publicly attributed to a specific reviewer. The OEO will read all comments provided by the review panel and assess them for pertinence, validity and applicability. The OEO in conjunction with the review panel will consolidate the comments before they are placed in DrChecks.

Appropriate individuals from the PDT will evaluate the comments and provide written responses in Dr. Checks. Concurrences with review comments will be noted. When provision of additional information is suggested by the panel, that information will be developed by the PDT, and a notation of where the information will be placed in the study documentation will be placed in DrChecks.

Where the PDT member does not concur with a panel comment, they will provide an explanation of why they do not concur. The OEO and the DDNPCX will make a reasonable attempt to resolve any outstanding issues. If an IEPR concern cannot be satisfactorily resolved between the Panel and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 or ER 1105-2-100, Appendix H.

(1) Documentation of IEPR. DrChecks review software will be used to document IEPR comments and aid in the preparation of the IEPR Review Report. Comments should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments. The OEO will be responsible for compiling and entering comments into DrChecks. The OEO shall prepare and deliver to the DDNPCX an IEPR Review Report that will accompany the IEPR Final Report for the project. The Final Report shall:

a) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;

b) Include the charge to the reviewers;

c) Describe the nature of their review and their findings and conclusions; and

d) Include a copy of the consolidated review comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final IEPR Review Report will be submitted by the OEO no later than 60 calendar days following the start of the public comment period for the draft Savannah Harbor Expansion General Re-evaluation Report and Tier II EIS. The report will be considered and documentation prepared on how issues were resolved or will be resolved. The recommendations and responses will be presented to the Civil Works Review Board by the District Commander with an IEPR panel member or OEO representative participating, preferably in person. The review documentation and certification will be provided to the PM by the DDNPCX for posting on the District's web site.

Savannah District, with assistance from the DDNPCX, shall prepare a written proposed response to the report, detailing any actions undertaken or to be undertaken in response to the report, and the reasons those actions are believed to satisfy the key concerns stated in the review report (if applicable). The proposed response will be coordinated with the MSC District Support Teams and HQUSACE to ensure consistency with law, policy, project guidance, ongoing policy and legal compliance review, and other USACE or National considerations.

**(2) IEPR Schedule** - The implementation schedule for the IEPR is provided below:

## IEPR Implementation Schedule

| ACTION | DATE |
|---|---|
| Complete subcontracts for panel members | 19 Jul 2010 |
| Submit Draft Charge (combine with Draft Work Plan – Task 1) | 19 Jul 2010 |
| USACE provides comments on draft charge | 21 Jul 2010 |
| Submit Final Charge (combined with Final Work Plan – Task 1) | 22 Jul 2010 |
| USACE approves Final Charge | 22 Jul 2010 |
| USACE/OEO Kick-off Meeting | 23 Jul 2010 |
| Review documents sent to panel members | 23 Jul 2010 |
| OEO/panel Orientation Meeting | 30 Aug 2010 |
| Panel members initiate their review | 7 Sep 2010 |
| Convene panel review teleconference | 21 Sep 2010 |
| External panel members provide draft final panel comments to OEO | 30 Sep 2010 |
| Submit Final IEPR Report | 8 Oct 2010 |
| Input final panel comments in DrChecks, Battelle provides final panel comment response template to USACE | 15 Oct 2010 |
| USACE PDT provides draft Evaluator responses and clarifying questions to OEO | 22 Oct 2010 |
| Final Panel Comment Teleconference between OEO, IEPR team, and PDT to discuss final panel comments, draft responses and clarifying questions | 29 Oct 2010 |
| USACE inputs final Evaluator responses in DrChecks | 5 Nov 2010 |
| OEO inputs BackCheck responses in DrChecks | 12 Nov 2010 |
| OEO submits pdf printout of DrChecks project file | 15 Nov 2010 |
| Project Closeout | **22 Jan 2010** |

**Model Certification/Approval.** EC 1105-2-407 requires certification (for Corps models) or approval (for non-Corps models) of planning models used for all planning activities. The EC defines planning models as any models and analytical tools that planners use to define water resource management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities to evaluate potential effects of alternatives and to support decision-making. The EC does not cover engineering models used in planning. Engineering software is being address under the Engineering and Construction (E&C) Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering activities in support of planning studies shall proceed as in the past. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed.

### C. Public Participation

A complete public participation plan has been developed by Savannah District and is available on the district website.

## 6. PARTICIPATION BY NON-FEDERAL INTEREST

The Georgia Ports Authority as well as three Federal Cooperating Agencies involved in the Savannah Harbor Expansion Project shall provide input to be used to monitor the quality and process during study development. The PDT shall consider their feedback as a quality indicator.

## 7. ENDORSEMENTS BY THE OFFICE CHIEFS

I certify that the study and review process required to be performed under my responsibility has been completed and the technical work is in accord with Corps regulations, standard report requirements, and customer expectations.

| | |
|---|---|
| District Commander | Date |
| Chief, Programs and Project Management Division | Date |
| Chief, Planning and Environmental Division | Date |
| Chief, Engineering Division | Date |
| District Counsel | Date |
| Chief, Operations Division | Date |
| Chief, Contracting Division | Date |
| Chief, Real Estate Division | Date |

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

CESAM-PD-D (1105-2-40a)

13 January 2012

MEMORANDUM FOR MR. JASON OKANE, (CESAS-PM)

SUBJECT: Certification of Completion of Agency Technical Review (ATR), Savannah Harbor Expansion Project, Deep-Draft Navigation Final General Reevaluation Report and Draft Tier II Environmental Impact Statement

1. In accordance with EC 1165-2-209, "Civil Works Review Policy," dated 31 January 2010, ATR of the Savannah Harbor Expansion Project, Deep-Draft Navigation Final General Reevaluation Report and Draft Tier II Environmental Impact Statement has been executed through the Deep Draft Navigation Planning Center of Expertise (DDNPCX).

3. We concur that ATR of the study report documents has been completed and certified. All outstanding issues have been addressed and satisfied. The DDNPCX point of contact is Mr. Johnny Grandison, CESAM-PD-D, (251)-694-3804.

Encls

BERNARD E. MOSEBY
Technical Director
Deep Draft Navigation Planning Center
Expertise

CF:
CESAS-PM/GARRETT

**COMPLETION OF AGENCY TECHNICAL REVIEW**
**SAVANNAH HARBOR EXPANSION PROJECT, DEEP-DRAFT NAVIGATION FINAL GENERAL REEVALUATION REPORT and DRAFT TIER II ENVIRONMENTAL IMPACT STATEMENT**

**CHATHAM COUNTY, GEORGIA, AND JASPER COUNTY, SOUTH CAROLINA**

**January 2012**

The Agency Technical Review (ATR) has been completed for the Savannah Harbor Expansion Project, Deep-Draft Navigation Final General Reevaluation Report and ~~Draft Tier II~~ Environmental Impact Statement. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209.

A panel of eight reviewers was established by the Deep Draft Navigation Planning Center of Expertise (DDNPCX), the Review Management Organization (RMO) that managed the conduct of this review. The ATR was initiated on 19 December 2011 and was completed on 6 January 2012.

During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing U.S. Army Corps of Engineers (Corps) policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been evaluated and responded to by the Savannah District Project Delivery Team (PDT) and comments have been back-checked by the ATR team (ATRT). There are no open comments. A complete copy of the ATR report and a copy of the final comment report from Dr. Checks are enclosed.

We certify that the ATR of the Savannah Harbor Expansion Project General Reevaluation Report and ~~Draft Tier II~~ Environmental Impact Statement was performed as required by EC 1165-2-209.

WILLEY.SHERIDAN.S.1369416304 Digitally signed by WILLEY.SHERIDAN.S.1369416304 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=WILLEY.SHERIDAN.S.1369416304 Date: 2012.01.17 08:03:17 -06'00'

Sheridan S. Willey
ATR Team Lead
CESWG-PE-PL

Date

Jason Okane
Project Manager
CESAS-PM-C

18 January 2012
Date

GRANDISON.JOHN NY.L.1230718772 Digitally signed by GRANDISON.JOHN NY.L.1230718772 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=GRANDISON.JOHN NY.L.1230718772 Date: 2012.01.17 08:05:49 -06'00'

Johnny Grandison
Review Management Organization
Representative DDNPCX

Date

## CERTIFICATION OF AGENCY TECHNICAL REVIEW

There are no remaining open comments, and all concerns resulting from the ATR of the project have been fully resolved.

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Gordy L. Simmons
Chief, Engineering Division
CESAS-EN

Date

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Bill Bailey
Chief, Planning Division
CESAS-PD

Date

**COMPLETION OF AGENCY TECHNICAL REVIEW**
**Savannah Harbor Expansion Project, Deep-Draft Navigation Final General Reevaluation Report (GRR) and Draft Tier II Environmental Impact Statement (EIS)**

**Chatham County, Georgia, and Jasper County, South Carolina**

**January 2012**

**1. Scope and Purpose of Review.** The purpose of this eport is to document one phase of review, Agency Technical Review (ATR), for the subject study. The review was conducted for the United States Army Corps of Engineers, Savannah District. The primary point of contact for Savannah District (the District) was Jason Okane, Project Manager, CESAS-PM-C. The Agency Technical Review Team (ATRT) was lead by Ms. Sheridan Willey, CESWG. The Deep Draft Navigation Planning Center of Expertise (DDNPCX) was the Review Management Organization (RMO) for this ATR.

This review phase follows report revisions subsequent to the December 2011 draft final report package. That package contained versions of the GRR and EIS dated December 2011.

Review documents included:

- Final GRR and EIS documents (titles above),
- GRR Appendix A – Economics
- GRR Appendix B – Real Estate
- GRR Appendix C – Engineering Investigations
- GRR Appendix D – Plan Formulation
- GRR Appendix E – Quality Control
- EIS Appendices A-H

**2. References.** This review report was prepared in response to Engineer Circular (EC) 1165-2-209 dated 31 January 2010, Water Resources Policies and Authorities, Civil Works Review Policy.

**3. Project Description.** Savannah Harbor is a deep draft navigation harbor located on the South Atlantic U.S. coast, 75 statute miles south of Charleston Harbor, South Carolina, and 120 miles north of Jacksonville Harbor, Florida. The harbor comprises the lower 21.3 miles of the Savannah River (which, with certain of its tributaries, forms the boundary between Georgia and South Carolina along its entire length of 313 miles) and 11.4 miles of channel across the bar to the Atlantic Ocean.

Within the harbor limits, the Savannah River is generally divided into two channels by a series of islands. From the Atlantic Ocean to River Mile 10 where the river converges, the harbor is separated into South and North Channels. Within this area, the navigation channel is maintained in the North Channel. After divergence of the river into Front and Back Rivers at River Mile 11, the navigation channel is maintained in Front River and passes by the business district of the City of Savannah. The navigation channel is maintained in Front River to the upper limits of the harbor at River Mile 21.3. The Atlantic Intracoastal Waterway (AIWW) crosses the navigation channel approximately 5.5 miles upstream of the entrance to the harbor. The Savannah River Below Augusta Project, which is a shallow draft navigation channel authorized for 9 feet deep

and 90 feet wide, extends upstream from the harbor (River Mile 21.3) to River Mile 202.6 at Augusta, Georgia.

The currently authorized deep draft navigation channel is 44 feet deep and 600 feet wide from deep water in the ocean (mile 11.4B) to the channel between the jetties (mile 2.6B), thence 42 feet deep and 500 feet wide to the harbor entrance (River Mile 0.0). From mile 0.0 to the upstream end of the Kings Island Turning Basin (River Mile 19.5) the channel is 42 feet deep and 500 feet wide. The channel is 36 feet deep and 400 feet wide from mile 19.5 to the upstream end of the Argyle Island Turning Basin (River Mile 19.9). The upper end of the harbor from River Mile 19.9 to its upstream limit at River Mile 21.3 is maintained at 30 feet deep and 200 feet wide.

Garden City Terminal is the Georgia Ports Authority-operated container terminal at Savannah Harbor and is currently the second largest container port on the US east coast and the fourth largest in the Nation. However, Savannah Harbor also currently has the shallowest controlling depth for a major port. Although the 42-foot controlling depth and 38-foot unrestricted access depth at Savannah Harbor is similar to current constraints at the Panama Canal (39 feet), the Panama Canal Expansion Project will be fully operational by 2014, which will allow passage for vessels with up to 50 feet of draft. The Georgia Ports Authority has planned and funded improvements at Garden City Terminal to coincide with the Panama Canal Expansion Project. With these improvements in place, this terminal will be the largest single container handling facility in the Nation with more than 1,200 acres of terminal space, 9,000 feet of berth, 33 post-Panamax size cranes, and two on-site intermodal transfer facilities serviced by two major rail lines. The facility, at full build out, will have a throughput capacity of 6.5 million Twenty-Foot Equivalent Units (TEUs).

Navigation improvements at Savannah Harbor present the opportunity to reduce future waterborne transportation costs and to enhance efficiency in international trade associated with larger, more efficient vessels, Garden City Terminal infrastructure improvements, and Savannah Harbor landside transportation infrastructure improvements.

**4. Required Disciplines for Technical Review:**

**Plan Formulation:** Team member should have extensive experience in the Corps planning process and be knowledgeable of Corps policies and guidelines. He or she should be familiar with deep-draft navigation projects.

**Geotechnical:** Team members will have extensive experience in deep-draft navigation and general navigation feature design, pre- and post-construction evaluation, and rehabilitation. A certified professional engineer is strongly recommended.

**Hydrology and Hydraulics:** Team members should be an expert in the field of hydrodynamics and how changes to existing channels will impact water movement through a system and what affects these impacts will have.

**Cost Estimating:** Team member will be familiar with cost estimating for similar projects in MII. Review includes construction schedules and contingencies for any document requiring Congressional authorization. The team member will be a Certified Cost Technician, a Certified

Cost Consultant, or a Certified Cost Engineer. As the Cost Engineering Center of Expertise, Walla Walla District will assign this team member as part of a separate effort coordinated by the ATR or IEPR team lead in conjunction with the geographic district's project manager.

**Economics:** Team member will have extensive experience in deep-draft navigation projects and have a thorough understanding of planning formulation and evaluation methodologies and techniques, including the application of models such as HarborSym. The member should also be familiar with forms of multi-port analysis and regional economics.

**Environmental – NEPA:** The reviewer should have a strong background in the environmental methodologies and application of habitat evaluation and alternative assessment related to the project region; as well as an in depth understanding or environmental laws and regulations related to NEPA documentation.

**Real Estate:** The reviewer should have knowledge in operations of deep-draft navigation projects.

**Operations:** The reviewer should have knowledge in reviewing RE Plans for feasibility studies relating to deep-draft navigation.

**5. Review Team:**

**Plan Formulation – Sheri Willey,** CESWG-PE-PL – 409-766-3917, sheridan.s.willey@usace.army.mil. Sheri Willey, P.E. is a civil works water resources planner/ civil engineer in the Galveston District's Planning and Environmental Branch. She is Regional Technical Specialist for Water Resources for the District. She is responsible for the development of decision documents used by Congress to authorize the implementation of civil works projects. To develop those reports she has lead study teams in the evaluation of problems and needs, selection of alternative evaluation methodologies, the analysis of findings of a multidisciplinary team that lead to conclusions and recommendations, and oversight of overall team documentation. As RTS for Plan Formulation, she has been responsible for coordinating with the different PCX's throughout the country for ATR on Galveston District projects as well as part of team performing reviews for other districts.

**Environmental – Larry Parson,** CESAM-PD-EC – 251-690-3139, larry.e.parson@usace.army.mil, Larry Parson is a Physical Scientist with the Mobile District, Planning and Environmental Division, Coastal Environment Team. He is a coastal environmental study manager with responsibilities for managing and conducting investigations involving oceanography, coastal processes, marine ecology, water quality, sediment analysis, and other matters related to environmental assessment and restoration. He closely coordinates and partners with various agencies to determine appropriate environmental measures for obtaining state Water Quality Certifications (WQC), Coastal Zone Consistency (CZC) determinations and all associated environmental compliances for O&M, CAP, and military projects. He has extensive knowledge and experience in the NEPA process for the formulation of Environmental Impact Statements (EIS), Environmental Assessments (EA), 404(b)(1)Water Quality Reports, and coordinating with support agencies for Threatened and Endangered Species, Critical Habitat, and Essential Fish Habitat. Mr. Parson is also the lead for the District's Regional Sediment Management (RSM) implementation strategy, which utilizes a regional

management approach for more effective sediment disposal methods, beneficial use, and environmental restoration.

**Geo-Technical, Christopher Mark Green,** CESAM-EN-GG - 251-690-3435, christopher.m.green@usace.army.mil, Christopher Mark Green is a Geotechnical Engineer in the Geotechnical Section of the Mobile District. He has been with the Mobile District for over 4 years. He is the primary Geotechnical Engineer for several civil and military projects. Currently, he is the PAE for Bayou Caddy, which includes armoring and repairing damaged Geotubes on the Mississippi Gulf Coast near Bay St. Louis. He has assisted with the Triple Barrel Project, Ophelia Disposal Area Repair and various projects associated with the Mississippi Coastal Improvements Program. He has also been involved with several inspections and certifications of levees and emergency levee repairs.

**Cost Engineering – James Neubauer,** CENWW-EC-X - 509 527-7332 James.G.Neubauer@usace.army.mil, Mr. James Neubauer GS-13 Technical Cost Engineering Lead for the Cost Engineering District of Expertise (DX) for Civil Works located in Walla Walla, WA: For 12 years he was a civil and military cost engineer (Lead Estimator - Albuquerque, CH/Cost - Europe, Lead Estimator - Walla Walla). He has 11 years civil works construction experience (Wyoming, Europe, Walla Walla), and 5 years military and civil PM (Europe and Albuquerque). He has provided ATR on several projects with cost estimates greater than $1Billion. He is presently the Cost DX ATR Coordinator. Licensed Civil PE. Certified Cost Engineer. PM1 Certification.

**Hydraulics and Hydrology, J. Greg Miller,** CESAM-EN-HH - 251-690-3115, John.g.miller@usace.army.mil, Mr. Miller is currently assigned as Lead Project Engineer for Civil Works within Mobile District Engineering Division. His experience includes over 34 years in hydraulic design and project engineering for navigation improvement, hurricane and storm damage reduction, environmental restoration, and flood damage reduction project purposes. He has performed numerous technical reviews for other districts on projects related to navigation improvements, including Jacksonville Harbor (Mile Point) Feasibility Study, Charleston Harbor GRR, Jacksonville Harbor Phase 2 Dredging P&S, Savannah Harbor Expansion AFB Documentation, and Texas City Channel LRR.

**Real Estate - Russell W. Blount III,** CESAM-RE-P - 251-694-3675, Russell.w.blountiii@usace.army.mil, Russell Blount is currently a Realty Specialist and Lead Real Estate Planner for Mobile District, Real Estate Division for both military and civil works projects. His responsibilities include planning and implementing major land acquisition/ relocation projects, oversight of Division title contracts, PCS Real Estate claims approvals and regional specialist for Agency Technical Review (ATR) assignments. Blount has 8 years of private sector experience in the title insurance and real estate industries. He holds a BS and MPA from the University of South Alabama.

**Operations – Nathan Lovelace,** CESAM-OP - 251-694-3713, Nathan.d.lovelace@usace.army.mil, Nathan Lovelace currently serves as the Dredge Material Project Manager in the Mobile District for the development of beneficial uses of dredge material, including District Champion for the inland and coastal regional sediment management program. Coupled with his new duties as Dredge Material Project Manager, Nathan has 11 years of extensive field project engineer experience along coastal Alabama and Mississippi, dredging

deep and shallow draft Federal channels. In addition to channel dredging, other civil works experiences include lead field engineer for a 27-mile beach restoration project, several wetland creation projects, coastal shore protection projects and several Mississippi Coastal Improvement Program projects. He has also spent the past several years developing and refining the Quality Assurance/Control and safety efforts relating to coastal dredging and earthwork. He is considered a Subject Matter Expert for construction and maintenance of upland disposal areas and marsh creations along the coast.

**Economics - Naomi Fraenkel,** CENAN - 917-790-8615, Naomi.R.Fraenkel@usace.army.mil
Naomi Fraenkel, FE, AICP, is an economist in New York District where she specializes in planning for navigation projects and economics of large-scale environmental restoration efforts.

**6. Charge To Reviewers**. The review team was charged with the detailed review of the study documentation, both directly and indirectly related to their field of expertise. The team was encouraged to review all documents in the submission package and verify overall consistency of the report information among disciplines. This ATR is to ensure that technical analyses meet the requirements of technical regulations, and ensure policy compliance. The review should also ensure that appropriate problems and opportunities are addressed; confirm that a reasonable array of solutions are considered; confirm that an appropriate solution is recommended; assure that appropriate costs, schedules, and risks are presented; confirm the recommended solution warrants Federal participation; is in accord with policies; can be implemented in accordance with environmental laws and statutes; and has a sponsor willing and able to fulfill the non-Federal responsibilities; and ensure that the decision document appropriately represents the views of the Corps of Engineers, the Army, and the President. Accordingly, the review should:

- Identify, examine, and comment upon assumptions that underlie analyses (i.e. public safety, economic, engineering, environmental, and others)
- Evaluate the appropriateness of models selected for use in evaluations, the application of data within those models, and the interpretation of and conclusions drawn from model results.
- Bring important issues to the attention of decision makers.

Review Criteria for ATR:

- Products were reviewed for compliance with guidance, including Engineering Regulations, Engineering Circulars, Engineering Manuals, Engineering Technical Letters, Engineering Construction Bulletins, Policy Guidance Letters, implementation guidance, project guidance memoranda, and other formal guidance memoranda issued by HQUSACE.
- Approved waivers should have been obtained from HQUSACE for any deviations from USACE guidance and documented in the review materials.

Key Review Considerations:

- The project meets the customer's scope, intent and quality objectives as defined in the PMP.
- Formulation and evaluation of alternatives are consistent with applicable regulations and guidance.

- Concepts and project costs are valid.
- The recommended alternative is feasible and will be safe, functional, constructible, environmentally sustainable, within the Federal interest, and economically justified according to policy.
- All relevant engineering and scientific disciplines have been effectively integrated.
- Appropriate computer models and methods of analysis were used and basic assumptions are valid and used for the intended purpose.
- The source, amount, and level of detail of the data used in the analysis are appropriate for the complexity of the project.
- The project complies with accepted practice within USACE.
- Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort.
- Project documentation is appropriate and adequate for the project phase.

Additional considerations for Decision Documents:

- Recognizing that the quality of each decision document has a direct and immediate impact on the credibility of the Corps of Engineers and the Department of the Army, ATR on decision documents should address the basic communication aspects of the documents.
- The main decision document and appendices should form an integrated and consistent product.
- As an initial guide, the ATR team should consider the Project Study Issue Checklist in Exhibit H-2, Appendix H, ER 1105-2-100, which includes many of the more frequent and sensitive policy areas encountered in studies.
- Composition of Technical Comments (DrChecks):
- Comments should follow a four part structure, composed of the following:
    - A clear statement of the ATRT concern.
    - The basis for the concern (often a reference to guidance).
    - The significance of the concern.
    - A suggested action that would resolve the concern.
- General guidance or suggestions by the ATRT for future PDT consideration are acceptable as a technical comment. However, the commenter should indicate that "a PDT evaluation of 'noted' will be sufficient".

Coordination of Editorial Comments:

- Editorial comments about errors, such as spelling, composition, missing or erroneous table or graphic references, or about writing or documentation suggestions were noted by the ATRT and provided to the ATR lead for coordination with the PDT study manager or project manager.

Coordination of reviewer questions was directed through the review team lead and the project manager, who coordinated the questions with the appropriate project delivery team member(s).

**7. Findings and Conclusions**. Review was completed and responses to all comments have been provided. A total of 47 comments were submitted during this review. The attached DrChecks report details all of the comments and the status of the review.

**8. Significant and/or Unresolved Issues**. All ATR issues have been addressed; all comments resulting from the ATR have been evaluated and responded to by the Savannah District PDT and comments have been back-checked by the ATR team.

**9. Lessons Learned**. The review materials were well organized. No basic improvements were identified for the review package or the review process.

**10. Dr. Checks Report**. The DrChecks report of comments and responses is attached as Enclosure 1. A signed certification statement from each of the ATR team members is retained by the Team Lead, the DDNPCX, and a copy has been provided to Savannah District.

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Date: 2012.01.17 08:03:03 -06'00'

Sheridan S. Willey
Regional Technical Specialist for Water Resources Plan Formulation
Galveston District
Southwestern Division

Enclosure 1

ATR COMMENTS AND RESPONSES

Comment Report: All Comments
Project: Savannah Harbor ATR
Review: SHEP- Final Agency Technical Review (ATR)
Displaying 47 comments for the criteria specified in this report.

| Id | Discipline | Section/Figure | Page Number | Line Number |
|---|---|---|---|---|
| 4334756 | Real Estate | n/a | n/a | n/a |
| This comprehensive RE Appendix (12 December 2011 version) does not require any significant changes as all requirements have been met. Minor revisions have been identified which are attached hereto. The RE Appendix is well written and conforms to the ER for water resource projects. In addition, this document adequately identifies a reasonable acquisition plan and legitimate cost estimates for potential project authorization.<br><br>(Attachment: Draft_RE_Appendix_12_Dec_2011[1_-_ATR_Review_Comments].pdf)<br><br>Submitted By: Russell Blount (251-694-3675). Submitted On: 15-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>All recommended revisions with the exception of 1 (pg 19 line 23) have been incorporated into the report.<br><br>Submitted By: John S. Hinely (912-652-5207) Submitted On: 16-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>All RE comments closed.<br><br>Submitted By: Russell Blount (251-694-3675) Submitted On: 19-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4344646 | Environmental | Problems and Needs | GRR - Executive Summary - Page 2 | n/a |
| Twenty-foot Equivalent Unit should be written with acronymn the first time.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>Concur with the comment. This has been corrected in the GRR.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4344674 | Environmental | Figure 9-1 Mitigation Option | GRR - | n/a |
| The deepening depths in the figure are in meters. Suggest adding the conversion to feet in parentheses along side.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>Concur with the comment. This information has been added to the GRR.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment. | | | |

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| | Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344699 | Environmental | 5.7.2 - Sea Level Rise | GRR | n/a |

For the sea level rise elevations, it would be helpful to also present in feet. This is later used to determine future sea levels which are presented in feet.

Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11

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| **1-0** | Evaluation **Concurred**<br>Concur. This information has been added to the GRR.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344713 | Environmental | Page 160 | GRR | n/a |

Also include units of feet for the sea level rise numbers of 25 or 50 cm.

Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11

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|---|---|
| **1-0** | Evaluation **Concurred**<br>Concur. This information, 25 cm (9.84 inches) and 50 cm (19.69 inches) has been added to the GRR.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344725 | Environmental | n/a' | EIS - Section 1 - page 3 - Last paragraph | n/a |

When discussing the public information meeting held Dec. 15, 2011. Should that be 2010?

Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The EIS has been revised.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344757 | Environmental | n/a' | EIS - General comment on Tables and Figures. | n/a |

| | |
|---|---|
| Many times tables and figures are sited as the following tables or figures or the tables or figures below. All tables and figures should be specically sited in the text, especially when it is referring to a series of table or figures. An example would be for page 4-26 when referring to Figures 4-6 - 4-14. ... are shown in Figures 4-6 through 4-14 below. This should be consistent throughout the document.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | |
| **1-0** | Evaluation **Non-concurred**<br>The District believes the text adequately directs the reader to the appropriate tables and figures.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>The comment regarding specific siting of tables and figures in the text at various locations in the EIS was a recommendation and is a matter of writing style. It has no bearing on the technical content of the EIS and quality of the work. If the authors feel that the text adequately directs the reader to the appropriate tables and figures, this reviewer is OK with that.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344780 | Environmental | n/a' | Page 3-24 - 1st complete paragraph | n/a |

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|---|---|
| States that additional environmental clearances would have to be obtained for use of maintenance sediment in this manner. If the situation arises, who would be responsible for obtaining the clearances?<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | |
| **1-0** | Evaluation **Concurred**<br>The sentence has been revised to reflect the Corps would have to obtain the additional environmental approvals.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344802 | Environmental | n/a' | Page 3-28, Figure 3-9 | n/a |

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|---|---|
| Provide a label at the top of the column or note at the bottom the significance of the cadmium included in the table. This also occurs in Table 4-4.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | |
| **1-0** | Evaluation **Concurred**<br>The table has been revised. Table 3-9 was intended to show dredging quantities for the selected plan, and Table 4-4 shows the dredging quantities by reach. Cadmium wsa deleted from both of these tables since is has not been discussed at this point in the document.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

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|---|---|---|---|---|
| 4344841 | Environmental | n/a' | Page 4-59 - last sentence. | n/a |
| Reference to Table 4-9. Should be changed to 4-10.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>The EIS has been revised to reflect the correct Table #.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4344845 | Environmental | Table 4-14 | Page 4-66 | n/a |
| Table 4-14 not referenced in text. Looks like a reference to 4-1 was mis-labled and should be 4-14.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>The text has been revised.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4344854 | Environmental | Table 4-14 | Page 5-10 | n/a |
| Sea level rise distances should also be expressed both in metric and english units.<br><br>Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>The EIS has been revised to include inches.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4344860 | Environmental | Section 5.02.13 - Disinfection Byproduct Formation | n/a | n/a |
| (Document Reference: 1st sentence) | | | | |

Chlorine in mis-spelled.

Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The spelling has been corrected.<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4344865 | Environmental | Section 5.02.3 | n/a | n/a |

(Document Reference: 1st sentence)

Cloride concentration unit should be consistent. Mostly throughout the document it's shown as mg/l but in a few places it's shown as mg/L.

Submitted By: Larry Parson ((251) 690-3139). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The concentrations discussed have been revised to show measurements in mg/l<br><br>Submitted By: Margarett McIntosh (912-652-5320) Submitted On: 22-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Larry Parson ((251) 690-3139) Submitted On: 22-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345795 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost and Schedule Risk Analysis)

1. The risk analysis comments are based upon total project baseline. A previous March 2011 risk analysis was performed resulting in a 25% contingency at an 80% confidence of successful completion. The added project scope is proportionately small to overall baseline; therefore, any % change to the previous contingency value should be minimal. If a large change in contingency is determined, it implies a significant error in one of the models. During the course of District QC and risk modeling update, several errors were corrected but were insignificant to outcome, resulting in a 25% contingency at the 80% confidence level.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>New Risk Register and Cost Model are dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345796 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost and Schedule Risk Analysis)

2. Risk Register: Knowing that this project scope and related risks have undergone numerous changes, ensure the risk register is current in concerns and risk levels. There may be a mix between the iterations.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>New Risk Register and Cost Model are dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Noted items reworked with deletions, additions, and improved discussions.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345797 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost and Schedule Risk Analysis)

3. Risk Register: The project is comprised of significant dredging and non-dredging work. The risk model was constructed with that in mind; however, it is unclear whether the risks indicated in the risk register relate to dredging, non-dredging, or both. The non-dredging costs are significant and modeled somewhat differently. Highly recommend another column be added in the risk register (new column B) that defines whether the risk relates to dredging, non-dredging, or both. That clarification should then track to the risk model.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Column added and ID # now corresponds with Cost Model dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345799 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

4. Risk Register: The Discussions and Concerns column does not clearly support the conclusions, the "WHY" for choosing levels of Likelihood and Impact. Better discussion is warranted. The logic should flow from left to right resulting in a documented Risk Level. A good example is I-36 – Acquisition Strategy. This is typically a high risk but conclusions are unclear.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Additional information added and clarified in new Risk Register dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |

| | |
|---|---|
| **1-1** | Backcheck Recommendation **Close Comment**<br>Improvements noted.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345801 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

5. Risk Register: There are several instances where the Likelihood and Impact choices to not marry to the Risk Level as presented in the risk matrix at the top of the screen. For example, I-1 reads as a Moderate risk in the matrix, but Risk Level says Low, implying it was not modeled. Risk I-6 indicates Likely and Significant, yet Risk Level indicates Low Risk. Recheck logic and ensure any Moderate and High risks are correctly included in the risk model.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Corrections made to Risk Register and information added and clarified in new Risk Register dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345802 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

6. Risk Model: There are a number of Non-Dredging risks that are modeled, but not clearly identified in the risk register. Good examples are the two most recently added scopes: Fish Passage and Water Impoundment. I agree they should be modeled, but describe the risks in the register. For example, on the Impoundment the greater risks are related to Pump Station and Activated Carbon scope and parametric estimates. The other estimated cost items appear fairly conservative. The end result is a risk modeled for those specific concerns.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Item 41 added to risk register to explain how risks for impoundment and fish passage were addressed. Additional information added and clarified in new Risk Register dated December 23, 2011.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Concern addressed under Risk ID I-18 and ID I-41.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345803 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

7. Risk Model: Variance Distribution: Somewhere, discussions should present the reasoning for the variances chosen for the model. For example: On the fish passage, it is unclear what is driving the variance between $21M and $28M. Was it

acquisition strategy, bid competition, scope change potential, construction mods...a combination of all?

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Item 41 added to risk register to explain how risks for impoundment and fish passage were addressed.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Worked w/ SAW estimator for better discussion of Item 41. Revisions are now considered sufficient.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345804 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

8. Risk Model: Explain how schedule risks were factored into the study.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Item 41 added to risk register to explain how risks for Non-Dredge and Dredge schedules were addressed, plus Item I-30 and I-36 specifically address schedule and acquisition.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Confirm that potential schedule growth is located within the risk model.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 03-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345805 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

9. Contract Acquisition and Construction Mods & Claims: These are common risks of high potential impact. It is unclear how these were addressed within the model.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Item 41 added to risk register to explain how risks for Non-Dredge and Dredge schedules were addressed, plus Item I-30 and I-36 specifically address schedule and acquisition.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Item 41 addresses mods, claims, residual unknown-unknowns.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345807 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

10. Risk Model - Forecast 1: Explain the negative sensitivity for the O&M Material (Bank).

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The negative sensitivity only identifies the Magnitude of how the O&M affects costs. It does not mean a negative cost occurrence. Most specifically it will add additional costs. Narrative will highlight the meaning in write up for Cost Risk.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 27-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345808 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

11. Risk Report – Executive Summary: Second paragraph could more clearly state that the $483M excludes contingency and that the $123M is a value added onto the $483M for a total of $607M at an 80% confidence for successful execution.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Concur – will try to add additional wording.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Additional working to clarify base cost plus contingency value for a total Baseline w/ Contingency that matches the table ES-1.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 03-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345811 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

12. Risk Report – Executive Summary: Findings and Recommendation should be strengthened with more discussion on potential risk mitigations.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Concur – but probably need more discussion with reviewer after Executive Summary finalized.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 03-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4345812 | Cost Engineering | n/a' | n/a | n/a |

(Document Reference: Cost & Schedule Risk Analysis)

13. Risk Report: Risk Register updates will result in a report revision based on the above comments.

Submitted By: Jim Neubauer (509-527-7332). Submitted On: 21-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Document will be revised and submitted asap.<br><br>Submitted By: John Caldwell (910-251-4586) Submitted On: 23-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Risk Register updates made and reviewed twice.<br><br>Submitted By: Jim Neubauer (509-527-7332) Submitted On: 03-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346552 | Design Team Leader | n/a' | Appendix C, General | n/a |

The charge to reviewers for this ATR included suggestion to focus on changes since the July, 2011 version of the report. Those changes applicable to Appendix C generally include additional evaluation of chloride impacts, design modification (relocation) of fish passage structure at New Savannah Bluff L&D, additional dissolved oxygen impact and mitigation modeling assessment, and updates to project costs. It appears applicable sections of the current version of the appendix address these changes.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>No changes necessary.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346557 | Design Team Leader | n/a' | Appendix C, General | n/a |

The ATR charge for this review included suggestion to verify that previous review comments have been addressed. Reference previous Appendix C-related ATR comment ID nos. 4080797, 4083021, 4085432, 4087443, 4087681, 4182293, and 4182306. Applicable sections of the current version of the appendix appear to be consistent with evaluations of these comments.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>No changes necessary.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346562 | Design Team Leader | n/a' | Appendix C, Sec. 1.0, 6th paragraph | n/a |
| The appendix generally appears to follow applicable policy guidance as specifically contained in Appendix C of ER 1110-2-1150, Paragraph 7 of ER 1110-2-1404, and Paragraph 7.c of ER 1110-2-1403.<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>No changes necessary.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4346566 | Hydraulics | n/a' | Appendix C, Sec. 1.2, 2nd paragraph | n/a |
| Total length of the proposed 47-foot channel appears to be more nearly 38.0 miles based on stationing from -97+680 to 103+000 (200,680 feet/5,280 feet/mile). Also, the increased channel length from the offshore extension appears to be more nearly 7.1 miles based on stationing from -60+000 to -97+680 (37,680 feet/5,280 feet/mile).<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>The text has been revised to reflect the correct channel lengths. "The total length of the SHEP navigation channel is 38.0 miles. This length is an increase of 7.1 miles from the currently authorized navigation channel due to the extension of the offshore entrance channel."<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4346569 | Hydraulics | n/a' | Appendix C, Sec. 3.2 | n/a |
| Text refers to six turning basins, but Table 3.2-1 lists five basins.<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>Text has been revised to read: "Five authorized turning basins, shown in Table 3.2-1, are located within the reaches proposed for deepening."<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 | | | |
| | Current Comment Status: **Comment Closed** | | | |
| 4346574 | Hydraulics | n/a' | Appendix C, Table | n/a |

| | | | | |
|---|---|---|---|---|
| | | | 6.3.4.1-1 | |

Appears stationing in this table should be negative. Also appears stationing for Route S-03 should begin at -60+000.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Stationing in the table has been revised.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346579 | Hydraulics | n/a' | Appendix C, Table 6.3.4.3-1 | n/a |

Appears the "B" shown for all stationing in this table should be removed, along with that shown in the last sentence of the paragraph preceding the table.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The "B" has been removed. Channel stationing across the bar to the ocean is shown with a negative sign only.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 28-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 29-Dec-11 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346591 | Hydraulics | n/a' | Appendix C, Sec. 7.2 | n/a |

Last paragraph refers to EC 1105-2-407, which has expired. As indicated elsewhere in this appendix (e.g., Sec. 7.0), it appears some documentation is provided in the Engineering Investigations Supplemental Materials regarding support of engineering models used for the project. The appendix should include discussion regarding approval of all models used in accordance with Enterprise Standard (ES)-08101, Software Validation for the Hydrology, Hydraulics, and Coastal Community of Practice.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Reference to EC 1105-2-407 in Section 7.2 of the Engineering Appendix has been removed. Also, Section 1.4 Model Certification is being added to the Engineering Appendix to include discussion of the various models used for SHEP and their approval status in accordance with the Enterprise Standard (ES)-08101.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 30-Dec-11 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 03-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4346597 | Hydraulics | n/a' | Appendix C, Sec. 7.5.2.2 | n/a |
| Second paragraph refers to EC 1165-2-211 for sea-level change considerations. That guidance has been superseded by EC 1165-2-212. The appendix should be updated accordingly.<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>The sea level rise analysis has been updated to incorporate the latest guidance, EC 1165-2-212.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 29-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 03-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4346604 | Design Team Leader | n/a' | Appendix C, Sec. 8.1.1 | n/a |
| Guidance used for sizing riprap and steel associated with mitigation structures should be stated.<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>Section 1.0 of the Engineering Appendix lists the USACE guidance used in the study and has been revised to include the references used for the mitigation design. Specifically, EM 1110-2-1100, Coastal Engineering Manual; EM 1110-2-2504, Design of Sheet Pile Walls; and EM 1110-2-1601, Hydraulic Design of Flood Control Channels.<br><br>Submitted By: Laura Williams (9126525268) Submitted On: 29-Dec-11 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 03-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4346610 | Operations | n/a' | Appendix C, Table 12.4-2 | n/a |
| Projected annual maintenance volume for range -98+600 to -57+000 is 124,000 cy, but Table 12.3-2 shows the volume as 21,580 cy. Discrepancy should be resolved.<br><br>Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11<br><br>Revised 22-Dec-11. | | | | |
| **1-0** | Evaluation **Concurred**<br>Table 12.3-2 is correct. Table 12.4-2 has been corrected.<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 03-Jan-12 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 04-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4346614 | Engineering Support | n/a' | Appendix C, Attachment 1, Plates 8, 9, and 15 | n/a |

Areas designated as passing lanes should be changed to meeting areas as discussed in SEC 6.3.3.

Submitted By: J. Greg Miller (251-690-3115). Submitted On: 22-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Drawings have been corrected to change "passing lanes" to "meeting areas"<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 03-Jan-12 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: J. Greg Miller (251-690-3115) Submitted On: 04-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4349825 | Planning - Plan Formulation | Section 10.3 | n/a | n/a |

In 10.3 Alternative Plan Costs in the 1st paragraph, last sentence states that "Recommended Plan costs are also presented in FY 2012 dollars with discounting conducted at the current FY 2012 discount rate (4.00%) in Table 11-2." Table 11-2 does not appear to present the FY 2012 costs for the recommended plan. Table 11-2 shows "Meeting Area Average Annual Equivalent Net Benefits". Table 11-1 shows "Economic Analysis of Alternative Deepening Plans" However, these costs do not match those in paragraph 10.3 and may be the FY 11 costs. I had difficulty in finding a table anywhere in the report that shows the benefit-to-cost ratio calculations for the recommended plan in the updated FY2012 costs.

Submitted By: Sheri Willey (409 766-3917). Submitted On: 27-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>The sentence identifying Table 11-2 has been deleted. There is no table showing benefits and costs in FY 2012 dollars. Chapter 11.4 does present the benefits, costs and BCR in FY12 doolars using the FY12 discount rate for the selected plan only.<br><br>Submitted By: Jerry Diamantides (401 861 0084) Submitted On: 04-Jan-12 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Sheri Willey (409 766-3917) Submitted On: 04-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4349862 | Economics | n/a' | n/a | n/a |

Present VOC's on a per TEU basis. (New comment text to read: Page 146 describes vessel operating costs and, likely in response to prior comments (see 4096112), limits the VOC's used to three types of which appropriately smooth the economic inconsistencies presented in recent Corps publications. That said, the VOC's used here in table 111 are difficult to reconcile as the operating costs on a per TEU basis are not presented (only dead weight tonnage costs are given and the actual Panamax, PPX1, and PPX2 vessels are not specified). This table should be extended to show per TEU VOC's.)

Submitted By: naomi fraenkel (917-790-8615). Submitted On: 27-Dec-11

| | |
|---|---|
| **1-0** | Evaluation **Concurred**<br>Concur. The table will be extended to show VOC's per TEU by vessel class.<br><br>Submitted By: Bernard Moseby (251 694-3884) Submitted On: 05-Jan-12 |
| **1-1** | Backcheck Recommendation **Open Comment** |

| | |
|---|---|
| | This comment will be closed when new text addressing it is presented.<br><br>Submitted By: naomi fraenkel (917-790-8615) Submitted On: 05-Jan-12 |
| **1-2** | Backcheck Recommendation **Open Comment**<br>Here is the information that you requested. Below is Table 111 extended to show the vessel operating cost per TEU using the FY2010 VOCs to update benefits to FY2012 price levels. VOC's are shown for the same vessel class plus values for the PPX2 103,800 DWT vessel that replaced the 86,100 PPX2 in the FY2012 update so that the typical vessel used in the HarborSym benefit estimation is the same typical vessel used in the TCSM benefit estimation. In Harbor Vessel Operating Cost TEU Cost per Hour Vessel DWT TEU FY12 VOC Per Hour 100% capacity 80% Capacity 60% Capacity Panamax 65,000 4,720 $2,296 $0.486 $0.608 $0.811 PPX1 74,100 6,185 $2,774 $0.449 $0.561 $0.748 PPX2 86,100 7,200 $3,080 $0.428 $0.535 $0.713 PPX2 103,800 8,670 $3,516 $0.406 $0.507 $0.676<br><br>Submitted By: Bernard Moseby (251 694-3884) Submitted On: 12-Jan-12 (Attachment: Vessel_cost_compare_FY08-10-mod-01122012.xlsx) |
| **1-3** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: naomi fraenkel (917-790-8615) Submitted On: 12-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4350800 | Geotechnical | n/a' | n/a | n/a |

| | |
|---|---|
| | Regarding the Raw Water Intake Impoundment: To create the impoundment soil will be excavated from the site and compacted to create an embankment? Do we have enough geotechnical data to conclude that the in situ soil will be suitable for construction?<br><br>Submitted By: Christopher Green (251-690-3435). Submitted On: 27-Dec-11 |
| **1-0** | Evaluation **Concurred**<br>A preliminary Geotechnical Evaluation was prepared by the A/E and has been added to the Supplemental Materials of the Engineering Appendix. Based on a geotechnical report from an adjacent parcel within the Trade Park, it was determined that a significant portion of the impoundment could be excavated into the ground. Cost estimates were made using conservative assumptions. Additional geotechnical testing will be conducted during final project design.<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 03-Jan-12 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Christopher Green (251-690-3435) Submitted On: 04-Jan-12 |
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4350856 | Geotechnical | 8.2.4 Chloride Impacts to Savannah's.... | 176 | n/a |

| | |
|---|---|
| | Fourth paragraph down on page 176, first sentence, the word "chlorine" is missing the "L".<br><br>Submitted By: Christopher Green (251-690-3435). Submitted On: 27-Dec-11 |
| **1-0** | Evaluation **Concurred**<br>spelling has been corrected<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 03-Jan-12 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Christopher Green (251-690-3435) Submitted On: 04-Jan-12 |

| | |
|---|---|
| | Current Comment Status: **Comment Closed** |

| | | | | |
|---|---|---|---|---|
| 4352425 | Geotechnical | 4.8.2 Water Resources | page 80 of GRR | n/a |
| On page 80 of the GRR, third paragraph, fourth sentence "possess" is missing the last "S".<br><br>Submitted By: Christopher Green (251-690-3435). Submitted On: 28-Dec-11 | | | | |
| **1-0** | Evaluation **Concurred**<br>change made as requested<br><br>Submitted By: Jerry Diamantides (401 861 0084) Submitted On: 04-Jan-12 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Christopher Green (251-690-3435) Submitted On: 04-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4357184 | Navigation | table 1-2 and table 1-3 | n/a | n/a |
| Sediment removal depths have not been corrected as stated in the back check.<br><br>Submitted By: Nathan Lovelace (251.957.6019). Submitted On: 03-Jan-12 | | | | |
| **1-0** | Evaluation **Concurred**<br>revisions made as attached<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 05-Jan-12 (Attachment: GRR_tables_1-2_and_1-3__05Jan12.docx) | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Nathan Lovelace (251.957.6019) Submitted On: 06-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4357189 | Navigation | Fig 1-8 | n/a | n/a |
| DA 13B still not labeled as stated in the back check..<br><br>Submitted By: Nathan Lovelace (251.957.6019). Submitted On: 03-Jan-12 | | | | |
| **1-0** | Evaluation **Concurred**<br>Figure 1-8 has been revised as requested<br><br>Submitted By: Jerry Diamantides (401 861 0084) Submitted On: 05-Jan-12 | | | |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Nathan Lovelace (251.957.6019) Submitted On: 06-Jan-12 | | | |
| | Current Comment Status: **Comment Closed** | | | |

| | | | | |
|---|---|---|---|---|
| 4357201 | Navigation | n/a' | n/a | n/a |
| No new comments for version of final DQC and ATR posted Dec 2011. Need to go back to Sept 13 comment 1 and 2 of the | | | | |

| | |
|---|---|
| 9.<br><br>Submitted By: Nathan Lovelace (251.957.6019). Submitted On: 03-Jan-12 | |
| **1-0** | Evaluation **Concurred**<br>Sep 13 comments have been addressed.<br><br>Submitted By: Carol Abercrombie (912-652-5514) Submitted On: 05-Jan-12 |
| **1-1** | Backcheck Recommendation **Close Comment**<br>Closed without comment.<br><br>Submitted By: Nathan Lovelace (251.957.6019) Submitted On: 06-Jan-12 |
| | Current Comment Status: **Comment Closed** |

**SAS – SAVANNAH HARBOR EXPANSION PROJECT**
**USACE- SAVANNAH DISTRICT**

**COST ENGINEERING DX - TPCS ATR CERTIFICATION UPDATE**

The Savannah Harbor Expansion Project for Savannah District has undergone a successful Cost Agency Technical Review (ATR), performed by the Walla Walla Cost DX ATR representatives. The Cost ATR included an updated study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies in accordance with ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of 5 January 2012, the Walla Walla District, Cost Engineering Directory of Expertise (DX) for Civil Works, certifies the estimated total project cost for the NED Plan 47' depth:

| | |
|---|---|
| FY 2013 Price Level: | $640,899,000 |
| Fully Funded Amount: | $688,118,000 |

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project controls and implementation procedures.

5 Jan 2012
**Date**

**Kim C. Callan, PE, CCE, PM1**
**Chief, Cost Engineering**
**Walla Walla District**

## **** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH**
LOCATION: **Savannah, Georgia**

DISTRICT: Savannah District PREPARED: 12/12/2011
POC: CHIEF, COST ENGINEERING,

This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT

| | | OCTOBER 1, 2010 PRICE LEVEL | | | | Program Year (Budget EC): 2013 | | | | | FULLY FUNDED PROJECT ESTIMATE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | BASE COST | Effective Price Level Date: 1 OCT 12 | | | FIRST COST | | | | |
| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | ($K) | COST ($K) | CNTG ($K) | FULL ($K) |
| A | B | C | D | E | F | G | H | I | J | K L | M | N | O |
| 06 | FISH & WILDLIFE FACILITIES | $169,835 | $42,459 | 25% | $212,294 | 4.7% | $177,756 | $44,439 | **$222,195** | | $184,397 | $46,099 | $230,497 |
| 12 | NAVIGATION PORTS & HARBORS | $207,023 | $51,756 | 25% | $258,779 | 8.1% | $223,834 | $55,959 | **$279,793** | | $234,085 | $58,521 | $292,606 |
| 18 | CULTURAL RESOURCE PRESERVATION | $11,132 | $2,783 | 25% | $13,915 | 5.7% | $11,771 | $2,943 | **$14,713** | | $12,017 | $3,004 | $15,022 |
| | **CONSTRUCTION ESTIMATE TOTALS:** | $387,990 | $96,998 | | **$484,988** | 6.5% | $413,361 | $103,340 | **$516,701** | | $430,499 | $107,625 | $538,124 |
| 01 | LANDS AND DAMAGES | $14,885 | $3,721 | 25% | $18,606 | 4.7% | $15,579 | $3,895 | **$19,474** | | $15,642 | $3,910 | $19,552 |
| 30 | PLANNING, ENGINEERING & DESIGN | $21,806 | $5,452 | 25% | $27,258 | 3.6% | $22,592 | $5,648 | **$28,241** | | $23,675 | $5,919 | $29,593 |
| 31 | CONSTRUCTION MANAGEMENT | $59,057 | $14,764 | 25% | $73,821 | 3.6% | $61,187 | $15,297 | **$76,484** | | $80,678 | $20,170 | $100,848 |
| | **PROJECT COST TOTALS:** | $483,738 | $120,935 | 25% | **$604,673** | 6.0% | $512,719 | $128,180 | **$640,899** | | $550,494 | $137,624 | $688,118 |

_____ CHIEF, COST ENGINEERING,

_____ PROJECT MANAGER,

_____ CHIEF, REAL ESTATE,

_____ CHIEF, PLANNING,

_____ CHIEF, ENGINEERING,

_____ CHIEF, OPERATIONS,

_____ CHIEF, CONSTRUCTION,

_____ CHIEF, CONTRACTING,

_____ CHIEF, PM-PB,

_____ CHIEF, DPM,

| | | |
|---|---|---|
| ESTIMATED FEDERAL COST: | 70% | **$481,683** |
| ESTIMATED NON-FEDERAL COST: | 30% | **$206,435** |
| **ESTIMATED TOTAL PROJECT COST:** | | **$688,118** |

**ESTIMATED TOTAL PROJECT O&M costs for 50 years** **$3,907,450**
Beginning NOV 2016 and includes 25% contingency
**ESTIMATED TOTAL PROJECT O&M costs INREASE for 50 years** **$506,826**
Beginning NOV 2016 and includes 25% contingency

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH
LOCATION: Savannah, Georgia
This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT

DISTRICT: Savannah District PREPARED: 12/12/2011
POC: CHIEF, COST ENGINEERING,

MAJOR FEATURES - REAL ESTATE, DISSOLVED O2, PRE-MONITORING, CSS GEORGIA, DIKES 14A &14B, & STRIPED BASS MITIGATION

Estimate Prepared: 9-Dec-11
Effective Price Level: 1-Oct-10

Program Year (Budget EC): 2013
Effective Price Level Date: 1 OCT 12

| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | FULLY FUNDED PROJECT ESTIMATE Mid-Point Date | ESC (%) | COST ($K) | CNTG ($K) | FULL ($K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| | PHASE 1 | | | | | | | | | | | | | |
| 06 | FISH & WILDLIFE FACILITIES | $79,433 | $19,858 | 25% | $99,291 | 4.7% | $83,138 | $20,784 | $103,922 | 2014Q3 | 2.5% | $85,242 | $21,310 | $106,552 |
| | --Dissolved O2 system and Water Storage | | | | | | | | | | | | | |
| 12 | NAVIGATION PORTS & HARBORS | $9,500 | $2,375 | 25% | $11,875 | 8.1% | $10,271 | $2,568 | $12,839 | 2014Q1 | 1.7% | $10,442 | $2,611 | $13,053 |
| | -Raise Dikes 14A and 14B | | | | | | | | | | | | | |
| 18 | CULTURAL RESOURCE PRESERVATION | $11,132 | $2,783 | 25% | $13,915 | 5.7% | $11,771 | $2,943 | $14,713 | 2014Q2 | 2.1% | $12,017 | $3,004 | $15,022 |
| | **CONSTRUCTION ESTIMATE TOTALS:** | $100,065 | $25,016 | 25% | **$125,081** | | $105,180 | $26,295 | $131,475 | | | $107,701 | $26,925 | $134,627 |
| 01 | LANDS AND DAMAGES | $14,885 | $3,721 | 25% | $18,606 | 4.7% | $15,579 | $3,895 | $19,474 | 2013Q2 | 0.4% | $15,642 | $3,910 | $19,552 |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| | PED | $6,268 | $1,567 | 25% | $7,835 | 3.6% | $6,494 | $1,624 | $8,118 | 2013Q2 | 0.7% | $6,541 | $1,635 | $8,176 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| | Construction Mgt, Monitoring, EDC,etc | $6,110 | $1,528 | 25% | $7,638 | 3.6% | $6,330 | $1,583 | $7,913 | 2014Q2 | 5.1% | $6,653 | $1,663 | $8,317 |
| | **CONTRACT COST TOTALS:** | $127,328 | $31,832 | | **$159,160** | | $133,583 | $33,396 | $166,979 | | | $136,537 | $34,134 | **$170,671** |

## **** TOTAL PROJECT COST SUMMARY ****

### **** CONTRACT COST SUMMARY ****

PROJECT: Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH
LOCATION: Savannah, Georgia
This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT
DISTRICT: Savannah District PREPARED: 12/12/2011
POC: CHIEF, COST ENGINEERING,

MAJOR FEATURES - Western McCoy's Cut, Diversion Channel, Close Rifle Cut, Deepen McCoy's Cut, Navigation AIDS, & DREDGE OUTER BAR

Estimate Prepared: 9-Dec-11
Effective Price Level: 1-Oct-10

Program Year (Budget EC): 2013
Effective Price Level Date: 1 OCT 12

| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | FULLY FUNDED PROJECT ESTIMATE Mid-Point Date | ESC (%) | COST ($K) | CNTG ($K) | FULL ($K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| | PHASE 2 | | | | | | | | | | | | | |
| 06 | FISH & WILDLIFE FACILITIES | $18,103 | $4,526 | 25% | $22,629 | 4.7% | $18,947 | $4,737 | $23,684 | 2015Q1 | 3.4% | $19,590 | $4,897 | $24,487 |
| | --McCoy's Cut, Riffle Cut & Nav Aids | | | | | | | | | | | | | |
| 12 | NAVIGATION PORTS & HARBORS | $73,480 | $18,370 | 25% | $91,850 | 8.1% | $79,447 | $19,862 | $99,309 | 2015Q2 | 3.8% | $82,491 | $20,623 | $103,114 |
| | --Dredge Outer Harbor | | | | | | | | | | | | | |
| 18 | CULTURAL RESOURCE PRESERVATION | | | | | | | | | | | | | |
| | **CONSTRUCTION ESTIMATE TOTALS:** | $91,583 | $22,896 | 25% | **$114,479** | | $98,394 | $24,599 | $122,993 | | | $102,081 | $25,520 | $127,601 |
| 01 | LANDS AND DAMAGES | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| | PED | $6,269 | $1,567 | 25% | $7,836 | 3.6% | $6,495 | $1,624 | $8,119 | 2013Q4 | 2.9% | $6,684 | $1,671 | $8,355 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| | Construction Mgt, Monitoring, EDC,etc | $7,584 | $1,896 | 25% | $9,480 | 3.6% | $7,858 | $1,964 | $9,822 | 2015Q2 | 9.4% | $8,596 | $2,149 | $10,745 |
| | **CONTRACT COST TOTALS:** | $105,436 | $26,359 | | **$131,795** | | $112,747 | $28,187 | $140,934 | | | $117,361 | $29,340 | **$146,701** |

# **** TOTAL PROJECT COST SUMMARY ****

PROJECT: Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH
LOCATION: Savannah, Georgia
This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT
DISTRICT: Savannah District PREPARED: 12/12/2011
POC: CHIEF, COST ENGINEERING,

MAJOR FEATURES - Dredge INNER HARBOR, Tidegate & Embankment, Rock Sill Back River, Fill Broad Berm, Fish Passage, Salt Marsh 1-S, Moinitor & Dike Raises.

Estimate Prepared: 9-Dec-11
Effective Price Level: 1-Oct-10

Program Year (Budget EC): 2013
Effective Price Level Date: 1 OCT 12

| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | FULLY FUNDED PROJECT ESTIMATE Mid-Point Date | ESC (%) | COST ($K) | CNTG ($K) | FULL ($K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| | PHASE 3 | | | | | | | | | | | | | |
| 06 | FISH & WILDLIFE FACILITIES | $72,299 | $18,075 | 25% | $90,374 | 4.7% | $75,671 | $18,918 | $94,589 | 2016Q1 | 5.1% | $79,566 | $19,891 | $99,457 |
| | --Tidegate, Rock Sill, Broad Berm, Fish Passage, and Salt Marsh Island 1-S | | | | | | | | | | | | | |
| 12 | NAVIGATION PORTS & HARBORS | $117,429 | $29,357 | 25% | $146,786 | 8.1% | $126,965 | $31,741 | $158,706 | 2016Q1 | 5.1% | $133,500 | $33,375 | $166,874 |
| | --Dredge Inner Harbor | | | | | | | | | | | | | |
| 18 | CULTURAL RESOURCE PRESERVATION | | | | | | | | | | | | | |
| | **CONSTRUCTION ESTIMATE TOTALS:** | $189,728 | $47,432 | 25% | **$237,160** | | $202,636 | $50,659 | $253,295 | | | $213,065 | $53,266 | $266,332 |
| 01 | LANDS AND DAMAGES | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| | PED | $6,269 | $1,567 | 25% | $7,836 | 3.6% | $6,495 | $1,624 | $8,119 | 2014Q2 | 5.1% | $6,827 | $1,707 | $8,533 |
| 31 | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| | Construction Mgt, Monitoring, EDC,etc | $7,584 | $1,896 | 25% | $9,480 | 3.6% | $7,858 | $1,964 | $9,822 | 2016Q1 | 12.7% | $8,854 | $2,214 | $11,068 |
| | **CONTRACT COST TOTALS:** | $203,581 | $50,895 | | **$254,476** | | $216,988 | $54,247 | $271,235 | | | $228,746 | $57,187 | **$285,933** |

**** CONTRACT COST SUMMARY ****

PROJECT: Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH
LOCATION: Savannah, Georgia
This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT

DISTRICT: Savannah District
POC: CHIEF, COST ENGINEERING,

PREPARED: 12/12/2011

MAJOR FEATURES - RESTORE DIKE CAPACITY, POST CONSTRUCTION MONITORING AND ADAPTIVE MGT AFTER CONSTRUCTION

Estimate Prepared: 9-Dec-11
Effective Price Level: 1-Oct-10

Program Year (Budget EC): 2013
Effective Price Level Date: 1 OCT 12

| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | FULLY FUNDED PROJECT ESTIMATE Mid-Point Date | ESC (%) | COST ($K) | CNTG ($K) | FULL ($K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | J | P | L | M | N | O |
| | PHASE 4 | | | | | | | | | | | | | |
| 06 | FISH & WILDLIFE FACILITIES | | | | | | | | | | | | | |
| 12 | NAVIGATION PORTS & HARBORS --Dike Raises | $6,614 | $1,654 | 25% | $8,268 | 8.1% | $7,151 | $1,788 | $8,939 | 2017Q1 | 7.0% | $7,652 | $1,913 | $9,565 |
| 18 | CULTURAL RESOURCE PRESERVATION | | | | | | | | | | | | | |
| | **CONSTRUCTION ESTIMATE TOTALS:** | $6,614 | $1,654 | | **8,268** | | $7,151 | $1,788 | $8,939 | | | $7,652 | $1,913 | $9,565 |
| 01 | LANDS AND DAMAGES | | | | | | | | | | | | | |
| 30 | PLANNING, ENGINEERING & DESIGN PED | $2,500 | $625 | 25% | $3,125 | 3.6% | $2,590 | $648 | $3,238 | 2014Q2 | 5.1% | $2,722 | $681 | $3,403 |
| 31 | CONSTRUCTION MANAGEMENT Post Monitoring & Adaptive Mgt | $34,279 | $8,570 | 25% | $42,849 | 3.6% | $35,515 | $8,879 | $44,394 | 2022Q3 | 41.5% | $50,267 | $12,567 | $62,834 |
| | **CONTRACT COST TOTALS:** | $43,393 | $10,848 | | **$54,241** | | $45,257 | $11,314 | $56,571 | | | $60,641 | $15,160 | **$75,801** |

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Savannah Harbor Expansion GRR - Tentative NED Plan - 47-FT DESIGN DEPTH
LOCATION: Savannah, Georgia
This Estimate reflects the scope and schedule in report; GENERAL RE-EVALUATION REPORT
MAJOR FEATURES - ADAPTIVE MGT & MONITOR AFTER ADAPTIVE MGT

DISTRICT: Savannah District PREPARED: 12/12/2011
POC: CHIEF, COST ENGINEERING,

Estimate Prepared: 9-Dec-11
Effective Price Level: 1-Oct-10

Program Year (Budget EC): 2013
Effective Price Level Date: 1 OCT 12

| WBS NUMBER | Civil Works Feature & Sub-Feature Description | COST ($K) | CNTG ($K) | CNTG (%) | TOTAL ($K) | ESC (%) | COST ($K) | CNTG ($K) | TOTAL ($K) | FULLY FUNDED PROJECT ESTIMATE Mid-Point Date | ESC (%) | COST ($K) | CNTG ($K) | FULL ($K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *A* | *B* | *C* | *D* | *E* | *F* | *G* | *H* | *I* | *J* | *P* | *L* | *M* | *N* | *O* |
| | PHASE 5 | | | | | | | | | | | | | |
| **06** | FISH & WILDLIFE FACILITIES | | | | | | | | | | | | | |
| **12** | NAVIGATION PORTS & HARBORS | | | | | | | | | | | | | |
| **18** | CULTURAL RESOURCE PRESERVATION | | | | | | | | | | | | | |
| | **CONSTRUCTION ESTIMATE TOTALS:** | | | | | | | | | | | | | |
| 01 | LANDS AND DAMAGES | | | | | | | | | | | | | |
| **30** | PLANNING, ENGINEERING & DESIGN | | | | | | | | | | | | | |
| | PED | $500 | $125 | 25% | $625 | 3.6% | $518 | $130 | $648 | 2029Q2 | 74.0% | $901 | $225 | $1,126 |
| **31** | CONSTRUCTION MANAGEMENT | | | | | | | | | | | | | |
| | Adaptive Mgt & Monitoring | $3,500 | $875 | 25% | $4,375 | 3.6% | $3,626 | $907 | $4,533 | 2029Q2 | 74.0% | $6,308 | $1,577 | $7,885 |
| | **CONTRACT COST TOTALS:** | $4,000 | $1,000 | | **$5,000** | | $4,144 | $1,036 | $5,180 | | | $7,209 | $1,802 | **$9,012** |

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

13 January 2012

Office of Counsel

## CERTIFICATION OF LEGAL REVIEW

The Savannah Harbor Expansion Project (SHEP) Final Environmental Impact Statement and General Re-Evaluation Report, dated January 2012, and the proposed draft SHEP Chief's Report and Record of Decision, have been reviewed by the Office of Counsel, Savannah District, and are approved as legally sufficient.

Terry G. Peters
District Counsel