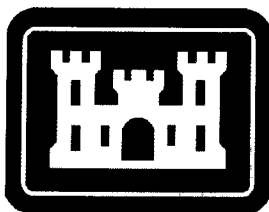


**Review Plan  
U.S. Army Corps of Engineers  
CENAB District  
CENAD Division**

**Hammond Dam NID# PA001133  
Issue Evaluation Study  
(SQRA)**



**US Army Corps  
of Engineers®**

*April 2013*

*Attached A*

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## 1. Introduction

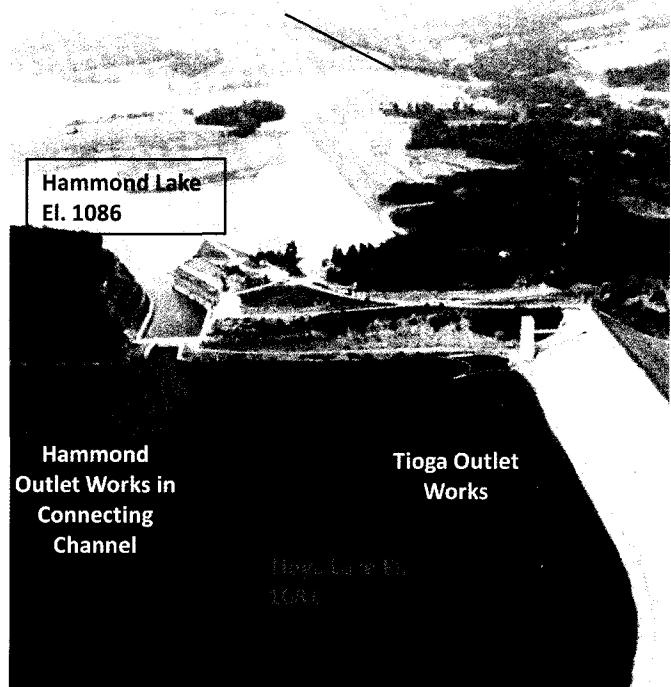
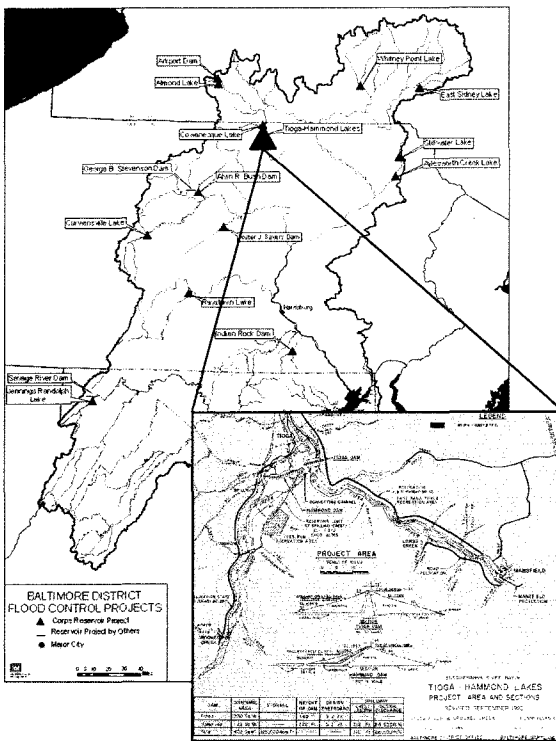
### ***a. Purpose***

This Review Plan is intended to ensure a quality-engineering Dam Safety Issue Evaluation Study developed by the Corps of Engineers. ER 1110-2-1156, "Dam Safety Policy and Procedures" dated 28 Oct 2011, Chapter 8 describes the Issue Evaluation Study (IES) Plan development, review, and approval process. This Review Plan has been developed for Hammond Dam, NID# PA01133. This Review Plan was prepared in accordance with EC 1165-2-214, "Civil Works Review Policy", and covers the review process for the Hammond Dam Phase I IES Report. The IES is a study that may lead to additional studies, modeling, or NEPA consultation. NEPA compliance would occur during the Dam Safety Modification Study Phase. Because the Phase 1 IES is used to justify Phase 2 Issue Evaluation Studies and potentially Dam Safety Modification (DSM) studies, it is imperative that the vertical teaming efforts are proactive and well coordinated to assure collaboration of the report findings, conclusions, and recommendations, and that there is consensus at all levels of the organization with the recommended path forward. However it should be noted that after completion of the PFMA on this project, there were few credible failure modes and the risk was determined to be very low. As such it was determined by the RMC that a full quantitative Risk Assessment would not be needed and instead the study would consist of a Semi-Quantitative Risk Assessment (SQRA).

### ***b. Project Description and Information***

Details of the project are included in the Issue Evaluation study Plan, last updated in June 2012.

For reference the following is a location map and photo of the Tioga-Hammond project.



**Project Background.**

The main issues to be addressed for the Hammond Dam as determined in the screening portfolio risk assessment (SPRA) were the potential for Embankment piping at the Crooked Creek outlet conduit for the extreme event, the potential for conduit joint failure for the Crooked Creek conduit at the Unusual and Extreme events, and foundation seepage and piping at the Unusual and Extreme events. The IES will evaluate these potential failure modes as well as other credible failure modes in order to determine the most critical failure modes and determine an overall probability of failure through a rigorous risk assessment process. The project was tested with the record pool event during Tropical Storm Agnes in June 1972, and the dam has performed satisfactorily during the 34 years since completion of the work.

**Risk Assessment Background.**

Hammond Dam was subjected to a Screening Portfolio Risk Assessment (SPRA) in May 2007 and was assigned a DSAC rating of II in September 2007 indicating an *urgent and unsafe or potentially unsafe* condition. An Interim Risk Reduction Measures (IRRM) plan was completed in May 2008 and many of the recommended measures have been implemented. An Issue Evaluation Study (IES) was initiated with a facilitated Probable Failure Mode Analysis (PFMA) conducted in July 2012. As a result of a preliminary risk screening during the PFMA, the risk associated with all probable failure modes appeared to be very low. Therefore, it was determined that a Qualitative Risk Assessment (QRA) report would be accomplished in lieu of a

formal IES report. The RMC later changed the report classification to a Semi-Quantitative Risk Assessment (SQRA) report. The draft of the SQRA report was completed in October 2012 and was subjected to a district quality control review using qualified technical personnel who have not been significantly involved in the Hammond PFMA or IES efforts. The District review was conducted and comments resolved during November and December 2012. The completed SQRA report was completed in December 2012 and the Quality Control and Consistency (QCC) Review, was completed during February 2013.

### ***c. Levels of Review***

#### **SQRA Reviews shall include:**

- District Quality Control (DQC)
- Agency Technical Review (ATR) (RMC Certification)
- RMC Reviews shall include:
- Quality Control and Consistency Review (RMC staff and/or external experts)

**Independent External Peer Review (IEPR)** is not required for this study since Dam Safety Modifications will not be needed.

### ***d. Review Team***

**Review Management Office:** The USACE Risk Management Center (RMC) is the Review Management Organization (RMO) for dam safety related work, including this SQRA. Contents of this review plan have been coordinated with the RMC and the North Atlantic Division, the Major Subordinate Command (MSC). Informal coordination with NAD will occur throughout the SQRA development, including briefings to the NAB and NAD Dam Safety Committees and Program Review Board updates as requested. In-Progress Review (IPR) team meetings with the RMC, NAD, and HQ will be scheduled on an "as needed" basis to discuss programmatic, policy, and technical matters. The NAD Dam Safety Program Manager will be the POC for vertical team coordination. This review plan will be updated for each new project phase.

**Agency Technical Review Team:** The primary specialties for this review will be Geotechnical and Structural Engineers and Geologists.

**Required ATR Team Expertise:** The ATR team will be chosen based on each individual's qualifications and experience with similar projects.

**ATR Lead:** The ATR Lead is a senior professional with extensive experience in preparing Civil Works documents and conducting ATRs (or ITRs). The lead has the

necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline, in this case, Structural Engineering, Geotechnical Engineering, or Geology.

**Geotechnical Engineer** - shall have experience in the field of geotechnical engineering, analysis, design, and construction of embankment dams. The geotechnical engineer shall have experience in subsurface investigations, rock and soil mechanics, internal erosion (seepage and piping), slope stability evaluations, erosion protection design, and earthwork construction. The geotechnical engineer shall have knowledge and experience in the forensic investigation of seepage, settlement, stability, and deformation problems associated with high head dams and appurtenances constructed on rock and soil foundations.

**Engineering Geologist** - shall have experience in assessing internal erosion (seepage and piping) beneath embankment dams constructed on various types of bedrock formations as well as glacial deposits. The engineering geologist shall be familiar with identification of geological hazards, exploration techniques, field and laboratory testing, and instrumentation. The engineering geologist shall be experienced in the design of grout curtains and must be knowledgeable in grout methodology, concrete mix designs, and other materials used in foundation seepage barriers.

**Hydraulic Engineer** – shall have experience in the analysis and design of hydraulic structures related to dams including the design of hydraulic structures (e.g., spillways, outlet works, and stilling basins). The hydraulic engineer shall be knowledgeable and experienced with the routing of inflow hydrographs through multipurpose flood control reservoirs utilizing multiple discharge devices, Corps application of risk and uncertainty analyses in flood damage reduction studies, and standard Corps hydrologic and hydraulic computer models used in drawdown studies, dam break inundation studies, hydrologic modeling and analysis for dam safety investigations.

**Mechanical Engineer** –shall have experience in machine design, machine rehabilitation and familiarity with design of mechanical gates and controls for flood control structures.

**Structural Engineer** – shall have experience and be proficient in performing stability analysis, finite element analysis, seismic time history studies, and external stability analysis. The structural engineer shall have specialized experience in the design, construction and analysis of concrete structures.

**Economist (or Consequence Specialist)** – shall be knowledgeable of policies and guidelines of ER 1110-2-1156 as well as experienced in analyzing flood risk

management projects in accordance with ER 1105-2-100, the Planning Guidance Notebook. The economist shall be knowledgeable and experienced with standard Corps computer models and techniques used to estimate population at risk, life loss, and economic damages.

## 2. Requirements

### a. Reviews

The review of all work products will be in accordance with the requirements of EC 1165-2-214 by following the guidelines established within this review plan. All engineering and design products will undergo District Quality Control Reviews.

#### i. District Quality Control (DQC)

DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements. DQC will be performed for all district engineering products by staff not involved in the work and/or study. Basic quality control tools include a plan providing for seamless review, quality checks and reviews, supervisory reviews, etc.

#### ii. Agency Technical Review (ATR)

ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assure that all the parts fit together as a coherent whole. ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists, etc.), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home Major Subordinate Command (MSC). Note: since this is a SQRA, ATR will be conducted as a Consistency Review by RMC Team.

#### iii. Independent External Peer Review (IEPR)

IEPR is the most independent level of review, and is applied in cases that meet certain criteria. This IES is not a decision document and does not cover work requiring a Type I or Type II IEPR. Issue Evaluation Studies are used to justify Dam Safety Modification Studies. If this project requires a Dam Safety Modification Study, both Type I and Type II IEPR will be conducted. (Not required for SQRA)

*iv. Policy and Legal Compliance Review*

Policy and Legal Compliance Review is required for decision documents. Since this IES is not a decision document it does not require a Policy and Legal Compliance Review. If this project requires a Dam Safety Modification Study, a Policy and Legal Compliance Review will be conducted. (Not required on this project)

*v. Peer Review of Sponsor In-Kind Contributions*

There will be no in-kind contributions for this SQRA.

**b. Approvals***i. Review Plan Approval and Updates*

The MSC for this SQRA is the North Atlantic Division. The MSC Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving the Baltimore District, MSC, RMC and HQUSACE members) as to the appropriate scope and level of review for the study and endorsement by the RMC. Like the PMP, the Review Plan is a living document and may change as the study progresses. The District is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in an Attachment to this plan. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-endorsed by the RMC and re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the District's webpage and linked to the HQUSACE webpage.

*ii. SQRA Report*

The SQRA Report shall undergo a DQC and formal ATR. After the ATR, the PDT will present the SQRA to the Quality Control and Consistency (QCC) Panel for review. The district and the risk assessment cadre present the SQRA, SQRA findings, conclusions, and recommendations for review. After the QCC meeting, the Risk Cadre and RMC will certify that the risk estimate was completed in accordance with the Corps' current guidelines and risk management best practices. The SQRA will then be presented to the Senior Oversight Group (SOG). The SOG generally consists of the following members: Special Assistant for Dam Safety (Chair); CoP & Regional Representatives to include Geotechnical and Materials CoP Leader, Structural CoP Leader, and Hydraulics and Hydrologic CoP Leader; Regional representatives determined by Special Assistant for Dam Safety; Corps Business Line & Program Representatives to include DSPM, Flood Damage Reduction, Programs, and Director, Risk Management Center; and any other Representatives determined by the Special Assistant for Dam Safety. The District



Dam Safety Officer (DSO), the MSC DSO, and the SOG Chairman will jointly approve the final SQRA after all comments are resolved. The SOG is scheduled for 30 April 2013 and will be accomplished via video-conference.

### **3. Guidance and Policy References**

- ER 5-1-11, USACE Business Process
- EC 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- ER 1110-2-1156, Safety of Dams – Policy and Procedure, 28 Oct 2011
- ER 1110-1-12, Quality Management, 31 Mar 2011

### **4. Summary of Required Levels of Review**

The dam safety program follows the policy review process described in EC1165-2-214, Civil Works Review Policy. The RMC will be the review management office for the ATR, and the RMC must certify that the risk assessment was completed in accordance with the USACE current guidelines and best risk management practices. A Quality Control and Consistency (QCC) review will be conducted including the district, MSC, and RMC. The district and the risk assessment cadre will present SQRA assessment, findings, conclusions, and recommendations for review. After resolution of QCC review comments, the MSC and HQUSACE will complete quality assurance and policy compliance review.

### **5. Models**

#### ***a. General***

The use of certified or approved models for all planning activities is required by EC 1105-2-407. The EC defines planning models as any models and analytical tools that planners use to define water resources 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. Engineering software is being addressed 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 type models will not be reviewed for certification and approval. 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.

**b. List**

(List any planning models expected to be used in developing recommendations and the model certification/acceptance status.)

<b>Model</b>	<b>Status</b>
None anticipated	

**6. Review Schedule**

<b>Project Phase / Submittal</b>	<b>Review Start</b>	<b>Review Complete</b>
DQC Review	5 Nov 2012	3 Dec 2012
ATR Review	26 Nov 2012	18 Jan. 2013
Report Revisions and Backcheck		
Submit Report to QCC		
QCC Review	21 Jan 2013	22 Feb 2013
Report Revisions		
Submit Report to SOG	Mar/Apr 2013	
SOG Review		30 April 2013
Report Revisions		

**7. Public Participation**

Public participation will not take place until the SQRA phase is completed. Public and stakeholder coordination has been performed to inform interested parties about the DSAC II rating and ongoing IES/SQRA. Findings of the Final SQRA will also be shared with appropriate stakeholders. If this project results in a Dam Safety Modification Study (DSMS), future public coordination will occur for NEPA compliance.

**8. Cost Estimate**

<b>Task Description</b>	<b>Review Start</b>	<b>Review Cost</b>
DQC Review	15 October 2012	\$25,000
ATR Review	26 Nov. 2012	\$25,000
QCC Review	21 Jan. 2013	\$25,000
SOG Review	March 2013	\$10,000

## 9. Execution Plan

Reviews will be documented using DrChecks

### **a. District Quality Control**

#### *i. General*

DQC will be conducted after completion of the final draft SQRA. DQC requires both supervisory oversight and District technical experts. The district will conduct a robust DQC in accordance with EC 1165-2-214, Civil Works Review Policy, the District's Quality Management Plan, and ER 1110-2-12, Quality Management. Documentation of DQC activities is required and will be in accordance with the District and MSC Quality manuals. The DQC and ATR will be concurrent. Comments and responses from DQC will be available for the ATR team to review through ProjNet DrChecks.

#### *ii. DQC Review and Control*

The District DSAC Project Manager will schedule DQC review meetings. The in progress review meetings should include PDT members from Geotechnical, Dam Safety, Geology, Hydrology & Hydraulics, Structures, Mechanical, and Operations as applicable. DQC Review will be conducted on the completed final draft SQRA including all Sections and Appendixes and will include comments, backcheck and SQRA revisions. ProjNet DrChecks review software will be used to document reviewer comments, responses and associated resolutions. Comments should be limited to those that are required to ensure the adequacy of the product.

### **b. Agency Technical Review**

#### *i. General*

Draft ER 1110-2-1156, Chapter 8 describes the purpose, process, roles and responsibilities for an SQRA in addition to the submittal, review, and approval process. The Risk Management Center (RMC) is responsible for coordinating and managing agency technical review of the IES Report in accordance with EC 1165-2-214. The ATR Lead will be an RMC team member unless otherwise approved by the RMC Director. The ATR Lead in cooperation with the PDT, MSC, and vertical team will determine the final make-up of the ATR team.

#### *ii. ATR Review and Control (RMC Consistency Review)*

Reviews will be conducted in a fashion which promotes dialogue regarding the quality and adequacy of the SQRA and baseline risk assessment necessary to achieve the purposes of the SQRA. The ATR team will review the SQRA report which includes supporting risk and stability analysis documentation. A QCC of the baseline risk estimate and supporting documentation will be performed under the leadership of the

RMC. Therefore, the level of effort for each ATR reviewer is expected to be between 16 and 32 hours. DrChecks review software will be used to document reviewer comments, responses and associated resolutions. Comments should be limited to those that are required to ensure the adequacy of the product. The RMC in conjunction with the MSC, will prepare the charge to the reviewers, containing instructions regarding the objective of the review and the specific advice sought. A kick off meeting will be held with the ATR team to familiarize reviewers with the details of the project.

The four key parts of a review comment will normally include:

- (1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures.
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed.
- (3) 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.
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the PDT must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist. 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 coordination, and lastly the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. Review Reports will be considered an integral part of the ATR documentation and shall also:

- (1) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer.
- (2) Include the charge to the reviewers prepared by the RMC in accordance with EC 1165-2-214, 7c.
- (3) Describe the nature of their review and their findings and conclusions.
- (4) Include a verbatim copy of each reviewer's comments and the PDT's responses.

ATR may be certified when all ATR concerns are either resolved or referred to HQUSACE for resolution and the ATR documentation is complete. Certification of ATR should be completed, based on work reviewed to date, for the final report. A draft certification is included in Attachment 1.

## 10. Review Plan Points of Contact

<b>Name/Title</b>	<b>Organization</b>	<b>Email/Phone</b>
James Snyder, DSPM	NAB	james.r.snyder@usace.army.mil
Michael Snyder, Lead Engineer	NAB	michael.r.snyder2@usace.army.mil
Damon Amlung, RMC Cadre Leader	LRL	damon.p.amlung@usace.army.mil
Tom Bishop / Review Manager	CEIWR-RMC	thomas.w.bishop@usace.army.mil

ATTACHMENT 1

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. 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 US Army Corps of Engineers 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 resolved and the comments have been closed in DrChecks<sup>sm</sup>.

SIGNATURE

Name  
ATR Team Leader  
Office Symbol/Company

\_\_\_\_\_  
Date

SIGNATURE

James R. Snyder, PE  
Project Manager (DSPM)  
CENAB-EN-GF

\_\_\_\_\_  
Date

SIGNATURE

Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

\_\_\_\_\_  
Date

SIGNATURE

Nathan Snorteland  
CEIWR-RMC

\_\_\_\_\_  
Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution. As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Ronald J. Maj, PE  
Chief, Engineering Division  
CENAB-EN

\_\_\_\_\_  
Date

SIGNATURE

Name  
Dam Safety Officer<sup>2</sup>  
Same as Ch, Engineering Division  
Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted  
<sup>2</sup> Only needed if different from the Chief, Engineering Division.

ATTACHMENT 2: TEAM ROSTERS

Include rosters and contact information for the current PDT, Risk Cadre, DQC team, ATR team, vertical team and RMC points of contact.

**Issue Evaluation Study - Risk Assessment – PDT (Original)**

Discipline	RMC Risk Cadre Member	NAB PDT Member
Cadre Team Lead	Chris Hogan, RMC	
Facilitator	Damon Amlung, LRL	
Co-Facilitator	Joe Carnall, LRL	
Report Writer	Damon Amlung, LRL	
DAMRAE	Joe Carnall, LRL	
Geotech RA	Chun-Yi Kuo, LRL Troy O'Neal, LRL	Mike Snyder Jim Snyder
Geologist RA	Jacob Nienaber, LRL	Megan Garrett
Structural RA	Josh Corbett, LRL Brett Heppermann, LRL	Preston Jacka
H&H RA	Adam Connelly, LRL	Dennis Seibel
Consequence RA	Alex Ryan, LRL	
Mechanical RA	Mark Robertson, LRL	Ben Alexander
Trainee(s)	Casey Cummins, LRL	
District DSPM		Jim Snyder
District Lead Engineer		Mike Snyder
District RA PM		
Water Management		Julia Fritz
Environmental		
Cost Engineering		Dan Durski
Oper Div Manager		Joe Ignatius
District Dam Safety Officer		Ron Maj
RADS II - Documents		Brian Glock
Support Personnel		Nicole Walsh (geotech)

<b><u>DQC Review Team Member</u></b>	<b><u>Organization</u></b>	<b><u>Technical Role</u></b>
Brian Glock, PE	Foundations & Dams Section, Geotechnical Branch	Geotechnical Engineer
Dennis Seibel, PE	Water Resources Section, Civil Works Branch	Hydrology & Hydraulics Engineer
Yohannes Assefa, PE	Structural Section, Design Branch	Structural Engineer
Charles Frey, PE	Ch. Foundations & Dams Section, Geotechnical Branch	Dam Safety Supervisor
Cheryl Webster	Geology and Investigations Section, Geotechnical Branch	Geologist

**RMC Consistency Review Team**

Chris Hogan, PE (RMC)

Kevin Richards, PhD, PE (RMC)





DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS  
441 G STREET, NW  
WASHINGTON, DC 20314-1000

22 Aug 2012

CECW

MEMORANDUM FOR CECW-CE, CECW-I, CECW-P, CEPA

SUBJECT: Civil Works Response to the Engineer Inspector General "Inspection of USACE Civil Works Review Processes"

1. The Engineer Inspector General (EIG) has just completed its "Inspection of USACE Civil Works Review Processes." The two main objectives of the inspection required the EIG to evaluate:
  - a. Compliance with established Agency Technical Review processes and procedures.
  - b. Compliance with established Independent External Peer Review processes and procedures.
2. The EIG report and its recommendations have been endorsed by the U.S. Army Corps of Engineers Commander, LTG Thomas P. Bostick. The bottom line is there is not a consistent buy-in and execution of EC 1165-2-209 "Civil Works Review Policy" across the organization and our plan of corrective action is based on that.
3. This action plan to respond to the EIG "Inspection of USACE Civil Works Review Processes" report has responsibilities directed to the subject HQ offices and to the field offices through the MSC Commanders. (Memo to the MSC Commanders is enclosed) The HQ requirements, to be completed by CECW-CE, CECW-I, CECW-P, and CEPA are listed below with the required completion dates and the lead office(s) identified in parentheses. I need your immediate attention to complete these actions:
  - a. Review plans – by August 2012:
    - (1) Correct broken links on HQ Review Plan website (lead: CEPA).
  - b. Review plans – by December 2012:

ATTACHED B

CECW

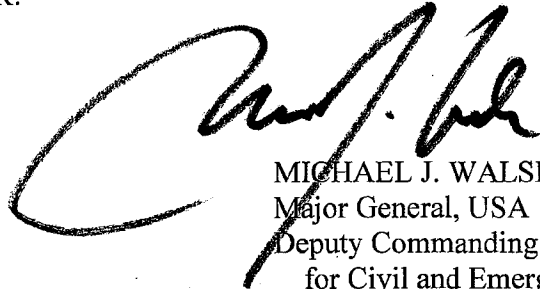
SUBJECT: Civil Works Response to the Engineer Inspector General "Inspection of USACE Civil Works Review Processes"

(2) Integrate with ongoing "web migration" schedule of PAO (lead CEPA).

4. For all of these actions, it is imperative that they be integrated with the Planning Modernization and Civil Works Transformation initiatives.

FOR THE COMMANDER:

Encl  
as



MICHAEL J. WALSH  
Major General, USA  
Deputy Commanding General  
for Civil and Emergency Operations



REPLY TO  
ATTENTION OF

CENAD-RBT

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

10 NOV 2012

MEMORANDUM FOR Commander, Baltimore District, US Army Corps of Engineers, ATTN:  
Dam Safety Officer (Mr. Maj), P.O. Box 1715 Baltimore, MD 21203-1715

SUBJECT: Approval of the Review Plan for the Issue Evaluation Study with a Semi-  
Quantitative Risk Assessment, Hammond Dam, PA (NID #PA01133)

1. References:

a. Review Plan for the Issue Evaluation Study with a Semi-Quantitative Risk Assessment (SQRA), Hammond Dam, PA (NID #PA01133).

b. EC 1165-2-214, Water Resources Policies and Authorities - Civil Works Review, 15 December 2012.

2. The enclosed Review Plan for the Issue Evaluation Study (IES) with a Semi-Quantitative Risk Assessment (SQRA) of the Hammond Dam has been prepared in accordance with Reference 1.b.

3. The USACE Risk Management Center (RMC) is the Review Management Organization (RMO) for the Agency Technical Review (ATR). As the IES will not lead to a modification report, the Review Plan does not include an Independent External Peer Review (IEPR).

4. In 2007 the Hammond Dam was rated a Dam Safety Action Class 2 (DSAC 2) by the Dam Safety Senior Oversight Group. Subsequent to the DSAC 2 rating the project has undergone a Potential Failure Mode Analysis (PFMA) and a full risk assessment was planned. However, since the PFMA did not find any significant failure modes, the RMC recommended that a SQRA be performed instead of a full risk assessment.

5. The Review Plan for the IES with a SQRA for the Hammond Dam is approved. The Review Plan is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.

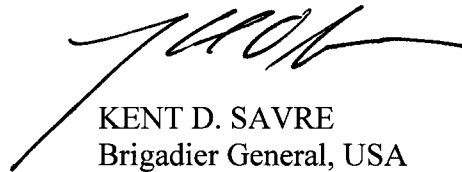
6. In accordance with Reference 1.b, Appendix B, Paragraph 6, this approved Review Plan shall be posted on your district website for public review and comment.

CENAD-RBT

SUBJECT: Approval of the Review Plan for Issue Evaluation Study with a Semi-Quantitative Risk Assessment, Hammond Dam, PA (NID #PA01133).

7. The Point of Contact in Business Technical Division for this action is Daniel Rodriguez, 347-370-7095 or Daniel.J.Rodriguez@usace.army.mil.

Encl  
as



KENT D. SAVRE  
Brigadier General, USA  
Commanding

CF (w/ encl):  
CENAB-EC-G (Mr. J. Snyder)