



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

REPLY TO  
ATTENTION OF:

12 DEC 2012

CEMVD-PD-N

MEMORANDUM FOR Commander, New Orleans District  
(ATTN: CEMVN-PM-B)

SUBJECT: Atchafalaya Basin Construction Project - Peer Review  
Plan (RP)

1. References:

- a. Memorandum, CEMVN-PM-B, 10 December 2012, SAB  
(encl 1).
- b. Memorandum, CEIWR-RMC, 5 December 2012, subject: Risk  
Management Center Endorsement - Atchafalaya Basin Construction  
Review Plan (encl 2).
- c. Engineering Circular (EC) 1165-2-209, Change 1, Civil  
Works Review Policy, dated 31 January 2012.

2. The subject RP provided under Reference 1.a. was reviewed and endorsed for approval by the Risk Management Center. The RP includes agency technical review and Type II Independent External Peer Review. The RP is consistent with the purpose and policy of EC 1165-2-209.

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

4. The RP is to be posted to the District website.

5. The POC for this action is Mr. Mincer Minor, CEMVD-PD-N, at (601) 634-5841.

A handwritten signature in black ink, reading "Edward E. Belk, Jr.", is positioned above the typed name and title.

EDWARD E. BELK, JR., P.E., SES  
Director of Programs

2 Encl

CF:  
CECW-MVD (J. Redican)

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT

ATCHAFALAYA BASIN CONSTRUCTION PROJECT

REVIEW PLAN

New Orleans District

Approved 12 December 2012

## Table of Contents

Item	Page No.
1. General	3
2. Program Description	3
3. References	6
4. Requirements	6
5. Plan for Review	8
6. Review Management Organization Coordination	14
7. Point of Contact	14
8. Appendix A - Statement of Completion of ATR	15
9. Appendix B - Statement of Completion of IEPR	16
10. Appendix C - Project Delivery Team Members	18

**MISSISSIPPI RIVER AND TRIBUTARIES PROJECT  
ATCHAFALAYA BASIN CONSTRUCTION PROJECT  
FEATURE REVIEW PLAN  
Reviews of documents and process**

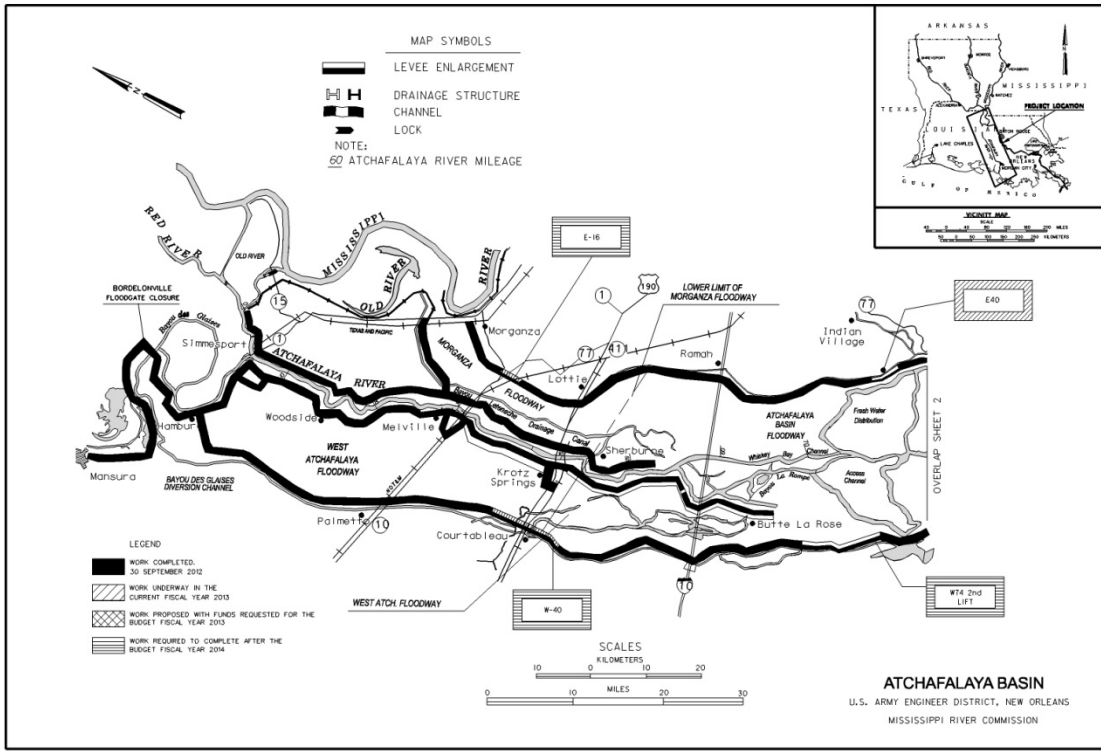
**1. General**

This Review Plan will be performed in accordance with the EC 1165-2-209 dated 31 January 2010. Documents and processes related to the feature are discussed below. This Review Plan will be used to outline the review process and is part of the Project Management plan for project number 108795.

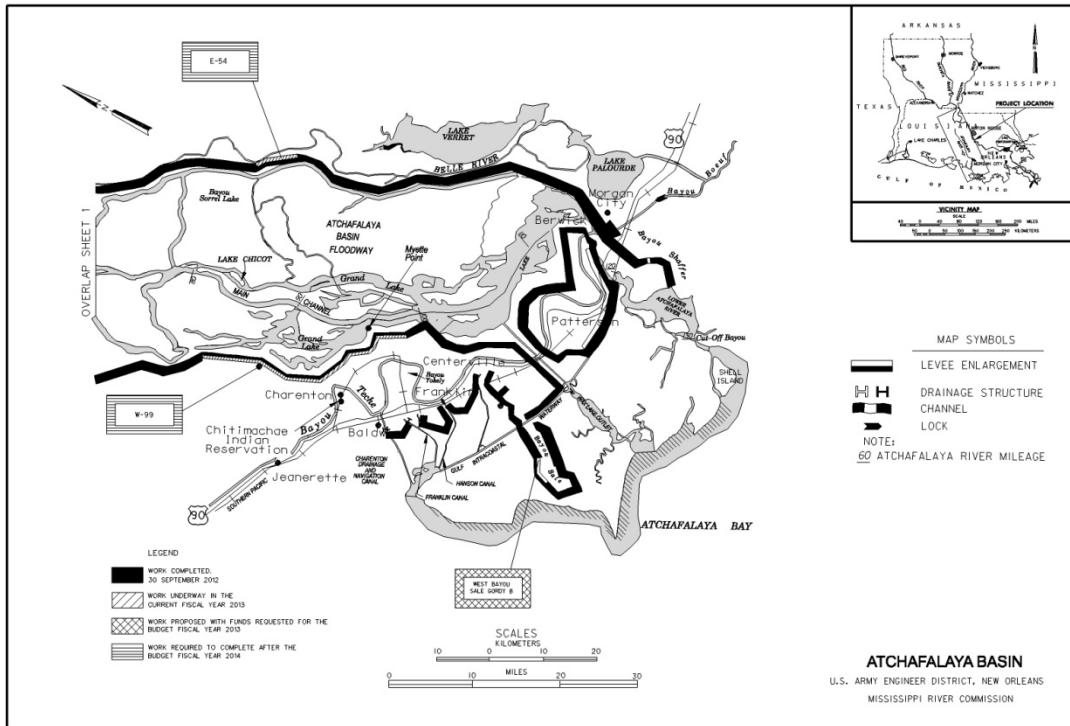
**2. Program Description**

The Mississippi River below Morganza Floodway is capable of carrying 1,500,000 cubic feet per second without threatening the integrity of the levees along its banks which protect densely populated areas, highly developed agricultural lands, industries, and the City of New Orleans, as well as a number of communities. Studies indicate that the project flood against which the flood control protection works are designed could be of such magnitude that 3,030,000 cubic feet per second will pass the latitude of Old River. Since the Mississippi River below the Morganza Floodway can carry only one-half this amount, the other one-half must be diverted from the main channel. This amount is diverted through the Old River Control Structure, the Old River Auxiliary Structure, the West Atchafalaya Floodway and the Morganza Control Structure. In order to prevent diverted waters from spreading over the rich and highly developed agricultural lands within the Atchafalaya Basin, these rivers and floodways have been leveed to confine the diverted flow.

This floodway system is a part of the main river system, in as much as the integrity of the main river system depends upon its utilization. Since this construction began, farms and industries have developed in the areas adjacent to the floodway assuming that they would receive protection. Therefore, overtopping or crevassing of the levees would cause far more damage than anticipated at the start of project construction. The main protection levees in the lower reaches are deficient because of consolidation of the soft underlying soils, especially those below the latitude of Krotz Springs, LA. Early construction of these levees to the approved grade is essential, not only for flood protection, but as a means of access for the movement of manpower and equipment to any spot threatened by floods.



SHEET 1 OF 2



SHEET 2 OF 2

The Atchafalaya Basin project is one of several Main Stem components, which together comprise the plan of improvement for the control of floods on the Mississippi River. Because the benefits of the Atchafalaya Basin derive from the way in which they operate together with the other Main Stem components when the Mississippi River floods, the benefit-cost ratio is a composite one that covers the entire plan.

The value of lands and improvements protected by the Main Stem System authorized works against the design flood is \$200.8 billion in 2010 dollars. This consists of 226,000 residential acres which include the City of New Orleans, 45,000 acres of commercial lands, 10 million acres of agricultural lands, and 6.5 million acres of woodland and marshland. The area subject to flooding by project flood assuming no protective works is 22.7 million acres. The area that will be provided complete protection by the completed project is 15.1 million acres.

The maximum flood of record was the 1927 flood which overflowed about 26,000 square miles, caused the deaths of 214 people, rendered 637,000 people temporarily homeless, and caused property damages of \$347.0 million. This would be equivalent to \$15.2 billion in damages in 2010 prices.

The next flood of magnitude was the 1973 flood which overflowed 16,875 square miles (10.8 million acres), caused the death of 28 people, and displaced approximately 45,300 persons. The deaths and displacements of persons would have been significantly higher without the project in place. Without Federal projects, approximately 19.8 million acres would have been inundated. Total damages with existing projects in operation were \$643 million (1973 price levels). Damages without projects would have been \$11.3 billion and total damages prevented by projects amounted to \$10.6 billion. Expressed in 2010 prices, damages without the projects would have been \$55.0 billion and damages prevented would have been \$51.9 billion.

The most recent flood event was the great flood of 2011, the largest recorded flood in the river's history. Along with around the clock exhaustive flood fighting measures, the MR&T System was tested with the activation of the Birds Point - New Madrid Floodway, the opening of the Morganza Floodway, and opening of the Bonne Carre Spillway. This was the first time in history that all three structures were operated simultaneously. The MR&T System operated as designed and prevented more than \$120 billion in damages. The Morganza structure was operated

for only the second time in history. The Atchafalaya Basin was able to successfully pass the record flood in spite of many miles of levees being below design elevation and several structures being in need of replacement. This was accomplished ONLY through extensive flood fighting efforts and constant coordination with local, state and other Federal entities.

### **3. References**

- EC 1165-2-209, Water Resources Policies and Authorities. Civil Works Review Policy (1/31/2010)
- ER 5-1-1, Project Management Business Process (11/1/2006)  
<http://140.194.76.129/publications/eng-regs/er5-1-11/entire.pdf>
- ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- ER-1110-1-12 Quality Management (6/21/2006)  
<http://140.194.76.129/publications/eng-regs/er1110-1-12/entire.pdf>
- ES-08011 QA-QC Process for Study-Design,  
<https://kme.usace.army.mil/CE/QMS/QMS%20Documents/2007-10/08011%20QC-QA%20Processes%20for%20Study-Design%20Phase.DOC>
- PMBP Manual, Proc 2000 PMP/PgMP Development  
[http://bp.usace.army.mil/robo/projects/pmbp\\_manual/PMBP\\_Manual/proc2000.htm](http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/proc2000.htm)
- PMBP Manual, REF8008G Quality Management Plan  
[http://bp.usace.army.mil/robo/projects/pmbp\\_manual/PMBP\\_Manual/REF8008G.htm](http://bp.usace.army.mil/robo/projects/pmbp_manual/PMBP_Manual/REF8008G.htm)
- Atchafalaya Basin Floodway System, Feasibility Study, Main Report and Final Environmental Impact Statement, January 1982
- Mississippi River and Tributaries, Atchafalaya Basin, Louisiana, 2010 Refined Project Flood Flowline, Hydraulic Design, April 2011

### **4. Requirements**

This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review,

decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

A. District Quality Control/Quality Assurance (DQC). All implementation documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home Major Subordinate Command (MSC). This review will include a bidability, constructability, operability and environmental (BCOE) review.

B. Agency Technical Review (ATR). ATR is mandatory for all implementation documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures and policy. The ATR will assess whether the analyses presented are technically correct and comply with published US Army Corps of Engineers (USACE) guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by a designated Review Management Organization (RMO) and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate with a leader from outside the MSC.

C. Independent External Peer Review (IEPR). IEPR may be required for implementation documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. IEPR panel members will be selected using the National Academy



of Science (NAS) Policy which sets the standard for "independence" in the review process. There are two types of IEPR: Type I is generally for decision documents and Type II is generally for implementation products. Only Type II is applicable for this project.

Type II IEPR reviews, or Safety Assurance Reviews (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Typically, Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness and acceptability of the design and construction activities in assuring public health, safety and welfare.

**5. Plan for Review** - The Mississippi Valley Division, in association with the Risk Management Center, will serve as the Review Management Organization.

A. Work Products Requiring Review include, but are not limited to the following:

- 1) Levee Enlargement P&S
- 2) Floodwall P&S
- 3) Floodgate P&S

**Note: No in kind services are anticipated from the Local Sponsor**

B. Levels of Review -

- 1) District Quality Control (DQC) - DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and MVN district Quality Management Plans. Each District's Atchafalaya Basin Construction Senior Project Manager (AB SPM) in conjunction with the Chief of Engineering Div will submit its work products, i.e., levee lift/floodwall/floodgate P&S to personnel in the District office not involved in their development for review and comment. This review team will be composed of senior members of the H&H, design and geotechnical disciplines. This review will include a bidability, constructability, operability and environmental (BCOE) review. The initial DQC will take place following the completion of work products under development as of the date of this review plan.

- a. Documentation: The AB SPM will prepare a report discussing all comments and the resolution to those comments. The report will include documentation of any clearance needed to advertise or start construction.
- b. Submittal: The report will be submitted to the MVD AB Coordinator and MVD MR&T Program Manager.
- c. This review plan is comprehensive and covers over \$1.2B in remaining work. The schedule of all reviews will be sequenced according to the project and the project priorities as reflected in the Project Management Plan (PMP). The level of annual funding will determine when features are sufficiently funded to be initiated. The costs for all reviews are accounted for in the PMP for each feature. The primary disciplines needed for each review will be determined during design of the individual feature based on the appropriate requirements.
- d. **Required DQC Team Expertise.** DQC team and required expertise;

<b>DQC Team Members/Disciplines</b>	<b>Expertise Required</b>
DQC Lead	The DQC lead should be a senior professional with experience in earthen levee lifts, floodwalls, and conducting DQC. The lead should also have the necessary skills and experience to lead a virtual team through the DQC process.
Hydraulic Engineering	The hydraulic reviewer should be a senior hydraulic engineer with experience in levee lifts and floodwall design.
Geotechnical Engineering	The geotech reviewer should be a senior geotechnical engineer with experience in levee lifts and floodwall design.
Civil Engineering	The Civil reviewer should be a senior Civil Engineer with experience in levee lifts and floodwall design.
Cost Engineering	The cost reviewer should be a Cost Pre-Certified Professional with experience preparing cost estimates for levee lifts and floodwall design.
Structural Engineering	The Structural reviewer should be a senior Structural Engineer with experience in levee lifts and floodwall design.
Construction/Operations	The Construction/Operations reviewer should be a senior Construction/Operations Manager with experience in levee lifts and floodwall design.

e. Estimated DQC Cost

<b>Review Milestone</b>	<b>#reviewers/total hours</b>	<b>Approximate cost/hr</b>	<b>Totals</b>
<b>ATR review</b>	7/40	\$120	\$4,800
<b>Backcheck</b>	7/20	\$120	\$2,400

ATR Certification	1/5	\$120	\$600
ATR Expenses (travel etc)	0	\$0	\$0
Total ATR costs	7/65	\$120	\$7,800

2) Agency Technical Review (ATR) - The Mississippi Valley Division in association with the Risk Management Center will serve as the Review Management Organization (RMO). The RMO will assemble an ATR team composed of members from outside the New Orleans, Vicksburg and Memphis Districts and include an ATR team leader from outside the MSC. The ATR will take place after completion of the District's DQC. The AB SPM in conjunction with the Chief of Engineering Division will submit the work products, i.e., levee lift/floodwall/floodgate P&S to the ATR team leader. The leader of the ATR team will complete the statement shown as Appendix A indicating completion of the review and resolution of comments.

- a. Documentation: Each ATR member will enter comments into DrChecks for review and resolution. Comments and discussion will be included in a report developed by the ATR team leader.
- b. Submittal: The report will be submitted to the MVD AB Coordinator and MVD MR&T Program Manager within 60 days after receipt of the work products.
- c. Features that may undergo ATR include, but are not limited to the following:
  - i. Floodwalls
- d. This review plan is comprehensive and covers over \$1.2B in remaining work. The schedule of all reviews will be sequenced according to the project and the project priorities as reflected in the Project Management Plan (PMP). The level of annual funding will determine when features are sufficiently funded to be initiated. The costs for all reviews are accounted for in the PMP for each feature. The primary disciplines needed for each review will be determined during design of the individual feature based on the appropriate requirements.
- e. **Required ATR Team Expertise.** ATR team and required expertise;

ATR Team Members/Disciplines	Expertise Required
------------------------------	--------------------

ATR Lead	The ATR lead should be a senior professional with experience in earthen levee lifts, floodwalls, and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process.
Hydraulic Engineering	The hydraulic reviewer should be a senior hydraulic engineer with experience in levee lifts and floodwall design.
Geotechnical Engineering	The geotech reviewer should be a senior geotechnical engineer with experience in levee lifts and floodwall design.
Civil Engineering	The Civil reviewer should be a senior Civil Engineer with experience in levee lifts and floodwall design.
Cost Engineering	The cost reviewer should be a Cost DX Staff or Cost DX Pre-Certified Professional with experience preparing cost estimates for levee lifts and floodwall design.
Structural Engineering	The Structural reviewer should be a senior Structural Engineer with experience in levee lifts and floodwall design.
Construction/Operations	The Construction/Operations reviewer should be a senior Construction/Operations Manager with experience in levee lifts and floodwall design.

f. Estimated ATR Cost

Review Milestone	#reviewers/total hours	Approximate cost/hr	Totals
ATR review	7/80	\$120	\$9,600
Backcheck	7/40	\$120	\$4,800
ATR Certification	1/5	\$120	\$600
ATR Expenses (travel etc)	0	\$0	\$0
<b>Total ATR costs</b>	<b>7/125</b>	<b>\$120</b>	<b>\$15,000</b>

3)Independent External Peer Review (IEPR) - We will perform Type II IEPR for all applicable levee lifts, floodwalls, and floodgate P&S. Specific structures that we will perform IEPR on are the Charenton Floodgate Replacement, the East and West Calumet floodgates, improvements at Berwick Lock, improvements at Bayou Beouf Lock and structures at Yellow Bayou, Hanson Canal and Franklin Canal. The IEPR team leader will complete the statement shown as Appendix B indicating completion of the review and resolution of comments. In the event that a non-typical design feature is proposed for a particular item, we will consider performing a Type II IEPR for that item.

- a. Documentation: The IEPR team leader will prepare a report discussing all comments and the resolution to those comments by each team member.

- b. Submittal: The report will be submitted to the MVD AB Coordinator and MVD MR&T Program Manager.
- c. This review plan is comprehensive and covers over \$1.2B in remaining work. The schedule of all reviews will be sequenced according to the project and the project priorities as reflected in the Project Management Plan (PMP). The level of annual funding will determine when features are sufficiently funded to be initiated. The costs for all reviews are accounted for in the PMP for each feature.
- d. Projects scheduled for reviews for the next 3 fiscal years are:
  - a. May 2013: West Bayou Sale Gordy phase 'B' levee lift, estimated construction cost \$3.4M
  - b. May 2014: North Bend phase 'B' levee lift, estimated construction cost \$6M
  - c. May 2015: W-124 levee lift, estimated construction cost \$9M.
  - d. Required IEPR Team Expertise.** IEPR team and required expertise;

ATR Team Members/Disciplines	Expertise Required
IEPR Lead	The IEPR lead should be a senior professional with experience in earthen levee lifts, floodwalls, and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the IEPR process.
Hydraulic Engineering	The hydraulic reviewer should be a senior hydraulic engineer with experience in levee lifts and floodwall design.
Geotechnical Engineering	The geotech reviewer should be a senior geotechnical engineer with experience in levee lifts and floodwall design.
Civil Engineering	The Civil reviewer should be a senior Civil Engineer with experience in levee lifts and floodwall design.
Cost Engineering	The cost reviewer should be a Cost Pre-Certified Professional with experience preparing cost estimates for levee lifts and floodwall design.
Structural Engineering	The Structural reviewer should be a senior Structural Engineer with experience in levee lifts and floodwall design.
Construction/Operations	The Construction/Operations reviewer should be a senior Construction/Operations Manager with experience in levee lifts and floodwall design.

e. Estimated Individual IEPR Cost

Review Milestone	#reviewers	Approximate cost	Totals
IEPR Contract	7	\$60,000	\$60,000

**4) Engineering Models.** The following engineering models are anticipated to be used in the development of the work products:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS	Hydraulic Flow Model	Certified

Note: No Planning models are anticipated to be used.

5) Policy and Legal Compliance Review. All implementation documents will be reviewed throughout the project for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies.

C. Objectives of Review

- 1) The project meets the Government's scope, intent and quality objectives. The ATR lead will be outside the home MSC.
- 2) Design concepts are valid, feasible, safe, functional and constructible.
- 3) Appropriate methods of analysis were used and basic assumptions are valid and used for the intended purpose.
- 4) The source, amount and level of detail of the data used in the analyses are appropriate for the complexity of the project.
- 5) The project complies with accepted practice and design criteria within the industry.
- 6) All relevant engineering and scientific disciplines have been effectively integrated.
- 7) Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort.
- 8) Project documentation is appropriate and adequate for the project phase.
- 9) Project documentation will be reviewed for policy compliance and undergo a legal review.

D. Additional Review - If, in the opinion of the senior leaders of the RMO, ATR comments are significant, an IEPR can be conducted for the specific AB item, in addition to the IEPR performed under this review plan.

**6. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION**

The RMO is responsible for managing the overall peer review effort described in this review plan. The Mississippi Valley Division, in association with the Risk Management Center, will be the RMO for this review effort. The Mississippi Valley Division will coordinate and approve the review plan. Each District will post the approved review plan on its public website.

#### **7. Point of Contact**

The technical point of contact for this review plan is Marti Lucore. The leaders of the ATR and IEPR teams will serve as the point of contact and liaison between the reviewers and the PDT's and MVD.

**Appendix A COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the <type of product> for Atchafalaya Basin Construction Project. 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

Name  
Project Manager (home district)  
Office Symbol

Date

SIGNATURE

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

Date

SIGNATURE

Nathan Snortland  
Director, Risk Managemnt Center  
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

Name  
Chief, Engineering Division (home district)  
Office Symbol

Date

SIGNATURE

Name  
Chief, Planning Division<sup>2</sup> (home district)  
Office Symbol

Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

<sup>2</sup> Decision Documents Only.



**Appendix B**

**USACE STATEMENT OF TECHNICAL REVIEW  
COMPLETION OF INDEPENDENT EXTERNAL PEER REVIEW**

The Independent External Peer Review (IEPR) Team has completed the IEPR of the Atchafalaya Basin Construction Project. Notice is hereby given that an IEPR has been conducted in accordance with the requirements of EC 1165-2-209. The review was appropriate to the level of risk and complexity inherent in the project. During the IEPR, 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 result, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The IEPR made the determination that the Quality Control activities employed appear to be appropriate and effective. All comments resulting from this IEPR have been resolved.

\_\_\_\_\_  
IEPR Team Leader

\_\_\_\_\_  
Date

**CERTIFICATION OF INDEPENDENT EXTERNAL PEER REVIEW**

Significant concerns and the explanation of the resolution are as follows:

As noted above, all concerns resulting from independent external peer review of the project have been fully resolved.

\_\_\_\_\_  
MVD Chief, Engineering & Construction

\_\_\_\_\_  
Date

\_\_\_\_\_  
MVD Chief, Operations

\_\_\_\_\_  
Date

