



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

REPLY TO
ATTENTION OF:

CEMVD-PD-SP

1 Jun 14

MEMORANDUM FOR Commander, St. Louis District

SUBJECT: Review Plan for Bois Brule Levee and Drainage District,
Design Deficiency Correction Project

1. References:

- a. Memorandum, Project Development Branch, 6 June 2014, subject: Bois Brule Review Plan Documentation (encl 1).
- b. Memo, CEIWR-RMC, 28 May 2014, subject: Risk Management Center Endorsement - Bois Brule Levee and Drainage Project, Missouri Review Plan (encl 2).
- c. Memo, CEMVD-RB-T, 10 June 2014, subject: Review Plan for Bois Brule Levee and Drainage District, Design Deficiency Correction Project (encl 3).
- d. EC 1165-2-214, CECW, 15 December 2012, subject: Civil Works Review Policy.

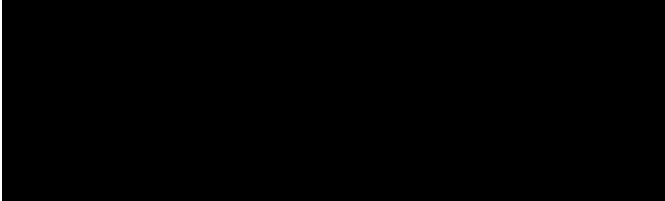
2. The enclosed Review Plan (RP) for Bois Brule Levee and Drainage District, Design Deficiency Correction Project has been prepared in accordance with EC 1165-2-214. The RP has been coordinated with the Upper District Support Team, the Risk Management Center, and the Business Technical Division, who concurred with the plan in references 1.a. and 1.c. above.

3. MVD hereby approves the RP, which is subject to change as circumstances require consistent with study development under the Project Management Business Process. Any subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The district should post the approved RP to its website.

CEMVD-PD-SP

SUBJECT: Review Plan for Bois Brule Levee and Drainage District,
Design Deficiency Correction Project

4. The MVD point of contact for this action is [REDACTED],
CEMVD-PD-SP, (601) 634-5293.



3 Encls

Director of Programs



DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

REPLY TO
ATTENTION OF:

Project Development Branch

JUN - 6 2014

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD-PD-SP/ [REDACTED])
[REDACTED] P.O. Box 80, Vicksburg, MS 39181-0080

SUBJECT: Bois Brule Review Plan Documentation

1. References:
 - a. A. EC 1165-2-209, 31 JAN 10, Civil Works Review Policy
 - b. Memorandum, CEMVD-PD, 11 OCT 12, USACE Civil Works Review Process
2. The Bois Brule review Plan (Enclosure 1) is submitted for your approval. Also enclosed is the CEMVS-RB-T Concurrence Memo (Enclosure 2), Review Plan Checklist for implementation Documents (Enclosure 3).
3. If you have any questions, please contact the Project Manager, [REDACTED] at 314-331-8780, [REDACTED]

3 Encls

1. Bois Brule review plan
2. CEMVS-RB-T, Concurrence Memo
3. Review Plan Checklist

[REDACTED]
Colonel, U.S. Army
District Commander

Encl 1

REVIEW PLAN

Bois Brule Levee and Drainage District, Missouri

St. Louis District

MSC Approval Date: Pending
Last Revision Date: 24 March 2014



**US Army Corps
of Engineers®**

REVIEW PLAN

Bois Brule Levee and Drainage District, Missouri

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS	1
2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION	2
3. STUDY INFORMATION	2
4. IN-KIND CONTRIBUTIONS	3
5. DISTRICT QUALITY CONTROL (DQC)	3
6. AGENCY TECHNICAL REVIEW (ATR)	3
7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)	5
8. REVIEW SCHEDULES AND COSTS	7
9. PUBLIC PARTICIPATION	8
10. REVIEW PLAN APPROVAL AND UPDATES	8
11. REVIEW PLAN POINTS OF CONTACT	8
ATTACHMENT 1: TEAM ROSTERS	9
ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS	11
ATTACHMENT 3: REVIEW PLAN REVISIONS	12
ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS	13

1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the design and construction activities of the *Bois Brule Levee and Drainage District Project (Project)*.

b. **References**

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 2012
- (2) Engineering Regulation (ER) 1110-1-12, Quality Management, 31 Mar 2011
- (3) Bois Brule Levee and Drainage District, Missouri, Project Management Plan (113947)

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-214, 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). It provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and work products. The EC outlines three levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR).

- (1) District Quality Control (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). Basic quality control tools include a Quality Management Plan providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. It is managed in the home district. Quality checks may be performed by staff responsible for the work, such as supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Additionally, the PDT is responsible for a complete reading of any reports and accompanying appendices prepared by or for the PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before approval by the District Commander. The Major Subordinate Command (MSC)/District Quality Management Plans address the conduct and documentation of this fundamental level of review.
- (2) 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 in a coherent whole. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise such as regional technical specialists (RTS), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team should be from outside the home MSC.
- (3) Independent External Peer Review (IEPR). 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. For clarity, IEPR is divided into two types, Type I is generally for decision documents and Type II is generally for implementation documents. A Type II IEPR (SAR) shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities. External panels will review the design and construction activities prior to initiation of physical construction and periodically thereafter until construction activities are completed. The review shall be on a regular schedule sufficient to inform the Chief of Engineers on the adequacy, appropriateness, and acceptability of the design and construction activities for the purpose of assuring that good science, sound engineering, and public health, safety, and welfare are the most important factors that determine a project's fate.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for the peer review effort described in this Review Plan is the Risk Management Center (RMC).

3. STUDY INFORMATION

- a. **Project Description.** The Bois Brule levee district is in Perry County, Missouri was formed in 1976 by a reorganization of the Perry County Drainage and Levee Districts Numbered 1, 2 and 3, Missouri. The levee district protects about 26,060 acres, which is nearly all in agricultural production. The protected area also includes two industries, the Perryville airport, and a highway that connects to a bridge across the Mississippi River at Chester, Illinois. The existing Bois Brule flood control project includes about 33.1 miles of levee, three closure structures, 341 seepage relief wells, four pumping stations, and two diversion ditches in lieu of two additional pumping stations. The project area also includes interior drainage ditching and culverts constructed by non-Federal interests. The levee failed due to underseepage prior to the crest of the 1993 flood, and the entire levee district was flooded.

The main deficiency in the existing project is caused by problems with the underseepage design. In addition, the levee grade is inadequate in some sections of the back levee where the levee settled so the top is below the authorized grade, and one existing pump station is undersized. The deficiency correction project includes 297 seepage relief wells, 8485 linear feet of seepage berms, a 7,000 foot long clay-filled seepage cutoff trench, three pumping stations with capacities of 50, 50, and 65 cubic feet per second (cfs) mainly for the flows from the additional relief wells, 4.2 miles of restoration of the levee to its design grade, 68 piezometers, 32,400 linear feet of ditching and 1,990 linear feet of new culverts to handle the additional flow from the new relief wells, and the relocation of 240 ft of public highway.

Products to be reviewed. This review plan applies to the plans and specifications and construction activities for the following deficiency corrections on the Project, currently planned to be completed in multiple parts. To date 99 relief wells, a 65 cfs pump station, seepage berm, and cutoff trench have been constructed. Remaining work consists of 198 seepage relief wells, seepage berms, a clay-filled seepage cutoff trench, two pumping stations with capacities of 50 cubic feet per second (cfs) mainly for the flows from the additional relief wells, 4.2 miles of restoration of the levee to its

design grade, 68 piezometers, 32,400 linear feet of ditching and 1,990 linear feet of new culverts to handle the additional flow from the new relief wells, and the relocation of 240 ft of public highway.

- b. General Site Location and Description.** The project area is located in Perry County, Missouri and has a small part in Randolph County, Illinois. It is located along the right bank of the Mississippi River between river miles 94 and 111 above the Ohio River.
- c. Factors Affecting the Scope and Level of Review.** No correction of the design deficiencies results in reduced levels of flood protection for the entire District. With the existing underseepage issues, sudden failure of the levee can occur at several locations along the levee at a river stage below net levee grade placing human life, vehicles, building, industrial equipment, livestock and agricultural production at risk. There is not expected to be any public dispute.

4. IN-KIND CONTRIBUTIONS

Construction costs are 100% Federal; the sponsor provides lands and relocations. There are no in-kind contributions anticipated.

5. DISTRICT QUALITY CONTROL (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 MSC. DQC efforts will include the necessary expertise to address compliance with published Corps policy. Reviews under this heading may include over the shoulder peer reviews; and Bid-ability, Constructability, Operability, and Environmental (BCOE) Reviews. Key products for review include plans, specifications, design documentation reports, and cost estimate for the final design review.

6. AGENCY TECHNICAL REVIEW (ATR)

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 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 the designated 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.

- a. Products to Undergo ATR.** All plans and specifications completed subsequent to approval of this review plan will undergo ATR.
- b. Required ATR Team Expertise.** ATR expertise will vary based on the particular needs of each project feature, but will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc) and may be supplemented by outside experts as appropriate. The disciplines represented on the ATR team will reflect the significant disciplines involved in the planning, engineering, design and construction effort. These disciplines include civil, geotechnical, structural, hydraulics and hydrology, and construction. The chief criterion for being a member of the ATR team is knowledge of the technical discipline and relevant experience.

c. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. 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 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; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers 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 team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), 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 1110-1-12 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.

At the conclusion of each ATR effort, the ATR team will prepare 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.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date. A sample Statement of Technical Review is included in Attachment 2.

7. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. **General.** Type I and Type II IEPRs are conducted in accordance with the guidance promulgated in EC 1165-2-214. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214. Type II IEPR, or Safety Assurance Review (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. 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.

b. **Decision on IEPR.** The current Review Plan addresses the design and construction activities for the Bois Brule Project. The Deficiency Correction Report Including Environmental Assessment was completed July 2003. All of these documents were prepared and approved before EC 1105-2-410, Review of Decision Documents dated 22 August 2008 and EC 1165-2-209 Civil Works Review Policy dated 31 January 2012, took effect. If at a later date it becomes necessary to conduct planning activities for this project it will be necessary to modify and update the current Review Plan to accommodate the policy compliance requirements identified in EC 1165-2-214 for a Type I IEPR.

In accordance with EC 1165-2-214 a Type II IEPR (SAR) shall be conducted on design and construction activities for flood risk management projects. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities.

c. **Products to Undergo Type II IEPR.** With the exception of the low risk ditching, culvert, and seepage berm contracts, all construction contracts will be subject to Type II IEPR. External panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule, and before substantial completion of construction activities. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare.

d. **Required Type II IEPR Panel Expertise.** The IEPR team will vary based on size and complexity of the product being review, but will consist of no more than six members including the IEPR Leader. The IEPR team will be coordinated through the Risk Management Center (RMC). External panels will conduct reviews of the design and construction activities prior to the 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. The Review Management

Office (RMO) for Type II IEPR reviews is the RMC. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. Type II IEPR is not exempted by statute from the Federal Advisory Committee Act (FACA).

The IEPR will be performed by an AE firm, using a USACE Indefinite Delivery Indefinite Quantity (IDIQ) Contract. The AE firm will provide the USACE with the final independent external expert reviewer list, including their credentials. Expert reviewers shall have experience in design and construction of projects similar in scope to the project. Expert reviewers shall be registered professional engineers in the United States, or similarly credited in their home country. The expert reviewers must have an engineering degree. A Master's degree in engineering is preferable, but not required, as hands-on relevant engineering experience in the listed disciplines is also important.

The Type II IEPR panel members will be comprised of individuals that have not been involved in the development of the decision document, meet the National Academy of Sciences guidelines for independence, and will be chosen by an outside organization. The following types of expertise may be represented on the Type II IEPR team:

- (1) IEPR team leader. The IEPR team leader shall hold a professional license in structural or civil engineering with a MS degree or higher in civil or structural engineering. The IEPR leader shall have a minimum of 20 years of design experience and experience with multi-million dollar, flood risk management projects. The team leader shall be a recognized leader with good communication skills to lead a diverse review team comprised of individuals located across the nation.
- (2) Hydraulics. The reviewer for hydraulics shall be a registered professional engineer with a minimum of a MS degree or higher in engineering science. The reviewer shall have a minimum of 20 years experience in hydrologic analysis and design of hydraulic structures as it relates to riverine flood risk management projects. Reviewer should have experience in the analysis and design involving interior drainage and riverine models using HEC-RAS and hydrology models using HEC-HMS. This member should also be knowledgeable in coincidence of frequency and the application of USACE risk and uncertainty analyses on flood risk management projects. Reviewer should be experienced with similar projects in an urban setting and participated in review of riverine flood risk management projects.
- (3) Structural. The reviewer for structural features shall be a registered professional structural engineer with a MS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 20 years experience in the design, layout, and construction of large urban flood risk management projects. Reviewer should be familiar with the design and construction of tall (15 feet high) flood walls, removable flood walls, closure structures, interior drainage facilities, concrete placement, and relocation of underground utilities. The reviewer should have experience with static and seismic design per industry code standards and USACE design regulations for Civil Works projects including soil-structure interaction evaluation and design. The reviewer shall also have a working knowledge of the software Mathcad 15, CWALSHT - USACE sheet pile design, CPGA - USACE pile group analysis, CFRAME - USACE frame analysis, CTWALL - USACE cantilever wall analysis, STAAD Pro- Finite element analysis, RISA-3D- Finite element analysis, and Microsoft Excel.
- (4) Civil. The reviewer for civil features shall be a registered professional engineer with a minimum MS degree or higher in civil or construction engineering. They shall have a minimum of 20 years experience in the design, layout, and construction of a large urban flood risk management projects to include knowledge regarding levees, interior drainage

facilities, earthwork, concrete placement, design of access roads, and relocation of underground utilities. The reviewer must be familiar with USACE regulations and standards.

- (5) Mechanical. The reviewer for mechanical features shall be a registered professional engineer with a BS degree or higher in mechanical engineering. Reviewer shall have a minimum of 20 years in mechanical design of pump stations. The Reviewer must be familiar with USACE regulations and standards
- (6) Geotechnical. The reviewer for geotechnical features shall be a registered professional engineer with a minimum BS degree or higher in civil or geotechnical engineering. Reviewer shall have a minimum of 20 years experience in subsurface investigations, floodwall and levee design, seepage and slope stability evaluations, erosion protection design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.
- (7) Electrical. The reviewer for electrical features shall be a registered professional engineer with a BS degree or higher in electrical engineering. Reviewer shall have a minimum of 20 years in electrical design of pump stations. The reviewer must be familiar with USACE regulations and standards.

e. **Documentation of Type II IEPR.** Dr Checks review software will be used to document IEPR comments and aid in the preparation of the Review Report. Comments should address adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should general include the same four key parts as described for ATR comments in Section 6. The Contractor will be responsible for compiling and entering comments into Dr Checks. The IEPR team will prepare a Review Report that will accompany the publication of the final report for the project and shall:

- (i) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (ii) Include the charge to the reviewers prepared by the Contractor;
- (iii) Describe the nature of their review and their findings and conclusions; and
- (iv) 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.

8. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.** The estimated cost per ATR is [REDACTED] but will vary based on the complexity of the project feature being reviewed. The ATR will occur during key stages in the P&S for each feature completed following this review plan. The next scheduled milestone for ATR is the Ditching and Culverts P&S, which is scheduled to begin 4th Quarter FY14. Since this is a small project, the comment resolution meeting will be conducted via teleconference. Remaining work will be completed as funding becomes available.
- b. **Type II IEPR Schedule and Cost.** The IEPR costs are paid from Project funds. Milestones to consider for a Type II IEPR (SAR) are at the record of final design in the Design Documentation Report; at the completion of the plans, specifications, and cost estimate; at the midpoint of construction for a particular contract, prior to final inspection, or at any critical design or construction decision milestone. The IEPR schedule is established by the RMO in conjunction with the District (PM and PDT). There are no Type II IEPR (SAR) scheduled for FY14. Remaining work to undergo Type II IEPR after FY14 includes remaining relief wells/piezometers, cutoff trenches and pump stations, for an

estimated cost of [REDACTED] each. This includes cost for in-house personnel, RMO administration and management, and the panel member participation.

9. PUBLIC PARTICIPATION

As required by EC 1165-2-214, the approved Review Plan will be posted on the District public website for public comment. Information will be conveyed to the public through the use of press releases and media interviews as necessary and through the use of posting information to the St. Louis District's website. There is no formal public review for the DDR, plans and specifications and construction phases. However, the cost share partner, Bois Brule Levee and Drainage District, will have opportunities to review the DDR, plans and specifications and construction phases as part of the PDT.

10. REVIEW PLAN APPROVAL AND UPDATES

The Mississippi Valley Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the project. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be 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, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

11. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- [REDACTED] [St. Louis District Project Manager, 314.331.8780](#)
- [REDACTED] [Mississippi Division Program Manager, 601.634.5293](#)
- [REDACTED] [Risk Management Center, 303.963.4556](#)

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team

A complete listing of the project delivery team can be found in the Project Management Plan

Vertical Team

The Vertical Team consists of members of the HQUSACE and CEMVD Offices. The Vertical Team plays a key role in facilitating execution of the project in accordance with the PMP. The Vertical Team is responsible for providing the PDT with Issue Resolution support and guidance as required. The Vertical Team will remain engaged seamlessly throughout the project via monthly telecons as required and will attend In Progress Reviews and other key decision briefings. The CEMVD District Liaison is the District PM's primary Point of Contact on the Vertical Team.

DQC Roster

Team Member	Area of Expertise	Contact Information
TBD	Civil Engineering	
TBD	Geotechnical Engineering	
TBD	Mechanical Engineering	
TBD	Electrical Engineering	
TBD	H&H Engineering	
TBD	Structural Engineering	

ATR Roster (ATR Roster will be determined by size and complexity of product)

Recommended Agency Technical Review Panel		
NAME	DISCIPLINE	Education & Experience
TBD	ATR Team Leader/Civil, P.E.	BS in Civil Engineering, 15+ years experience in the civil design and construction of levees
TBD	Geotechnical, P.E.	BS in Civil/ Geotechnical Engineering, 10+ years experience in the geotechnical design and construction of levees
TBD	Hydrology and Hydraulics, P.E.	BS in Civil/Hydraulic Engineering, 10+ years experience in the hydrology and hydraulic design
TBD	Mechanical, P.E.	BS in Mechanical Engineering, 10+ years experience in mechanical design
TBD	Electrical, P.E.	BS in Civil/Hydraulic Engineering, 10+ years experience in electrical design
TBD	Structural Engineer	BS in Structural Engineering, 10+ years experience in the structural design and construction of levee enclosure structures

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

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 1165-2-214. 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 DrCheckssm.

Name
ATR Team Leader
Office Symbol/Company

Date

Project Manager
CEMVS-PM-N

Date

Director, Risk Management 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
Office Symbol

Date

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office of Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act

Review Plan Checklist for Implementation Documents

Date: 04 June 2014
Originating District: MVS
Project/Study Title: Bois Brule Levee and Drainage District, Missouri
PWI #: OJ4625
District POC: [REDACTED]

Please fill out this checklist and submit with the draft Review Plan when coordinating with the appropriate RMO. For DQC, the District is the RMO; for ATR of Dam and Levee Safety Studies, the Risk Management Center is the RMO; and for non-Dam and Levee Safety projects and other work products, MVD is the RMO; for Type II IEPR, the Risk Management Center is the RMO. Any evaluation boxes checked 'No' indicate the RP possibly may not comply with EC 1165-2-209 and should be explained. Additional coordination and issue resolution may be required prior to MSC approval of the Review Plan.

REQUIREMENT	REFERENCE	EVALUATION
1. Is the Review Plan (RP) a standalone document? a. Does it include a cover page identifying it as a RP and listing the project/study title, originating district or office, and date of the plan? b. Does it include a table of contents? c. Is the purpose of the RP clearly stated and EC 1165-2-209 referenced? d. Does it reference the Project Management Plan (PMP) of which the RP is a component including P2 Project #? e. Does it include a paragraph stating the title, subject, and purpose of the work product to be reviewed? f. Does it list the names and disciplines in the home district, MSC and RMO to whom inquiries about the plan may be directed?	EC 1165-2-209, Appendix B, Para 4a EC 1165-2-209 Para 7a EC 1165-2-209 Para 7a (2) EC 1165-2-209 Appendix B, Para 4a EC 1165-2-209, Appendix B, Para 4a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i>		

Review Plan Checklist for Implementation Documents

REQUIREMENT	REFERENCE	EVALUATION
2. Documentation of risk-informed decisions on which levels of review are appropriate.	EC 1165-2-209, Appendix B, Para 4b	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
a. Does it succinctly describe the three levels of peer review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR)?	EC 1165-2-209 Para 7a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
b. Does it contain a summary of the CW implementation products required?	EC1165-2-209 Para 15	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
c. DQC is always required. The RP will need to address the following questions:	EC1165-2-209 Para 15a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
i. Does it state that DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans?	EC1165-2-209 Para 8a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
ii. Does it list the DQC activities (for example, 30, 60, 90, BCOE reviews, etc)	EC 1165-2-209 Appendix B (1)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
iii. Does it list the review teams who will perform the DQC activities?	EC 1165-2-209 Appendix B, Para 4g	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
iv. Does it provide tasks and related resource funding and schedule showing when the DQC activities will be performed?	EC 1165-2-209 Appendix B, Para 4c	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
d. Does it assume an ATR is required and if an ATR is not required does it provide a risk based decision of why it is not required? If an ATR is required the RP will need to address the following questions:	EC1165-2-209 Para 15a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
i. Does it identify the ATR District, MSC, and RMO points of contact?	EC 1165-2-209 Para 7a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
ii. Does it identify the ATR lead from outside the home MSC?	EC 1165-2-209 Para 9c	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Current Approved Version: May 6, 2011. Printed copies are for "Information Only." The controlled version resides on the MVD Regional QMS SharePoint Portal.

Review Plan Checklist for Implementation Documents

REQUIREMENT	REFERENCE	EVALUATION
<p>iii. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)? If the reviewers are listed by name, does the RP describe the qualifications and years of relevant experience of the ATR team members?*</p> <p><i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i></p>	EC 1165-2-209 Appendix B, Para 4g	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
iv. Does it provide tasks and related resource, funding and schedule showing when the ATR activities will be performed?	EC 1165-2-209 Appendix C, Para 3e	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
v. Does the RP address the requirement to document ATR comments using Dr Checks?	EC 1165-2-209 Para 7d (1)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
e. Does it assume a Type II IEPR is required and if a Type II IEPR is not required does it provide a risk based decision of why it is not required including RMC/ MSC concurrence? If a Type II IEPR is required the RP will need to address the following questions:	EC1165-2-209 Para 15a	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
i. Does it provide a defensible rationale for the decision on Type II IEPR?	EC 1165-2-209 Para 7a	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
ii. Does it identify the Type II IEPR District, MSC, and RMO points of contact?	EC 1165-2-209 Appendix B, Para 4a	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
iii. Does it state that for a Type II IEPR, it will be contracted with an A/E contractor or arranged with another government agency to manage external to the Corps of Engineers?	EC 1165-2-209 Appendix B, Para 4k (4)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
iv. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be made up of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of expertise suitable for the review being conducted?	EC 1165-2-209 Appendix B, Para 4k(1) and Appendix E, Para's 1a & 7	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Current Approved Version: May 6, 2011. Printed copies are for "Information Only." The controlled version resides on the MVD Regional QMS SharePoint Portal.

Review Plan Checklist for Implementation Documents

REQUIREMENT	REFERENCE	EVALUATION
v. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be selected using the National Academy of Science (NAS) Policy which sets the standard for "independence" in the review process?	EC 1165-2-209 Para 6b (4) and Para 10b	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
vi. If the Type II IEPR panel is established by USACE, has local (i.e. District) counsel reviewed the Type II IEPR execution for FACA requirements?	EC1165-2-209 Appendix E, Para 7c(1)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
vii. Does it provide tasks and related resource, funding and schedule showing when the Type II IEPR activities will be performed?	EC1165-2-209 Appendix E, Para 5a	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
viii. Does the project address hurricane and storm risk management or flood risk management or any other aspects where Federal action is justified by life safety or significant threat to human life?	EC1165-2-209 Appendix E, Para 2	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Is it likely? If yes, Type II IEPR must be addressed.		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
ix. Does the RP address Type II IEPR factors? Factors to be considered include: <ul style="list-style-type: none"> • Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices? • Does the project design require redundancy, resiliency and robustness • Does the project have unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems. 		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
f. Does it address policy compliance and legal review? If no, does it provide a risk based decision of why it is not required?	EC 1165-2-209 Para 14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Current Approved Version: May 6, 2011. Printed copies are for "Information Only." The controlled version resides on the MVD Regional QMS SharePoint Portal.

Review Plan Checklist for Implementation Documents

REQUIREMENT	REFERENCE	EVALUATION
3. Does the RP present the tasks, timing, and sequence of the reviews (including deferrals)? a. Does it provide an overall review schedule that shows timing and sequence of all reviews? b. Does the review plan establish a milestone schedule aligned with the critical features of the project design and construction?	EC 1165-2-209, Appendix B, Para 4c EC 1165-2-209, Appendix C, Para 3g EC 1165-2-209, Appendix E, Para 6c	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
4. Does the RP address engineering model certification requirements? a. Does it list the models and data anticipated to be used in developing recommendations? b. Does it indicate the certification /approval status of those models and if certification or approval of any model(s) will be needed? c. If needed, does the RP propose the appropriate level of certification/approval for the model(s) and how it will be accomplished?	EC 1165-2-209, Appendix B, Para 4i	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. Does the RP explain how and when there will be opportunities for the public to comment on the study or project to be reviewed? a. Does it discuss posting the RP on the District website? b. Does it indicate the web address, and schedule and duration of the posting?	EC 1165-2-209, Appendix B, Para 4d	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
6. Does the RP explain when significant and relevant public comments will be provided to the reviewers before they conduct their review? a. Does it discuss the schedule of receiving public comments? b. Does it discuss the schedule of when significant comments will be provided to the reviewers?	EC 1165-2-209, Appendix B, Para 4e	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

**Review Plan Checklist
for Implementation Documents**

REQUIREMENT	REFERENCE	EVALUATION
<p>7. Does the RP address whether the public, including scientific or professional societies, will be asked to nominate professional reviewers?*</p> <p>a. If the public is asked to nominate professional reviewers then does the RP provide a description of the requirements and answer who, what, when, where, and how questions?</p> <p><i>* Typically the public will not be asked to nominate potential reviewer</i></p>	EC 1165-2-209, Appendix B, Para 4h	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</p>
<p>8. Does the RP address expected in-kind contributions to be provided by the sponsor?</p> <p>a. If expected in-kind contributions are to be provided by the sponsor, does the RP list the expected in-kind contributions to be provided by the sponsor?</p>	EC 1165-2-209, Appendix B, Para 4j	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A</p>
<p>9. Does the RP explain how the reviews will be documented?</p> <p>a. Does the RP address the requirement to document ATR comments using Dr Checks and Type II IEPR published comments and responses pertaining to the design and construction activities summarized in a report reviewed and approved by the MSC and posted on the home district website?</p> <p>b. Does the RP explain how the Type II IEPR will be documented in a Review Report?</p> <p>c. Does the RP document how written responses to the Type II IEPR Review Report will be prepared?</p> <p>d. Does the RP detail how the district/PCX/MSC and CECW-CP will disseminate the final Type II IEPR Review Report, USACE response, and all other materials related to the Type II IEPR on the internet?</p>	<p>EC 1165-2-209, Para 7d</p> <p>EC 1165-2-209 Appendix B, Para 4k (14)</p> <p>EC 1165-2-209 Appendix B, Para 4k (14)</p> <p>EC 1165-2-209 Appendix B, Para 5</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</p>
10. Has the approval memorandum been prepared and does it accompany the RP?	EC 1165-2-209, Appendix B, Para 7	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Current Approved Version: May 6, 2011. Printed copies are for "Information Only." The controlled version resides on the MVD Regional QMS SharePoint Portal.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
RISK MANAGEMENT CENTER
12596 WEST BAYAUD AVE., SUITE 400
LAKEWOOD, CO 80228

REPLY TO
ATTENTION OF

CEIWR-RMC

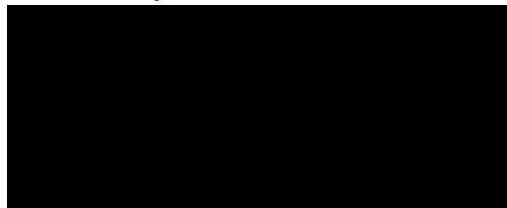
28 May 2014

MEMORANDUM FOR: Commander, Mississippi Valley Division, ATTN: CEMVD-RB-T (Turner)

SUBJECT: Risk Management Center Endorsement – Bois Brule Levee and Drainage Project, Missouri Review Plan

1. The Risk Management Center (RMC) has reviewed the Review Plan (RP) for the Bois Brule Levee and Drainage Project, dated 24 March 2014, and concurs that this RP complies with the current peer review policy requirements outlined in EC 1165-2-214 "Civil Works Review Policy", dated 15 December, 2012.
2. This review plan was prepared by the St. Louis District, reviewed by the Mississippi Valley Division and the RMC, coordinated with the Flood Risk Management Planning Center of Expertise, and all review comments have been satisfactorily resolved.
3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MSC Commander's approval memorandum, and a link to where the RP is posted on the District website to the RMC Senior Review Manager (rmc.review@usace.army.mil).
4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all aspects of the Agency Technical Review, the Independent External Peer Review (as appropriate), and Model Certification efforts defined in the RP. For further information, please contact me at 720-215-5545.

Sincerely,



Director
Risk Management Center

CF:
CEIWR-RMC [REDACTED]
CEMVD-CE (Division Quality Manager)

Encl 2



REPLY TO
ATTENTION OF:

CEMVS-EC

DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

MAR 24 2014

MEMORANDUM FOR USACE Risk Management Center (CEIWR-RMC-WD [REDACTED]),
13952 Denver West Parkway, Golden, Colorado 80401

SUBJECT: Review Plan for Bois Brule Levee and Drainage District, Design Deficiency
Correction Project

1. The review plan for the subject project is attached for the Risk Management Center's review and endorsement for approval. The review plan was prepared in accordance with EC 1165-2-214 and QMS 08502-MVD.
2. The project is in the implementation phase; engineering and design will be accomplished over many years by a combination of resources such as USACE personnel from MVS and other districts within MVD, by engineering consultants hired by the Corps or the project sponsor, or by the project sponsors themselves. The main deficiency in the existing project is caused by problems with the underseepage design. In addition, the levee grade is inadequate in some sections of the back levee where the levee settled so the top is below the authorized grade, and one existing pump station is undersized.
3. As required by EC 1165-2-214, review and endorsement of the review plan is requested.
5. The point of contact for this memorandum is the project manager, [REDACTED] at 314-331-8477.

FOR THE COMMANDER:

[REDACTED]

Chief, Engineering and Construction Division
St. Louis District USACE

CEMVD-RB-T

10 June 2014

MEMORANDUM FOR CEMVD-PD--SP (Mark Moore)

SUBJECT: Review Plan for Bois Brule Levee and Drainage
District, Design Deficiency Correction project

1. Reference memorandum, CEMVS-EC, 24 March 2014, subject as above.
2. This office concurs with subject Review Plan.
3. The RB-T point of contact is [REDACTED]
901-544-0716.

[REDACTED]
Chief, Business Technical
Division

Encl 3