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

REPLY TO
ATTENTION OF:

CEMVD-PD-KM

8 February 2013

MEMORANDUM FOR Commander, Memphis District, ATTN: CEMVM-PM-P

SUBJECT: Review Plan (RP) for St. Francis Basin Construction, Flood Risk Management Project (P2# 107070)

1. References:

a. Memorandum, CEMVM-DE, 29 January 2013, subject as above (encl 1).

b. Memorandum, CEMVD-RB-T, 7 February 2013, subject: Review Plan for St. Francis Basin Construction, Flood Risk Management Project (P2# 107070) (encl 2).

c. EC 1165-2-214, Civil Works Review, 15 December 2012.

2. MVD staff has reviewed the Review Plan (RP) and related documents for the subject project. The RP was also reviewed and endorsed by the Review Management Organization (encl 2). The RP was developed in accordance with reference 1.c., which establishes an accountable, comprehensive, life cycle review strategy for civil works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation.

3. The subject RP plan is approved. Please post the approved RP to your web page.

4. The MVD point of contact for this action is Ms. Sarah Palmer, CEMVD-PD-KM, (601) 634-5910.

2 Encls

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

CEMVD-RB-T 7 February 2013

MEMORANDUM FOR CEMVD-PD-KM (Dennis Norris)

SUBJECT: Review Plan for St Francis Basin Construction, Flood Risk Management Project (P2#107070)

1. Reference memorandum, CEMVM, 29 January 2013, subject as above.

2. This office concurs with subject Review Plan.

3. The RB-T point of contact is Mr. Will Bradley, 601-634-5644.

ROBERT H. FITZGERALD, P.E.
Chief, Business Technical
Division

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MISSISSIPPI VALLEY DIVISION
1400 WALNUT STREET
VICKSBURG, MS 39181-0080

REPLY TO
ATTENTION OF

CEMVM-DE

29 January 2013

MEMORANDUM FOR Commander, US Army Corps of Engineers, Mississippi Valley Division (CEMVD-RB-T/Mr. Robert Fitzgerald)

SUBJECT: Review Plan (RP) for St Francis Basin Construction, Flood Risk Management Project (P2# 107070) (Encl)

1. The Review Plan for St. Francis Basin Construction, Flood Risk Management Project is attached for Mississippi Valley Division's review and approval. The RP was prepared in accordance with EC 1165-2-209.

2. The St. Francis Basin Construction, Flood Risk Management Project is currently in the implementation phase and 90 % complete. As required by EC1165-2-209, request review and approval of the remaining 10 % Review Plan.

3. The point of contact for this memorandum is the project manager, Dewey Powell, at (901) 544-3940, E-mail: dewey.l.powell@usace.army.mil

Thomas L Minyard

THOMAS L. MINYARD, P.E.
Chief, Engineering & Construction Division

Encl
as

US Army Corps
of Engineers ®

Memphis District

Review Plan
For
St Francis Basin Construction,
Flood Risk Management Project

Preconstruction, Engineering, and Design (PED) Phase

10 December 2012

P2# 107070

Review Plan

St Francis Basin Construction, Flood Risk Management Project

10 December 2012

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Review Plan

St Francis Basin Construction
Flood Risk Management Project
10 December 2012

1 INTRODUCTION

1.1 Purpose and Authority

This Review Plan (RP) defines the scope and level of quality management activities for the St Francis Basin Construction, Flood Risk Management Project. The purpose of this RP is to define the scope and level of review for implementation documents for the Project. This RP is a stand-alone document, and also serves as an appendix for the Project Management Plan. The Project is authorized by Flood Control Act of 1928, as amended (36, 50,58,65,68,74,86,90 and 2001). All these amendments support flood risk management in the St Francis Basin. The Memphis District will execute the remaining line items (channel enlargement)) of the Project and report to the Mississippi Valley Division (MVD) in Vicksburg, MS. The remaining channel enlargements are in the Design phase and will be followed with plans and specifications and construction. The Environmental Impacts Statement was completed and approved December 1973.

1.2 Review Requirements

This RP was developed in accordance with EC 1165-2¬209, which establishes the procedures for ensuring the quality and credibility of US Army Corps of Engineers (USACE) decision and implementation documents through independent review. This RP describes the scope of review for the current phase of work. All appropriate levels of review, District Quality Control Plan (DQC), Agency Technical Review (ATR), and Policy and Legal Review, will be included in this RP and any levels not included will require documentation in the RP of the risk-informed decision not to undertake that level of review. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual Project.

1.3 Primary Points of Contact

1.3.1 DQC

Memphis District	Mr. Shane Callahan	901-544-3665

1.3.2 ATR

MVD Review Management Office	Ms. Yolanda Arthur	601-634-5798
RMC Review Management Office	Mr. Colin Krumdieck	720-215-5545

1.4 References

a.	ER 1105-2-100	*Planning Guidance Notebook,* 20 November 2007
b.	ER 1110-1-12	*Engineering and Design - Quality Management*, 21 July 2006, incorporating Change 1, 30 September 2006
c.	ER 1110-2-1150	*Engineering and Design for Civil Works*, 31 August 1999
e.	EC 1105-2-408	Peer Review of Decision Documents, 31 May 2005
f.	EC 1105-2-410	*Review of Decision Documents*, 22 August 2008
g.	EC 1165-2-209	*Civil Works Review Policy* 31 January 2010,

2 PROJECT INFORMATION

2.1 Project Description

The project provides protection against headwater floods by means of a detention reservoir at Wappapello, Missouri, improvement of the flood-carrying capacities of the St. Francis and Little River Ditches and tier principal tributaries by means of channel improvements, new channels, auxiliary channels and leveed floodways.

This Programmatic Review Plan is for the remaining St Francis Basin Construction items of work in West Memphis and Vicinity, Arkansas and Ditch 10 west of Blytheville, Arkansas. The items of work are as follows:

1. Fifteen Mile Bayou – 9.4 miles of channel enlargement from above the confluence with Ten Mile Bayou at mile 21.5 to stream mile 30.9 with a proposed 40- foot channel bottom.

2. Ten Mile Bayou – 6.4 miles of channel enlargement from the confluence of Fifteen Mile Bayou upstream to 6.4 mile with a proposed 30 – foot channel bottom.

3. Ten Mile Diversion – 1.4 miles of channel enlargement with 30 –foot channel bottom width from the confluence of Fifteen Mile Bayou stream mile 0.0 to 1.5.

4. Ditch 15 – 2.5 miles of channel enlargement with proposed 30 – foot channel bottom width from the confluence of Ten Mile Diversion mile 0.0 to 2.5.

5. Ditch 15 Diversion – 1.1 miles of proposed channel construction with 10 –foot bottom width from Ditch 15 north of Highway 62 to 1.1 miles to Fifteen Milles Bayou slough.

6. Ditch 10 – 3 miles of channel enlargement with proposed 22-foot earthen bottom width from Arkansas Hwy 119 north to the Missouri State Line.

The majority of the remaining item of work for this Project will be in the West Memphis and Vicinity section of the Basin except for Ditch 10 west of Blytheville, Arkansas. The remaining work in the West Memphis and Vicinity area includes channel enlargement of Upper Fifteen Mile Bayou (9.8 miles), Ten Mile Diversion Ditch (1.4 Miles), Ditch 15 (2.5 Miles), Ten Mile Bayou (6.4 Miles) and channel

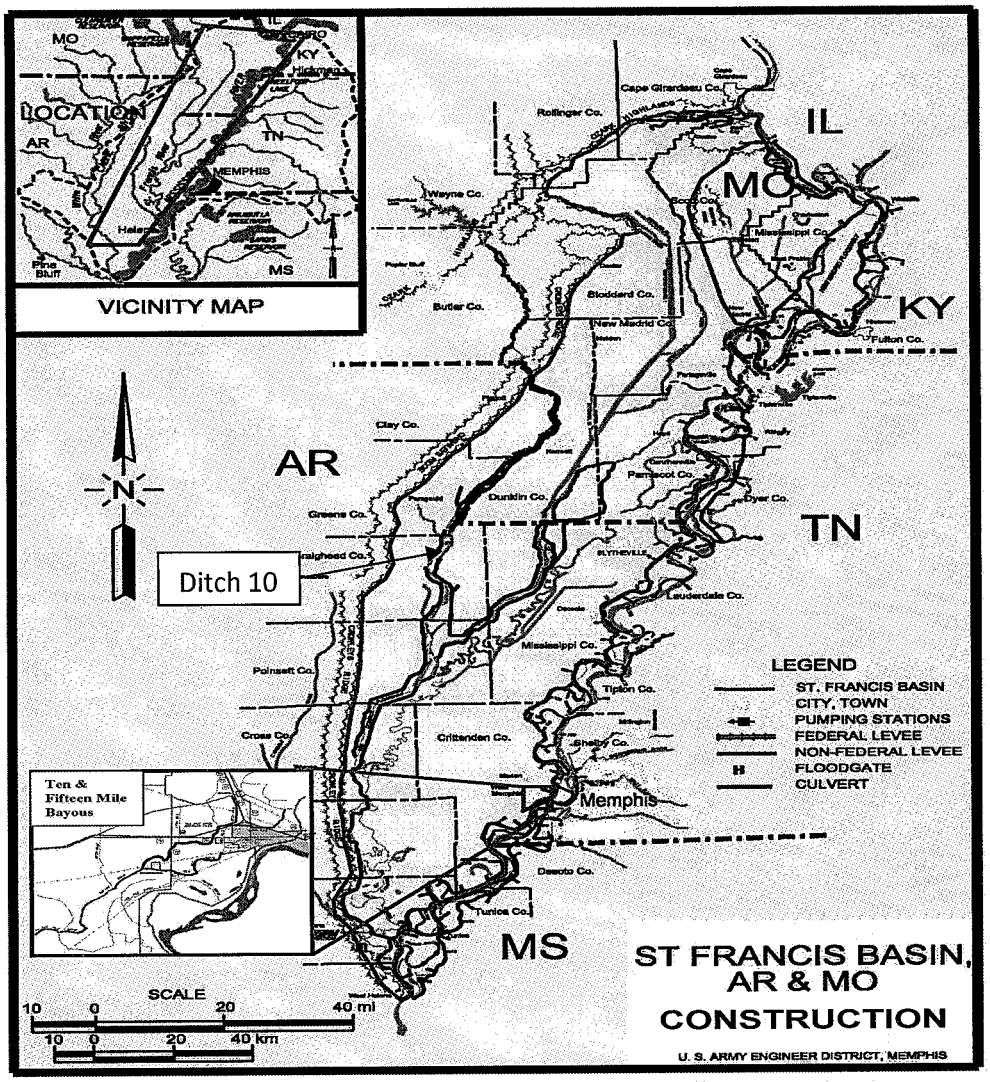
construction of Ditch 15 Diversion (1.1 Miles) and channel enlargement of Ditch 10 west of Blytheville (3.0 Miles) as reference above.

The cities of Marion and West Memphis suffer from frequent urban flooding. The terrain is flat with relatively minor changes in elevation which is typical of the Mississippi River Delta. Recent damaging floods have occurred in the West Memphis and Vicinity area in December 1967, January 1974, April 1994, March 1975, April 1979, and December 1982. The April 1979 flood, a 2-year event based on its 24 hour rainfall, was a notable one in the city's history with over 100 people evacuated from their homes for up to 4 days. This area contains a large storage basin above Highway 64, which is drained by a channel that becomes Upper Fifteen Mile Bayou to the south of Highway 64. This storage basin is an old meander from Greasy Corner up through the study reaches and is approximately 260.3 square miles. The average annual damages in the urban area without any improvements are estimated to be $2.8 million and in the rural areas to be $455,000.

Alternative 4 is The Recommended Plan from the Decision Document, General Reevaluation Report, approved April 2009. This alternative includes Fifteen Mile Bayou, Ten Mile Diversion, Ditch 15, and Ditch 15 Diversion. The general channel sizes of these enlargements will result in new bottom widths of 40 feet for Fifteen Mile Bayou, 30 feet for both Ten Mile Diversion and Ditch 15, 10 feet for the new Ditch 15 Diversion and 22 feet for Ditch 10 Item 2 in Mississippi County, Arkansas.

2.2 Project Location

The St Francis Basin is located in southeastern Missouri and northeastern Arkansas. The remaining work is located in the West Memphis, Arkansas and Vicinity area starting near the confluence of Ten Mile Bayou and Fifteen Mile Bayou near Edmondson, Arkansas upstream to north of U.S. Highway 64 west of Marion Arkansas. Ditch 10 begins south of Arkansas Highway 119, then north up to the Arkansas and Missouri state line.


LOCATION
VICINITY MAP
IL
MO
KY
TN
AR
MS
Ditch 10
Ten & Fifteen Mile Bayous
LEGEND
ST. FRANCIS BASIN
CITY, TOWN
PUMPING STATIONS
FEDERAL LEVEE
NON-FEDERAL LEVEE
FLOODGATE
CULVERT
Memphis
SCALE
10 0 20 40 mi
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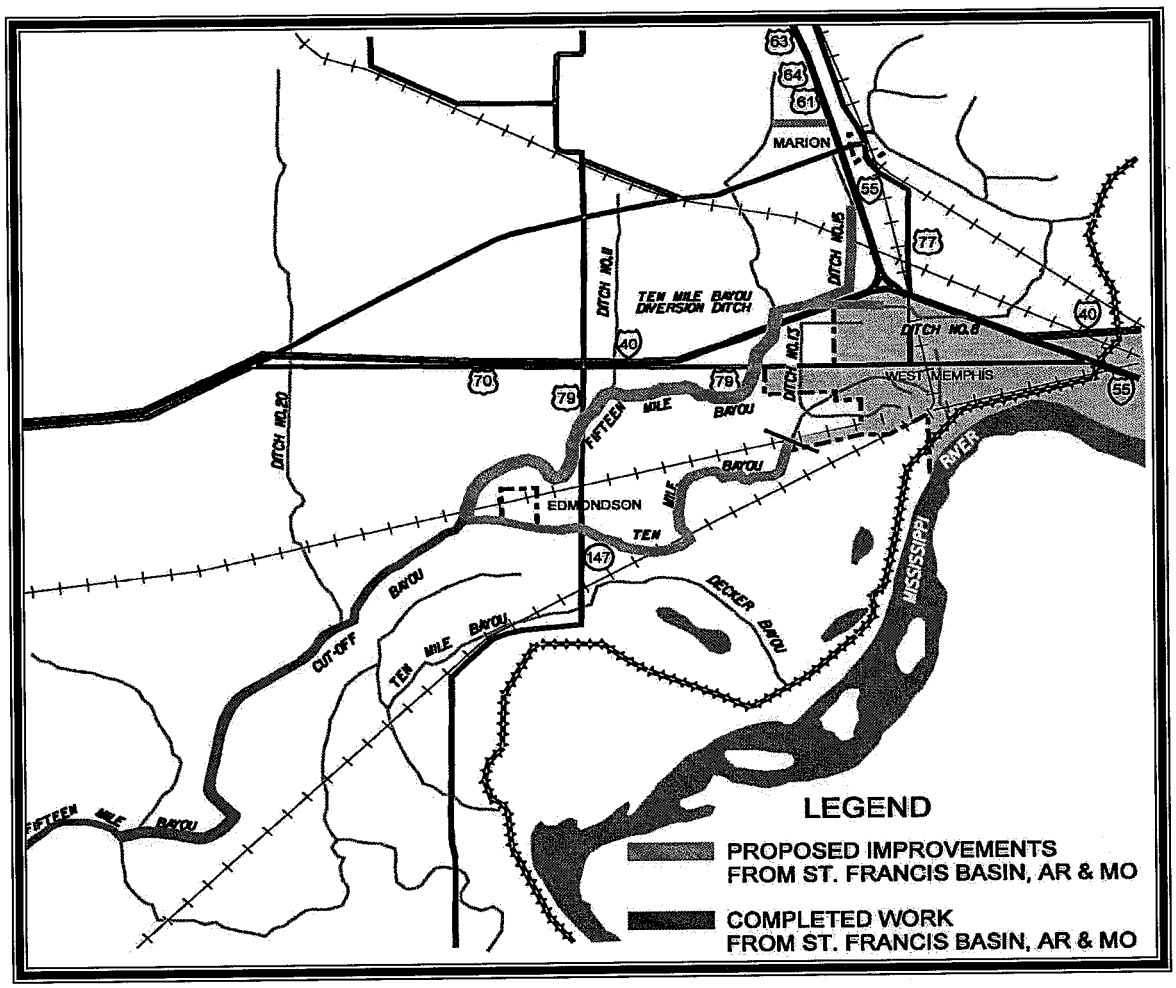
ST FRANCIS BASIN, AR & MO
CONSTRUCTION
U. S. ARMY ENGINEER DISTRICT, MEMPHIS

Ten and Fifteen Mile Bayous



2.3 Project Primary Risk Factors

The Project primary risk factors are removable existing infrastructure. The Project design will strive to minimize risks by following the latest guidance and incorporating redundancy and resiliency into closure structures.

2.3.1 Existing Infrastructure:

The project integrity will depend on existing infrastructure such as existing bridges that will not be relocated or modified because of the channel enlargement and the abutment structures. Analysis will be conducted on these existing features to determine their structural integrity for reliability. Both State and local agency would be required to maintain these existing features in "Acceptable" condition in order for the FRM project to stay at an overall "Acceptable" rating status.

2.4 Project Authority

The St Francis Basin project was authorized by Flood Control Act of 1928, as amended. The work remaining located in West Memphis and Vicinity area was authorized by the Water Resources Development Act of 1986 (WRDA) and was based upon studies conducted during the 1970's and early 1980's. WRDA authorized improvements on Fifteen Mile and Ten Mile Bayous to include construction of a trapezoidal channel providing a 10-year level of protection (10% annual chance of exceedence level of risk reduction) from Greasy Corner to the West Memphis City limits and for the city of West Memphis and Marion Arkansas. Both resolutions requested the review of past pertinent reports to determine whether any modifications to the recommendations are advisable in the interest of flood risk management.

3 PRODUCT INFORMATION

The results of the Implementation Phase of the Project will be design, specifications, and supporting documentation for the Project to go to solicitation.

The following is a partial list of products produced during the course of the Project:

- **A.** Plans and Specifications
- **B.** Design Quality Control Plan (DQCP)
- **C.** Cost Estimate
- **D.** Engineering Considerations and Instructions to the Field
- **E.** Operations, Maintenance, Repair, Rehabilitation, and Replacement Manual (OMRR&R Manual)

Implementation documents will be designed with in-house capabilities to include regional assistance from other Districts within MVD. The purpose of implementation documents is to provide a detailed plan for construction. The implementation products listed above will be developed by a USACE project delivery team (PDT). A construction contractor will complete the construction. The OMRR&R Manual will be developed by a USACE PDT.

4 SCOPE OF REVIEWS

All work products undergo DQC and ATR. However, there is a level of judgment applied to determine if an IEPR is required. Each level of review and how it applies to the Project is explained in Paragraphs 4.1 through 4.5. Documentation for risk-informed decision on IEPR is included in Attachment 3.

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 decision document. 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 Commander's approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to vertical team members i.e. the RMO and home MSC.

4.1 District Quality Control (DQC)

DQC is the review of basic science and engineering work products focused on fulfilling the Project quality requirements defined in the Project Management Plan (PMP). It is managed in the home district and may be conducted by staff in the home district as long as they are not doing the work involved in the study, including contracted work that is under review. The design products for the Project will be developed entirely internal to the Corps of Engineers by the PDT. Basic quality control tools used on the Project include a QMP providing for seamless review, peer quality checks and reviews, supervisory reviews, PDT reviews, a biddability, constructability, operability, and environmental (BCOE) review, in-house product development checklists, and established Business Quality Practices (BQPs) used to ensure quality procedures are followed. Prior to implementation of EC 1165-2-209, the Project plans and specifications also received an Independent Technical Review (ITR) from reviewers of disciplines similar to those used for the ATR on the Project. DQC also includes certification of the plans, specifications, and the DDR by a BCOE signoff certification, which includes the chiefs of construction, engineering, and operations divisions and the chiefs of the civil construction and geotechnical functional elements.

DQC efforts include the necessary expertise to address compliance with published Corps policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district seeks issue resolution support from the vertical team in accordance with the procedures outlined in Appendix H, ER 1105-2-100 or other appropriate guidance.

DQC 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 be 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.

Quality checks and reviews will be conducted during the development process and are considered as routine management practice. Quality checks will 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 will not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts.

Project Delivery Team (PDT) reviews are performed by members of the PDT to ensure consistency and effective coordination across all project disciplines. 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 Memphis District Commander.

A copy of all comments and responses from DQC will be provided to the ATR team at each review in the form of a Quality Assurance Review Memo.

The MVD and Memphis District Quality Management Plans (QMPs) address the conduct and documentation of this fundamental level of review. DQC is required for this Project.

4.1.1 Peer Reviews (District Quality Review)

Prior to ATR, all implementation documents will receive a peer review. The Peer Review is conducted by a peer in the same discipline and reviews calculations, assumptions, and other design details used in the design and specifications. A certification will be prepared once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a quality assurance certification statement by the MVM Chief of Engineering and Construction Division. The certification will state that the Peer Review team concurs with the Project design and that it is ready for advertising. Peer review disciplines are listed in Paragraph 7.1.2.

4.1.2 A/E Product Reviews

If products are produced by A/E firms, at the submittal of their final products, the A/E shall provided certification that the products that they produced had undergone the A/E's quality control procedure. It is also noted that the A/E is required to have all the design drawings stamped by a registered professional engineer.

4.1.3 Biddability, Constructability, Operability, and Environmental Review (BCOE)

The BCOE Review reviews all aspects of the documents used to bid for a construction contract to ensure they will result in a biddable and constructible project. The BCOE Review occurs prior to advertising the contract for bids. The BCOE Review disciplines are listed in Paragraph 7.1.3.

4.2 Agency Technical Review (ATR)

ATR is an in-depth review undertaken to ensure the quality and credibility of the government's scientific information is 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. ATR is mandatory for all decision and implementation documents. For other work products, a case specific risk-informed decision is made as to whether ATR is appropriate. The purpose of ATR is to ensure proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assures that all the parts fit a coherent whole. The ATR review package includes the certified DQC review package. ATR teams are comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team is selected from outside MVD.

DQC efforts include the necessary expertise to address compliance with published Corps policy. When policy and/or legal concerns arise during DQC efforts that are not readily and mutually resolved by the PDT and the reviewers, the district seeks issue resolution support from the vertical team in accordance with the procedures outlined in Appendix H, ER 1105-2-100 or other appropriate guidance.

4.2.1 Required ATR Team Expertise

The ATR team consists of 7 members including the ATR team leader. ATR reviewers will be comprised of individuals that have not been involved in the development of the design documents. The following paragraphs describe the list of required disciplines as well as the experience required by each of the ATR team members. Other disciplines/functions may be added to the ATR team as necessary, in which case the added team member(s) will have the appropriate experience and educational requirements. See Paragraph 7.2 for a list of the assigned ATR team members.

4.2.1.1 ATR Team Leader

The ATR team leader shall hold a professional license in structural or civil engineering with a BS degree or higher in civil or structural engineering. The ATR leader shall have a minimum of 15 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 at various districts across the nation.

4.2.1.2 Structural

The reviewer for structural features shall be a registered professional engineer with a BS degree or higher in civil or structural engineering. The reviewer shall have a minimum of 10 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 bridges and abutments, 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.

4.2.1.3 Civil Design

The reviewer for civil features shall be a registered professional engineer with a minimum BS degree or higher in civil or construction engineering. The reviewer shall have a minimum of 10 years experience in the design, layout, and construction of large urban flood risk management projects including 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.

4.2.1.4 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 10 years experience in subsurface investigations, seepage and slope stability evaluations, erosion protection

design, and construction and earthwork construction. The reviewer must be familiar with USACE regulations and standards.

4.2.1.5 Cost

The reviewer for cost estimating shall be a registered or certified cost engineer with a BS degree or higher in engineering or construction management. Reviewer shall have a minimum of 10 years in cost estimating and have experience with estimating urban flood risk management projects. The reviewer shall have extensive knowledge of MII software and the Total Project Cost Summary (TPCS) as required during ATR.

4.2.2 Documentation, Issue Resolution, and Certification 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 be 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 to 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, MSC, RMC, 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, for the AFB, draft report, and final report. A sample ATR certification is included as Attachment 1.

4.3 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. Any work product that undergoes ATR may also undergo Type I and/or Type II IEPR. In general, decision documents undergo Type I IEPR and implementation documents undergo Type II IEPR (or Safety Assurance Review). Meeting the specific conditions identified for possible exclusions is not, in and of itself, sufficient grounds for recommending exclusion.

4.3.1 Type II IEPR

A Type II IEPR was considered not needed because the Project poses no significant threat to human life.

4.4 Model Certification and Approval

EC 1165-2-209 requires certification (for Corps models) or approval (for non-Corps models) of planning models used for all planning activities. The EC defines planning models as any models and analytical tools that planners use to define water 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 used in planning; however, engineering software used for models is currently addressed under the Engineering and Construction Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering activities in support of planning studies will proceed as in the past. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and will follow the professional practice of documenting the application of the software and modeling results.

The models to be employed in the Project have either been developed by or for the use by USACE. More specifically, the models to be employed in the completion of design are:

- MCACES (MII): This is a cost estimation model that was developed by Building Systems Design Inc. The Army Corps of Engineers began using this model in 1989.

- HEC-FDA: This model, developed by the Corps' Hydrologic Engineering Center, will assist the PDT in applying risk analysis methods for flood damage reduction studies as required by EM 1110-2-1419. This program
    - Provides a repository for both the economic and hydrologic data required for the analysis;
    - Provides the tools needed to understand the results;
    - Calculates the Expected Annual Damages and the Equivalent Annual Damages;
    - Computes the Annual Exceedance Probability and the Conditional Non-Exceedance Probability; and
    - Implements the risk-based analysis procedures contained in EM 1110-2-1619.

- HEC-RAS: The function of this model is to complete one-dimensional hydraulic calculations for a full network of natural and manmade channels. HEC-RAS major capabilities are
    - User interface;
    - Hydraulic Analysis;
    - Data storage and Management; and
    - Graphics and reporting.

- HEC-HMS: The function of this model is to simulate precipitation-runoff process in watershed systems. This program provides:
    - Hydrologic simulations
    - Parameter estimation
    - Simulation analyses

- Mathcad 15 – ideal for knowledge capture, calculation, sharing and reuse. Mathcad lets individuals work with update-able, interactive designs, so users can capture the critical methods and values behind each of their engineering projects.
- Mathcad automatically creates an auditable trail of documented calculations, thus simplifying compliance, reporting, and verification and troubleshooting.

- CSETT: The function of this model is to compute consolidation settlement of compressible soils resulting from simple and complex loading conditions. Capabilities include:
    - Ultimate settlement and time-rate of consolidation for the total soil mass specified and for the individual compressible soil layers within the soil mass.
    - In situ overburden pressures and the induced stresses
    - Analysis of multiple soil layers and a variety of drainage conditions.
- GeoStudio: Geostudio includes 8 modeling programs: Slope/W for slope stability; SEEP/W for groundwater seepage; SGMA/W for stress deformation; QUAKE/W for dynamic earthquake; TEMP/W for geothermal; CTRAN/W for contaminant transport; AIR/W for airflow; VADOSE/W for vadose zone and covers

- CPGA: The function of this model is basic pile group analysis. It eliminates inaccuracies inherent in hand analysis methods.

- CFRAME: The function of this model is to utilize the stiffness methods of structural analysis. The Cholesky decomposition method is used to solve the resulting matrix equation. Automatic generation routines are available to simplify the data input.

- CWALSHT: The function of this model is to design and/or analyze either cantilever or anchored sheet pile walls. It determines the required depth of penetration of a new wall or assesses the factors of safety for an existing wall

- STAAD.Pro is used for analyzing and deigning buildings, brides, towers, transportation, industrial and utility structures. It provides static, dynamic, and seismic analyses, load types and generation, finite element calculations, steel, timber, and concrete design analyses.

- RISA-3D: This modeling software analyzes and optimizes all types of structures and common structural materials including steel, concrete, wood, aluminum and masonry.

- Mathcad 15 calculates design computations, analyzes and plots data in a user friendly platform.

- GiNT stores all types of subsurface data and creates reports, boring logs, and lab reports, etc.

- Micro station v8i is software used to design, model, visualize, document, and map projects. It is primarily used to layout design plans.
    - InRoads, a tool within Microstation, provides site analysis and graphic coordinate geometry

MicroStation V8*i* is the CAD Software used by engineers, architects, GIS professionals, constructors, and owner operators to design, model, visualize, document, map, and sustain infrastructure projects.

MicroStation is their preferred CAD software foundation because it delivers an integrated and proven suite of intuitive, interactive, and highly interoperable capabilities to the desktop.
InRoads Site also offers sophisticated, easy-to-use site analysis tools; comprehensive, interactive graphic coordinate geometry; and user-definable XML reports.

4.5 Policy Compliance and Legal Review

The Memphis District Office of Counsel is responsible for legal review of decision and implementation documents and signs a certification of legal sufficiency prior to construction of the Project.

5 POSTING of REVIEW PLANS and PUBLIC COMMENT

To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, this RP will be published on the district's public internet site following approval by MVD. A link to the RP is available at the District's "Review Plan" hyperlink.

5.1 District Posting of Review Plans on Internet

The Memphis District maintains a web site that hosts electronic versions of Review Plans for its studies/projects as well as a list of the current and active Review Plans with links to the documents. In posted documents, lists of the names of USACE reviewers may be displayed. The MVD and HQUSACE postings also link to the District's site. The district will establish a mechanism on their web site for allowing the public to comment on the adequacy of the RP, and will consider public comments on RPs. The RP is published on the Memphis District's public internet site following approval by MVD. The Memphis District website is located at http://www.mvm.usace.army.mil.

5.2 Division Posting of Review Plans on Internet

MVD will post on its website, and update at least every three months, an agenda of RPs. The agenda describes all decision and implementation documents, the RP for each entry on the agenda, and provides a link from the agenda to each document made public. MVD's website is located at http://www.mvd.usace.army.mil.

5.3 Comment Period and Handling of Comments

The public comment period is 30 days.

If and when comments are received, the PDT will consider them and decide if revisions to the Review Plan are necessary. Public comments on the Review Plan may be made by writing or emailing the following contact:

Memphis District, Corps of Engineers
ATTN: PM-P (Dewey Powell)
167 North Main Street, B202
Memphis, Tennessee 38103
Email: dewey.l.powell@usace.army.mil

The Memphis District will consider public comments and recommend any changes to the RP to MVD. Significant and relevant public comments will also be provided to reviewers prior to conduct of the review.

Due to changes in the Project, the RP may require updates. Updates are posted to the same website and the Public will have a similar opportunity to comment on RP updates.

6 REVIEW SCHEDULE AND COSTS

The recommended schedule should show the timing and sequence of all reviews, to include a milestone schedule with the critical features of the Project design and construction. All costs for reviews should be provided to include expected in-kind contributions provided by the sponsor.

6.1 Review Plan Schedule

ATR will be conducted for plans and specifications at the 65% level for each line item of design. One review (65%) was selected based on the complexity of the Project. Designs will include channel enlargement, channel construction , closure and structure designs.

SCHEDULED REVIEW PLAN	15 Mile Bayou	10 Mile Bayou	10 Mile Diversion	Ditch 15	Ditch 15 Diversion	Ditch 10
Review Plan receives District approval	1/29/13	1/29/13	1/29/13	1/29/13	1/29/13	1/29/13
Review Plan sent to MSC (MVD)	2/12/13	2/12/13	2/12/13	2/12/13	2/12/13	2/12/13
Review Plan sent to RMO (RMC)	2/22/13	2/22/13	2/22/13	2/22/13	2/22/13	2/22/13
RMC reviews and endorse Review	3/22/13	3/22/13	3/22/13	3/22/13	3/22/13	3/22/13
MVD approves Review Plan	3/29/13	3/29/13	3/29/13	3/29/13	3/29/13	3/29/13
Review Plan sent to RIT	4/3/13	4/3/13	4/3/13	4/3/13	4/3/13	4/3/13

6.2 DQC Schedule and Cost

The DQC, which includes peer reviews, an ITR, and a BCOE review, is accomplished prior to ATR. The DQC costs are paid from Project funds. The schedule for completing major products for this Project is:

This Project (St Francis Basin Construction) has several line items included in the benefit to cost ratio for SFB. To qualify for the President Budget, the project would need a benefit to cost ratio of at least 3.0. The SFB project benefit to cost ratio is less that the required 3.0. St Francis Basin Construction has not been in the President budget since 2006. With the uncertainty of funding of the remaining work, and when to set a schedule for each line item, the District will revise the approved Review Plan to reflect the schedule for the line items as funds are allocated to perform the work per line item..

Plans Complete	TBA
Specifications Complete	TBA
DDR Complete	TBA
O&M Manual Updates Complete	TBA

6.3 ATR Schedule and Cost

The ATR costs are paid from Project funds. Following is the schedule for the ATR review:

6.3.1 ATR Schedule

For this RP, ATRs will follow the 65% completion of each line item (Fifteen Mile Bayou, Ten Mile Bayou, Ten Mile Diversion, Ditch Fifteen, Ditch Fifteen Diversion and Ditch Ten). ATR is requested for reach in the event delays in the design process (permits, funding, etc), staggers the completion dates. Each line item will be designed by a fully separate PDT; therefore, a consistency ATR is also requested to ensure design and specifications are consistent among line items for the final product. A PDT team will be develop for each line item as funding is appropriated for the line items.

6.3.2 ATR Cost

Discipline	Estimated Labor Cost
ATR Team Lead	$10,000/review
Supporting Disciplines	$5,000 ea.

6.4 IEPR External Peer Review

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.

6.4.1 Type I IEPR

This Project does not require a Type I IEPR because it is now in the implementation phase and not the study phase.

6.4.2 Type II IEPR

A Type II IEPR is conducted to insure public health, safety, and welfare. The circumstances requiring a Type II IEPR are described in Appendix E of EC 1165-2-209. Each of those circumstances is explicitly considered in developing a risk-informed rationale for determining the appropriate level of review, including the need for a safety assurance review. Type II IEPR panels will conduct reviews of plans and specifications, design documentation, and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule to include review of the OMRR&R Manual. DQC, cost estimate, and engineering considerations and instructions to the field will be made available upon request to assist in the review; however, review of these documents is not required under IEPR review. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare.

Decision on IEPR: MVM has determined that the remaining item of work for St Francis Basin construction pro0ject does not require a Type II IEPR for the following reasons:

- It is not justified by life safety nor would failure of the project pose significant threat to human life;
- It does not involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations; does not contain precedent-setting methods or models; and does not present conclusions that are likely to change prevailing practices;
- It does not require redundancy, resiliency, and/or robustness and
- It does not involve unique construction sequencing or a reduced or overlapping design construction schedule.

7 REVIEW TEAMS

7.1 District Quality Control Activities

This is the list of the review teams who will perform the DQC activities. It should be stated that the DQC will be managed by the home district in accordance with Major Subordinate Command (MSC) and District Quality Management Plans.

When policy and/or legal concerns arise during review efforts that are not readily and mutually resolved by the PDT and the reviewers, the District seeks issue resolution support from the vertical team in accordance with the procedures outlined in ER 1105-2-100, Appendix H or other appropriate guidance.

7.1.1 Project Delivery Team

See Appendix A

7.1.2 Peer Reviewers

See Appendix A

7.1.3 BCOE Reviewers

NAME [1]	DISTRICT / SECTION	DISCIPLINE
Tom Morgan	CEMVMR-EC-C	Construction Branch Chief
Edward Lambert	CEMVM-PD-E	Environmental Branch Chief
Jan Berry	CEMVM-EC-D	Design Branch Chief
Cory Williams	CEMVM-EC-G	Geotechnical Chief
David Berretta	CEMVM-EC-H	Hydrology and Hydraulic Chief

[1] Names will be removed in version posted for public review to protect privacy. Reviewers will be added for each line item.

7.2 Agency Technical Review

NAME[1]	DISTRICT / ORGANIZATION	DISCIPLINE
	TBA	MSC Point of Contact
	TBA	ATR Coordinator
	TBA	ATR Team Lead
TBD		Structural
TBD		Geotechnical
TBD		Civil
TBD		Cost

[1] Names will be removed in version posted for public review to protect privacy. Technical Reviewers will be added for each line item.

8 SUMMARY OF REVIEW PLAN UPDATES

Revision No.	Date	Description of major change(s)

9 APPENDICES (Listing/History of Completed Review Packages)

Review Date	Type of Review	Review Title / Description)

APPENDIX A

PROJECT DELIVERY TEAM

St Francis Basin Construction/Ten and Fifteen Mile Bayous

Project Delivery Team

TASK	PRIMARY RESPONSIBILITY	LEAD	PEER REVIEW
Design, Plan & Specification and Cost Estimating			
Real Estate	MVM	Pillars	
Cost Engineering/Relocation	MVM	Carpenter	
Civil Design	MVM	Bagley	
H &H	MVM	Davenport/Bruchman	
Geotechnical	MVM	Lord	
Construction	MVM	Holloway	
Structural	MVM	Hsu	
Reviews			
DQCR	NVM	Callahan	N/A
ATR	MVM	Burks, MVM	N/A
BCOE		TBD	N/A

APPENDIX B

AGENCY TECHNICAL REVIEW SCHEDULE

ATR	Date					
	Line Item One **15 Mile Bayou**	**Line Item Two** **10 Mile Bayou**	**Line Item Three** **10 Mile Diversion**	**Line Item Four** **Ditch 15**	**Line Item Five** **Ditch 15 Diversion**	**Line Item Six** **Ditch 10**
	65%	65%	65%	65%	65%	65%
RMC approved ATR Team	TBA	TBA	TBA	TBA	TBA	TBA
Review Docs and charge sent to ATR Team	TBA	TBA	TBA	TBA	TBA	TBA
Charge approved by PDT and ATR Team	TBA	TBA	TBA	TBA	TBA	TBA
Review docs sent to ATR Team	TBA	TBA	TBA	TBA	TBA	TBA
ATR DrChecks comments complete	TBA	TBA	TBA	TBA	TBA	TBA
PDT DrChecks evaluations complete	TBA	TBA	TBA	TBA	TBA	TBA
ATR backchecks complete; DrChecks closed	TBA	TBA	TBA	TBA	TBA	TBA
ATR certification form signed	TBA	TBA	TBA	TBA	TBA	TBA
ATR final report complete	TBA	TBA	TBA	TBA	TBA	TBA
Report sent to RMC for approval	TBA	TBA	TBA	TBA	TBA	TBA
Report approved by RMC	TBA	TBA	TBA	TBA	TBA	TBA

Remaining ATRs will follow the 65% completion of each reach design Line item. ATR is requested per Line item in the event delays in the design process (permits, funding, etc), staggers the completion dates. Each line item will be designed by a fully separate PDT.

Attachment 1: **ATR Certification**

CERTIFICATION OF AGENCY TECHNICAL REVIEW [1]

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

Denny Lundberg
Chief, Engineering Division
CEMVR-EC

Date

SIGNATURE

Gary Meden
Chief, Programs & Project Management Division [3]
CEMVR-PM

Date

Instructions:

Prior to saving/printing this document for a specific project, delete these Instructions and all other notes/annotations that are in green italicized font in the completed form.

[Required Input] – Information in Blue brackets is required. Once the input is provided, the text should be formatted in black and the brackets should be deleted.

[1] *Add appropriate additional signatures (Operations, Construction, AE principal for ATR solely conducted by AE, etc).*

[2] *Use this signature area only needed (i.e., if some portion of the ATR was contracted)*

[3] *Use this signature area only needed (i.e., for Decision Documents)*

This from is in accordance with Attachment C-1 of EC 1165-2-209 (incl Errata Sheet No. 1) dated 15 July 2010.

CERTIFICATION OF LEGAL REVIEW

This product including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Memphis District and is approved as legally sufficient.

_____ _____

Steve Roth, District Counsel Date

Attachment 3: **IEPR Decision Documentation**

STATEMENT OF RATIONALE FOR DECISION TO HAVE/NOT HAVE AN IEPR

The Project is in the implementation phase and therefore does not require a Type I IEPR. This attachment documents the vertical team's risk informed recommendation to conduct Type II IEPR. According to EC 1165-2-209, the vertical team must make a risk-informed decision whether or not to conduct Type II IEPR, make a risk-informed decision to conduct Type II IEPR or make a risk informed recommendation to the Chief of Engineers or Director of Civil Works to not conduct Type II IEPR.

Table 1, based on the US Army Field Manual 5-19, Composite Risk Management, was used to assess each risk in the IEPR tables.

TABLE 1: RISK ASSESSMENT MATRIX

		Risk Probability			
		Frequent	**Likely**	**Seldom**	**Unlikely**
Severity	**Catastrophic**	L	L	L	M
	Critical	L	L	L	L
	Marginal	L	L	L	L
	Negligible	L	L	L	L

E (Extremely High)	Loss of ability to accomplish Project	Red
H (High)	Significantly degrades capabilities to accomplish Project	Blue
M (Moderate)	Degrades Project accomplishment capabilities	Yellow
L (Low)	Little or no impact on Project accomplishment	Green

The results from the Risk Assessment Matrix represent all six of the Line items as follows: Fifteen Mile Bayou, Ten Mile Bayou, Ten Mile Diversion, Ditch 15, Ditch 15 Diversion and Ditch 10. All of these line items are channel enlargement and pose little to no threat to human life.

Attachment 3: **IEPR Decision Documentation**

Risk	Probability	Severity	Assessment	Contributes to IEPR Decision?
Project poses a significant threat to human life	Unlikely	Negligible	Low	No
Project involves 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	Unlikely	Negligible	Low	No
The project design requires redundancy, resiliency, and robustness	Unlikely	Negligible	Low	No

The project has unique construction sequencing or a reduced or overlapping design construction schedule	Unlikely	Marginal	Low	No
Risk of interrupting power generation	Unlikely	Negligible	Low	No
Risk of a faulty or incomplete design making it to construction	Unlikely	Marginal	Moderate	No
Risk of contractor misinterpreting design which results in project failure	Unlikely	Critical	High	No

RECOMMENDATION REGARDING TYPE II IEPR (SAR)

Based on the above assessment, it is the risk-informed recommendation of the Project Delivery Team and the Chief of E&C or Engineering that Type II IEPR (SAR) is NOT required for this project.

The decision to not conduct a Type II IEPR (SAR) is recommended by:

Signature of Chief, EC

29 Jan 2013
Date

The above recommendation is ☒ Approved ☐ Disapproved by

2/06/13

APPENDIX C

MISSISSIPPI VALLEY DIVISION

Review Plan Checklist
For Implementation Documents

Date: 19 APR 2011
Originating District: Memphis District
Project/Study Title: St Francis Basin Construction Flood Risk Management Project
P2 #: 1070070
District POC: Dewey Powell
PCX Reviewer: N/A

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 stand alone document?	EC 1165-2-209, Appendix B Para 4a	Yes ☒ No ☐
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?		a. Yes ☒ No ☐
b. Does it include a table of contents?		b. Yes ☒ No ☐
c. Is the purpose of the RP clearly stated and EC 1165-2-209 referenced?	EC 1165-2-209 Para 7a	c. Yes ☒ No ☐
d. Does it reference the Project Management Plan (PMP) of which the RP is a component including P2 Project #?	EC 1165-2-209 Para 7a (2)	d. Yes ☒ No ☐
e. Does it include a paragraph stating the title, subject, and purpose of the work product to be reviewed?	EC 1165-2-209 Appendix B Para 4a	e. Yes ☒ No ☐
f. Does it list the names and disciplines in the home district, MSC and RMO to whom inquiries about the plan may be directed?* **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.*	EC 1165-2-209, Appendix B, Para 4a	f. Yes ☒ No ☐

2. Documentation of risk-informed decisions on which levels of review are appropriate.	EC 1165-2-209, Appendix B, Para 4b	Yes ☒ 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 1165-2-209,7a	a. Yes ☒ No ☐
b. Does it contain a summary of the CW implementation products required?	EC1165-2-209 Para 15	b. Yes ☒ No ☐
c. DQC is always required. The RP will need to address the following questions:	EC1165-2-209 Para 15a	
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	i. Yes ☒ No ☐
ii. Does it list the DQC activities (for example, 30, 60, 90, BCOE reviews, etc)	EC 1165-2-209 Appendix B (1)	ii. Yes ☒ No ☐
iii. Does it list the review teams who will perform the DQC activities?	EC 1165-2-209 Appendix B, 4g	iii. Yes ☒ 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	iv. Yes ☒ 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	d. Yes ☒ No ☐
i. Does it identify the ATR District, MSC, and RMO points of contact?	EC 1165-2-209 Para 7[a]	i. Yes ☒ No ☐
ii. Does it identify the ATR lead from outside the home MSC?	EC 1165-2-209 Para 9c	ii. Yes ☒ No ☐
iii. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list	EC 1165-2-209 Appendix B 4g	iii. Yes ☒ No ☐

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?*		
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	iv. Yes ☒ No ☐
v. Does the RP address the requirement to document ATR comments using Dr Checks?	EC 1165-2-209 Para 7d (1)	v. Yes ☒ No ☐
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.		
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	e. Yes ☒ No ☐
i. Does it provide a defensible rationale for the decision on Type II IEPR?	EC 1165-2-209 Para 7a	i. Yes ☒ No ☐
ii. Does it identify the Type II IEPR District, MSC, and RMO points of contact?	EC 1165-2-209 Appendix B Para 4a	ii. Yes ☒ No ☐
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 USACE	EC 1165-2-209 Appendix B Para 4k (4)	iii. Yes ☒ No ☐
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) & Appendix E, Para's 1a & 7	iv. Yes ☒ No ☐

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	v. Yes ☒ No ☐
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?		vi. Yes ☐ No ☐ NA☒
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 7c(1)	vii. Yes ☒ No ☐ NA☐
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? *Is it likely? Yes* ☒ *No* ☐ *If yes, Type II IEPR must be addressed.*	EC1165-2-209 Appendix E, Para 5a	viii. Yes ☒ No ☐ NA☐
ix. Does the RP address Type II IEPR factors?	EC1165-2-209 Appendix E Para 2	ix. Yes ☒ No ☐
Factors to be considered include: • 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 through Design Build or Early Contractor		

delivery systems? *Is it likely? Yes ☒ No ☐* *If yes, Type II IEPR must be addressed.* g. 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	g. Yes ☒ No ☐
3. Does the RP present the tasks, timing, and sequence of the reviews (including	EC 1165-2-209, Appendix B,	Yes ☒ No ☐
a. Does it provide and overall review schedule that shows timing and sequence of all reviews?	EC 1165-2-209, Appendix C, Para 3g	a. Yes ☒ No ☐
4. Does the RP address engineering model certification requirements?	EC 1165-2-209, Appendix B, Para 4i	Yes ☒ No ☐
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) wil be needed? c. If needed, does the RP propose the appropriate level of certification and/or approval for the model(s) and how it will be accomplished?		a. Yes ☒ No ☐ b. Yes ☒ No ☐ c. Yes ☒ No ☐
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?	EC 1165-2-209, Appendix B, Para 4d	Yes ☒ No ☐
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?		a. Yes ☒ No ☐ b. Yes ☒ No ☐
6. Does the RP explain when significant and relevant public comments will be provided to the reviewers before they conduct their review?	EC 1165-2-209, Appendix B, Para 4e	Yes ☒ No ☐
a. Does it discuss the schedule of receiving public comments?		a. Yes ☒ No ☐

b. Does it discuss the schedule of when significant comments will be provided to the reviewers?		b. Yes ☒ No ☐
7. Does the RP address whether the public, including scientific or professional societies, will be asked to nominate professional reviewers?*	EC 1165-2-209, Appendix B, Para 4h	Yes ☒ No ☐
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? ** Typically the public will not be asked to nominate potential reviewers*		a. Yes ☐ No ☐ N/A ☒
8. Does the RP address expected in-kind contributions to be provided by the sponsor?	EC 1165-2-209, Appendix B, Para 4j	Yes ☒ No ☐
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?		a. Yes ☒ No ☐
9. Does the RP explain how the reviews will be documented?		Yes ☒ No ☐
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?	EC 1165-2-209, Para 7d	a. Yes ☒ No ☐
b. Does the RP explain how the Type II IEPR will be documented in a Review Report?	EC 1165-2-209 Appendix B Para 4k (14)	b. Yes ☒ No ☐
c. Does the RP document how written responses to the Type II IEPR Review Report will be prepared?	EC 1165-2-209 Appendix B Para 4k (14)	c. Yes ☒ No ☐

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?	EC 1165-2-209 Appendix B Para 5	d. Yes ☒ No ☐
10. Has the approval memorandum been prepared and does it accompany the RP?	EC 1165-2-209, Appendix B, Para 7	Yes ☒ No ☐